

Draft Environmental Impact Report (Draft EIR)

[State Clearinghouse No. 2012091037]

for

**Los Angeles International Airport (LAX)
West Aircraft Maintenance Area Project**

Volume 1

Main Document and Appendix A

City of Los Angeles
Los Angeles World Airports

October 2013

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Los Angeles World Airports

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1.0 INTRODUCTION AND EXECUTIVE SUMMARY

1.1 Summary of Proposed Project

Los Angeles World Airports (LAWA), a proprietary department of the City of Los Angeles, is preparing an Environmental Impact Report (EIR) to evaluate the environmental impacts of the proposed West Aircraft Maintenance Area Project (proposed Project) pursuant to the California Environmental Quality Act (CEQA - Public Resources Code Section 21000 et seq.) and the *CEQA Guidelines* (California Code of Regulations Title 14, Section 15000 et seq.).

The proposed Project would grade approximately 84 acres in the southwestern portion of the airfield (hereafter referred to as the Project site) and develop approximately 68 acres of the 84 acres with taxiways and aircraft parking apron areas, maintenance hangars, employee parking, service roads, and ancillary facilities (i.e., related storage, equipment and facilities).¹ The proposed Project would be able to accommodate up to 10 Airplane Design Group (ADG) VI aircraft, such as the Airbus A380, or a mix of smaller aircraft on the site. The proposed Project would not increase passenger or gate capacity and would not increase flights and/or aircraft operations at LAX, but would consolidate, relocate, and modernize some existing maintenance facilities and activities.

An Initial Study (IS) and Notice of Preparation (NOP), included as Appendix A of this EIR, was circulated for public review from September 14, 2012 to October 15, 2012. In response to requests from the public, LAWA further extended the public review period for the IS/ NOP by 15 days until October 30, 2012. During the public review period, LAWA held a public Scoping Meeting on October 4, 2012, at the Flight Path Learning Center and Museum at LAX. The meeting, attended by approximately 30 people, was staffed by LAWA and consultants on the proposed Project, and was organized in an open house format, with information on the proposed Project and the CEQA process available and on display. The primary purpose of the meeting was to receive public comments regarding the scope and content of the environmental information to be included in the EIR.

As indicated in the IS/NOP, this EIR evaluates the following resource areas: Air Quality, Greenhouse Gas Emissions, Hazards and Hazardous Materials, Hydrology and Water Quality, Noise, Land Use and Planning, and Construction Surface Transportation. The IS/NOP determined that no significant impacts would occur for the following resource areas: Aesthetics, Agricultural and Forest Resources, Biological Resources, Cultural Resources, Geology and Soils, Mineral Resources, Population and Housing, Public Services, Recreation, and Utilities and Service Systems. These topics will not be evaluated further in this EIR.

Subsequent to release of the IS/NOP and based on public input and LAWA coordination with the Federal Aviation Administration (FAA) minor refinements have been made to certain components of the proposed Project. Although the boundary of the Project site has not changed, refinements and corrections in the detailed site area tabulations resulted in the acreage of the Project site being revised from approximately 75 acres to approximately 84 acres. Other refinements to the proposed Project include: the developed area of the site has

¹ Within the Project site, 68 acres would be paved while approximately 16 acres would be unpaved islands between taxiways and other unpaved areas.

1.0 Introduction and Executive Summary

been reduced by seven acres; the aircraft maintenance hangar area has been reduced from approximately 400,000 square feet to approximately 290,000 square feet of hangar bay space (floor area); and access to the site is now via westerly extensions of Taxiway B and the extension of Taxiway C (as Taxilane C) rather than from Taxiway AA and Taxiway B. Based on the coordination between LAWA and the FAA regarding the design of the proposed Project, the reduction of the developed area and the change in access would improve visibility of aircraft from the air traffic control tower and remove paved apron areas from the Runway Protection Zone for Runway 7L.

In addition, the proposed Project no longer includes the ground run-up enclosure (GRE) that was originally contemplated for the Project site. The results of a preliminary GRE noise analysis determined that development of the GRE at the Project site would provide only a minimal noise reduction benefit to sensitive receptors nearby. Therefore, LAWA has eliminated the placement of the GRE at the Project site and will conduct a separate airport-wide GRE siting study as a separate activity, to determine locations better suited for a GRE, in order to provide a more beneficial and noticeable noise reduction to adjacent communities.

1.2 Relationship to the LAX Master Plan and EIR

The 2004 LAX Master Plan serves as a broad policy statement regarding the conceptual strategic planning framework for future development at LAX and is the comprehensive development program for LAX properties, including runway and taxiway system modernization, redevelopment of terminal areas, airport maintenance areas, airport access improvement and passenger safety, security, and convenience enhancements. The proposed Project responds to the development framework set forth for LAX in the Master Plan with incorporation of certain refinements reflected in the engineering, design, and construction specifications for the proposed Project. The LAX Master Plan allowed for the replacement of existing hangars through the construction of three hangar/maintenance facilities dispersed in the western portion of the airport. The proposed Project represents a refinement to the programmed development of hangar/maintenance facilities in the western portion of the airport property. Specifically, the proposed Project would exchange locations identified for aircraft apron and maintenance on the east side of Taxiway AA with an area identified for employee parking (West Employee Parking) on the west side of Taxiway AA. Both facilities are proposed for the southwest portion of the airport property, south of World Way West as proposed under the LAX Master Plan, with access routes to and from each facility remaining essentially unchanged. Neither these refinements nor construction of the proposed Project as a whole, would affect the number of aircraft operations at LAX, which is determined by market demand and supply considerations. The proposed Project would allow for more efficient and effective maintenance of aircraft while at LAX.

The Final EIR for the LAX Master Plan (California State Clearinghouse Project No. 1997061047) included an analysis of the environmental impacts of future development at LAX, including aircraft maintenance areas and related ancillary facilities at LAX.

The LAX Master Plan Final EIR contains Master Plan commitments and mitigation measures that apply to the LAX property, including the Project site. Therefore, LAWA would implement applicable commitments and mitigation measures identified in the LAX Master Plan Mitigation Monitoring and Reporting Program (MMRP) as part of the proposed Project. The LAX Master Plan commitments and mitigation measures proposed to be implemented as part of the

proposed Project are identified below in **Table 1-1** and in the individual technical sections within Chapter 4, *Environmental Impact Analysis*, along with new mitigation measures that are proposed to reduce or avoid environmental impacts associated with the proposed Project.

1.3 Purpose of this EIR

This EIR is a Project EIR, as defined by Section 15161 of the *CEQA Guidelines* and, as such, serves as an informational document for the general public and decision-makers. The Lead Agency, LAWA, is responsible for the preparation and distribution of this EIR pursuant to Public Resources Code Section 21067. In addition to supporting LAWA's decision-making on the proposed Project, this EIR is intended for use in connection with other permits and approvals necessary for the construction and operation of the proposed Project, including potential use by the Regional Water Quality Control Board, South Coast Air Quality Management District, the City of Los Angeles Department of Building and Safety, the City of Los Angeles Department of Public Works, the City of Los Angeles Fire Department and other responsible public agencies that must approve activities undertaken with respect to the proposed Project.

This EIR evaluates the environmental impacts identified by the IS/NOP to be potentially significant and provides mitigation measures as appropriate. This methodology is consistent with *CEQA Guidelines* Section 15063(c)(3)(A). Pursuant to *CEQA Guidelines* Section 15128, proposed Project effects found not to be significant are discussed in the IS/NOP, attached as Appendix A of this EIR. Areas of environmental concern evaluated in the IS were based on Appendix G, Environmental Checklist Form, of the *CEQA Guidelines*. Environmental areas determined to be less than significant in the IS are discussed in Chapter 6, *Other Environmental Considerations*, of this EIR. Refinements have been made to the proposed Project to reflect additional information and coordination with the public and the FAA. The refinements do not represent a material change to the proposed Project that was described in the IS/NOP and do not change any of the conclusions in the IS.

In addition to evaluating environmental impacts specific to the proposed Project, this EIR also includes, pursuant to Section 15130 of the *CEQA Guidelines*, an examination of the effects of cumulative development at LAX and in the study area. Cumulative development includes anticipated future projects that, in conjunction with the proposed Project, may result in a cumulative impact. In addition, this EIR evaluates the extent to which environmental effects could be reduced or avoided through the implementation of feasible alternatives to the proposed project. Furthermore, LAWA is responsible for certifying the EIR and adopting any mitigation measures needed to address the significant environmental impacts associated with the proposed Project. For projects that result in significant unavoidable adverse environmental effects, LAWA may, after making a series of findings, pursuant to *CEQA Guidelines* Section 15091, certify the EIR and adopt a Statement of Overriding Considerations pursuant to *CEQA Guidelines* Section 15093.

1.4 Organization of this EIR

This EIR follows the preparation and content guidance provided in CEQA and the *CEQA Guidelines*. Listed below is a summary of each chapter of the report.

1.0 Introduction and Executive Summary

Chapter 1 – Introduction and Executive Summary

This chapter provides a summary of the proposed Project and environmental analysis, including a summary of potentially significant impacts and proposed mitigation measures.

Chapter 2 – Project Description

This chapter presents the location of the Project, the objectives of the proposed Project, a description of the individual components of the proposed Project and a construction schedule. In addition, the chapter identifies the intended use of the EIR and the approvals required for implementation of the proposed Project.

Chapter 3 – Overview of Project Setting

This chapter provides an overview of existing conditions for areas proposed for improvement and areas potentially affected by the proposed Project. This chapter also describes other projects proposed in the nearby area that may, in conjunction with the proposed Project, result in cumulative impacts on the existing environment.

Chapter 4 –Environmental Impact Analysis

The introductory section of Chapter 4 describes the analytical framework for the environmental review of the proposed Project. The remaining sections of the chapter provide detailed analysis of the potential environmental impacts of the proposed Project on air quality, greenhouse gas emissions, hazards and hazardous materials, hydrology and water quality, noise, land use and planning, and construction surface transportation.

Chapter 5 – Alternatives

This chapter provides an evaluation of Project alternatives that could feasibly attain most of the basic objectives of the Project while avoiding or substantially reducing any of the significant effects of the proposed Project identified in Chapter 4, *Environmental Impact Analysis*, in this EIR. As further described in Chapter 5, the alternatives to the proposed Project include:

No Project-No Development Alternative: Under the No Project-No Development Alternative, development of a consolidated aircraft maintenance facility with aircraft parking apron areas, maintenance hangars, employee parking areas, and ancillary facilities (i.e., related storage, equipment and facilities) would not occur. The Project site would continue to be used as a staging area for airport construction projects, with modular construction trailers/offices, a surface parking area, an airfield access security post (Guard Post 21), a small LAWA Police Department/Transportation Security Administration (LAWAPD/TSA) canine “walk” area, paved roads, and outdoor loading and storage areas. In addition, material would continue to be stockpiled on the site in association with projects under construction at LAX. Thus, the physical conditions associated with the site and its activities would remain essentially the same as under current conditions. Without the proposed Project, there would be less ability to efficiently and effectively maintain ADG VI aircraft and other aircraft at LAX. The need for maintenance facilities removed by past and pending projects as contemplated under the LAX Master Plan would be accommodated to the extent feasible at various maintenance facilities already in use on the airport, with potential for some maintenance having to be accommodated at other airports. Other existing aircraft maintenance facilities at LAX are currently used on a regular

1.0 Introduction and Executive Summary

basis by the tenant airlines/companies, and it is uncertain to what degree specific existing facilities could accommodate the aircraft maintenance needs associated with the removed facilities. It is possible, that the remaining facilities would not be able to accommodate the existing or future demands completely and/or efficiently. This is especially true relative to the ability to accommodate the remain overnight (RON)/remain all day (RAD) areas associated with the removal of aircraft maintenance hangars that would be removed. As indicated in Section 5.4.1, there are already substantial demands on existing RON/RAD areas at LAX and the loss of RON/RAD spaces would exacerbate that problem. Given that the RON/RAD areas at the subject maintenance areas are used for aircraft cabin cleaning and light servicing/maintenance (i.e., "Level A checks"), the loss of those areas without the provision of replacement areas, such as would be provided by the proposed Project, would mean that such aircraft servicing and light maintenance would need to be done while aircraft are at the gate, which would extend gate occupancy time and possibly delay other aircraft waiting to use the gate, or require additional stacking of aircraft at the remaining RON/RAD areas, which hinders the efficient management and movement of aircraft in those areas.

No Project-Existing LAX Master Plan Alternative: Under the No Project-Existing LAX Master Plan Alternative, development of aircraft maintenance facilities in the southwestern portion of the airport with aircraft parking apron areas, maintenance hangars, employee parking areas, and ancillary facilities (i.e., related storage, equipment and facilities) would occur in a manner that replicates the exact program locations presented in the 2004 LAX Master Plan without the currently proposed Project refinements. Under this Alternative, a new 270,000-square foot aircraft maintenance hangar would be constructed just east of Taxiway AA to the west of the existing United-Continental Hangar, with a new aircraft apron area placed between the new hangar and Taxiway C. The former Continental Airlines training building, which is now vacant, would be demolished and rebuilt as a 23,000 square foot ancillary building (i.e., potential maintenance-related offices, machine shops, etc.). Employee parking and maintenance-related storage/staging would be provided between the new hangar and the new ancillary building. Additionally, this Alternative would include another new maintenance hangar, approximately 25,000 square feet in size, located between the United-Continental Hangar and the American Airlines High-Bay Hangar. Based on existing conditions, the new hangar and associated apron area would likely be developed immediately southwest of the new Aircraft Rescue and Firefighting Facility replacing two to three of the existing aircraft RON parking positions on the west side of Taxiway R. For purposes of this alternatives analysis, it is assumed that construction would commence in early to mid-2014 with completion by mid- to late-2018.

Reduced Project Alternative: The Reduced Project Alternative would eliminate one of the two aircraft maintenance hangars proposed for the Project along with 150 associated employee parking spaces, and would reduce the proposed aircraft apron area by approximately half. The developed area of the site would be reduced by approximately 22 acres (10 acres of hangar area/parking and 12 acres of apron area) resulting in a total development area of approximately 45 acres, compared to the proposed Project with approximately 68 acres of development area. The site would be able to accommodate up to eight ADG VI aircraft, or a mix of smaller aircraft, compared to the 10 ADG VI aircraft that could be accommodated under the proposed Project. Similar to the proposed Project, the Reduced Project Alternative would include the grading of the 84-acre site and remove all of the existing stockpiles; however, existing uses within the northeast portion of the Project site would remain, including the existing construction trailers/offices area, which would continue to be used for coordination of terminal improvements,

1.0 Introduction and Executive Summary

unrelated to activities occurring on the Project site, Guard Post 21, and the LAWAPD/TSA canine “walk” area. The total floor area of the hangar to be constructed under this alternative would be approximately 125,000 square feet and it would be designed to accommodate up to an ADG VI aircraft. The hangar would consist of a single hangar building with adjacent hardstands to the west and east where aircraft can be parked and undergo various maintenance activities that do not require being within a hangar (i.e., such as maintenance to the interior/cabin areas). In addition, as only one aircraft hangar would be developed under the Reduced Project Alternative, it would be less able to accommodate the need for maintenance facilities removed by pending or planned LAX Master Plan projects and therefore would result in the need for use of various other maintenance facilities currently in use at LAX with the potential need for some maintenance to be accommodated at other airports. For purposes of this alternatives analysis it is assumed that construction of the Reduced Project Alternative would commence in the early to mid-2014 with completion by mid-2015.

Alternate Site Alternative: Under this alternative, the Project site would continue to be used as a staging area for airport construction projects as described under the No Project-No Development Alternative. Proposed maintenance facilities would instead be developed at a location in the eastern portion of the airport, south of Century Boulevard and east of Sepulveda Boulevard within the Delta and United Airlines Complex area. Existing facilities on the approximately 59 acre alternate site include the Delta Airlines ground support equipment (GSE) facility, the American Eagle Commuter Terminal, the Delta Airlines maintenance area, the Mercury Air Group Cargo building, the LAX Records Retention Building, and the United Maintenance Hangar.

In order to accommodate two modern maintenance hangars with a design similar to that described for the proposed Project, and due to the size and age of the existing hangars and maintenance facilities on the site, the existing facilities would need to be demolished to accommodate the new hangars to be built on the north and east of the alternate site under this Alternative. This Alternative would require removal of the Delta Airlines GSE facility, American Eagle Commuter Terminal, Delta Airlines maintenance area, Mercury Air Group Cargo, LAX Records Retention Building, and the United Maintenance Hangar. Some of the existing hangars and office/administration buildings that would be removed to support development of the alternative, including the former Western Airlines double-arched hangar, are part of the Intermediate Terminal Complex, which is considered a historical resource pursuant to CEQA.

Existing aircraft maintenance operations would be integrated into the new hangars to the extent possible and some maintenance operations might need to be relocated to other existing maintenance areas such as the United-Continental Hangar (western maintenance area). However, similar to the No Project-No Development Alternative, such consolidation and relocation of maintenance and cargo facilities may overburden the existing facilities and some amount of maintenance and cargo operations may need to be completed at other airports. It is anticipated that the LAX Records Retention Building would be relocated to another existing LAWA building.

Up to 300 parking spaces for employees, and related storage, equipment and facilities would also be located on the site, with access from Century Boulevard and Avion Drive. Similar to the proposed Project, the site would be able to accommodate up to 10 ADG VI aircraft, or a mix of smaller aircraft. For purposes of this alternatives analysis, it is assumed that construction of the Alternate Site Alternative would commence in early to mid-2014 with completion prior to 2019.

Chapter 6 – Other Environmental Considerations

This chapter contains several subsections, most of which are required under the *CEQA Guidelines* Section 15126.2, Consideration and Discussion of Significant Environmental Impacts. The chapter provides a summary of significant unavoidable impacts that would result from the proposed Project, an analysis of significant irreversible changes in the environment that would result from the Project, and an evaluation of the proposed Project's potential to result in growth-inducing impacts by fostering economic or population growth or the construction of housing, either directly or indirectly. Potential secondary effects that could result due to implementation of mitigation measures associated with the proposed Project are also discussed. Last, a summary of environmental effects determined not to be significant in the IS/NOP is provided.

Chapter 7 – List of Preparers, References, NOP and Scoping Meeting Comments, and List of Acronyms

This chapter provides the following: a list of the individuals from the LAWA and contractors who performed key roles in the preparation and development of this EIR; a list containing the bibliography of documents used in the preparation of this EIR; a list of agencies, organizations and individuals who provided comments on the IS/NOP and at the public scoping meeting; and a list of acronyms used in this EIR.

1.5 Executive Summary of Environmental Impacts

Table 1-1 summarizes the environmental impacts of the proposed Project related to air quality (including human health risks), greenhouse gas emissions, hazards and hazardous materials, hydrology and water quality, noise, land use and planning, and construction surface transportation as identified in Chapter 4, *Environmental Impacts Analysis*, of this EIR. In accordance with the requirements of the *CEQA Guidelines*, and as further described in Chapter 6, *Other Environmental Considerations*, all other environmental categories addressed in Appendix G of the *CEQA Guidelines*, including Aesthetics, Agricultural and Forest Resources, Biological Resources, Cultural Resources, Geology and Soils, Mineral Resources, Population and Housing, Public Services, Recreation, and Utilities and Service Systems were determined to be less than significant in the IS/NOP prepared for the proposed Project. The IS/NOP is included as Appendix A of this EIR.

1.6 Areas of Known Controversy and Issues to be Resolved

Several letters were received during the public circulation period for the IS/NOP prepared for this EIR and comments were also received at the public scoping meeting held on October 4, 2012. The primary environmental concerns associated with the proposed Project that were raised are summarized below. The NOP comments are included in Appendix A of this EIR.

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Air Quality

General concern was raised regarding potential air quality impacts on nearby communities and sensitive receptors related to construction and operation of the proposed Project, as well as cumulative effects. Potential impacts associated with air quality due to construction and operation of the proposed Project are addressed in Section 4.1, *Air Quality*.

Greenhouse Gas Emissions

Concern was raised regarding potential impacts to greenhouse gases and global climate change related to the proposed Project and cumulative projects. Potential impacts from individual and cumulative contributions to global climate change are analyzed in Section 4.2, *Greenhouse Gas Emissions*.

Hazards and Hazardous Materials

Concern was raised regarding potential contaminants and other hazards and hazardous materials located at the Project site that could pose a risk to the public and the environment with implementation of the proposed Project. Potential impacts associated with hazards and hazardous materials, including the potential for hazardous materials to be released into the environment, workers to be exposed to hazardous materials, and the potential of the proposed Project to affect existing remediation operations are analyzed in Section 4.3, *Hazards and Hazardous Materials*.

Hydrology and Water Quality

Concern was raised regarding potential impacts to water quality, groundwater recharge, drainage patterns, increased runoff, downstream storm facilities, and other potential impacts to hydrology and water quality as a result of construction and operation of the proposed Project. Section 4.4, *Hydrology and Water Quality*, evaluates the potential for the proposed Project to result in hydrology and water quality impacts.

Noise

Concern was raised regarding the potential for noise to have an impact on residential and other sensitive receptors in the vicinity of LAX as a result of construction and operation of the proposed Project. Specific noise concerns focused on engine run-ups associated with the GRE and other maintenance activities, noise associated with aircraft arriving and departing from the Project site, and cumulative impacts. Questions and concerns were also raised regarding the hours and frequency of GRE use, GRE design, and assumptions and methodology for evaluating noise impacts. A detailed analysis of potential noise impacts is included as part of this EIR in Section 4.5, *Noise*. The analysis evaluates potential noise impacts due to construction activities including construction-related traffic, operational noise impacts associated with maintenance and aircraft activities on the Project site, and impacts associated with aircraft arriving and departing from the Project site. As mentioned above, the GRE has been eliminated from the proposed Project.

Relationship to the LAX Master Plan

Concern was raised regarding the relationship of the proposed Project to components identified in the LAX Master Plan, including the type, location, and size of facilities associated with the proposed Project compared to proposed LAX Master Plan improvements. An evaluation of the

1.0 Introduction and Executive Summary

proposed Project and its consistency with applicable plans, including the LAX Master Plan, and consistency with existing land uses are analyzed in Section 4.6, *Land Use and Planning*.

Transportation

Concern was raised regarding the proposed Project and its potential to result in individual or cumulative traffic impacts on the existing circulation system and surrounding communities. Potential impacts associated with construction traffic are analyzed in Section 4.7, *Construction Surface Transportation*. As the future operation of the proposed Project would not result in long-term operational changes to traffic activity and traffic flows within the Airport study area as, in the long-term, the proposed Project would not increase the number of employees or airline passengers traveling to/through LAX. Therefore, an operational analysis of future traffic activity associated with proposed Project operations is not necessary and was not performed.

Project Alternatives

Comments were provided that emphasized the need for the EIR to study alternative site locations, particularly locations further away from residential areas. Comments were also provided that requested the GRE be located further to the north. An evaluation of Project alternatives that could feasibly attain most of the basic objectives of the Project while avoiding or substantially reducing any of the significant effects of the proposed Project are identified in Chapter 5, *Alternatives*.

1. Introduction and Executive Summary

Table 1-1

Summary of Environmental Impacts Related to the Proposed Project

Impact by Discipline (Level of Significance Before Mitigation)	Existing Mitigation Measures and Environmental Commitments/Controls ^a	New Mitigation Measures	Level of Significance After Mitigation
AIR QUALITY			
Air Quality-Construction (Significant Unavoidable - temporary)	LAX-AQ-1 – General Air Quality Control Measures (Measure Number 1a through 1g) LAX-AQ-2 –Construction-Related Control Measures (2a through 2o)	No New Feasible Mitigation Identified	Significant and Unavoidable (temporary)
Air Quality–Operation (Less Than Significant)	LAX-AQ-4 – Operations-Related Control Measures (4a, 4d, 4e, 4f)	None Required	Less Than Significant
Air Quality-Cumulative-Construction (Significant Unavoidable - temporary)	<i>Same as for Air Quality-Construction above</i>	No New Feasible Mitigation Identified	Significant and Unavoidable (temporary)
Air Quality-Cumulative-Operations (Less Than Significant)	<i>Same as for Air Quality- Operation above</i>	None Required	Less Than Significant
Human Health Risk Assessment- Construction (Less Than Significant)	LAX-AQ-1 – General Air Quality Control Measures (Measure Number 1a through 1g) LAX-AQ-2 –Construction-Related Control Measures (2a through 2o)	None Required	Less Than Significant
Human Health Risk Assessment- Operation (Less Than Significant)	LAX-AQ-4 – Operations-Related Control Measures (4a, 4d, 4e, 4f)	None Required	Less Than Significant
Human Health Risk Assessment- Cumulative (Less Than Significant)	LAX-AQ-1 – General Air Quality Control Measures (Measure Number 1a through 1g) LAX-AQ-2 –Construction-Related Control Measures (2a through 2o)	None Required	Less Than Significant

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Table 1-1

Summary of Environmental Impacts Related to the Proposed Project

Impact by Discipline (Level of Significance Before Mitigation)	Existing Mitigation Measures and Environmental Commitments/Controls ^a	New Mitigation Measures	Level of Significance After Mitigation
	LAX-AQ-4 – Operations-Related Control Measures (4a, 4d, 4e, 4f)		
GREENHOUSE GAS EMISSIONS			
Construction (Less Than Significant)	LAX-AQ-1 – General Air Quality Control Measures (1f and 1g) LAX-AQ-2 –Construction-Related Control Measures (2d through 2g, 2i through 2k, 2m, and 2o)	None Required	Less Than Significant
Operation (Less Than Significant)	LAX-AQ-4 – Operations-Related Control Measures (4a, 4d, 4e, 4f)	None Required	Less Than Significant
Cumulative-Construction (Less Than Significant)	<i>Same as for Greenhouse Gases -Construction above</i>	None Required	Less Than Significant
Cumulative-Operations (Less Than Significant)	<i>Same as for Greenhouse Gases -Operation above</i>	None Required	Less Than Significant
HAZARDS AND HAZARDOUS MATERIALS			
Construction (Significant)	LAX Master Plan Commitment HM-1. Ensure Continued Implementation of Existing Remediation Efforts LAX Master Plan Commitment HM-2. Handling of Contaminated Materials Encountered During Construction	Mitigation Measure MM-HAZ (WAMA)-1	Less Than Significant with Project Specific Mitigation
Operation (Less Than Significant)	LAX Master Plan Commitment HM-1. Ensure Continued Implementation of Existing Remediation Efforts	None Required	Less Than Significant

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Table 1-1

Summary of Environmental Impacts Related to the Proposed Project

Impact by Discipline (Level of Significance Before Mitigation)	Existing Mitigation Measures and Environmental Commitments/Controls ^a	New Mitigation Measures	Level of Significance After Mitigation
Cumulative-Construction (Less Than Significant)	<i>Same as for Hazards and Hazardous Materials-Construction above</i>	None Required	Less Than Significant
Cumulative-Operations (Less Than Significant)	<i>Same as for Hazards and Hazardous Materials-Operation above</i>	None Required	Less Than Significant
HYDROLOGY AND WATER QUALITY			
Construction (Less Than Significant)	LAX Master Plan Commitment HWQ-1. Conceptual Drainage Plan	None Required	Less Than Significant
Operation (Less Than Significant)	LAX Master Plan Mitigation Measure MM-HWQ-1. Update Regional Drainage Facilities	None Required	Less Than Significant
Cumulative-Construction (Less Than Significant)	<i>Same as for Hydrology and Water Quality-Construction above</i>	None Required	Less Than Significant
Cumulative-Operations (Less Than Significant)	<i>Same as for Hydrology and Water Quality -Operation above</i>	None Required	Less Than Significant
NOISE			
Construction (Less Than Significant)	LAX Master Plan Mitigation Measure MM-N-7, Construction Noise Control Plan LAX Master Plan Mitigation Measure MM-N-8, Construction Staging LAX Master Plan Mitigation Measure MM-N-9. Equipment Replacement LAX Master Plan Mitigation Measure MM-N-10,	None Required	Less Than Significant

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Table 1-1

Summary of Environmental Impacts Related to the Proposed Project

Impact by Discipline (Level of Significance Before Mitigation)	Existing Mitigation Measures and Environmental Commitments/Controls ^a	New Mitigation Measures	Level of Significance After Mitigation
	Construction Scheduling LAX Master Plan Commitment ST-16, Designated Haul Routes LAX Master Plan Commitment ST-22, Designated Truck Routes		
Operation (Less Than Significant)	LAX Master Plan Commitment N-1. Maintenance of Applicable Elements of Existing Aircraft Noise Abatement Program	None Required	Less Than Significant
Cumulative-Construction (Less Than Significant)	<i>Same as for Noise-Construction above</i>	None Required	Less Than Significant
Cumulative-Operations (Less Than Significant)	<i>Same as for Noise -Operation above</i>	None Required	Less Than Significant
LAND USE AND PLANNING			
Construction (Less Than Significant)	Not applicable	None Required	Less Than Significant
Operation (Less Than Significant)	LAX Master Plan Commitment LU-4. Neighborhood Compatibility Program	None Required	Less Than Significant
Cumulative-Construction (Less Than Significant)	Not applicable	None Required	Less Than Significant
Cumulative-Operations (Less Than Significant)	<i>Same as for Land Use and Planning-Operation above</i>	None Required	Less Than Significant

1.0 Introduction and Executive Summary

Table 1-1

Summary of Environmental Impacts Related to the Proposed Project

Impact by Discipline (Level of Significance Before Mitigation)	Existing Mitigation Measures and Environmental Commitments/Controls ^a	New Mitigation Measures	Level of Significance After Mitigation
CONSTRUCTION SURFACE TRANSPORTATION			
Construction (Less Than Significant)	LAX Master Plan Commitment C-1. Establishment of a Ground Transportation/Construction Coordination Office LAX Master Plan Commitment C-2. Construction Personnel Airport Orientation LAX Master Plan Commitment ST-9. Construction Deliveries. LAX Master Plan Commitment ST-12. Designated Truck Delivery Hours LAX Master Plan Commitment ST-14. Construction Employee Shift Hours LAX Master Plan Commitment ST-16. Designated Haul Routes LAX Master Plan Commitment ST-17. Maintenance of Haul Routes LAX Master Plan Commitment ST-18. Construction Traffic Management Plan LAX Master Plan Commitment ST-22. Designated Truck Routes	None Required	Less Than Significant
Cumulative-Construction (Less Than Significant)	<i>Same as for Construction Surface Transportation-Construction above</i>	None Required	Less Than Significant

^a Includes mitigation measures and environmental commitments set forth in the LAX Master Plan Final EIR, as well as other environmental controls set forth by LAWA, such as related to air pollution control measures, for development projects at LAX.

Source: PCR Services Corporation, 2013

2.0 PROJECT DESCRIPTION

2.1 Introduction

The Los Angeles World Airports (LAWA) proposes to construct and implement the Los Angeles International Airport (LAX) West Aircraft Maintenance Area Project (referred to hereafter as the proposed Project). The intent of the proposed Project is to consolidate, relocate, and modernize some of the existing aircraft maintenance facilities at LAX consistent with the LAX Master Plan. The consolidation, relocation, and modernization of these facilities would allow for more efficient and effective maintenance of existing aircraft at the airport, including Airplane Design Group (ADG) VI aircraft (Airbus A380s and Boeing 747-8s). The proposed Project would also include the provision of aircraft parking positions adjacent to the new aircraft maintenance facilities and apron space for remain overnight/remain all day (RON/RAD) aircraft parking, which provides extended layover space for aircraft that cannot be remain parked at terminal area contact gates. Routine aircraft maintenance and RON/RAD aircraft parking are regular functions at a major airport such as LAX. Currently these functions occur in multiple areas of the airport where routine aircraft maintenance can be performed, including low power engine run-up testing, when required.

The proposed Project would grade approximately 84 acres in the southwestern portion of the airfield (hereafter referred to as the Project site) and develop approximately 68 acres of the 84 acres with taxiways and aircraft parking apron areas, maintenance hangars, employee parking, service roads, and ancillary facilities (i.e., related storage, equipment and facilities).¹ The proposed Project would be able to accommodate up to 10 ADG VI aircraft, or a mix of smaller aircraft on the site. The proposed Project would not increase passenger or gate capacity and would not increase flights and/or aircraft operations at LAX.

2.2 Location and Surrounding Uses

LAX encompasses approximately 3,650 acres and is situated at the western edge of the City of Los Angeles (**Figure 2-1**). The Project site is located within the southwest portion of LAX immediately south of World Way West between Taxiway AA and Pershing Drive (**Figure 2-2**). Existing adjacent uses include the West Remote Pads/Gates and aircraft aprons to the north; an airport employee parking lot and vacant airport property to the south; Taxiway AA, an American Airlines employee parking lot and the United (formerly Continental) Airlines maintenance hangars to the east; and Pershing Drive followed by the Los Angeles/El Segundo Dunes to the west. The Los Angeles/El Segundo Dunes is a former residential area that consists of open space/coastal dunes, with navigational aids, minor ancillary airport and utility improvements, abandoned residential streets, and the El Segundo Blue Butterfly Habitat Restoration Area. To the north of LAX is the community of Westchester (part of the City of Los Angeles), to the south

¹ Within the Project site, 68 acres would be paved while approximately 16 acres would be unpaved islands between taxiways and other unpaved areas.

2.0 Project Description

is the City of El Segundo, to the east is the City of Inglewood and the unincorporated Los Angeles County community of Lennox, and to the west is the Pacific Ocean (**Figure 2-3**).

2.3 Existing Conditions

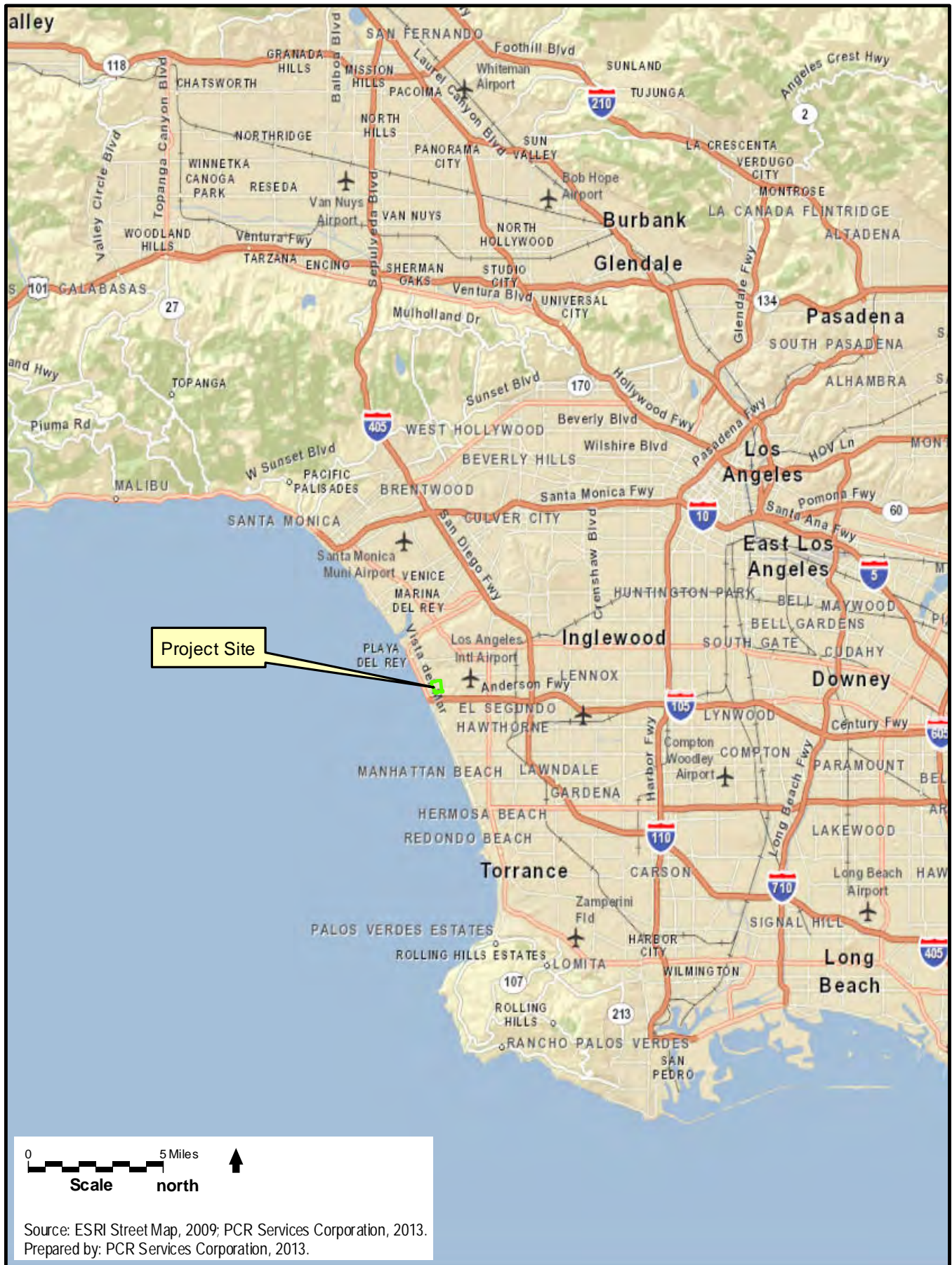
The Project site is currently used primarily as a staging area for airport construction projects, and includes: modular construction trailers/offices and an associated surface parking area, several paved roads, and several paved and unpaved outdoor loading and storage areas. In addition, stockpiled material consisting of soil and construction rubble is located within and immediately adjacent to the Project site. The Project site is permitted by the South Coast Air Quality Management District (SCAQMD) to accommodate and has at various times supported a concrete batch (production) plant and a rock/concrete crusher, although such facilities are not currently located on the Project site. In addition to construction-related uses, the Project site supports certain airport operations-related uses such as an airfield access security post (Guard Post 21) and a small LAWA Police Department/Transportation Security Administration (LAWAPD/TSA) canine “walk” area.

The Project site is located entirely within the City of Los Angeles LAX Plan area, as well as the LAX Specific Plan area, and is designated in the LAX Plan as “Airport Airside.” Permitted uses include, but are not limited to, runways, taxiways, aircraft gates, maintenance areas, airfield operation areas, air cargo areas, passenger handling facilities, fire protection facilities, and other ancillary airport facilities. The LAX Specific Plan establishes the zoning and development regulations and standards consistent with the LAX Plan for the airport. Existing zoning within the LAX Specific Plan is Airport Airside (LAX-A Zone). Permitted uses in LAX-A Zone include, but are not limited to: surface and structured parking lots; aircraft under power; airline maintenance and support; air cargo facilities; commercial passenger vehicle staging and holding area; helicopter operations; navigational aids; runways, taxiways, aircraft parking aprons, and service roads; passenger handling facilities; run-up enclosures; and other ancillary airport facilities. The proposed Project is consistent with existing land use designations.

2.4 Project Objectives

The objectives of the proposed Project include the following:

- Consolidate, relocate, and modernize some of the existing aircraft maintenance facilities at LAX consistent with the LAX Master Plan.
- Provide for more efficient and effective maintenance of existing aircraft at the airport, including ADG VI aircraft (i.e., Airbus A380 and Boeing 747-8).
- Provide aircraft maintenance hangars and aircraft parking areas that are all sized to accommodate ADG VI aircraft and other aircraft in one location.
- Provide an area for RON/RAD aircraft parking that can also support routine servicing and maintenance of aircraft.
- Support consistency with the LAX Master Plan by providing an aircraft maintenance area in the southwest portion of the airport.



2.0 Project Description

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2.0 Project Description

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2.0 Project Description

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2.5 Project Characteristics

2.5.1 Overview

The proposed Project would provide facilities and areas for aircraft maintenance and maintenance hangars, as well as parking areas for existing aircraft and employees. Refer to **Figure 2-4** for the conceptual site plan associated with the proposed Project. As described in detail below, proposed facilities would include: (1) an apron area; (2) aircraft maintenance hangars; and (3) ancillary facilities. Approximately 68 acres of the 84-acre Project site would be paved/developed, with the remaining 16 acres being unpaved islands adjacent to the proposed taxiways within the site. The proposed Project would not increase passenger or gate capacity and would not increase flights and/or aircraft operations at LAX. The proposed facilities are anticipated to serve aircraft that would be at LAX in conjunction with regularly scheduled flights or other business matters, whereby aircraft maintenance and/or parking would be ancillary to the primary reason why the aircraft is at the airport. Similarly, the proposed Project would consolidate functions and services that already occur elsewhere at the airport. This consolidation of existing RON/RAD and aircraft maintenance activities is not anticipated to result in an increase in such activities at LAX nor is it projected to result in an increased number of employees associated with such activities.

2.5.2 Apron Area

An aircraft parking apron area is a large flat paved surface where aircraft can either be maintained or parked until their next scheduled flight at which time they would be moved to their appropriate aircraft parking departure gate. Such apron areas occur at many locations at LAX including, but not limited to, airline maintenance areas, the West Remote Pads/Gates, the RON/RAD spaces along the west side of Taxiway R, and at air cargo areas when needed. Portions of the proposed aircraft apron not associated with access and circulation at the Project site would serve as aircraft parking areas (i.e., RON/RAD) for aircraft awaiting maintenance and/or placement at a terminal gate for departure. The proposed Project includes the construction of an aircraft RON/RAD parking apron on approximately 29 acres of the Project site south of the proposed hangars. The footprint for the proposed aircraft hangars and employee parking are not included in the 29 acres, and represent additional area to be developed as part of the proposed Project (see description below). Unlike certain existing maintenance areas that do not fully accommodate all aircraft types operating at LAX, the proposed Project would fully accommodate ADG VI aircraft, as well as smaller commercial aircraft.

Access to the apron area would be via the westerly extension of Taxiway B and the extension of Taxiway C (as Taxilane C), which is part of the proposed Project and would add approximately seven (7) acres of taxiway pavement and approximately 10 acres of paved shoulder area within the Project site.² In addition, approximately 2.5 acres of service road area would extend into and adjacent to the apron area.

² The aircraft apron area would be located outside of the Runway Protection Zone restricted development area associated with the nearest runway - Runway 7L.

2.0 Project Description

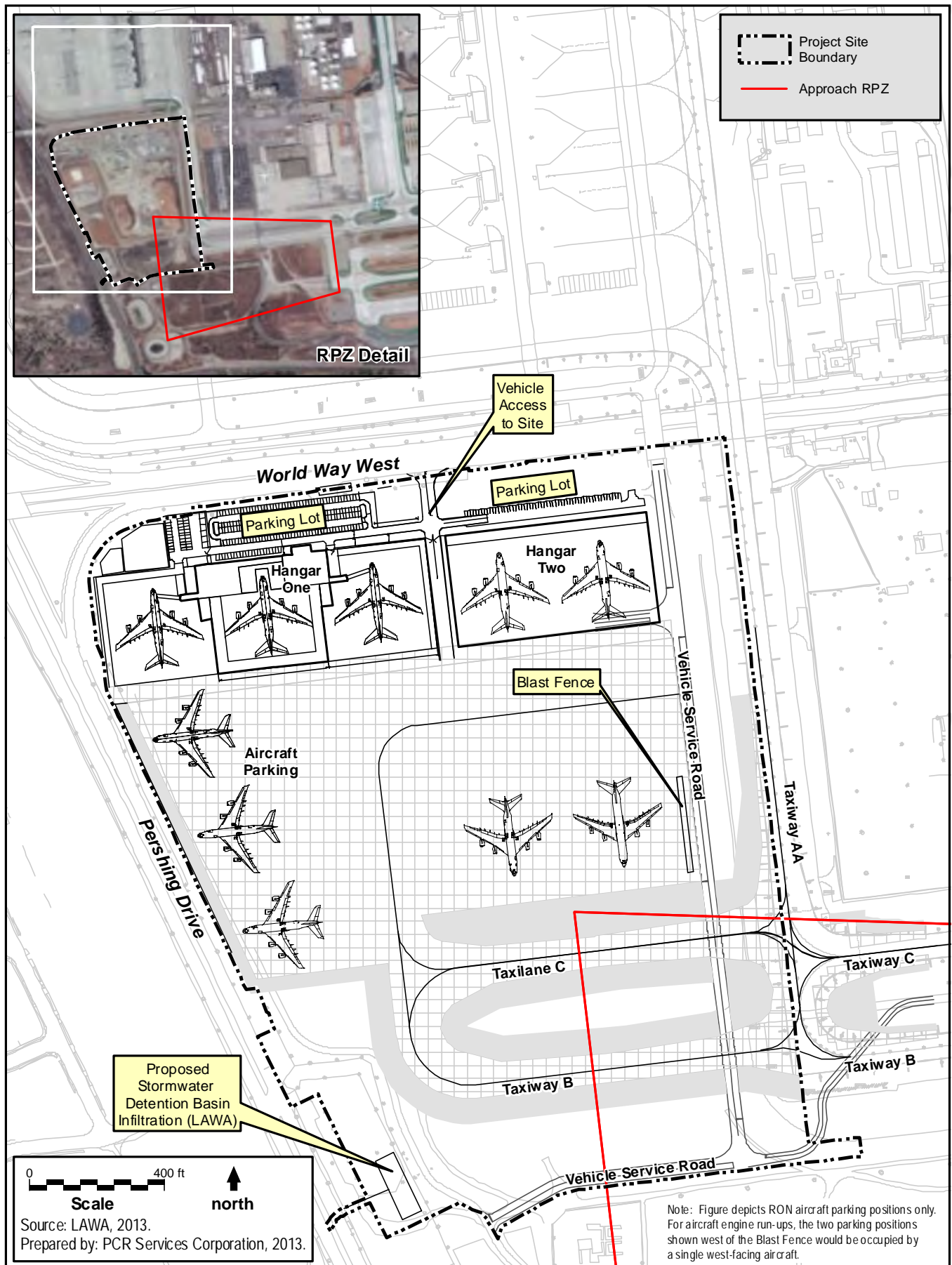
Aircraft traveling to and from the Project site would mostly be towed with high-speed tugs, but some aircraft may be under power (taxi). Once leaving the Project site, aircraft would be towed back or taxi to a passenger gate or cargo ramp area to resume normal operation.

2.5.3 Aircraft Maintenance Hangars

The proposed Project includes construction of aircraft maintenance hangars capable of accommodating a wide range of existing aircraft up to and including ADG VI aircraft. The proposed hangar area, including employee parking and other associated paved areas, in addition to aircraft apron areas described previously that may overlap, is estimated to encompass approximately 19 acres of the Project site. The purpose of the aircraft hangars would be to provide an area for routine aircraft maintenance when aircraft are not at a contact terminal gate, scheduled line maintenance, and other higher levels of scheduled and unscheduled aircraft maintenance. Unlike the existing aircraft maintenance hangars, the new hangars would be fully capable of servicing the largest aircraft that regularly operate at LAX – the Airbus A380 - and would contain state of the art features to enable the effective servicing of other aircraft types as well.

Approximately 290,000 square feet of hangar bay space (floor area) with a maximum estimated height of up to approximately 150 feet could be accommodated on the Project site. Hangars also include a maintenance shop and supporting office space. Hangars would typically have a sliding hangar door to fully enclose aircraft within the hangar. Typical equipment (subject to user requirements of the eventual tenant) may include an internal crane to hoist aircraft or parts, 400 Hertz (Hz) power and pre-conditioned air, a compressed air system to include drop down reels and/or floor mounted receptacles that are retractable, explosion proof outlets and/or plugs installed in drop down reels and/or floor mounted that are retractable, foundation able to handle point loading for jacks, trench drain to include oil/water separators and grease traps, foam fire protection system, water sprinkler or deluge system, test bed for testing equipment and parts, ground water storage tank, phone, intercom, and internet installed throughout the entire hangar, lighting in both (hangar and office) to include 3-phase power, auxiliary back-up power, office support space for administrative functions, conference rooms, kitchen, break and restrooms, warehouse shipping/receiving, vehicle service bays, tool storage, welding shop, and flammable/hazardous materials storage. The proposed aircraft hangars would provide areas for routine and unscheduled aircraft maintenance.

Airlines routinely inspect and maintain their aircraft to ensure the safety of the traveling public, and each aircraft is on a stringent maintenance schedule based on its number of hours in operation. As part of this regularly scheduled maintenance, the U.S. Department of Transportation Federal Aviation Administration (FAA) requires that aircraft engines be tested at various power levels to ensure their proper operation. These tests are called engine run-ups and occur when aircraft are stationary, causing what can be a substantial amount of noise. Both low-power and high-power engine run-ups occur at LAX. Two types of low-power engine checks include: (1) checks when an engine is only idling, which can be performed on a parking ramp when an aircraft is at the gate and does not require any installed safety devices; and (2) low-power engine checks that occur above engine idle and are monitored and performed away from concourse/gate areas. High-power engine checks require engine run-ups at or near maximum thrust settings, as well as safety devices referred to as blast fences, which are open one-sided structures that redirect high energy exhaust (jet blast) from a jet engine to prevent

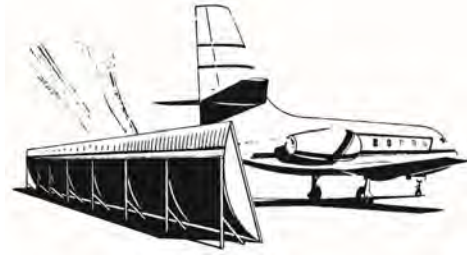


2.0 Project Description

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2.0 Project Description

damage and injury in the downstream area. They are designed to withstand heat and high speed air streams, and to control dust and debris carried by the turbulent air from engine run-ups. As part of the proposed Project, a blast fence that would accommodate ADG VI aircraft and other aircraft is proposed on the apron area parallel to Taxiway AA (see Figure 2-4). Based on assumptions associated with the proposed maintenance operations, an estimated 60 run-ups annually (five monthly) may occur at the Project site.



Typical Blast Fence

Assumptions associated with aircraft movement to and from the Project site are based on the number of spaces available at the site (i.e., either parked on the apron or within hangars) to accommodate aircraft, which is up to 10 ADG VI aircraft, or a mix of smaller aircraft. In addition, assumptions related to aircraft movement are also based on typical airline operations at LAX, with consideration given to the airlines within the western area of LAX whose maintenance operations and RON/RAD aircraft parking are being consolidated. Additionally, the assumptions take into consideration other existing RON/RAD aircraft parking activities at LAX, such as those that occur at the West Remote Pads/Gates and at the Central Terminal Area (CTA), which can become crowded during overnight periods, and RON/RAD in other areas such as on the west side of Taxiway R. Following are the operational aircraft assumptions associated with the proposed Project:

Morning (a.m.) – 13 total aircraft movements

- Seven aircraft arrive at the Project site from early arrival flights and remain all day awaiting their return to gates for same day p.m. departure flights; servicing/light maintenance checks may occur while aircraft are parked. These aircraft are assumed to include the four wide-body aircraft that currently use the aircraft parking area at the former TWA Hangar area, and three wide-body aircraft that might typically park at the RON/RAD positions adjacent to Taxiway R.
- Four aircraft that arrived at the Project site the prior p.m. leave to go to gates for a.m. departure flights. These include three narrow-body aircraft that might otherwise park overnight at one of the northern concourses in the CTA and one narrow-body aircraft that might otherwise park overnight at one of the southern concourses in the CTA.
- On average, one aircraft arrives each a.m. for maintenance that will last more than one day (i.e., would go to a maintenance hangar/bay and stay there for several days - assumes that between the total hangar positions (3) and adjacent bays (2), one position/bay would, on average, be available each day).

2.0 Project Description

- On average, one aircraft leaves each a.m. after having completed maintenance. This includes the departure of aircraft that have been at the Project site for several days of maintenance, or the departure of aircraft that arrived at the site the previous p.m.

Afternoon/Evening (p.m. – 13 total aircraft movements)

- Seven aircraft that arrived at the Project site in the a.m. return to gates for same day p.m. departure flights.
- Four aircraft arrive at the Project site and stay overnight (until next a.m., awaiting a.m. departure flights); servicing/light maintenance checks may occur while the aircraft are parked.
- On average, one aircraft leaves each p.m. after having completed maintenance that occurred at the Project site over an extended period (i.e., more than one day).
- On average, one aircraft arrives each p.m. for maintenance that will last more than one day.

Based on the above, it is estimated that a maximum of 26 aircraft would travel to or from the Project site on a daily basis.

The proposed Project also includes construction of employee vehicle parking areas to accommodate aircraft maintenance technicians and management staff. Such parking is planned to occur immediately north of the hangar area. The size of the employee parking lot would be based on tenant requirements, but is not expected to exceed 300 spaces. Access to and from the parking lot would be via World Way West. The employee parking area would include lighting, paint/stripes for vehicle stalls, and an Air Operations Area security fence with a personnel gate to separate airside and landside activities.

As detailed below in Section 2.7, Construction Schedule, the initial phase of the proposed Project would involve construction of a portion of the proposed hangar area along with associated employee parking. The remainder of the hangar area and additional employee parking is anticipated to be constructed by the end of the proposed Project's planned five (5) year development program. It is possible that, based on the construction timing of the LAX Master Plan improvements, a relocatable structure(s) may be constructed prior to a permanent hangar to provide covered maintenance space until such time as the permanent hangar(s) is/are developed.³

2.5.4 Ancillary Facilities

The proposed Project includes ancillary (supplemental) facilities and equipment to support the primary function of the proposed Project, which is aircraft maintenance. Ancillary facilities and support includes areas for equipment (such as site-specific ground support equipment [GSE]) and maintenance areas/facilities, including electrical charging stations. A combination of diesel-fueled and alternative fuels, such as electric power and compressed natural gas or liquefied natural gas, would fuel cars, trucks and related equipment in use on the site.

³ A relocatable structure is a temporary structure that would typically feature a high strength polyvinyl chloride (i.e., PVC) coated polyester membrane cladding that is tensioned over an engineered structural steel frame system. If used, the relocatable structure would be removed once a permanent hangar is developed.

RON/RAD kits (large cabinet type structures that provide hook-ups for 400 Hz ground power, GSE charging stations, preconditioned air, and potable water) are proposed at the aircraft parking positions at the west end of the apron (along Pershing) and will allow full aircraft functionality without running auxiliary power units, as well as a wash rack for aircraft washing operations that would include a recycling system to minimize flows to the sewer system. The hangars described above would require provisions for fire protection, including possibly water storage for a deluge system. Deluge systems are used for fire protection and have the ability to deliver large volumes of water under high pressure. This delivery is accomplished by storing large volumes of water in storage tanks that would be located near the hangars.

The proposed Project would connect to existing water, sanitary sewer, storm drain, electricity, natural gas, and communications lines located within the World Way West and Pershing Drive right-of-ways. Multiple existing utility lines also bisect the Project site, and would either be preserved, adjusted/strengthened, or abandoned/removed. In addition, to safely convey runoff from the Project site, an on-site system of 18-inch, 24-inch, 36-inch, and 42-inch reinforced concrete pipes would be constructed. A detention/infiltration basin with connections to the existing storm drains in World Way West and Pershing Drive is proposed in the southwest corner of the Project site (within an existing LAX employee surface parking lot) to treat stormwater runoff. The proposed Project also includes other on-site water quality improvements (e.g., wash rack recycling system, oil-water separator, use of porous pavement or media filters, etc.) to reduce urban pollutants in Project stormwater runoff.

2.6 Relocation and Demolition of Existing On-Site Uses

Development of the Project site would include removal or relocation of existing on-site uses. Existing construction staging yards and associated equipment would either be phased out or relocated if necessary to other areas at LAX such as the existing staging areas located to the south of Westchester Parkway and west of Lincoln Boulevard. These areas are undeveloped and have been in use for several years as construction staging areas for various improvement projects at LAX. If the construction staging activities currently occurring on the Project site are not completely phased out well in advance of site clearing and need to be relocated, the shift in activities would not materially change the general pattern and type of activities that have occurred in these construction staging areas over the last several years. Construction staging for the proposed Project would occur on-site. The existing small fenced area used by LAWAPD/TSA as a canine “walk” area would be relocated in an area in the southern area of the airport, west of Runway 7R. Guard Post 21 would be demolished prior to the construction of the second hangar. Existing utility lines serving the site would either be preserved, adjusted/strengthened, or removed. Stockpiled soil and construction rubble stockpiles existing within and immediately adjacent to the site would be re-used on-site as backfill material and/or exported for off-site re-use and/or disposal.

2.0 Project Description

2.7 Construction Schedule

The proposed Project would be sequenced in a manner that would provide an efficient construction approach while supporting LAWA's need to meet the demands for hangar facilities over the next five years. The following summarizes the anticipated construction sequencing and associated schedule:

Sequence No. 1: Site Clearing and Infrastructure Development

This initial construction activity is comprised of site clearing and infrastructure development. This activity would involve mass grading of 84 acres, placement of major underground utilities, preparation of platforms for the construction of the hangar facilities, and construction of the full depth aircraft apron area, taxiway/taxilane extensions, site access, and vehicle parking.⁴ Implementation of this first development phase is expected to commence in 2014 and take approximately 18 to 20 months, reaching completion by 2015. During this period, the existing on-site construction staging areas would either be phased out or relocated if/as necessary to other suitable construction staging areas at the airport.

LAX is permitted by the SCAQMD to operate a concrete batch plant and a rock crusher at the airport. It is anticipated that a temporary concrete batch plant would be installed on the site and utilized for construction of the proposed Project. While the concrete batch plant would be utilized during the proposed Project's development period, it may be removed prior to full buildout of the site.

Construction staging for this activity would be largely self-staged (including a required concrete batch plant) and/or located immediately adjacent to the work area, including the potential use of the existing parking lot located at the southwest corner of the site. The existing parking lot is currently used for construction worker parking for the Bradley West project. Those functions that cannot be self-staged and/or located on the sites adjacent to the work area, primarily trailers and associated parking would be located in other LAX designated staging areas, such as those south of Westchester Parkway and west of Lincoln Boulevard.

Sequence No. 2: First Hangar Development

Sequence No. 2 consists of the development of the first of the aircraft maintenance hangars. The first hangar to be constructed is anticipated to be a single bay hangar located in the northwest quadrant of the site. The hangar may be constructed by LAWA or a third party developer, such as an airline company, aircraft maintenance company, or other party as determined in the future through a separate lease/procurement process.

For the purposes of the Environmental Impact Report (EIR) analysis, it is assumed that the total floor area of the one-bay hangar would be approximately 125,000 square feet. The hangar would be a single hangar building designed to accommodate up to an ADG VI aircraft with adjacent hardstands (one on each side of the hangar building) where aircraft can be parked and undergo various maintenance activities that do not require being within a hangar (i.e., such as maintenance to the interior/cabin areas). Basic construction would generally include: installation

⁴ Although the proposed Project would develop and operate on approximately 68 acres of new paved area, due to the use of the site for construction staging (which currently includes several stockpiles), and line-of-sight requirements, a larger area (i.e., 84 acres) would be graded.

of foundations; installation of full depth paving within the hangar extending to, and connecting, as necessary, with the primary apron areas constructed under Sequence No. 1; installation of exterior covering and roof; interior/appurtenant, and all appropriate safety and fire protection appurtenances. Construction of the first hangar area is anticipated to commence within several weeks following the start of Sequence No. 1. For purposes of this EIR, it is assumed that the construction of this first hangar would commence in 2014 and take 18 to 20 months to complete (ending approximately mid- to late-2015).

Sequence No. 3: Additional Hangar Development

The schedule for construction of the additional maintenance hangar would be dictated by market conditions; however for purposes of this EIR it is assumed it would be completed prior to 2019. The additional maintenance hangar to be constructed is assumed to include at a minimum a two-bay hangar located in the northeast quadrant of the site. The hangar may be constructed by LAWA or a third party developer, such as an airline company, aircraft maintenance company, or other party as would be determined in the future through a separate lease/procurement process.

For the purposes of the EIR analysis, it is assumed that the total floor area of the additional maintenance hangar would be approximately 165,000 square feet. The hangar would be designed to accommodate up to two ADG VI aircraft. Basic construction would generally include: installation of foundations along the perimeter of the proposed hangar; installation of full depth paving within the hangar extending to, and connecting, with the primary apron areas constructed in Sequence No. 1; installation of exterior covering and roof; interior/appurtenant, and all appropriate safety and fire protection appurtenances. Construction of the additional hangar is estimated to take approximately 16 to 24 months and is anticipated to commence in the last quarter of 2016.

2.8 Grading

The Project site has been used as a construction staging area for multiple LAX projects for a number of years and has at various times supported a batch plant. As such, the amount of stockpiled material consisting of soil and construction rubble that exists within and immediately adjacent to the Project site fluctuates frequently as some projects have deposited and utilized stockpiled materials on the Project site for grading, cut, and fill such as the Crossfield Taxiway Project and the South Airfield Improvement Project. Of the existing stockpiled material, an estimated 295,000 cubic yards would be exported for off-site re-use or disposal.

2.9 Intended Use of this EIR

Implementation of the proposed Project would require approvals from and consultation with federal, state, and regional/local agencies. The EIR will be used by the following agencies in connection with permits and approvals necessary for the construction and operation of the proposed Project. Federal, state, and regional/local agency actions required for the construction and operation of the proposed Project may include, but are not limited to, those described below. This EIR may also be used in connection with other federal, state, or

2.0 Project Description

regional/local approvals, permits, or actions that may be deemed necessary for the proposed Project, but which are not specifically identified below.

2.9.1 Federal Actions

- FAA approval of an FAA Notice of Construction or Alteration, to ensure safe and efficient use of navigable airspace with consideration of the proposed Project and during the construction of the West Aircraft Maintenance Area Project. LAWA has submitted a FAA Form 7460-1 “Notice of Proposed Construction or Alteration” for the proposed Project to engage FAA on airspace issues.
- FAA approval of an amended/updated Airport Layout Plan for LAX, which will reflect the improvements associated with the proposed Project.
- The FAA may use information from this EIR in their completion of the appropriate environmental review under the National Environmental Policy Act for the federal approvals identified above.

2.9.2 State Actions

- SCAQMD review of any permits required under the Clean Air Act for stationary sources;
- Consultation with the California Department of Fish and Wildlife.

2.9.3 Local and Regional Actions

- LAWA Certification of the Final EIR for the LAX West Aircraft Maintenance Area Project;
- LAX Specific Plan Compliance Review in accordance with Section 7 of the LAX Specific Plan;
- Preparation of a Project-specific Storm Water Management Plan or Standard Urban Storm Water Mitigation Plan for approval by the City of Los Angeles Bureau of Sanitation, Watershed Protection Division;
- Los Angeles Fire Department approval;
- Grading permits, building permits, and other permits issued by the City of Los Angeles Department of Building and Safety for the proposed Project and any associated City of Los Angeles Department of Public Works permits for infrastructure improvements.

3.0 OVERVIEW OF PROJECT SETTING

3.1 Introduction

This chapter provides an overview of existing land uses and the environmental setting relevant to the proposed West Aircraft Maintenance Area Project (proposed Project). Detailed descriptions of the existing setting specific to each of the environmental topics evaluated in this Environmental Impact Report (EIR) are provided within their respective sections in Chapter 4, *Environmental Impact Analysis*. This chapter also describes related projects proposed at the Los Angeles International Airport (LAX) and in the nearby area that may, in conjunction with the proposed Project, result in cumulative impacts on the environment.

3.1.1 Study Area

For purposes of describing the existing conditions in the vicinity of LAX, each environmental topic evaluated in this EIR addresses a study area appropriate to the evaluation of impacts associated with that topic. For most analyses, the study area is limited to the airport boundaries or to portions thereof. However, the study areas associated with some sections, such as transportation, extend off-airport (the traffic study area is depicted in **Figure 4.7-1** in Section 4.7, *Construction Surface Transportation*). Impacts associated with air quality and greenhouse gases evaluate total Project-related emissions, which cannot be contained on-airport. Moreover, these analyses consider sources both on and off the airport, such as worker commute and construction vehicle trips. The human health risk analysis, which is based on the air quality analysis, similarly considers on- and off-airport factors, including health risks at off-airport sensitive receptors (as depicted in **Figure 4.1-2** in Section 4.1, *Air Quality*, of this EIR).

3.1.2 Study Years

LAWA issued a Notice of Preparation (NOP) on September 14, 2012 and, as such, the environmental baseline used for determining significant impacts primarily represents the physical conditions that existed at that time. However, for certain issue areas where data specific to that timeframe were unavailable or incomplete, more current information was utilized to define the environmental baseline. Environmental topics that included data from other baseline years are identified in Section 4.2, *Greenhouse Gas Emissions*, of this EIR. The buildout year for the proposed Project is 2018.

3.2 Existing Airport Facilities

LAX encompasses approximately 3,650 acres, and consists of two airfield areas (north and south), each containing two runways as well as associated taxiways and taxilanes; a Central Terminal Area (CTA), with nine terminals (eight domestic and one international, including the newly opened Bradley West concourse), parking garages, a two-level roadway system, the Theme Building, and administrative offices; a midfield area located west of the CTA, consisting of taxiways, hangars, remote gates, maintenance and ancillary facilities, an Aircraft Rescue and Fire Fighting facility, and a fuel farm; three cargo areas: the Century Cargo Complex located between Century Boulevard and the south airfield complex east of the CTA, the Imperial Cargo

3.0 Overview of Project Setting

Complex located on the northwest corner of Imperial Highway/Aviation Boulevard, and the South Cargo Complex, located along the north side of Imperial Highway; largely undeveloped land and a golf course located north of the north airfield complex; and parking facilities located within the northeastern portion of the airport, east of the CTA, and east of the south airfield complex.

Existing aircraft maintenance facilities are primarily located in the midfield area and within the Century Cargo Complex.

3.4 Land Use Setting

The Project site is located within the southwest portion of the LAX property, which is located within the City of Los Angeles. LAX encompasses approximately 3,650 acres and is situated at the western edge of the City of Los Angeles, as shown in **Figure 2-1** in Chapter 2, *Project Description*, of this EIR. LAX is bounded on the north by the City of Los Angeles communities of Westchester and Playa del Rey; on the south by the City of El Segundo; on the southeast by the unincorporated community of Del Aire and the City of Hawthorne; and on the east by the City of Inglewood, the unincorporated community of Lennox, the City of Los Angeles community of South Los Angeles, and the unincorporated community of Athens. The Los Angeles/El Segundo Dunes, Vista del Mar, Dockweiler State Beach, and the Santa Monica Bay (Pacific Ocean) are located to the west of the airport. All of the cities and communities in the vicinity of the Project site are located within Los Angeles County. Off-airport uses include residential, schools, and recreational uses in the Playa del Rey and Westchester communities to the north; commercial, hotel, and office uses to the east in the cities of Los Angeles and Inglewood; residential, recreational, commercial, and civic uses to the south in the City of El Segundo; and open space and recreational uses associated with the Los Angeles/El Segundo Dunes, Dockweiler State Beach and the Pacific Ocean to the west.

Specifically, the Project site occupies the area immediately south of World Way West between Taxiway AA and Pershing Drive. Existing adjacent uses include: the West Remote Pads/Gates and aircraft aprons to the north; an airport employee parking lot and vacant airport land to the south; Taxiway AA, an American Airlines employee parking lot and the United (formerly Continental) Airlines maintenance hangars to the east; and Pershing Drive followed by the Los Angeles/El Segundo Dunes to the west.

The Project site is currently used primarily as a staging area for airport construction projects, and includes: modular construction trailers/offices and an associated surface parking area, several paved roads, and several paved and unpaved outdoor loading and storage areas. In addition, stockpiled material consisting of soil and construction rubble is located within and immediately adjacent to the Project site. The Project site is permitted by the South Coast Air Quality Management District (SCAQMD) to accommodate and has at various times supported a concrete batch (production) plant and a rock/concrete crusher, although such facilities are not currently located on the Project site. In addition to construction-related uses, the Project site supports certain airport operations-related uses such as an airfield access security post (Guard Post 21) and a small Los Angeles World Airports (LAWA) Police Department/Transportation Security Administration (LAWAPD/TSA) canine “walk” area.

The Project site is located entirely within the LAX Plan area and the LAX Specific Plan area of the City of Los Angeles. The LAX Plan, which is a part of the General Plan of the City of Los

Angeles, designates the land use for the Project site as "Airport Airside." The LAX Specific Plan, which establishes zoning and development regulations and standards consistent with the LAX Plan, designates the zoning for the Project site as Airport Airside (LAX-A Zone).

3.5 Environmental Setting

This section provides an overview of the existing environmental setting related to the proposed Project and the topical issues evaluated in Chapter 4, *Environmental Impacts Analysis*, of this EIR. Additional information regarding existing conditions for these topics is provided in Chapter 4 of this EIR.

3.5.1 Air Quality

The airport is located within the South Coast Air Basin (Basin), a 6,745 square-mile area encompassing all of Orange County and the urban, non-desert portions of Los Angeles, Riverside, and San Bernardino Counties. The Basin is under the jurisdiction of the SCAQMD. At the federal level, the Basin is designated as a nonattainment area for ozone (O₃), fine particulate matter (PM_{2.5}), and lead (Pb). At the State level, the Basin is designated as nonattainment for O₃, nitrogen dioxide (NO₂), PM₁₀, PM_{2.5}, and Pb. The existing air quality setting immediate to the Project site is dominated by construction staging and stockpiling activities, airport airside activity (including various aircraft and ground-support equipment activity), and motor vehicle traffic.

3.5.2 Greenhouse Gas Emissions

The primary greenhouse gas emission sources on and within the vicinity of the Project site are emissions of carbon dioxide (CO₂) from combustion of fuels associated with construction activities, aircraft operation, area traffic, and building and lighting operations.

3.5.3 Hazards and Hazardous Materials

The Project site is currently used as a construction staging area that includes stockpiled soils and various materials excavated from previous and ongoing projects at LAX. Portions of the Project site were previously occupied by three land farming efforts to remediate soils contaminated with total petroleum hydrocarbons, which over time the necessary remediation was successfully completed. The Project site is within the Hyperion Field Methane Zone, indicating the potential presence of subsurface methane gas, which is common within former oil production areas and other locations where organic material is present in the soil; the City of Los Angeles Municipal Code Section 91.7101 (Methane Seepage Regulations) addresses construction requirements in such areas. The Former Hyperion Oilfield Map suggests that there may be two abandoned/plugged oil wells on the Project site and four other abandoned plugged oil wells south and east of the Project site; the California State Division of Oil, Gas, and Geothermal Resources administers the regulatory program related to review of construction site plans in areas of known, existing, or abandoned oil wells. There is a subsurface jet fuel plume in the vicinity of the Project site, due to leaking fuel hydrant lines, underground storage tanks, and fuel distribution lines at the former Continental Airlines Aircraft Maintenance facility, which

3.0 Overview of Project Setting

was located northeast of the Project site. Remediation is currently underway to remove jet fuel and based on the most recent monitoring report, the lateral extent of the plume is not expanding.

3.5.4 Hydrology and Water Quality

The Project site is located within the western portion of the Pershing Sub-basin which includes approximately 700 acres of airport property. Runoff from the Pershing Sub-basin generally flows via a network of storm drains north or south to a reinforced concrete box (RCB) in World Way West then drains westward to a RCB in Pershing Drive, which flows south and combines with the Imperial Sub-basin drainage pipe along the north side of Imperial Highway before being discharged to Santa Monica Bay via the County's Imperial Outfall. Groundwater at LAX and the Project site occurs at approximately 100 feet below the ground surface as part of the West Coast Groundwater Basin. Groundwater beneath LAX is not used for municipal or agricultural purposes. Designated beneficial uses for this groundwater include municipal, industrial process, and agricultural use.

3.5.5 Noise

The Project site and adjacent area is currently subject to high ambient noise levels resulting from a combination of noise sources, including on-site construction staging activities, aircraft operations (including takeoffs and landings, aircraft taxiing and maintenance activities), and motor vehicle traffic along Pershing Drive, Imperial Highway and Westchester Parkway. The Project site is located within the airport boundary, which is not a noise-sensitive use. The nearest noise-sensitive land use (i.e., residential, schools, places of worship, parks, libraries, and hospitals) from the middle of the Project site is a residential neighborhood located 0.55 mile to the south in the City of El Segundo.

3.5.6 Land Use and Planning

The Project site is located within the City of Los Angeles, on the LAX property, and is subject to the land use and zoning requirements of the LAX Plan and LAX Specific Plan area, respectively. The LAX Plan designates the Project site as "Airport Airside." The LAX Specific Plan, zones the Project site as "Airport Airside" (LAX-A Zone). The LAX Master Plan identifies the proposed Project site as Proposed Employee Parking (West Employee Parking facility), within the southwest portion of the airport. Portions of the Project site are also identified by the LAX Master Plan as Airfield/Airport Open Space. Directly east of the Project site, is an area identified by the LAX Master Plan as Proposed Maintenance Facility and Aircraft Apron area.

3.5.7 Transportation/Traffic

The Project site is located on the western side of the LAX airport property. Regional access is provided by Interstate 405 (I-405) and Interstate 105 (I-105), local access is by Pershing Drive via Imperial Highway and Westchester Parkway, and site access is from driveways along World Way West. Existing traffic on the western side of the airport is restricted largely to airport employee/delivery traffic and general traffic between the west sides of the City of El Segundo

and the community of Westchester/Playa del Rey. Airport travelers do not access LAX from the west. Existing traffic at the Project site is restricted to airport construction worker and airport construction vehicle traffic.

3.6 Development Setting/Related Projects

This section identifies past, present, and reasonably foreseeable future related projects, including LAX development projects (LAX Master Plan projects and other LAX projects) and non-LAX development projects that could, in conjunction with the proposed Project, result in cumulative impacts to the environment. These projects are listed in **Table 3-1** and identified in **Figure 3-1**. A description of each project is also provided.

The Related Projects list (Table 3-1) is based largely on similar lists contained in recent LAX EIRs including Central Utility Plant Replacement Project (CUP-RP) and Specific Plan Amendment Study (SPAS). The list also takes into consideration the list of LAWA Preliminary Capital Improvement Projects (CIP) Projects dated June 18, 2013. The CIP Projects list was reviewed to confirm that projects identified on the Related Projects list were included on the CIP Projects list, and CIP data regarding fiscal year cost estimates were used in estimating the cost and construction period for each project, which was then used to estimate construction-related trip generation (i.e., the construction costs were factored against other similar LAWA projects for which detailed trip generation estimates have been completed). The CIP Projects list was also reviewed in terms of whether other improvements on the list should be added to the Related Projects list. The CIP projects on the CIP Projects list are related to typical ongoing maintenance and operation of the airport (i.e., improvements that typically occur during the normal course of business), like runway repairs/rehabilitation, terminal activities such as electrical upgrades, signage replacement, restroom upgrades, information technology systems installation/improvements, security systems, etc., or projects that would likely involve relatively little construction activities and equipment, such as airside visual enhancements, passenger boarding bridge replacements/relocations, and elevators/escalators replacement. Such projects were grouped together under a single “Miscellaneous” category. On the other hand, improvement projects that appeared to be much more than typical “business as usual” activities were considered to be individual Related Projects. For example, the North Terminal Improvements (i.e., Terminal 1 Terminal Renovation Project - Southwest Airlines) identified in the CIP Projects list has an estimated cost of approximately \$380,000,000. In considering the relative “construction intensity” of the various projects based on costs alone, which would be taken into account in estimating cumulative impacts related to construction traffic, the construction intensity of the overall Miscellaneous category was, in general, considered to be approximately 25 percent of that associated with the individual larger projects. This is a reflection that the costs associated with most of the Miscellaneous improvement projects are primarily related to equipment/materials costs rather than construction activities. Key examples of such projects include the Elevators/Escalators Replacement Project, the Passenger Boarding Bridge Replacement Project, Electrical Upgrades, and Security and IT Improvements, which are all included in the Miscellaneous category.

3. Overview of Project Setting

Table 3-1
On-Airport Related Projects

Figure 3-1 ID#	Project Name	Estimated Year		
		Start of Construction		Completion/Implementation
1	Runway Safety Area (RSA) Improvements-South Airfield ^a	Feb. 2014		Feb. 2015
2	RSA Improvements-North Airfield ^a	June 2014		June 2019
3	LAX Bradley West Project Remaining Work	Nov. 2013		Dec. 2017
4	Terminal 3 (T-3) Connector	July 2019		Jan. 2022
5	North Terminal Improvements (i.e., Terminal 1)	Aug. 2013		Aug. 2017
6	South Terminal Improvements (i.e., Terminals 5-8)	Nov. 2011		Feb. 2018
7	Midfield Satellite Concourse: Phase 1 - North Concourse Project	July 2014		July 2019
8	Central Utility Plant Replacement Project (CUP-RP) Remaining Work	Sep. 2013		Dec. 2014
9	Miscellaneous Projects and Improvements ^b	Jan. 2014		July 2020
10	LAX Northside Area Development ^{a, c}	Jan. 2015		Dec. 2022
11	LAX Master Plan Alt. D/Specific Plan Amendment Study (SPAS) Development ^{a, b, d}	June 2015		June 2025
12	Metro Crenshaw/LAX Transit Corridor and Station ^{a, e}	Dec. 2015		Apr. 2019

Notes:

^a This project is subject to additional environmental review pursuant to the National Environmental Policy Act.

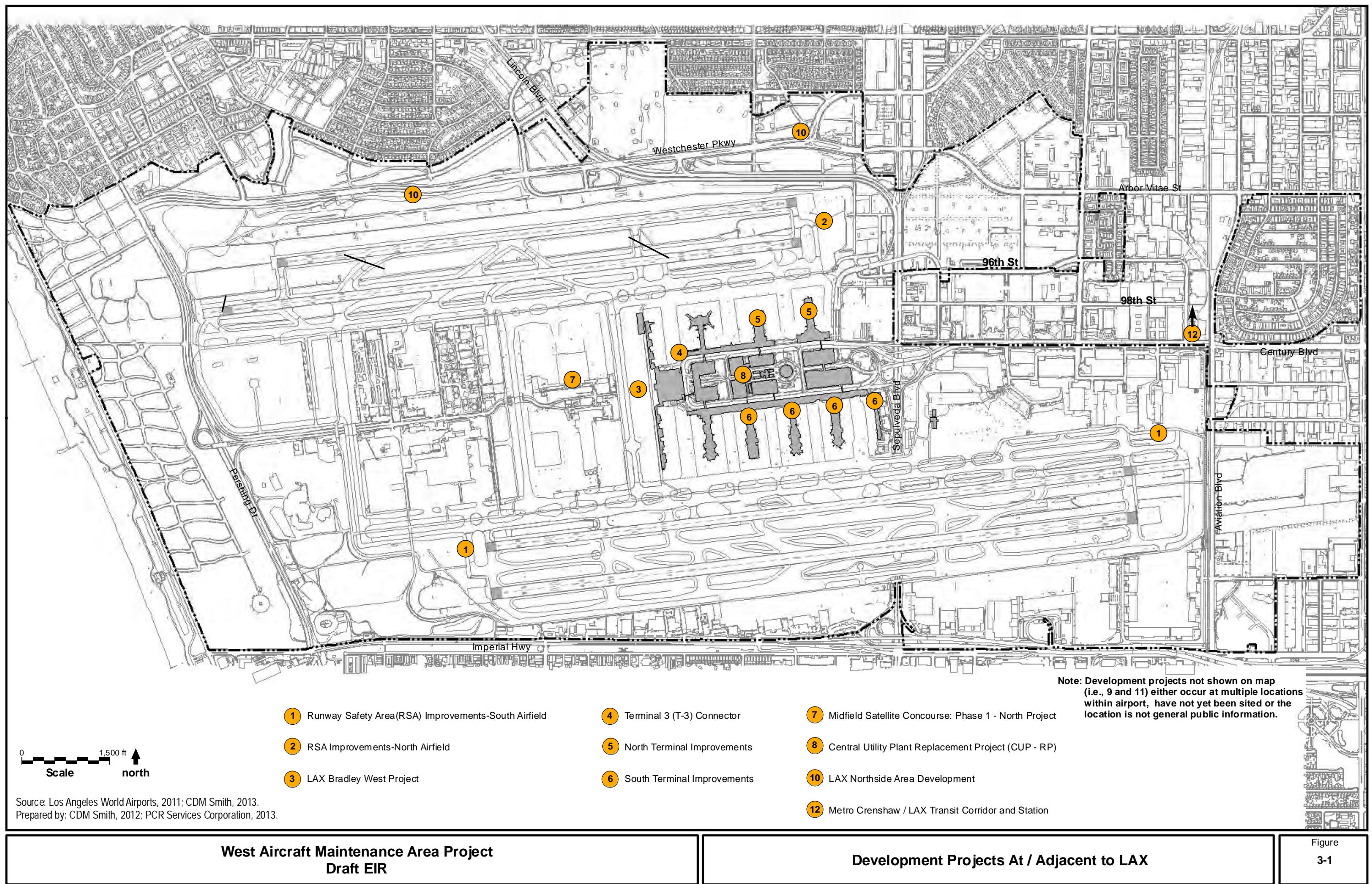
^b These improvements and projects would occur in various places on the landside and airside portions of LAX.

^c Construction traffic estimates provided by Gibson Transportation Consulting, Inc., who has prepared detailed traffic analysis for the proposed LAX Northside Plan Update.

^d LAWA evaluated nine development alternatives for the LAX SPAS and in February 2013 the Board of Airport Commissioners (BOAC) selected one alternative for advancement into further planning and evaluation; however, all the approvals necessary to implement that alternative have not yet occurred. For the purposes of the WAMA cumulative construction impacts analysis, an assumption is made that the LAX Master Plan improvements, as previously approved, are implemented, which provides a more conservative analysis than if one were to assume the BOAC-selected alternative (i.e., more development would occur under the LAX Master Plan scenario than under the BOAC-selected alternative).

^e Assumes only the portion of the overall Metro Crenshaw/LAX Transit Corridor and Station project that occurs in the general vicinity of LAX. Estimated schedule based on information obtained from Crenshaw/LAX Transit Corridor Project EIR, project website, and communications between LAWA staff and Metro staff.

Sources: CDM Smith (list and characteristics of WAMA project and concurrent projects); Crenshaw/LAX Transit Corridor Project FEIR (Metro Crenshaw/LAX Transit Corridor cost), August 2011, www.metro.net/projects/crenshaw_corridor.com (Metro Crenshaw/LAX Transit Corridor schedule), accessed November 12, 2012; Ricondo & Associates, Inc., December 2012.



3.0 Overview of Project Setting

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The traffic study area for this EIR includes those roads and intersections that would most likely be affected by employee and truck traffic associated with construction of the proposed Project. This is consistent with the information and requirements defined in City of Los Angeles Department of Transportation (LADOT) *Traffic Study Policies and Procedures*, revised by the LADOT in December 2010, notwithstanding that a construction traffic analysis is not typically required by LADOT.

Cumulative impacts of the proposed Project and development projects within the vicinity of LAX are discussed further within each section of Chapter 4, *Environmental Impact Analysis*, of this EIR. The Cumulative Impacts section of each resource provides an analysis of the impacts from the proposed Project and surrounding development projects as they pertain to each specific category of environmental resource.

3.6.1 On-Airport Related Projects

- **Runway Safety Area (RSA) Improvements-South Airfield (Table/Figure 3-1 #1)** – Improvements at west end of Runway 7L/25R including runway and connecting taxiway extensions to meet FAA Runway Safety Area (RSA) requirements, as well as rehabilitation of deteriorating concrete at east end of runway and Taxiway B.
- **RSA Improvements-North Airfield (Table/Figure 3-1 #2)** – Improvements at east end of Runway 6L-24R to meet FAA RSA requirements, and rehabilitate concrete pavement. In addition, a separate activity will include improvements to Runway 6R-24L RSA to meet FAA requirements, and runway rehabilitation.
- **LAX Bradley West Project Remaining Work (Table/Figure 3-1 #3)** – Completion of replacing existing concourses and aprons at the Tom Bradley International Terminal (TBIT) with new concourses and gates at Bradley West. Remaining work includes demolition of existing TBIT concourses and installation of east gates/aprons along Bradley West concourses. Also includes Taxiway T project and construction of secure/sterile passenger and baggage connection between the TBIT core and Terminal 4 (T-4). Although construction of a similar connection between the TBIT core and T-3 is also part of the overall Bradley West Project, it is broken out separately below, as its construction would not begin until well after the other Bradley West improvements are completed.
- **Terminal 3 (T-3) Connector (Table/Figure 3-1 #4)** – See above.
- **North Terminal Improvements (Table/Figure 3-1 #5)** – Major interior improvements and building system upgrades within the North Terminal, particularly Terminal 1 (Southwest).
- **South Terminal Improvements (Table/Figure 3-1 #6)** – Major interior improvements and building system upgrades within the South Terminal, particularly Terminal 5 (Delta Airlines) and Terminals 6-8 (United Airlines).
- **Midfield Satellite Concourse: Phase 1 - North Concourse Project (Table/Figure 3-1 #7)** – Development of north concourse portion of Midfield Satellite Concourse (MSC) west of the Bradley West Project, along with construction of a connection system for moving passengers, baggage, and materials between MSC, Bradley West, and the CTA.
- **Central Utility Plant Replacement Project (CUP-RP) Remaining Work (Table/Figure 3-1 #8)** – Completion of CUP-RP and related underground piping network within CTA.

3.0 Overview of Project Setting

- **Miscellaneous Projects and Improvements (Table 3-1 #9)** – This includes a wide variety of smaller miscellaneous projects and improvements mostly related to repair/replacement of, and upgrades to, existing facilities at LAX, including, but not limited to, runway repair/rehabilitation; elevators/escalators replacement; CTA second level roadway repairs; terminal taxilanes and aprons rehabilitation; passenger boarding bridge replacements; terminal electrical, plumbing, and facilities upgrades; miscellaneous demolition; movement of temporary stockpiles; and other similar activities.
- **LAX Northside Area Development¹ (Table/Figure 3-1 #10)** – Development of LAX Northside area with a mix of employment, retail, restaurant, office, hotel, research and development, education, civic, airport support, recreation, and buffer uses. The approved development plan provides entitlements for up to 4.5 million square feet of development, subject to a limitation on the total number of vehicle trips.
- **LAX Master Plan Alternative D/SPAS Development (Table/Figure 3-1 #11)** – In accordance with the LAX Master Plan Stipulated Settlement and Section 7.H. of the LAX Specific Plan, LAWA completed the LAX SPAS to identify and evaluate alternatives to certain improvements delineated in the LAX Master Plan. Those proposed Master Plan improvements, generally referred to as the "Yellow-Light Projects," include the Ground Transportation Center (GTC), the Automated People Mover between the GTC and the CTA, demolition of Terminals 1, 2, and 3, reconfiguration of the north runway complex, and on-airport road improvements associated with the GTC. Nine alternatives comprised of various combinations of airfield, terminal, and ground access improvements are addressed within the SPAS Final EIR, and a Staff-Recommended Alternative (combination of SPAS Alternatives 1 and 9) was acted upon by the Los Angeles City Council in April 2013. That alternative must still undergo review, including environmental review pursuant to the National Environmental Policy Act, and approval by FAA in order to be implemented. In addition, project-level California Environmental Quality Act analysis will be required for individual project components. As such, for related projects included in this EIR, the existing LAX Master Plan Alternative D, which is SPAS Alternative 3, is assumed.

3.6.2 Other Related Projects

- **Metro Crenshaw/LAX Transit Corridor and Station (Table/Figure 3-1 #12)** – The Los Angeles County Metropolitan Transportation Authority (Metro) recently approved the proposed Crenshaw/LAX Transit Corridor Project, which includes an 8.5-mile light-rail transit line that would connect the existing Metro Green Line and the Metro Expo Line at Crenshaw and Exposition Boulevards. A station is proposed in proximity to LAX, near the intersection of Century Boulevard and Aviation Boulevard.

4.0 ENVIRONMENTAL IMPACT ANALYSIS

4.0.1 EIR Type

This Environmental Impact Report (EIR), as defined by Section 15161 of the *California Environmental Quality Act (CEQA) Guidelines*, is a Project EIR, and as such is site- and Project-specific. Pursuant to *CEQA Guidelines* Section 15128, potential effects of the proposed Project that were determined to be less than significant or no impact are discussed in the Initial Study (IS), attached as Appendix A and summarized in Chapter 6, *Other Environmental Considerations*, of this EIR. This chapter of the EIR and the topical sections included herein evaluate the environmental impacts determined by the IS to be potentially significant, consistent with *CEQA Guidelines* Section 15063(c)(3)(A), and mitigation measures are provided as appropriate to reduce or avoid significant environmental impacts.

Los Angeles World Airports (LAWA), as the Lead Agency is responsible for certifying the EIR and adopting any mitigation measures needed to reduce or avoid the proposed Project's significant environmental impacts.

4.0.2 Baseline for Determining Significant Environmental Impacts

In accordance with Section 15125 of the *CEQA Guidelines*, the affected environment (referred to in the *CEQA Guidelines* as the "environmental setting") is characterized by the physical environmental conditions that existed in the vicinity of the proposed Project when the Notice of Preparation (NOP) is published, and normally constitutes the baseline physical conditions against which project impacts are compared to determine whether an impact is significant. For this EIR, the environmental baseline used for determining significant impacts primarily represents the physical conditions that existed when the NOP for the proposed Project was published in September 2012. However, for certain issue areas where data specific to that timeframe were unavailable or incomplete, more current information was utilized to define the environmental baseline as follows:

- For purposes of evaluating potential construction traffic impacts of the proposed Project, intersection turning movement traffic volume data were collected in April and May 2013. These volumes were used as a basis for preparing the construction traffic analysis and assessing potential Project-related construction traffic impacts.
- For purposes of evaluating potential impacts associated with hazards and hazardous materials, information on surface conditions was based on the *Report of Screening-Level Sampling and Analyses of Selected Stockpiles: West Aircraft Maintenance Area* prepared by Geosyntec Consultants, completed on June 2013, which supplemented information on subsurface conditions that was based on various technical studies; the most recent study was completed in December 2012.
- The environmental baseline for evaluating potential hydrology and water quality impacts is based on the *West Maintenance Area, Los Angeles International Airport, Engineer's Design Report: Appendix F, Drainage Design Report* prepared by Atkins in August 2013.

- For purposes of evaluating potential impacts associated with noise, information on existing noise conditions is based on a noise technical memorandum *Noise Analysis Results for the Proposed WAMA at LAX* prepared by Harris Miller Miller & Hanson Inc. in June 2013. Information on Aircraft Taxi Noise was based on a technical memorandum, *West Aircraft Maintenance Area-Taxi Noise*, prepared by Ricondo and Associates in September 2013.

Based on the nature of updated information listed above and the limited duration between when the NOP was published (September 2012) and when the updated information was compiled, a period during which there were no major changes in the nature and activity levels of uses at and around the airport, the environmental baseline conditions characterized by the updated information are considered to be reasonably representative of the physical conditions that existed when the NOP was published.

4.0.3 Incorporation of Los Angeles International Airport (LAX) Master Plan Commitments and Mitigation Measures into the Environmental Analysis

The proposed Project responds to the development framework set forth in the LAX Master Plan and represents a refinement to the programmed development of hangar/maintenance facilities in the western portion of the airport property. Applicable LAX Master Plan commitments and mitigation measures identified in the LAX Master Plan Mitigation Monitoring and Reporting Program (MMRP) are included as part of the proposed Project in order to reduce or avoid potential impacts. Relevant LAX Master Plan commitments and mitigation measures are cited within individual sections of this chapter where applicable.

The environmental analysis assumes that these measures will be implemented in conjunction with the proposed Project as required in the MMRP. To the extent that these measures would not reduce significant environmental effects to a less than significant level, and Project level information has revealed additional feasible mitigation measures, new mitigation measures are separately identified after the various impact conclusions and proposed for adoption as conditions of approval.

4.0.4 Evaluation of Cumulative Impacts

Section 15130 of the *CEQA Guidelines* requires that the analysis of potential project impacts include cumulative impacts, which are defined as “two or more individual effects which, when considered together are considerable or which compound or increase other environmental impacts.” Under the requirements of the *CEQA Guidelines*, analysis of cumulative impacts need not be as in-depth as that performed relative to the proposed Project, but instead should “be guided by the standards of practicality and reasonableness.”

As further described in Chapter 2, *Project Description*, of this EIR, construction of the proposed Project is expected to occur within three construction sequences over a five year period, with the majority of construction activity occurring during an approximate 20-month period, beginning

4.0 Environmental Impact Analysis

in 2014 and ending in 2015. The schedule for construction of the first aircraft maintenance hangar is estimated to take 18 to 20 months and would be completed prior to 2016. Construction of the additional aircraft maintenance hangar is estimated to take approximately 16 to 24 months and is anticipated to commence in the last quarter of 2016 and be completed prior to 2019.

Accordingly, the cumulative analysis for each environmental issue analyzed in this EIR, with the exception of the cumulative analysis for greenhouse gas (GHG) emissions, evaluates the effects of other proposed development projects that may be constructed at some point during the same five year time period (i.e., 2014 through 2018). This includes past, present, and reasonably foreseeable future related projects identified for LAX development projects (LAX Master Plan projects and other LAX projects) and non-LAX development projects that could, in conjunction with the proposed Project, result in cumulative impacts to the environment. Related projects within or adjacent to LAX are described in Chapter 3, *Overview of Project Setting*, of this EIR and are listed in **Table 3-1** and identified in **Figure 3-1**.

For the GHG analysis, as further described in Section 4.2, *Greenhouse Gas Emissions*, of this EIR, climate change impacts are cumulative in nature, and therefore no typical single project would result in emissions of such a magnitude that it would be significant on project basis. Thus, the analysis of significance of potential impacts from GHG emissions related to a single project is already representative of the long-term impacts on a cumulative basis. Therefore, projects that exceed the Project-specific significance thresholds would cause cumulatively considerable impacts with respect to GHG emissions.

As further described in Section 4.7, *Construction Surface Transportation*, of this EIR, the construction traffic analysis assumed that peak cumulative traffic conditions associated with other LAX development projects listed in Table 3-1 would occur around March 2018. In addition, a two percent annual growth in background traffic that includes additional growth from non-specific projects and LAX background development was assumed during this timeframe to provide a conservative traffic analysis.

4.0.5 Organization

Each of the environmental disciplines addressed in this chapter is discussed in a separate section using a common organization. Sections are numbered 4.1 through 4.7. Several sections are divided into subsections to simplify and clarify the discussion. Within each environmental topic section, discussion of the following is provided:

- The **Introduction** briefly describes the issues addressed in the analysis and identifies related topics. The Introduction also identifies any specific issue area of the topic that is not being addressed as part of this EIR and provides a discussion explaining the reasons why. In many cases, a number of specific issue areas were evaluated and impacts determined to be less than significant, as documented in the IS that was published with NOP for the proposed Project in September 2012 (included herein as Appendix A). Subsequent to release of the IS/NOP and based on public input and LAWA coordination with the Federal Aviation Administration minor refinements have been made to certain components of the proposed Project, which are detailed in the Introduction. In accordance with Sections 15063(c)(3)(A) and 15128 of the *CEQA Guidelines*, further analysis of specific issue areas where impacts were determined to be less than significant in the IS is not required and is not

4.0 Environmental Impact Analysis

provided in this EIR. The refinements do not represent a material change to the proposed Project that was described in the IS/NOP and do not result in the identification of new significant impacts or the increase in the severity of previously identified impacts.

- The **Methodology** describes how the issue was approached, including explanations of any assumptions, equations, or calculations; identification of information sources used for the analysis; and delineation of the study area considered for each environmental discipline. This section also identifies the environmental baseline used to determine the significance of potential impacts.
- The **Existing Conditions** discusses the existing conditions for the environmental discipline in the study area, including relevant activities, facilities, and regulations.
- The **Thresholds of Significance** are quantitative or qualitative criteria used to determine whether a significant environmental impact would occur as a result of the project. This section identifies the origins of the thresholds of significance used in the analysis. In general, and unless otherwise noted, the thresholds of significance used in the analysis reflect guidance provided in Appendix G of the *CEQA Guidelines*¹ and/or criteria or guidance included in the *L.A. CEQA Thresholds Guide*.²
- The **Applicable LAX Master Plan Commitments and Mitigation Measures** section lists the LAX Master Plan commitments and mitigation measures applicable to the proposed Project. As background, in conjunction with approval of the LAX Master Plan and certification of the Final EIR in December 2004, the Los Angeles City Council adopted an MMRP³ to ensure that mitigation measures and LAX Master Plan commitments identified in the Final EIR are implemented. Mitigation measures are activities, policies, or practices designed to avoid or minimize significant environmental impacts. Besides mitigation measures, the MMRP for the LAX Master Plan includes Master Plan commitments. LAX Master Plan commitments were determined to be more appropriate than mitigation measures where: (1) standards and regulations exist with which compliance is already required by the applicable regulatory agency; (2) impacts would be adverse but not significant; and (3) design refinements could be incorporated into the project to reduce or avoid potential impacts. The timing of implementation of LAX Master Plan commitments and mitigation measures is set forth in the LAX Master Plan MMRP. Unless otherwise noted, the impacts analysis for the proposed Project assumes that the applicable LAX Master Plan commitments and mitigation measures would be implemented concurrently with and as part of the proposed Project. To the extent that the LAX Master Plan commitments and mitigation measures would not reduce significant environmental impacts to a level that is less than significant, Project-specific mitigation measures, if feasible, are separately identified in the Mitigation Measures section.
- The **Impacts Analysis** section presents the analysis of impacts for the construction (the build-out horizon year 2018) and operation of the proposed Project. Impacts were compared to the thresholds of significance to determine whether they would be, under

¹ State of California, Guidelines for California Environmental Quality Act (State CEQA Guidelines), California Code of Regulations, Title 14, Chapter 3, Sections 15000-15387.

² City of Los Angeles, L.A. CEQA Thresholds Guide, Your Resource for Planning CEQA Analysis in Los Angeles, 2006.

³ City of Los Angeles, Los Angeles World Airports, Alternative D Mitigation Monitoring and Reporting Program, September 2004.

4.0 Environmental Impact Analysis

CEQA, significant or less than significant. For purposes of determining significance, potential impacts were compared to the environmental baseline/existing conditions.

- **Cumulative** impacts are the impacts of the proposed Project in conjunction with past, present, and reasonably foreseeable future projects. The environmental impacts of the proposed Project may be individually minor, but collectively significant when considered in conjunction with other projects.
- **Mitigation Measures** are specified procedures, plans, policies, or activities proposed for adoption by the lead agency to reduce or avoid the significant impacts identified in the analysis of environmental impacts. This section identifies Project-specific mitigation measures proposed to address significant impacts that would occur with implementation of the proposed Project. In accordance with the requirements of CEQA, an MMRP would be adopted as part of the proposed Project approvals to ensure that implementation of mitigation measures are properly monitored and documented.
- **Level of Significance After Mitigation** is a CEQA determination of the significance of a particular impact after implementation of the proposed mitigation measures. This section identifies any significant impacts that cannot be mitigated to a level that is less than significant. These "significant unavoidable impacts" are also listed in Chapter 6, *Other Environmental Considerations*, of this EIR.

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4.1 Air Quality

4.1.1 Introduction

This air quality analysis examines potential air quality impacts that could result from the proposed Project. The analysis addresses the change in criteria pollutant emissions from construction and operational activities, as well as the emission of toxic air contaminants (TAC) from construction activities associated with the proposed Project. Greenhouse gas emissions are discussed separately in Section 4.2, *Greenhouse Gas Emissions*, of this Draft Environmental Impact Report (EIR).

The air quality impact analyses presented below include development of emission inventories for the proposed Project (i.e., the quantities of specific pollutants, typically expressed in pounds per day or tons per year) based on emission modeling and assessment of localized concentrations (i.e., the concentrations of specific pollutants within ambient air, typically expressed in terms of micrograms per cubic meter) and based on screening criteria and dispersion modeling. The criteria pollutant emissions inventories and localized concentrations were developed using standard industry software/models and federal, state, and locally approved methodologies. Concentrations of TAC were used with federal and state health risk parameters to estimate cancer risks and non-cancer health hazard indices for maximally exposed individuals (MEI). Results of the emission inventories were compared to daily emissions thresholds established by the South Coast Air Quality Management District (SCAQMD) for the South Coast Air Basin (Basin).¹ Results of the risk calculations were compared to the health risk thresholds also established by the SCAQMD for the Basin. This section is based in part on the detailed information contained in Appendix B, *Air Quality, Greenhouse Gas, and Human Health Risk Assessment*.

4.1.1.1 Pollutants of Interest

Six criteria pollutants were evaluated for the proposed Project, including ozone (O₃) using as surrogates volatile organic compounds (VOCs)² and oxides of nitrogen (NO_x), nitrogen dioxide (NO₂), carbon monoxide (CO), sulfur dioxide (SO₂), particulate matter with an aerodynamic diameter less than or equal to 10 micrometers (PM₁₀), and particulate matter with an aerodynamic diameter less than or equal to 2.5 micrometers (PM_{2.5}). These pollutants were analyzed consistent with guidelines set forth by the SCAQMD for the preparation of California Environmental Quality Act (CEQA) documents³ and are considered to be pollutants of concern based on the type of emission sources associated with construction and operation of the proposed Project, and are thus included in this assessment. Although lead (Pb) is a criteria pollutant, it was not evaluated in this EIR because the proposed Project would have a negligible impact on Pb levels in the Basin. The only source of Pb emissions from the Los Angeles

¹ South Coast Air Quality Management District, CEQA Air Quality Handbook, 1993; as updated by SCAQMD Air Quality Significance Thresholds, March 2011, Available: <http://www.aqmd.gov/CEQA/handbook/signthres.pdf>.

² The emissions of volatile organic compounds (VOC) and reactive organic gases (ROG) are essentially the same for the combustion emission sources that are considered in this EIR. This EIR will typically refer to organic emissions as VOC.

³ South Coast Air Quality Management District, CEQA Air Quality Handbook, 1993; as updated by SCAQMD Air Quality Significance Thresholds, March 2011, Available: <http://www.aqmd.gov/CEQA/handbook/signthres.pdf>.

4.1 Air Quality

International Airport (LAX) is from aviation gasoline (AvGas) associated with piston-engine general aviation aircraft; however, due to the low number of piston-engine general aviation aircraft operations at LAX, AvGas quantities are low and emissions from these sources would not be materially affected by the Project. Sulfate compounds (e.g., ammonium sulfate) are generally not emitted directly into the air but are formed through various chemical reactions in the atmosphere; thus, sulfate is considered a secondary pollutant. All sulfur emitted by airport-related sources included in this analysis was assumed to be released and to remain in the atmosphere as SO₂. Therefore, no sulfate inventories or concentrations were estimated.

Following standard industry practice, the evaluation of O₃ was conducted by evaluating emissions of VOCs and NO_x, which are precursors in the formation of O₃. O₃ is a regional pollutant and ambient concentrations can only be predicted using regional photochemical models that account for all sources of precursors, which is beyond the scope of this analysis. Therefore, no photochemical O₃ modeling was conducted for the proposed Project. Additional information regarding the six criteria pollutants that were evaluated in the air quality analysis is presented below.

In addition, a number of TAC were analyzed to estimate potential exposure concentrations and associated health risks to MEI. The contaminants selected were those commonly emitted from airport equipment, vehicles, and activities. These contaminants are specific compounds or elements in the organic vapor or particulate matter emissions from engine exhaust, evaporation, and fugitive dust.

4.1.1.1.1 Ozone (O₃)

O₃, a component of smog, is formed in the atmosphere rather than being directly emitted from pollutant sources. O₃ forms as a result of VOCs and NO_x reacting in the presence of sunlight in the atmosphere. O₃ levels are highest in warm-weather months. VOCs and NO_x are termed “O₃ precursors” and their emissions are regulated in order to control the creation of O₃.

O₃ damages lung tissue and reduces lung function. Scientific evidence indicates that ambient levels of O₃ not only affect people with impaired respiratory systems (e.g., asthmatics), but also healthy children and adults. O₃ can cause health effects such as chest discomfort, coughing, nausea, respiratory tract and eye irritation, and decreased pulmonary functions.

4.1.1.1.2 Nitrogen Dioxide (NO₂)

NO₂ is a reddish-brown to dark brown gas with an irritating odor. NO₂ forms when nitric oxide reacts with atmospheric oxygen. Most sources of NO₂ are man-made; the primary source of NO₂ is high-temperature combustion. Significant sources of NO₂ at airports are boilers, aircraft operations, and vehicle movements. NO₂ emissions from these sources are highest during high-temperature combustion, such as aircraft takeoff mode.

NO₂ may produce adverse health effects such as nose and throat irritation, coughing, choking, headaches, nausea, stomach or chest pains, and lung inflammation (e.g., bronchitis, pneumonia).

4.1.1.1.3 Carbon Monoxide (CO)

CO is an odorless, colorless gas that is toxic. It is formed by the incomplete combustion of fuels. The primary sources of this pollutant in Los Angeles County are automobiles and other mobile sources. The health effects associated with exposure to CO are related to its interaction with hemoglobin once it enters the bloodstream. At high concentrations, CO reduces the amount of oxygen in the blood, causing heart difficulties in people with chronic diseases, reduced lung capacity, and impaired mental abilities.

4.1.1.1.4 Particulate Matter (PM₁₀) and Fine Particulate Matter (PM_{2.5})

Particulate matter consists of solid and liquid particles of dust, soot, aerosols, and other matter small enough to remain suspended in the air for a long period of time. PM₁₀ refers to particulate matter with an aerodynamic diameter less than or equal to 10 micrometers (microns, μm or μm) and PM_{2.5} refers to particulate matter with an aerodynamic diameter less than or equal to 2.5 micrometers. Particles smaller than 10 micrometers (i.e., PM₁₀ and PM_{2.5}) represent that portion of particulate matter thought to represent the greatest hazard to public health.⁴ PM₁₀ and PM_{2.5} can accumulate in the respiratory system and are associated with a variety of negative health effects. Exposure to particulate matter can aggravate existing respiratory conditions, increase respiratory symptoms and disease, decrease long-term lung function, and possibly cause premature death. The segments of the population that are most sensitive to the negative effects of particulate matter in the air are the elderly, individuals with cardiopulmonary disease, and children. Aside from adverse health effects, particulate matter in the air causes a reduction of visibility and damage to paints and building materials.

A portion of the particulate matter in the air comes from natural sources such as windblown dust and pollen. Man-made sources of particulate matter include fuel combustion, automobile exhaust, field burning, cooking, tobacco smoking, factories, and vehicle movement on, or other man-made disturbances of, unpaved areas. Secondary formation of particulate matter may occur in some cases where gases like sulfur oxides (SO_x)⁵ and NO_x interact with other compounds in the air to form particulate matter. In the Basin, both VOCs and ammonia are also considered precursors to PM_{2.5}. Fugitive dust generated by construction activities is a major source of suspended particulate matter.

The secondary creators of particulate matter, SO_x and NO_x, are also major precursors to acidic deposition (acid rain). While SO_x is a major precursor to particulate matter formation, NO_x has other environmental effects. NO_x reacts with ammonia, moisture, and other compounds to form nitric acid and related particles. Human health concerns include effects on breathing and the respiratory system, damage to lung tissue, and premature death. Small particles penetrate into sensitive parts of the lungs and can cause or worsen respiratory disease. NO_x has the potential to change the composition of some species of vegetation in wetland and terrestrial systems, to create the acidification of freshwater bodies, impair aquatic visibility, create eutrophication of estuarine and coastal waters, and increase the levels of toxins harmful to aquatic life.

⁴ U.S. Environmental Protection Agency, Particle Pollution and Your Health, September 2003.

⁵ The term SO_x accounts for distinct but related compounds, primarily SO₂ and, to a far lesser degree, sulfur trioxide. As a conservative assumption for this analysis, it was assumed that all SO_x is emitted as SO₂, therefore SO_x and SO₂ are considered equivalent in this document and only the latter term is used henceforth.

4.1 Air Quality

4.1.1.1.5 Sulfur Dioxide (SO₂)

Sulfur oxides are formed when fuel containing sulfur (typically, coal and oil) is burned, and during other industrial processes. The term "sulfur oxides" accounts for distinct but related compounds, primarily SO₂ and sulfur trioxide. As a conservative assumption for this analysis, it was assumed that all SO_x are emitted as SO₂; therefore, SO_x and SO₂ are considered equivalent in this document. Higher SO₂ concentrations are usually found in the vicinity of large industrial facilities.

The physical effects of SO₂ include temporary breathing impairment, respiratory illness, and aggravation of existing cardiovascular disease. Children and the elderly are most susceptible to the negative effects of exposure to SO₂.

4.1.1.2 Scope of Analysis

The air quality analysis conducted for the proposed Project addresses construction-related impacts, with peak construction occurring between 2014 and 2015, and operational-related impacts. The basic steps involved in performing the analysis are listed below.

Construction:

- Identify construction-related emissions sources for the identified sources.
- Develop peak daily construction emissions inventories.
- Compare emissions inventories with appropriate CEQA thresholds for construction.
- Conduct dispersion modeling for the peak year of Project construction emissions.
- Obtain background concentration data from SCAQMD and estimate future concentrations with the proposed Project.
- Conduct risk assessment calculations for exposure to TAC.
- Identify potential construction-related mitigation measures if warranted beyond what is already required through Los Angeles World Airports (LAWA) air quality control measures including, but not limited to, LAX Master Plan commitments and mitigation measures.

Operations:

- Identify operational-related emission sources.
- Develop peak daily operational emissions inventories for the identified sources.
- Compare emissions inventories with appropriate CEQA thresholds for operations.
- Develop health risk estimates for operational impacts based on SCAQMD Tier 2 Risk Assessment Methodology.
- Identify potential operations-related mitigation measures if warranted beyond what is already required through LAX Master Plan commitments and mitigation measures.

4.1.2 Methodology

The air quality assessment for the proposed Project was conducted in accordance with the City of Los Angeles *L.A. CEQA Thresholds Guide*⁶ and the SCAQMD's 1993 *CEQA Air Quality Handbook*.⁷ The City of Los Angeles has not adopted specific City-wide significance thresholds for air quality impacts; however, its *L.A. CEQA Thresholds Guide* references the thresholds and methodologies contained in the SCAQMD *CEQA Air Quality Handbook* for evaluating proposed projects in the City. Thus, the determinations and assessments contained herein are based on the SCAQMD's *CEQA Air Quality Handbook* as well as information presented in the following documents:

- *LAX Master Plan Final EIR*, Chapter 4.6, *Air Quality*, April 2004;
- *LAX Master Plan Final EIR*, Chapter 4.24.1, *Human Health Risk Assessment*, April 2004;
- *LAX Master Plan Final EIR*, Section 4.20, *Construction Impacts*, April 2004;
- *LAX Master Plan Final EIR*, Appendix F-B, *Air Quality Appendix*, April 2004; and
- *Report of Screening-Level Sampling and Analyses of Selected Stockpiles: West Aircraft Maintenance Area* by Geosyntec Consultants, June 2013.

4.1.2.1 Construction

Daily emissions during construction were forecast by assuming a conservative estimate of construction (i.e., assuming all construction occurs at the earliest feasible date) and applying the mobile-source and fugitive dust emissions factors derived from the California Emissions Estimator Model (CalEEMod), Version 2013.2, an emissions inventory software program recommended by the SCAQMD. CalEEMod is based on outputs from OFFROAD2011 and EMFAC2011, which are emissions estimation models developed by the California Air Resources Board (CARB) to calculate emissions from construction activities. The output values used in this analysis were adjusted to be Project-specific, based on equipment usage rates, type of fuel, and construction schedule. These values were then applied to the construction phasing assumptions used in the criteria pollutant analysis to generate criteria pollutant emissions values for each construction year.

Emissions estimates for the proposed Project's construction activities included the application of emission reduction measures required by LAWA air quality control measures including the LAX Master Plan Mitigation Monitoring and Reporting Program (MMRP), the LAX Master Plan-Mitigation Plan for Air Quality (LAX MP-MPAQ) and SCAQMD rules, as well as additional control measures set forth in the LAX Master Plan Community Benefits Agreement. These measures are applicable to NO_x, PM₁₀ and PM_{2.5} emissions. The measures that would result in reductions of NO_x, PM₁₀ and PM_{2.5} are discussed in Section 4.1.5 below.

In order to estimate construction emissions, resource requirements and activity schedules were developed by the LAWA project team, an integrated team of the LAWA and consultant staff responsible for oversight and program management. Monthly estimates of equipment usage (in

⁶ City of Los Angeles, *L.A. CEQA Thresholds Guide*, (2006) B-1.

⁷ South Coast Air Quality Management District, *CEQA Air Quality Handbook*, 1993, as updated by SCAQMD *Air Quality Significance Thresholds*, March 2011, Available: <http://www.aqmd.gov/CEQA/handbook/signthres.pdf>.

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hours) were also developed for each piece of equipment expected to be used during construction of the proposed Project. From the resource information provided, peak daily emissions estimates were developed for the construction period.

As further described in Chapter 2, *Project Description*, of this EIR, construction of the proposed Project is expected to occur within three construction sequences over the next five years, with peak construction occurring during an approximate 20-month period, beginning in 2014 and ending in 2015. The first two sequences, Site Clearing and Infrastructure Development and First Hangar Development, would overlap, thereby resulting in peak construction during the 2014 to 2015 timeframe. The third sequence, Additional Hangar Development, would occur on its own after completion of the first two sequences. Demolition of concrete and asphalt would be nominal, and the demolition debris may be reused on-site. Mass grading is expected to occur during development of the aircraft apron area as well as during site preparation for future aircraft maintenance hangar areas. Hauling activities would include debris removal and the export of approximately 295,000 cubic yards of soil. Concrete pouring would take approximately six months to complete and would overlap with the hangar construction, which would take approximately 18 to 20 months. A complete listing of the construction equipment by phase, construction phase duration, emissions estimation model and dispersion model input assumptions used in this analysis is included within the emissions calculation worksheets that are provided in Appendix B of this EIR.

4.1.2.1.1 Emission Source Types

Off-Road and On-Road Equipment

Emissions estimates for CO, VOC, NO_x, SO₂, PM₁₀, and PM_{2.5} were developed using CalEEMod for off-road construction equipment that remain on-site and on-road construction equipment which can travel on- and off-site. Emissions from off-road equipment (dozers, loaders, sweepers, and other heavy-duty construction equipment) and on-road vehicles (tractor trailers, light duty trucks, employee vehicles, etc., which can travel on highways and local roads) were evaluated separately to account for the CARB's published emissions factors for both categories of equipment. Off-road equipment types, models, and horsepower ratings were determined based on Project-specific construction schedule and needs.

Emission factors for CO, VOC, NO_x, PM₁₀, and PM_{2.5} for off-road vehicles (i.e., vehicles not licensed to travel on public roadways) used in the analysis were based on calendar year 2014 and later emission rates from CalEEMod. Emissions for off-road equipment were then calculated by multiplying an emission factor by the horsepower, load factor, and operational hours for each type of equipment. Select equipment were assumed to be equipped with CARB verified Level 3 diesel particulate filters (DPFs) achieving PM₁₀ and PM_{2.5} emissions reductions of approximately 85 percent,⁸ as required by the LAX Master Plan mitigation program (see Section 4.1.5 for additional details).

On-road equipment emissions are generated from pick-up trucks, water trucks, dump trucks, haul trucks, cement trucks,⁹ and other on-road vehicles (i.e., vehicles licensed to travel on public

⁸ California Air Resources Board, Diesel Certifications, Verification Procedure - Currently Verified, Available: <http://www.arb.ca.gov/diesel/verdev/vt/cvt.htm>.

⁹ While it is anticipated that much, if not most, of the concrete needs associated with the proposed Project

roadways). Exhaust emissions from on-road on-site sources were calculated using emission factors for CO, VOC, NO_x, PM₁₀, and PM_{2.5} from CalEEMod. The emission factors correspond to fleet average factors for calendar year 2014 and later.¹⁰ Select on-road equipment, such as certain types of haul trucks, would meet more stringent (i.e., less polluting) emission standards for newer engines and were modeled with these more stringent emission factors. For example, soil export haul trucks and concrete trucks were assumed to comply with United States Environmental Protection Agency (USEPA) 2007 on-road emissions standards for PM₁₀ and NO_x, as prescribed by the LAX Master Plan Mitigation Measures described in detail below.

Emissions for heavy-duty diesel vehicles and trucks were calculated separately based on EMFAC2011 emission factors for the vehicle classification “heavy-heavy-duty diesel single construction truck (T7 single construction).”¹¹ The EMFAC factors account for start-up, running, and idling. In addition, the VOC emission factors include diurnal, hot soak, running, and resting emissions, and the PM₁₀ and PM_{2.5} factors include tire and brake wear.

Fugitive Dust

An additional source of PM₁₀ and PM_{2.5} emissions associated with construction activities is fugitive dust. Fugitive dust emissions resulting from soil handling (i.e. excavation), wind erosion of dirt piles, and dust entrainment from vehicle travel on paved and unpaved roadways were also quantified as part of the construction emissions inventories. Fugitive dust emissions were calculated using the USEPA's *Compilation of Air Pollutant Emission Factors (AP-42)*¹² and SCAQMD's *CEQA Air Quality Handbook*.¹³ Watering, as required under LAWA construction contracts and standard air quality control measures, and also being one of the main dust suppression measures recommended in SCAQMD Rule 403, was applied in the modeling calculations, which reduces fugitive dust emissions by 61 percent according to the SCAQMD.¹⁴

Fugitive VOCs

Fugitive VOC emissions were quantified as part of this analysis. Types of activities that would emit VOCs and included in this analysis include VOC emissions from architectural coatings, solvents, and hot-mix asphalt paving. Most surface coatings by 2015 are assumed to be water-based (as many of them are today) and coating manufacturers would continue to be required to comply with SCAQMD rules and regulations governing the use of coatings and solvents while CARB continues to regulate the VOC content of consumer products such as aerosol spray paint.¹⁵

improvements would be provided by an on-site concrete batch plant, for which LAWA currently has the necessary SCAQMD and USEPA (Clean Air Act Title V) permits, it is likely that some amount of concrete (i.e., specialty concrete) would come from off-site plants and be delivered by truck.

¹⁰ Year 2014 is the assumed date for the start of construction and represents a conservative assumption for later years.

¹¹ California Air Resources Board, Research Division, EMFAC2011 On-Road Emissions Inventory Estimation Model, Available: <http://www.arb.ca.gov/msei/modeling.htm>.

¹² U.S. Environmental Protection Agency, Compilation of Air Pollutant Emission Factors AP-42, Fifth Ed, 1995.

¹³ South Coast Air Quality Management District, CEQA Air Quality Handbook, 1993, as updated by SCAQMD Air Quality Significance Thresholds, March 2011, Available: <http://www.aqmd.gov/CEQA/handbook/signthres.pdf>.

¹⁴ South Coast Air Quality Management District, Fugitive Dust, Table XI-A: Construction & Demolition, Available: http://www.aqmd.gov/ceqa/handbook/mitigation/fugitive/MM_fugitive.html.

¹⁵ South Coast Air Quality Management District, Rules and Regulations, Available: <http://www.aqmd.gov/rules>.

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Worker Commute Trips

Emissions from worker commute trips were calculated using emission factors and assumed default commute distances, as provided in CalEEMod. The number of workers during each construction phase was provided by LAWA. Construction-worker vehicle emissions were calculated using SCAQMD default assumptions for vehicle fleet mix, travel distance, and average travel speeds.¹⁶

4.1.2.1.2 Localized Construction

The localized effects from the on-site portion of daily emissions from the sources described above were evaluated at nearby sensitive receptor locations potentially impacted by the proposed Project according to the SCAQMD's localized significance threshold (LST) methodology,¹⁷ which uses on-site mass emission rate look-up tables with Project-specific daily construction site areas (acres) and receptor distances. LSTs are only applicable to on-site emissions of the following criteria pollutants: NO_x, CO, PM₁₀, and PM_{2.5}. LSTs represent the maximum emissions from a project that are not expected to cause or contribute to an exceedance of the most stringent applicable federal or state ambient air quality standard, and are developed based on the ambient concentrations of that pollutant for each source receptor area (SRA) and distance to the nearest sensitive receptor. The mass rate look-up tables were developed for each SRA and can be used to determine whether or not a project may generate significant adverse localized air quality impacts. The LST mass rate look-up tables apply to projects that are less than or equal to five acres. If the project exceeds five acres or any applicable LST when the mass rate look-up tables are used as a screening analysis, then project-specific air quality modeling may be performed. The SCAQMD recommends that lead agencies perform project-specific air quality modeling for larger projects.¹⁸ The Project site exceeds five acres in total size; therefore, Project-specific dispersion modeling was used to assess localized construction impacts rather than the mass emission rate look-up tables.

The Project-specific air quality modeling of localized construction impacts were done in a manner consistent with the way in which the SCAQMD developed the mass emission rate look-up tables as described in Chapter 2 of its *Final Localized Significance Threshold Methodology* (June 2008). The USEPA and SCAQMD-approved dispersion model, American Meteorological Society (AMS)/USEPA Regulatory Model (AERMOD),¹⁹ was used to model the air quality impacts of NO_x, CO, PM₁₀, and PM_{2.5} emissions. AERMOD can estimate the air quality impacts of single or multiple point, area, or volume sources using historical meteorological conditions. Volume sources were used to represent the emissions from trucks and heavy-duty construction equipment. Volume sources are three-dimensional sources of emissions that can be used to model releases from a variety of industrial uses, including moving diesel trucks and equipment.²⁰ Area sources were used to model fugitive dust emissions of PM₁₀ and PM_{2.5}. Area sources are

¹⁶ ENVIRON International Corporation, *CalEEMod Appendix A - Calculation Details*, February 2011, Section 4.5, pages 13-15. Available: <http://caleemod.com/>.

¹⁷ South Coast Air Quality Management District, *Final Localized Significance Threshold Methodology*, (2008). Available: http://www.aqmd.gov/ceqa/handbook/LST/Method_final.pdf.

¹⁸ South Coast Air Quality Management District, *Final Localized Significance Threshold Methodology*, (2008) 1-5.

¹⁹ Lakes Environmental, AERMOD VIEW Software.

²⁰ California Air Resources Board, *ARB Health Risk Assessment Guidance for Rail Yards and Intermodal Facilities*, (2006) 3.

two-dimensional surface-based sources of emissions that can be used to model releases from emissions that occur over a wide area, such as fugitive dust. Although the SCAQMD calculated PM₁₀ deposition when it developed its mass emission LSTs, this analysis did not model PM₁₀ deposition as a conservative approach. For the purpose of the dispersion modeling, the maximum daily emissions that could occur due to construction activities from any construction phase were selected for the LST analysis. As a conservative approach, it was assumed that an average workday would result in 8 hours of emissions-generating activity. Therefore, the maximum daily emissions were divided by 8 to convert the maximum daily emissions into emission rates in units of pounds per hour.

The models were used to identify concentrations at various receptors in the vicinity of the Project site. Field receptors were placed at 50-meter intervals at the boundary of LAX and outside of LAX to cover the nearby portions of the communities of El Segundo, Playa del Rey, and Westchester. Due to the size of the Project site and the number of model runs required, this receptor grid was determined to provide a balanced approach with respect to receptor coverage and model run times. This receptor grid is also consistent with SCAQMD recommended guidance for AERMOD.²¹

The meteorological data from the monitoring station located at LAX was used in the analysis. The meteorological data were obtained from the SCAQMD website and have been preprocessed using AERMET.²² AERMET is a meteorological preprocessor for organizing available meteorological data into a format suitable for use in AERMOD air quality dispersion model. These files were also developed by the SCAQMD using site specific surface characteristics obtained using AERSURFACE. AERSURFACE is a tool that provides realistic and reproducible surface characteristic values, including albedo, Bowen ratio, and surface roughness length, for input into AERMET.

The Project area is generally characterized by flat terrain. Thus, for modeling purposes, the flat terrain option was used in the modeling run.

The SCAQMD requires that AERMOD be run using USEPA regulatory default options, unless non-default options are justified. AERMOD was run using USEPA regulatory default options. As noted above, the flat terrain option was modeled. Additional modeling options are listed below:

- Urban dispersion (Los Angeles County population of 9,862,049, as per SCAQMD guidance);
- Averaging periods: 1-hour (CO and NO₂), 8-hour (CO), 24-hour (PM₁₀ and PM_{2.5}); Annual (NO₂ and PM₁₀);
- Flagpole receptor heights: 0 meter (corresponding to ground-level concentrations); and
- No building downwash (no point sources modeled).

AERMOD contains the Ozone Limiting Method (OLM) and Plume Volume Molar Ratio Method (PVMRM) options, which are used to model the conversion of NO_x to NO₂. The PVMRM option was used in this modeling analysis. The SCAQMD provides hourly O₃ data for modeling

²¹ Refer to the SCAQMD AERMOD modeling guidance website: http://www.aqmd.gov/smog/metdata/AERMOD_ModelingGuidance.html

²² South Coast Air Quality Management District, AQMD Meteorological Data for AERMOD, <http://www.aqmd.gov/smog/metdata/AERMOD.html>. 2010.

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conversion of NO_x to NO₂ using the PVMRM option. In addition, the following values were used in the analysis:

- Ambient Equilibrium NO₂/NO_x Ratio: 0.90 (default);
- In-stack NO₂/NO_x Ratio: 0.10 (default);²³ and
- Default O₃ Value: 40 parts per billion (used only for missing data in the hourly O₃ data file provided by the SCAQMD).

The LSTs for NO₂ were developed based on the 1-hour NO₂ California Ambient Air Quality Standards (CAAQS) of 0.18 parts per million (ppm). An exceedance of the 1-hour NO₂ California Ambient Air Quality Standard (NAAQS) is determined based on the USEPA standard, which is the 3-year average of the 98th percentile of the daily maximum 1-hour average. Because the 1-hour NO₂ NAAQS is evaluated over a three-year period, it is appropriately considered for construction activities that could last for multiple years. The 1-hour NO₂ NAAQS was considered in this analysis because of the duration of construction of the proposed Project. The LSTs for CO were developed based on the 1-hour and 8-hour CAAQS of 20 ppm and 9.0 ppm, respectively. With respect to CO, the CAAQS are more stringent than the NAAQS; therefore, the NAAQS need not be specifically addressed. For PM₁₀ and PM_{2.5}, the LSTs were derived based on requirements in SCAQMD Rule 403, Fugitive Dust.

4.1.2.1.3 Human Health Risk Assessment for Inhalation of TAC During Construction

The LAX Master Plan Final EIR²⁴ previously examined incremental health risks due to inhalation of TAC from operational sources associated with four build alternatives and the No Action/No Project Alternative. Because project level details were not available regarding construction phasing, the program-level LAX Master Plan Final EIR did not address health risk associated with construction activities of any of the individual LAX Master Plan components, including the proposed Project. Health risk associated with construction activities were addressed in the Final EIRs prepared for the LAX Master Plan projects that have been or are being constructed, including the South Airfield Improvement Project (SAIP),²⁵ Crossfield Taxiway Project (CFTP),²⁶ and Bradley West Project²⁷. Based on the nature and characteristics of the proposed Project, releases of TAC during proposed construction activities would occur and need to be evaluated;

²³ USEPA, "NO₂/NO_x In-Stack Ratio (ISR) Database," http://www.epa.gov/ttn/scram/no2_isr_database.htm. Accessed April 2013. If no equipment-specific information is available, the default NO₂/NO_x In-Stack Ratio is 0.10. Data provided in the "NO₂_ISR_alpha_database.xlsx" file downloaded from the website does not include information specifically for construction equipment. Values for diesel internal combustion engines (ICE) for a water pump indicate ratios ranging from 0.0 to 0.5. However, the upper and lower-end ratios are based on very low average NO_x values and were considered not representative of the project. Two of the ICE water pumps with higher average NO_x values had ratios of approximately 0.09 and 0.16. Given that none of the data specifically applies to construction equipment, a default value of 0.10 was used in the analysis.

²⁴ City of Los Angeles, Final Environmental Impact Report for Los Angeles International Airport (LAX) Proposed Master Plan Improvements, April 2004.

²⁵ City of Los Angeles, Los Angeles World Airports, Final Environmental Impact Report for South Airfield Improvement Project, Los Angeles International Airport (LAX), October 2005.

²⁶ City of Los Angeles, Los Angeles World Airports, Final Environmental Impact Report for Crossfield Taxiway Project, Los Angeles International Airport (LAX), January 2009.

²⁷ City of Los Angeles, Los Angeles World Airports, Final Environmental Impact Report for Bradley West Project, Los Angeles International Airport (LAX), September 2009.

therefore, human health risks associated with construction activities associated with the proposed Project are evaluated in this EIR.

The construction Human Health Risk Assessment (HHRA) is based on estimates for construction TAC emissions associated with the proposed Project. Baseline construction emissions are assumed to be zero, so no baseline year is used in the analysis. The HHRA was developed as required under State of California statutes and regulations²⁸, and was conducted in four steps as defined in SCAQMD, California Environmental Protection Agency (CalEPA), and USEPA guidance^{29,30,31} consisting of:

- Identification of chemicals (in this case, TAC) that may be released in sufficient quantities to present a public health risk (Hazard Identification);
- Analysis of ways in which people might be exposed to chemicals (i.e., TAC) (Exposure Assessment);
- Evaluation of the toxicity of chemicals (i.e., TAC) that may present public health risks (Toxicity Assessment); and
- Characterization of the magnitude of health risks for the exposed community, and of locations in the community where the greatest risks or hazards may be realized (Risk Characterization).

Hazard Identification

In general, TAC of concern used in the HHRA are based on TAC identified under California Assembly Bill AB2588 and for which the CalEPA, Office of Environmental Health Hazard Assessment (OEHHA) has developed cancer slope factors, chronic reference levels, and/or acute reference levels.

The list of TAC of concern used in this HHRA was developed using regulatory lists, emissions estimates, human toxicity information, results of the LAX Master Plan HHRA, and a review of

²⁸ California Environmental Protection Agency, Office of Environmental Health Hazard Assessment, Air Toxics Hot Spots Information and Assessment Act of 1987, Section 44300; California Environmental Protection Agency, Office of Environmental Health Hazard Assessment, Air Toxics Hot Spots Program Guidance Manual for Preparation of Health Risk Assessments, August 2003.

²⁹ South Coast Air Quality Management District, Supplemental Guidelines for Preparing Risk Assessments for the Air Toxics Hot Spots Information and Assessment Act (AB2588), July 2005.

³⁰ California Environmental Protection Agency, Office of Environmental Health Hazard Assessment, Air Toxics Hot Spots Program Risk Assessment Guidelines, Part I: Technical Support Document for the Determination of Acute Reference Exposure Levels for Airborne Toxicants, March 1999. California Environmental Protection Agency, Office of Environmental Health Hazard Assessment, Air Toxics Hot Spots Program Risk Assessment Guidelines, Part IV: Technical Support Document for Exposure Assessment and Stochastic Analysis, September 2000. California Environmental Protection Agency, Office of Environmental Health Hazard Assessment, Air Toxics Hot Spots Program Risk Assessment Guidelines, Part III: The Determination of Chronic Reference Exposure Levels for Airborne Toxicants, February 23, 2000. California Environmental Protection Agency, Office of Environmental Health Hazard Assessment, Air Toxics Hot Spots Program Risk Assessment Guidelines, Part II: Technical Support Document for Describing Available Cancer Potency Factors, updated August 2003. California Environmental Protection Agency, Office of Environmental Health Hazard Assessment, Air Toxics Hot Spots Program Guidance Manual for Preparation of Health Risk Assessments, August 2003.

³¹ U.S. Environmental Protection Agency, Office of Emergency and Remedial Response, Risk Assessment Guidance for Superfund, Vol. I, Human Health Evaluation Manual (Part A), Interim Final, EPA/540/1-89/002, December, 1989.

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health risk assessments for construction activities included in the SAIP Final EIR,³² CFTP Final EIR,³³ LAX Bradley West Project Final EIR,³⁴ LAX Central Utility Plant Replacement Project (CUP-RP) Final EIR,³⁵ and LAX Master Plan Final EIR.³⁶ This list of TAC was further refined to include only TAC with chronic Reference Exposure Levels (RELs), acute RELs, and cancer potency values identified by the California OEHHA. The resulting list of TAC of concern evaluated in this HHRA is provided in **Table 4.1-1**.

Exposure Assessment

The exposure assessment includes identification of exposed populations, selection of exposure pathways, and calculation of exposure concentrations and total dose. For this HHRA, the following receptors were identified for quantitative evaluation: non-Project workers (on and off-airport), off-airport resident adults, off-airport resident children, and off-airport school children. In addition, quantification of exposure to on-site Project workers was conducted for comparison to California Occupational Safety and Health thresholds. An exposure pathway consists of four basic parts: a TAC source (e.g., diesel engines); a release mechanism (e.g., diesel engine exhaust); a means of transport from the release point to the receptor (e.g., local winds); and a route of exposure (e.g., inhalation). Numerous possibly complete exposure pathways exist for receptors at or near LAX, but most are anticipated to make minimal to negligible contribution to total risks and hazards. For this HHRA, the inhalation pathway is the most important complete exposure pathway, contributing the majority of risk associated with the proposed Project, and was therefore quantitatively evaluated for all receptors. Exposure concentrations were developed from construction TAC emissions (based on PM10 and VOC emissions) incorporated into air dispersion modeling with AERMOD.

In the LAX Master Plan EIS/EIR and other tiered LAX EIRs (SAIP EIR, CFTP EIR, Bradley West Project EIR, and CUP-RP EIR), average long-term daily intakes were used to estimate risk and hazards for cancer and non-cancer risk assessment in accordance with Risk Assessment Guidance for Superfund (RAGS), Part A³⁷ (hereafter referred to as RAGS Part A). RAGS Part A methodology estimated intake of a contaminant in air via inhalation using inhalation rate and body weight. This calculation resulted in an exposure expressed as milligrams of chemical per kilogram of body weight per day (mg/kg-day). This estimate was then used along with a slope factor that predicted the risk of cancer for each mg/kg-day intake to provide a cancer risk estimate. In 2009, the EPA released RAGS, Part F³⁸ (hereafter referred to as RAGS Part F),

³² City of Los Angeles, Los Angeles World Airports, Final Environmental Impact Report for Los Angeles International Airport (LAX) South Airfield Improvement Project, August 2005.

³³ City of Los Angeles, Los Angeles World Airports, Final Environmental Impact Report for Los Angeles International Airport (LAX) Crossfield Taxiway Project, January 2009.

³⁴ City of Los Angeles, Los Angeles World Airports, Final Environmental Impact Report for Los Angeles International Airport (LAX) Bradley West Project, September 2009.

³⁵ City of Los Angeles, Los Angeles World Airports, Draft Environmental Impact Report for Los Angeles International Airport (LAX) Central Utility Plant Replacement Project, October 2009.

³⁶ City of Los Angeles, Final Environmental Impact Report for Los Angeles International Airport (LAX) Proposed Master Plan Improvements, April 2004.

³⁷ U.S. Environmental Protection Agency, Office of Emergency and Remedial Response, Risk Assessment Guidance for Superfund, Vol. I, Human Health Evaluation Manual (Part A), Interim Final, EPA/540/1-89/002, December, 1989.

³⁸ U.S. Environmental Protection Agency, Office of Emergency and Remedial Response, Risk Assessment Guidance for Superfund, Vol. I, Human Health Evaluation Manual (Part F, Supplemental Guidance for Inhalation

Table 4.1-1

Toxic Air Contaminants (TAC) of Concern for the Proposed Project

Toxic Air Contaminant	Type
Acetaldehyde	VOC
Acrolein	VOC
Benzene	VOC
1,3-Butadiene	VOC
Ethylbenzene	VOC
Formaldehyde	VOC
n-Hexane	VOC
Methyl alcohol	VOC
Methyl ethyl ketone	VOC
Propylene	VOC
Styrene	VOC
Toluene	VOC
Xylene (total)	VOC
Naphthalene	PAH
Arsenic	PM-Metal
Cadmium	PM-Metal
Chromium VI	PM-Metal
Copper	PM-Metal
Lead	PM-Metal
Manganese	PM-Metal
Mercury	PM-Metal
Nickel	PM-Metal
Selenium	PM-Metal
Vanadium	PM-Metal
Diesel PM	Diesel Exhaust
Chlorine	PM-Inorganics
Silicon	PM-Inorganics
Sulfates	PM-Inorganics

Notes:

PAH = Polycyclic aromatic hydrocarbons

PM = Particulate matter

VOC = Volatile organic compounds

Sources: CDM Smith 2013

which recommends that risk assessors should use inhalation dosimetry methodology. In this approach, the concentration of the chemical in air is the exposure metric (e.g., milligrams per cubic meter, mg/m^3), and risks are estimated using a unit risk that predicts cancer risk for each mg/m^3 . Inhalation rate and body weight are no longer used in the calculations. The health risk assessment conducted for this project used the RAGS Part F methodology. The exposure pathway parameters used to estimate inhalation pathway exposure dose are presented in Appendix B.3 of this EIR.

Risk Assessment), Final, EPA-540-R-070-002, OSWER 9285.7-82, January 2009.

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Toxicity Assessment

Risks from exposure to TAC are calculated by combining estimates of potential exposure with chemical-specific toxicity criteria developed by CalEPA, USEPA, or both. The toxicity assessment initially examined quantitative toxicity criteria for TAC selected from regulatory lists.

A toxicity assessment for TAC of concern was conducted for the LAX Master Plan Final EIR, as described in Technical Report 14a of that EIR. Conclusions of that assessment have not changed materially. Both the CalEPA OEHHA, and USEPA continually update toxicity values as new studies are completed, and all toxicity information provided in Technical Report 14a was reviewed and updated as appropriate by researching recent information available from USEPA, CalEPA OEHHA, World Health Organization (WHO), and Agency for Toxic Substance and Disease Registry (ATSDR).

Acute RELs developed by the State of California were used in the characterization of potential acute non-cancer health hazards associated with the proposed Project. Other sources of acute toxicity criteria (e.g., ATSDR) were also evaluated as a source of acute criteria as part of this re-assessment of toxicity information.

Cancer unit risk factors, cancer slope factors, and chronic RELs developed by the State of California were used to characterize cancer risks and chronic non-cancer health hazards associated with longer term inhalation of emissions from construction activities. Both types of toxicity criteria are based on studies of chronic exposure in animals or, in some cases, to people. Acute RELs developed by the State of California were used in characterization of potential hazards associated with short-term exposure (usually from exposures on the order of 1-hour). RELs are based on the most sensitive, relevant, adverse health effect reported in the medical and toxicological literature. Since margins of safety³⁹ are incorporated to address data gaps and uncertainties, exceeding an REL does not automatically indicate an adverse health impact. Acute RELs are applicable to all receptors, children and adults, and hazards are the ratio of estimated or measured concentrations and the REL. Cancer unit risk factors, cancer sloped factors, chronic RELs, and acute RELs are presented in Appendix B.3 of this EIR.

Risk Characterization

Concentrations of TAC of concern in air, locations of potentially exposed populations, including locations for MEI exposure scenarios (worker, resident, student), and toxicity criteria were used to calculate incremental human health risks associated with the proposed Project. Risks for people recreating near the airport would be lower than those for workers, residents, and students, and no risks were calculated for this population.

For the proposed Project, grid points were analyzed along the airport fence-line and within the study area. These locations are anticipated to represent MEI, based on previous dispersion modeling for LAX. Concentrations of each TAC at these nodes were used in calculating cancer risk, and chronic and acute non-cancer health hazard estimates. These calculations were used

³⁹ Margin of safety is a ratio of the no-observed-effect level to the estimated exposure dose. Margins of safety are incorporated in the development of toxicity values to account for differences in dose-response among individuals. For example, the same dose of alcohol may have a greater effect on a woman than a man, not only because a woman is smaller in body size but also because men and women metabolize alcohol at different rates.

to identify locations with maximum cancer risks and maximum non-cancer health hazards and serve as the basis for significance determinations.

MEI estimates were partially land use specific. On-airport locations were used to identify commercial and on-worker locations. For off-airport locations, all land uses and associated receptors (commercial, residential, etc.) were evaluated for all fence-line grid points under the assumption that such land use could be present now or in the future. Risk and hazard calculations were based on receptors appropriate for land use designations. For example, at each grid node, exposure parameters appropriate for adult commercial workers, for both adult and child residential receptors and for school children were used to estimate exposures, cancer risks, and non-cancer health hazards at that grid point location.

Fence-line concentrations of TAC represent the highest or near-highest concentrations that could be considered "off-airport." Concentrations in areas where people actually work, live, or attend school are predicted to be lower. Thus, impacts for residents, workers, and school children are likely to provide protective estimates for risks and hazards that may occur as a result of implementing the proposed Project.

Cancer risks were estimated by multiplying exposure estimates for carcinogenic chemicals by corresponding cancer slope factors. Results were risk estimates expressed as the odds of developing cancer. Cancer risks were based on an exposure duration of 70 years.

Chronic non-cancer health hazard estimates were calculated by dividing exposure estimates by reference doses. Reference doses are estimates of highest exposure levels that would not cause adverse health effects even if exposures continue over a lifetime. The ratio of exposure concentration to reference concentration is termed the hazard quotient (HQ). A HQ greater than one indicates an exposure concentration greater than that considered safe. A ratio that is less than one indicates that Project-related (incremental) exposure was less than the highest exposure level that would not cause an adverse health effect and, hence, no impact to human health would be expected. Risks or odds of adverse effects cannot be estimated using reference doses. However, because reference concentrations are developed in a conservative fashion, HQs only slightly higher than one are generally accepted as being associated with low risks (or even no risk) of adverse effects, and that potential for adverse effects increases as the HQ gets larger.

Impacts of exposure to multiple chemicals were accounted for by adding cancer risk estimates for exposure to all carcinogenic chemicals, and by adding estimated HQs for non-carcinogenic chemicals that affect the same target organ or tissue in the body. Addition of HQs for TAC that produce effects in similar organs and tissues results in a Hazard Index (HI) that reflects possible total hazards. Several TAC have effects on the respiratory system including acetaldehyde, acrolein, formaldehyde, xylenes, and diesel particulates. Non-cancer health hazards for the proposed Project were calculated for the respiratory system which accounted for essentially all potential non-cancer health hazards.

Acute non-cancer risk estimates were calculated by dividing estimated maximum 1-hour TAC concentrations in air by acute RELs. An acute REL is a concentration in air below which adverse effects are unlikely for people, including sensitive subgroups, exposed for a short time on an intermittent basis. In most cases, RELs are estimated on the basis of a 1-hour exposure duration. RELs do not distinguish between adults and children, but are established at levels that are considered protective of sensitive populations. Since margins of safety are

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incorporated to address data gaps and uncertainties, exceeding the REL does not automatically indicate an adverse health impact.

Short-term concentrations for TAC associated with Project construction were estimated using the same air dispersion model (AERMOD) used to estimate annual average concentrations, but with the model option for 1-hour maximum concentrations selected. These concentrations represent the highest predicted concentrations of TAC. Acute non-cancer health hazards were then estimated at each grid point by dividing estimated maximum 1-hour TAC concentrations in air by acute RELs. A hazard index equal to or greater than 1, the threshold of significance for acute non-cancer health impacts, indicates some potential for adverse acute non-cancer health impacts. A hazard index less than 1 suggests that adverse acute non-cancer health impacts are not expected.

To determine whether releases of TAC during airport construction for the proposed Project would be significant, incremental human health risks for the proposed Project were compared to appropriate thresholds of significance identified in SCAQMD or CalEPA guidance or policy. The comparisons to off-site risks will use the SCAQMD risk thresholds, while on-site occupational exposures will be compared to occupational thresholds developed by CalEPA (specifically by California Occupational Safety and Health Administration (CalOSHA)).

4.1.2.2 Operations

The operational air quality assessment was conducted in accordance with the *L.A. CEQA Thresholds Guide*⁴⁰ and the SCAQMD's *CEQA Air Quality Handbook*⁴¹ for evaluating air quality impacts. The methodology for determining baseline conditions, estimating airport-related emissions, and assessing the significance of impacts followed standard practices for determining impacts of aviation sources that have been found acceptable by USEPA, CARB, and SCAQMD; this methodology is summarized below.

Regional and localized operational air quality impacts were assessed based on the net new incremental increase in emissions compared to existing conditions. In accordance with the *CEQA Guidelines* and the *L.A. CEQA Thresholds Guide*, the impacts of the proposed Project were compared to baseline conditions to determine significance under CEQA.

4.1.2.2.1 Emission Source Types

The incremental increase in regional daily air pollutant emissions of CO, VOC, NO_x, SO₂, PM₁₀, and PM_{2.5} were compared to the existing airport uses. Sources of emissions are generally divided into two categories: mobile and stationary. Examples of LAX-related mobile sources include aircraft, ground support equipment (GSE), and on-road motor vehicles. Examples of LAX-related stationary sources include hangar utility equipment such as air conditioning and water heating/cooling units.

⁴⁰ City of Los Angeles, *L.A. CEQA Thresholds Guide*, (2006) B-1.

⁴¹ South Coast Air Quality Management District, *CEQA Air Quality Handbook*, 1993, as updated by SCAQMD *Air Quality Significance Thresholds*, March 2011, Available: <http://www.aqmd.gov/CEQA/handbook/signthres.pdf>.

Mobile Sources

As discussed in Chapter 2, *Project Description*, the intent of the proposed Project is to consolidate, relocate, and modernize some of the existing aircraft maintenance facilities at LAX consistent with the LAX Master Plan. Operation of the proposed Project would not result in additional or increased operational or maintenance activities and would not result in net new trips to LAX. The proposed Project is not expected to increase the number of run-ups from aircraft engine testing compared to the current condition. Improvements associated with the LAX Master Plan would consolidate, relocate, and modernize existing maintenance operations and run-ups in the western area of LAX. The proposed Project would relocate an estimated 60 annual (five monthly) existing run-ups in the western area of LAX to the Project site, also located in the western area of LAX. Thus, the proposed Project would not result in net new emissions from run-ups. The proposed Project would not increase passenger or gate capacity and would not increase flights and/or aircraft operations at LAX. Thus, on-road motor vehicle emissions were not included in the inventory, since there would be no new vehicle trips associated with the proposed Project. In addition, emissions from aircraft landing and takeoff operations (LTO) would not increase and were not included in this inventory. The future operation of the proposed Project would not result in long-term operational changes to traffic activity and traffic flows within the airport study area as the proposed Project would not increase the number of employees or airline passengers traveling to/through LAX.

However, compared to baseline conditions, the distance between the terminal gates and maintenance area is further under the proposed Project. Aircraft being maintained at the proposed Project facilities would need to taxi or be towed further; thus, some incremental emissions would be generated from either aircraft engines for those taxiing or from the aircraft tugs that tow the aircraft to and from maintenance.⁴² The use of the existing maintenance areas that would be replaced with the proposed Project uses were reviewed, and the following assumptions and methodology was developed to calculate these incremental emissions:

- On a daily basis, 26 aircraft would move between the gates and the maintenance areas:
 - 20 aircraft would be towed per day, using a towbarless aircraft tractor represented by a model year 2005, 400 HP wide body aircraft tug, at an average speed of 15 miles per hour (mph); and
 - 6 aircraft per day would taxi at an average speed of 17 mph. These aircraft were represented by a Boeing 737-300 with CFM56-3-B1 engines, a Boeing 757-300 with RB211-535E4B Phase 5 engines, and a Boeing 767-300 with CF6-80A2 engines. For each pollutant, the engine with the highest emission factor was assumed for all 6 daily aircraft movements.
- Incremental distances (proposed Project minus baseline) ranged from 1.0 to 2.4 miles, one way.
- Aircraft engine emission factors were obtained from FAA's Emissions and Dispersion Modeling System (i.e., EDMS model), version 5.1.4.

⁴² As discussed in Section 5.6.2, the anticipated increase in aircraft taxiing distances is not an exclusive outcome of the proposed Project, as the future development of new aircraft maintenance facilities in the southwest portion of the airport, in areas proximate to the Project site, is contemplated in the LAX Master Plan.

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- Aircraft tug emission factors and load factors were obtained from CARB's OFFROAD 2011 and OFFROAD 2007⁴³ emission models.
- The modeling of emissions associated with towing activities is based on the use of diesel-fueled GSE, which provides for a conservative analysis. LAX has committed to converting GSE to low and ultra-low emission technology (e.g., electric, fuel cell, and other future low-emission technologies). The program to convert the LAX GSE fleet is currently being implemented. Thus, future actual emissions associated with towing are likely to be lower as this program is implemented.

Stationary Sources

While the proposed Project would develop the site with taxiways and aircraft parking apron areas, maintenance hangars, and related facilities, and consolidate and modernize existing aircraft maintenance activities, these activities already occur at LAX. Since the activities that would occur in the new modernized maintenance area already generate emissions through current activities, any net change in such emissions due to their relocation to the site would be negligible in comparison to the emissions that occur from existing maintenance activities. For the purposes of this assessment, the proposed aircraft maintenance hangar building is assumed to result in no net new (no additional) emissions. Therefore, no incremental stationary source emissions were included in the operational impact analysis.

4.1.2.2.2 Localized Operations

Traffic-congested roadways and intersections have the potential to generate localized high levels of CO. CO is produced in greatest quantities from vehicle combustion and is usually concentrated at or near ground level because it does not readily disperse into the atmosphere.

As stated previously, existing maintenance would be consolidated and replaced with new maintenance facilities; therefore, operation of the proposed Project would not result in additional or increased operational or maintenance activities and would not result in net new trips to LAX. The SCAQMD recommends an evaluation of potential localized CO impacts when vehicle to capacity (V/C) ratios are increased by two percent or more at intersections with a level of service (LOS) of C or worse or when LOS declines from A through C to D or worse. The proposed Project would not cause an increase in vehicular traffic compared to existing conditions and would not result in long-term operational changes to traffic activity and traffic flows within the airport study area. Therefore, a CO hotspots modeling analysis is not required and is not included in this assessment as the proposed Project would not cause or contribute to the formation of CO hotspots.

The on-site portion of daily emissions from the sources described above would not result in localized effects at off-site sensitive receptors. Operation of the proposed Project would not result in additional or increased operational or maintenance activities at LAX. The Project is not expected to increase the number of run-ups from aircraft engine testing compared to the current condition and would not result in net new emissions from run-ups. As discussed previously, the Project would relocate a limited number of existing run-ups (i.e., an estimated 60 annual or five

⁴³ OFFROAD 2007 emission factors were used in the greenhouse gas analysis as CARB's 2011 Inventory Model for Off-Road Diesel Equipment does not provide emission factors for GHG emissions (see Chapter 4.2, *Greenhouse Gas Emissions*, of this EIR).

monthly) in the western area of LAX to the Project site, also located in the western area of LAX. In addition, the future operation of the proposed Project would not result in long-term operational changes to traffic activity and traffic flows within the airport study area as, in the long-term, the proposed Project would not increase the number of employees or airline passengers traveling to/through LAX. Only the difference in travel distance for towing or taxiing aircraft to the maintenance area(s) changes between the existing conditions and the proposed Project. Therefore, impacts will be determined based on the net new emissions from taxiing/towing emissions associated with this incremental increase in distance between the gates and the Project area.

4.1.2.2.2 Toxic Air Contaminants

The operational health risk impacts due to potential exposure to TAC were evaluated using SCAQMD's Tier 2 methodology and calculator.⁴⁴ TAC emissions were developed from operational VOC and PM10 emissions calculated as described in the Mobile Source methodology under Section 4.1.2.2.1. The speciated TAC emissions were based on CARB Organic Speciation Profile Nos. 818 (Diesel Equipment) and 5861 (Aircraft Exhaust - Jet Fuel); and PM Speciation Profile Nos. 6159 (Offroad Diesel Vehicle Exhaust – 2015) and 1413 (Aircraft Jet Fuel – CFM56-3B).

4.1.2.3 Odor Impacts (Construction and Operations)

Potential odor impacts were evaluated by conducting a screening-level analysis; if necessary this would be followed by a more detailed analysis (i.e., dispersion modeling). The screening-level analysis consisted of reviewing the Project site plan and proposed Project elements to identify new or modified odor sources. If it is determined that the proposed Project would introduce a potentially significant new odor source, or significantly modify an existing odor source, then downwind sensitive receptor locations would be identified and site-specific dispersion modeling conducted to determine proposed Project impacts.

4.1.3 Existing Conditions

4.1.3.1 Climatological Conditions

The airport is located within the Basin, a 6,745 square-mile area encompassing all of Orange County and the urban, non-desert portions of Los Angeles, Riverside, and San Bernardino Counties. The meteorological conditions at the airport are heavily influenced by the proximity of the airport to the Pacific Ocean to the west and the mountains to the north and east. This location tends to produce a regular daily reversal of wind direction: onshore (from the west) during the day and offshore (from the east) at night. Comparatively warm, moist Pacific air masses drifting over cooler air resulting from coastal upwelling of cooler water often form a bank of fog that is generally swept inland by the prevailing westerly (i.e., from the west) winds. The "marine layer" is generally 1,500 to 2,000 feet deep, extending only a short distance inland and rising during the morning hours producing a deck of low clouds. The air above is usually

⁴⁴ South Coast Air Quality Management District (SCAQMD). 2012. Risk Assessment Tool for Rule 1401 and 212, Version 7.0. http://www.aqmd.gov/permit/r1401_risk_assessment.htm. Accessed August 2013.

4.1 Air Quality

relatively warm, dry, and cloudless. The prevalent temperature inversion in the Basin tends to prevent vertical mixing of air through more than a shallow layer.

A dominating factor in the weather of California is the semi-permanent high-pressure area of the North Pacific Ocean. This pressure center moves northward in summer, holding storm tracks well to the north, and minimizing precipitation. Changes in the circulation pattern allow storm centers to approach California from the southwest during the winter months and large amounts of moisture are carried ashore. The Los Angeles region receives on average 10 to 15 inches of precipitation per year, of which 83 percent occurs during the months of November through March. Thunderstorms are light and infrequent, and on very rare occasions, trace amounts of snowfall have been reported at the airport.

The annual minimum mean, maximum mean, and overall mean temperatures at the airport are 55 degrees Fahrenheit (°F), 70°F, and 63°F, respectively. The prevailing wind direction at the airport is from the west-southwest with an average wind speed of roughly 6.4 knots (7.4 mph or 3.3 meters per second [m/s]). Maximum recorded gusts range from 27 knots (31 mph or 13.9 m/s) in July to 54 knots (62 mph or 27.8 m/s) in March. The monthly average wind speeds range from 5.7 knots (6.5 mph or 2.9 m/s) in December to 7.4 knots (8.5 mph or 3.8 m/s) in April.⁴⁵

4.1.3.2 Regulatory Context

Air quality is regulated by federal, state, and local laws. In addition to rules and standards contained in the federal Clean Air Act (CAA) and the California Clean Air Act (CCAA), air quality in the Los Angeles region is subject to the rules and regulations established by CARB and SCAQMD with oversight provided by the USEPA, Region IX.

4.1.3.2.1 Federal

The USEPA is responsible for implementation of the CAA. The CAA was first enacted in 1970 and has been amended numerous times in subsequent years (1977, 1990, and 1997). Under the authority granted by the CAA, USEPA has established NAAQS for the following criteria pollutants: O₃, NO₂, CO, SO₂, PM₁₀, PM_{2.5}, and Pb. **Table 4.1-2** presents the NAAQS that are currently in effect for criteria air pollutants. As discussed previously, O₃ is a secondary pollutant, meaning that it is formed from reactions of “precursor” compounds under certain conditions. The primary precursor compounds that can lead to the formation of O₃ are VOCs and NO_x.

The CAA also specifies future dates for achieving compliance with the NAAQS and mandates that states submit and implement a State Implementation Plan (SIP) for local areas not meeting these standards. These plans must include pollution control measures that demonstrate how the standards will be met. The 1990 amendments to the CAA identify specific emission reduction goals for areas not meeting the NAAQS. These amendments require both a demonstration of reasonable further progress toward attainment and incorporation of additional sanctions for failure to attain or meet interim milestones.

⁴⁵ Ruffner, J.A., Climates of the States: National Oceanic and Atmospheric Administration Narrative Summaries, Table, and Maps for Each State with Overview of State Climatologist Programs, Third Edition, Volume 1: Alabama-New Mexico, Gale Research Company, 1985.

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Table 4.1-2

National and California Ambient Air Quality Standards

Pollutant	Averaging Time	CAAQS	NAAQS	
			Primary	Secondary
Ozone (O ₃)	8-Hour	0.070 ppm (137 µg/m ³)	0.075 ppm (147 µg/m ³)	Same as Primary
	1-Hour	0.09 ppm (180 µg/m ³)	N/A	N/A
Nitrogen Dioxide (NO ₂)	Annual	0.030 ppm (57 µg/m ³)	0.053 ppm (100 µg/m ³)	Same as Primary
	1-Hour	0.18 ppm (339 µg/m ³)	0.100 ppm (188 µg/m ³)	N/A ¹
Carbon Monoxide (CO)	8-Hour	9.0 ppm (10 mg/m ³)	9 ppm (10 mg/m ³)	N/A
	1-Hour	20 ppm (23 mg/m ³)	35 ppm (40 mg/m ³)	N/A
Sulfur Dioxide (SO ₂) ²	Annual	N/A	0.030 ppm (80 µg/m ³)	N/A
	24-Hour	0.04 ppm (105 µg/m ³)	0.14 ppm (365 µg/m ³)	N/A
	3-Hour	N/A	N/A	0.5 ppm (1,300 µg/m ³)
	1-Hour	0.25 ppm (655 µg/m ³)	0.075 ppm (196 µg/m ³)	N/A ¹
Respirable Particulate Matter (PM ₁₀)	AAM	20 µg/m ³	N/A	N/A
	24-Hour	50 µg/m ³	150 µg/m ³	Same as Primary
Fine Particulate Matter (PM _{2.5})	AAM	12 µg/m ³	12.0 µg/m ³	15.0 µg/m ³
	24-Hour	N/A	35 µg/m ³	Same as Primary
Lead (Pb)	Rolling 3-month Average	N/A	0.15 µg/m ³	Same as Primary
	Monthly	1.5 µg/m ³	N/A	N/A
Visibility Reducing Particles	8-Hour (State)	Extinction of 0.23 per km	N/A	N/A
	8-Hour (Lake Tahoe)	Extinction of 0.07 per km	N/A	N/A
Sulfates	24-Hour	25 µg/m ³	N/A	N/A

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Table 4.1-2

National and California Ambient Air Quality Standards

Pollutant	Averaging Time	CAAQS	NAAQS	
			Primary	Secondary
Hydrogen Sulfide	1-Hour	0.03 ppm (42 µg/m ³)	N/A	N/A
Vinyl Chloride	24-Hour	0.01 ppm (26 µg/m ³)	N/A	N/A

Notes:

NAAQS = National Ambient Air Quality Standards
CAAQS = California Ambient Air Quality Standards
ppm = parts per million (by volume)
µg/m³ = micrograms per cubic meter
N/A = Not applicable
mg/m³ = milligrams per cubic meter
AAM = Annual arithmetic mean

¹ On March 20, 2012, the USEPA took final action to retain the current secondary NAAQS for NO₂ (0.053 ppm averaged over a year) and SO₂ (0.5 ppm averaged over three hours, not to be exceeded more than once per year) (77 Federal Register [FR] 20264).

² On June 22, 2010, the 1-hour SO₂ NAAQS was updated and the previous 24-hour and annual primary NAAQS were revoked. The previous 1971 SO₂ NAAQS (24-hour: 0.14 ppm; annual: 0.030 ppm) remain in effect until one year after an area is designated for the 2010 NAAQS (75 FR 35520). On August 5, 2013, the USEPA finalized area designations for the 2010 SO₂ primary NAAQS. The USEPA designated as nonattainment most areas in locations where existing monitoring data from 2009 to 2011 indicate violations of the 1-hour SO₂ NAAQS. The USEPA intends to address in separate future actions the designations for all other areas, including California, for which it is not yet prepared to issue designations (78 FR 47191).

Source: California Air Resources Board, Ambient Air Quality Standards Chart, Available: <http://www.arb.ca.gov/research/aaqs/aaqs2.pdf>, accessed April 12, 2013.

LAX is located in the Basin, which is designated as a federal nonattainment area for O₃, PM_{2.5}, and Pb. Nonattainment designations under the CAA for O₃ are classified into levels of severity based on the level of concentration above the standard, which is also used to set the required attainment date. The Basin was reclassified on September 22, 1998 to attainment/maintenance for NO₂ and on June 11, 2007 for CO since concentrations of these pollutants dropped below the NO₂ and CO NAAQS for several years. More recently, the Basin was reclassified to attainment/maintenance for PM₁₀ on July 26, 2013.⁴⁶ Attainment/maintenance means that the pollutant is currently in attainment and that measures are included in the SIP to ensure that the NAAQS for that pollutant are not exceeded again (maintained). The attainment status with regard to the NAAQS is presented in Table 4.1-2 for each criteria pollutant.

⁴⁶ U.S. Environmental Protection Agency, "Approval and Promulgation of Implementation Plans; Designation of Areas for Air Quality Planning Purposes; California; South Coast Air Basin; Approval of PM₁₀ Maintenance Plan and Redesignation to Attainment for the PM₁₀ Standard," *Federal Register*, Vol. 78, No. 123, June 26, 2013, pp. 38223-38226.

4.1.3.2.2 State

The CCAA, signed into law in 1988, requires all areas of the state to achieve and maintain the CAAQS by the earliest practicable date. The CAAQS are generally as stringent as, and in several cases more stringent than, the NAAQS; however, in the case of short-term standards for NO₂ and SO₂, the CAAQS are less stringent than the NAAQS. The currently applicable CAAQS are presented with the NAAQS in Table 4.1-2. The attainment status with regard to the CAAQS is presented in **Table 4.1-3** for each criteria pollutant. CARB has been granted jurisdiction over a number of air pollutant emission sources that operate in the state. Specifically, CARB has the authority to develop emission standards for on-road motor vehicles, as well as for stationary sources and some off-road mobile sources. In turn, CARB has granted authority to the regional air pollution control and air quality management districts to develop stationary source emission standards, issue air quality permits, and enforce permit conditions.

Table 4.1-3

South Coast Air Basin Attainment Status

Pollutant (Status as of December 28, 2012)	National Standards	California Standards
Ozone	Nonattainment - Extreme	Nonattainment
Carbon Monoxide	Attainment - Maintenance	Attainment
Nitrogen Dioxide	Attainment - Maintenance	Nonattainment
Sulfur Dioxide	Attainment	Attainment
PM10	Attainment - Maintenance	Nonattainment
PM2.5	Nonattainment	Nonattainment
Lead	Nonattainment	Nonattainment

Sources: California Air Resources Board, Area Designations Maps/State and National, Available: <http://www.arb.ca.gov/design/adm/adm.htm>, accessed September 12, 2013; USEPA, The Green Book Nonattainment Areas for Criteria Pollutants, Available: <http://www.epa.gov/oaqps001/greenbk/index.html>, accessed September 12, 2013.

Toxic Air Contaminant Regulations

The CARB's statewide comprehensive air toxics program was established in the early 1980's. The Toxic Air Contaminant Identification and Control Act (Assembly Bill [AB] 1807) created California's program to reduce exposure to air toxics. The SCAQMD has jurisdiction over the air quality of the Basin and has released a draft final Basin-wide air toxics study (MATES III, Multiple Air Toxics Exposure Study, May 2008). As part of the MATES III study, a series of maps showing regional trends in estimated outdoor inhalation cancer risk from toxic emissions was prepared and indicates that the City of Los Angeles is exposed to an inhalation cancer risk of 500 – 3,692 persons per million. These risk maps depict inhalation cancer risk due to modeled outdoor TAC pollutant levels, and do not account for cancer risk due to other types of exposure. The largest contributors to inhalation cancer risk are diesel engines.

4.1 Air Quality

In September 1987, the California Legislature established the AB 2588 air toxics "Hot Spots" program. It requires facilities to report their air toxics emissions, ascertain health risks, and to notify nearby residents of significant risks. The SCAQMD has determined that the significance criterion for cancer health risks is a ten in one million increase in the chance of developing cancer. The SCAQMD has also adopted a significance criterion for cancer burden. The cancer burden is the estimated increase in the occurrence of cancer cases in a population as a result of exposures to TAC emissions. The SCAQMD has determined that the significance criterion for cancer burden is greater than 0.5 excess cancer cases in areas with an incremental increase in cancer risk greater than or equal to 1 in 1 million. The significance of non-cancer (acute and chronic) risks is evaluated in terms of HI for different endpoints. The SCAQMD threshold for non-cancer risk for both acute and chronic HI is 1.0. In September 1992, the "Hot Spots" Act was amended by Senate Bill 1731 which required facilities that pose a significant health risk to the community to reduce their risk through a risk management plan. Beginning In 2000, the CARB has adopted diesel risk reduction plans and measures to reduce DPM emissions and the associated health risk. These are discussed in more detail in the following section.

California Air Resources Board Air Toxics Control Measure

In 2004, CARB adopted a control measure to limit commercial heavy duty diesel motor vehicle idling in order to reduce public exposure to diesel particulate matter (DPM) and other TAC. The measure applies to diesel-fueled commercial vehicles with gross vehicle weight ratings greater than 10,000 pounds that are licensed to operate on highways, regardless of where they are registered. In general, it prohibits idling for more than 5 minutes at any location.

In addition to limiting exhaust from idling trucks, CARB promulgated emission standards for off-road diesel construction equipment such as bulldozers, loaders, backhoes and forklifts, as well as many other self-propelled off-road diesel vehicles. A CARB regulation that became effective on June 15, 2008, aims to reduce emissions by installation of diesel soot filters and encouraging the replacement of older, dirtier engines with newer emission controlled models. The regulation requires that fleets limit their unnecessary idling to 5 minutes; there are exceptions for vehicles that need to idle to perform work (such as a crane providing hydraulic power to the boom), vehicles being serviced, or in a queue waiting for work. A prohibition against acquiring certain vehicles (e.g., Tier 0 and Tier 1) began on March 1, 2009; however, CARB is not enforcing this part of the regulation until "it receives authorization from USEPA."⁴⁷ Implementation of the fleet averaging emission standards is staggered based on fleet size, with the largest operators to begin compliance in 2014.⁴⁸ By 2020, CARB estimates that DPM will be reduced by 74 percent and smog forming NO_x (an O₃ precursor emitted from diesel engines) by 32 percent, compared to what emissions would be without the regulation.⁴⁹

⁴⁷ Office of Administrative Law, "California Regulatory Notice Register, February 26, 2010," <http://www.oal.ca.gov/res/docs/pdf/notice/9z-2010.pdf>. Accessed March 2013.

⁴⁸ CARB, In-Use Off-Road Diesel Vehicle Regulation, Overview, Revised May 2012, http://www.arb.ca.gov/msprog/ordiesel/faq/overview_fact_sheet_dec_2010-final.pdf. Accessed June 2013.

⁴⁹ CARB, "Emissions and Health Benefits of Regulation for In-Use Off-Road Diesel Vehicles," <http://www.arb.ca.gov/msprog/ordiesel/documents/OFRDDIESELhealthFS.pdf>. Accessed March 2013.

4.1.3.2.3 South Coast Air Quality Management District

SCAQMD has jurisdiction over an area of 10,743 square miles consisting of Orange County and the urban, non-desert portions of Los Angeles, Riverside, and San Bernardino Counties, and the Riverside County portions of the Salton Sea Air Basin and Mojave Desert Air Basin. The Basin is a sub-region of SCAQMD's jurisdiction and covers an area of 6,745 square miles. While air quality in this area has improved, the Basin requires continued diligence to meet air quality standards.

The SCAQMD has adopted a series of Air Quality Management Plans (AQMPs) to meet the CAAQS and NAAQS. SCAQMD and CARB have adopted the 2012 AQMP which incorporates the latest scientific and technological information and planning assumptions, including the 2012-2035 Regional Transportation Plan/Sustainable Communities Strategy (RTP/SCS), and updated emission inventory methodologies for various source categories.⁵⁰ The Final 2012 AQMP was adopted by the AQMD Governing Board on December 7, 2012. Therefore, the 2012 AQMP is the most appropriate plan to use for consistency analysis. The AQMP builds upon other agencies' plans to achieve federal standards for air quality in the Basin. It incorporates a comprehensive strategy aimed at controlling pollution from all sources, including stationary sources, and on-road and off-road mobile sources. The 2012 AQMP builds upon improvements in previous plans, and includes new and changing federal requirements, implementation of new technology measures, and the continued development of economically sound, flexible compliance approaches. In addition, it highlights the significant amount of emission reductions needed and the urgent need to identify additional strategies, especially in the area of mobile sources, to meet all federal criteria pollutant standards within the timeframes allowed under the federal CAA.

The 2012 AQMP's key undertaking is to bring the Basin into attainment with NAAQS for 24-hour PM_{2.5} by 2014. It also intensifies the scope and pace of continued air quality improvement efforts toward meeting the 2023 8-hour O₃ standard deadline with new measures designed to reduce reliance on the CAA Section 182(e)(5) long-term measures for NO_x and VOC reductions. SCAQMD expects exposure reductions to be achieved through implementation of new and advanced control technologies as well as improvement of existing technologies.

The control measures in the 2012 AQMP consist of four components: 1) Basin-wide and Episodic Short-term PM_{2.5} Measures; 2) Contingency Measures; 3) 8-hour O₃ Implementation Measures; and 4) Transportation and Control Measures provided by the Southern California Association of Governments (SCAG). The AQMP includes eight short-term PM_{2.5} control measures, 16 stationary source 8-hour O₃ measures, 10 early action measures for mobile sources and seven early action measures are proposed to accelerate near-zero and zero emission technologies for goods movement related sources, and five on-road and five off-road mobile source control measures. In general, the SCAQMD's control strategy for stationary and mobile sources is based on the following approaches: 1) available cleaner technologies; 2) best management practices; 3) incentive programs; 4) development and implementation of zero-near-zero technologies and vehicles and control methods; and 5) emission reductions from mobile sources.

⁵⁰ <http://www.aqmd.gov/aqmp/2012aqmp/index.htm>

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The SCAQMD also adopts rules to implement portions of the AQMP. At least one of these rules is applicable to the construction phase of the proposed Project. Rule 403 requires the implementation of best available fugitive dust control measures during active construction activities capable of generating fugitive dust emissions from on-site earth-moving activities, construction/demolition activities, and construction equipment travel on paved and unpaved roads. Also, SCAQMD Rule 1113 limits the amount of VOCs from architectural coatings and solvents, which lowers the emissions of odorous compounds.

4.1.3.2.4 Southern California Association of Governments

SCAG is the metropolitan planning organization (MPO) for Los Angeles, Orange, Ventura, Riverside, San Bernardino, and Imperial Counties and serves as a forum for the discussion of regional issues related to transportation, the economy, community development, and the environment. As the federally-designated MPO for the Southern California region, SCAG fulfills federal requirements to research and develop plans for transportation, hazardous waste management, and air quality. Pursuant to California Health and Safety Code 40460(b), SCAG has the responsibility for preparing and approving the portions of the AQMP relating to regional demographic projections and integrated regional land use, housing, employment, and transportation programs, measures and strategies. SCAG is also responsible under the CAA for determining conformity of transportation projects, plans, and programs with applicable air quality plans. With regard to air quality planning, SCAG has prepared the 2012-2035 RTP/SCS, which addresses regional development and growth forecasts.

4.1.3.2.5 Other Related Rules and Policies

In the Basin, the City of Los Angeles, CARB, and the SCAQMD have adopted or proposed additional rules and policies governing the use of cleaner fuels in public vehicle fleets. The City of Los Angeles Policy CF#00-0157 requires that City-owned or operated diesel-fueled vehicles be equipped with particulate traps and that they use ultra-low-sulfur diesel fuel. CARB has adopted a Risk Reduction Plan for diesel-fueled engines and vehicles. The SCAQMD has proposed a series of rules that would require the use of clean fuel technologies in on-road school buses, on-road heavy-duty public fleets, and street sweepers. This analysis includes the use of diesel particulate traps.

4.1.3.3 Existing Ambient Air Quality

In an effort to monitor the various concentrations of air pollutants throughout the Basin, the SCAQMD has divided the region into 38 SRAs in which monitoring stations operate. The monitoring station that is most representative of existing air quality conditions in the Project area is the Southwest Coastal Los Angeles Monitoring Station located at 7201 W. Westchester Parkway (referred to as the LAX Hastings site), less than 0.5-mile from Runway 6L-24R (northernmost LAX runway). This station monitors O₃, CO, SO₂, NO₂, and PM₁₀. The nearest representative monitoring station that monitors PM_{2.5} is the South Coastal Los Angeles County 1 Station, which is located at 1305 E. Pacific Coast Highway (North Long Beach). The most recent data available from these monitoring stations encompassed the years 2008 to 2012. In general, the measured concentrations at these locations are below concentrations measured at many of the other monitors around the Basin. The existing ambient air quality data from these monitoring locations are provided in **Table 4.1-4**.

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Table 4.1-4

**Southwest Coastal Los Angeles and South Coastal Los Angeles County
Monitoring Station Ambient Air Quality Data**

Pollutant^{1,2}	2008	2009	2010	2011	2012
Ozone (O₃)					
Maximum Concentration 1-hr period, ppm	0.086	0.077	0.089	0.078	0.106
Days over State Standard (0.09 ppm)	0	0	0	0	1
Maximum Concentration 8-hr period, ppm	0.075 ³	0.070	0.070	0.067	0.075
Days over State Standard (0.070 ppm)	1	0	0	0	1
Days over Federal Standard (0.075 ppm)	0	0	0	0	0
Nitrogen Dioxide (NO₂)					
Maximum Concentration 1-hr period, ppm	0.094	0.077	0.076	0.098	0.077
98 th Percentile Concentration 1-hr period, ppm	0.076	0.069	0.061	0.065	0.055
Days over State Standard (0.18 ppm)	0	0	0	0	0
Annual Arithmetic Mean (AAM), ppm	0.014	*	0.012	0.013	*
Exceed State Standard? (0.030 ppm)	No	No	No	No	No
Carbon Monoxide (CO)					
Maximum Concentration 1-hr period, ppm	4	3	3	2	3
Exceed State Standard? (20.0 ppm)	0	0	0	0	0
Maximum Concentration 8-hr period, ppm	3	2	2	2	2
Exceed State Standard? (9.0 ppm)	0	0	0	0	0
Sulfur Dioxide (SO₂)					
Maximum Concentration 1-hr period, ppb	15	12	16	8	5
Days over Federal Standard (75 ppb)	0	0	0	0	0
Maximum Concentration 24-hr period, ppb	4	6	2	2	1
Days over State Standard (40 ppb)	0	0	0	0	0
Respirable Particulate Matter (PM₁₀)^{3,4}					
Maximum Concentration 24-hr period, µg/m ³	50	52	37	41	31
Days over State Standard (50 µg/m ³)	0	6	*	0	0
Days over Federal Standard (150 µg/m ³)	0	0	0	0	0
Annual Concentration, µg/m ³	25.5	25.5	*	21.4	19.6
Exceed State Standard? (20 µg/m ³)	Yes	Yes	*	Yes	No

4.1 Air Quality

Table 4.1-4

**Southwest Coastal Los Angeles and South Coastal Los Angeles County
Monitoring Station Ambient Air Quality Data**

Pollutant ^{1,2}	2008	2009	2010	2011	2012
Fine Particulate Matter (PM_{2.5})^{3,4}					
Maximum Concentration 24-hr period, µg/m ³	57.2	63.0	35.0	39.7	49.8
Days over Federal Standard (150 µg/m ³)	8	6	0	2	4
Annual Concentration, µg/m ³	14.1	12.8	10.3	11.3	10.6
Exceed State Standard? (12 µg/m ³)	Yes	Yes	No	No	No

Notes:

µg/m³ = micrograms per cubic meter

PM₁₀ = particulate matter equal to less than 10 microns in diameter

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

ppm = parts per million

ppb = parts per billion

* Insufficient data to determine the value

¹ Monitoring data from the Los Angeles-Westchester Parkway Station (located at 7201 W Westchester Parkway) was used for O₃, CO, NO₂, SO₂, and PM₁₀ concentrations. Monitoring Data from the North Long Beach Station (located at 3648 N Long Beach Boulevard) was used for PM_{2.5} concentrations.

² An exceedance is not necessarily a violation. Violations are defined in 40 Code of Federal Regulations 50 for NAAQS and 17 California Code of Regulations 70200 for CAAQS.

³ State and federal statistics may differ for the following reasons: State statistics are based on California-approved samplers, whereas national statistics are based on samplers using federal reference or equivalent methods. State and national statistics may therefore be based on different samplers. In 2008, the federal method resulted in an ozone concentration of 0.075 ppm (which does not exceed the federal standard); the State method resulted in an ozone concentration of 0.076 and there is 1 day that exceeded the State standard.

⁴ Statistics may include data that are related to an exceptional event.

Source: California Air Resources Board, State and Local Air Quality Monitoring Plan, iAdam, Air Quality Data Statistics, <http://www.arb.ca.gov/adam/netrpt>, 2013; United States Environmental Protection Agency, AirData Monitor Values Report, <http://www.epa.gov/airdata/>, 2013.

The data shows the following pollutant trends (refer to Table 4.1-2 for NAAQS and CAAQS standards):

Ozone - The maximum 1-hour O₃ concentration recorded during the 2008 to 2012 period was 0.106 ppm, recorded in 2012. During this period, the California standard was exceeded in 2008 and 2012. The maximum 8-hour O₃ concentration was 0.075 ppm recorded in 2008 and 2012. The California standards were exceeded twice during the reporting period, while the NAAQS were not violated.

Nitrogen Dioxide - The highest 1-hour NO₂ concentration recorded was 0.098 ppm in 2011. The maximum 98th percentile 1-hour concentration was 0.076 ppm, recorded in 2008. The highest recorded NO₂ annual arithmetic mean was 0.014 ppm recorded in 2008. As shown, the standards were not exceeded during the five-year period.

Carbon Monoxide - The highest 1-hour CO concentration recorded was 4 ppm, recorded in 2008. The maximum 8-hour CO concentration recorded was 3 ppm recorded in 2008. As demonstrated by the data, the standards were not exceeded during the five-year period.

Sulfur Dioxide - The highest 1-hour concentration of SO₂ was 16 parts per billion (ppb) recorded in 2010. The maximum 24-hour concentration was 6 ppb, recorded in 2009. As shown, the standards were not exceeded during the five-year period.

Respirable Particulate Matter (PM₁₀) - The highest recorded 24-hour PM₁₀ concentration recorded was 52 micrograms per cubic meter (µg/m³) in 2009. During the period 2008 to 2012, the CAAQS for 24-hour PM₁₀ was exceeded for 6 days in 2009; the NAAQS was not exceeded. The maximum annual average recorded was 25.5 µg/m³ in 2008 and 2009.

Fine Particulates (PM_{2.5}) - The maximum 24-hour PM_{2.5} concentration recorded was 63 µg/m³ in 2009. The 24-hour NAAQS was exceeded between 0 and 8 days annually from 2008-2012. The maximum annual average recorded was 14.1 µg/m³ in 2008.

Lead (Pb) - The monitored area for the Project site is in compliance with the CAAQS and NAAQS for ambient concentrations of lead. The Los Angeles County portion of the Basin is currently in nonattainment with the California and National standards for Pb primarily as the result of Pb emissions from an industrial lead-acid battery recycling facility in the City of Commerce. The SCAQMD currently maintains a network of three source-oriented Pb monitors around the facility. Monitoring is only conducted periodically elsewhere in the Basin because the primary sources of atmospheric Pb, leaded gasoline and lead-based paint, are no longer available in the Basin.

4.1.3.3.1 Existing Health Risk in the Project Area

In 2008, the SCAQMD released a draft final Basin-wide air toxics study (MATES III, Multiple Air Toxics Exposure Study, May 2008). The MATES III Study represents one of the most comprehensive air toxics studies ever conducted in an urban environment. The Study was aimed at estimating the cancer risk from TAC emissions throughout the Basin by conducting a comprehensive monitoring program, an updated emissions inventory of TACs, and a modeling effort to fully characterize health risks for those living in the Basin. The Study concluded that the average carcinogenic risk from air pollution in the Basin is approximately 1,200 in one million. Mobile sources (e.g., cars, trucks, trains, ships, aircraft, etc.) represent the greatest contributors. Approximately 85 percent of the risk is attributed to DPM emissions, approximately 10 percent to other toxics associated with mobile sources (including benzene, butadiene, and formaldehyde), and approximately 5 percent of all carcinogenic risk is attributed to stationary sources (which include industries and other certain businesses, such as dry cleaners and chrome plating operations).

As part of the MATES III Study, the SCAQMD has prepared a series of maps that show regional trends in estimated outdoor inhalation cancer risk from toxic emissions, as part of an ongoing effort to provide insight into relative risks. The maps' estimates represent the number of potential cancers per million people associated with a lifetime of breathing air toxics (24 hours per day outdoors for 70 years) in parts of the area. The MATES III Los Angeles County map, which is the most recently available map to represent existing conditions near the Project area, is provided in **Figure 4.1-1**. As shown, the estimated lifetime cancer risk from exposure to TACs for those residing within the vicinity of the proposed Project is estimated at 884 cancers per million, while the vast majority of the area surrounding LAX ranges between 500 to 1,200 cancers per million.⁵¹ However, the visual resolution available in the map is 1 kilometer by 1

⁵¹ <http://www3.aqmd.gov/webappl/matesiii/>

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kilometer and, thus, impacts for individual neighborhoods are not discernible on this map. In general, the risk of the Project site is comparable with other areas in the Los Angeles area; the risk from air toxics is lower near the coastline, and increases inland, with higher risks concentrated near large diesel sources (e.g., freeways, airports, and ports).

The CARB also prepares a series of maps that show regional trends in estimated outdoor inhalable cancer risk from air toxic emissions. The Year 2010 Los Angeles County Central map, which is the most recently available map to represent existing conditions, shows cancer risk ranging from 500 to 1,500 cancers per million in the Project area, which is generally consistent with the SCAQMD's risk maps.⁵²

The data from the SCAQMD and CARB provide a slightly different range of risk. This difference is primarily related to the fact that the SCAQMD risk is based on monitored pollutant concentrations and the CARB risk is based on dispersion modeling and emission inventories. Regardless, the SCAQMD and CARB data shows that there is an inherent health risk associated with living in urbanized areas of the Basin, where mobile sources (e.g., cars, trucks, trains, ships, aircraft, etc.) represent the greatest contributors to the overall risk.

4.1.3.4 Sensitive Receptors and Locations

Residential areas are located to the north and south of the Project area and, typical of residential areas in urban settings, are likely to contain populations that are sensitive to air pollution. These population groups include children, elderly, and acutely and chronically ill persons (especially those with cardio-respiratory diseases).

Sensitive land uses in close proximity to the Project site are shown in **Figure 4.1-2** and include the following:

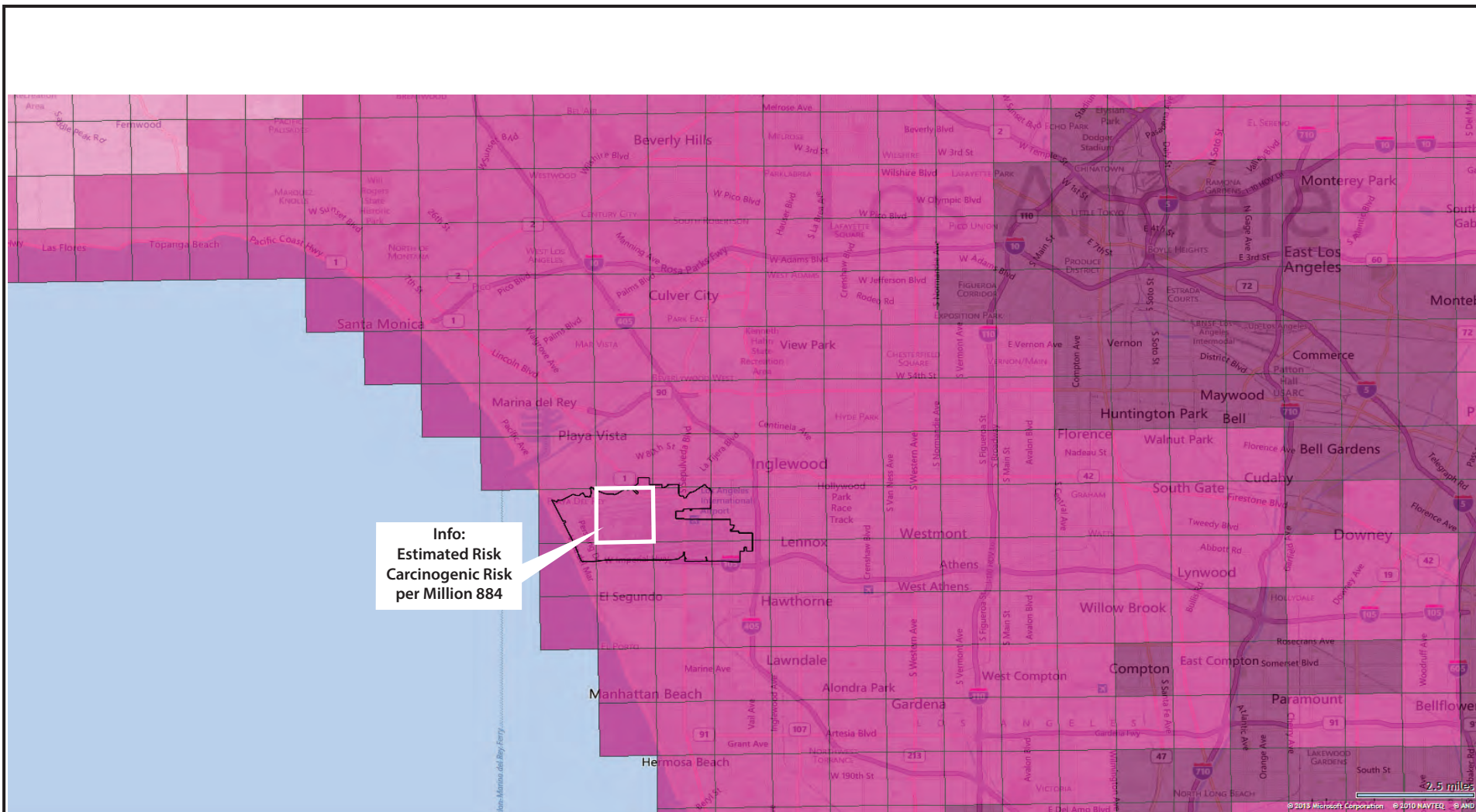
- The El Segundo residential neighborhood located approximately 1,550 feet to the south of the Project site boundary.
- The Playa del Rey/Westchester residential neighborhood located approximately 4,800 feet to the north of the Project site boundary.
- St. Bernard High School located approximately 4,500 feet to the north of the Project site boundary.

4.1.4 Thresholds of Significance

Based on thresholds of significance established by the LAX Master Plan EIS/EIR, which are consistent with those found in the *L.A. CEQA Thresholds Guide*, a significant air quality impact would occur if the direct and indirect changes in the environment that may be caused by the proposed Project would potentially result in one or more of the following future conditions:

- Conflict with or obstruct the implementation of the applicable air quality plan;
- Violate any air quality standard or contribute substantially to an existing or projected air quality violation;

⁵² <http://www.arb.ca.gov/ch/communities/hlthrisk/cncrinhl/rskmapvwtrend.htm.400>



Source: South Coast AQMD -
Multiple Air Toxics Exposure Study III
(Model Estimated Carcinogenic Risk), 2010
Prepared by: PCR Services Corporation, 2013.

Legend

Airport Boundary

Estimated Risk

0	51 to 250	501 to 1200
1 to 25	251 to 500	1201 to 3692
26 to 50		

**West Aircraft Maintenance Area Project
Draft EIR**

**Total Cancer Risk for Los Angeles
International Airport Area**

Figure
4.1-1

4.1 Air Quality

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- Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is nonattainment under an applicable federal or state ambient air quality standard (including releasing emissions which exceed quantitative thresholds for O₃ precursors);
- Expose sensitive receptors to substantial pollutant concentrations; or
- Create objectionable odors affecting a substantial number of people.

The *CEQA Guidelines* (Section 15064.7) provide that, when available, the significance criteria established by the applicable air quality management district or air pollution control district may be relied upon to make determinations of significance. The potential air quality impacts of the Project are evaluated according to thresholds and methodologies developed by the SCAQMD. The SCAQMD has developed CEQA operational and construction-related thresholds of significance for air pollutant emissions from projects proposed in the Basin. Construction and operational emission thresholds are summarized in **Table 4.1-5**. In accordance with the SCAQMD *CEQA Air Quality Handbook*, a significant air quality impact would occur if the estimated incremental increase in construction-related or operations-related emissions attributable to the proposed Project would be greater than the daily emission thresholds presented in Table 4.1-5.

Table 4.1-5

**SCAQMD CEQA Thresholds of Significance for
Air Pollutant Emissions in the South Coast Air Basin**

Pollutant	Mass Emission Thresholds lbs/day	
	Construction	Operation
VOC ^a	75	55
NO _x	100	55
CO	550	550
SO ₂	150	150
PM ₁₀	150	150
PM _{2.5}	55	55
Pb ^b	3	3

Notes:

^a The emissions of VOCs and reactive organic gases are essentially the same for the combustion emission sources that are considered in this EIR. This EIR will typically refer to organic emissions as VOCs.

^b The only source of lead emissions from LAX is from aviation gasoline (AvGas) associated with piston-engine general aviation aircraft; however, due to the low number of piston-engine general aviation aircraft operations at LAX, AvGas quantities are low and emissions from these sources would not be materially affected by the Project.

Source: SCAQMD, 1993, 2011.

4.1 Air Quality

The SCAQMD has also developed operational and construction-related thresholds of significance⁵³ for air pollutant concentration impacts from projects proposed in the Basin. These thresholds are summarized in **Table 4.1-6**. In accordance with the SCAQMD *CEQA Air Quality Handbook*, a significant air quality impact would occur if the estimated incremental ambient concentrations due to construction-related or operations-related emissions would be greater than the concentration thresholds presented in Table 4.1-6. The SCAQMD's recommended thresholds for the evaluation of localized air quality impacts are based on the difference between the maximum monitored ambient pollutant concentrations in the area and the CAAQS or NAAQS.

Therefore, the thresholds depend upon the concentrations of pollutants monitored locally with respect to a Project site. For pollutants that already exceed the CAAQS or NAAQS (e.g., PM₁₀ and PM_{2.5}), the thresholds are based on SCAQMD Rule 403 for construction and Rule 1303, Table A-2 for operations as described in the *Final Localized Significance Threshold Methodology*. The methodology requires that the anticipated increase in ambient air concentrations, determined using a computer-based air quality dispersion model, be compared to localized significance thresholds for PM₁₀, PM_{2.5}, NO₂, and CO.⁵⁴ The significance threshold for PM₁₀ represents compliance with Rule 403 (Fugitive Dust) and Rule 1303 (New Source Review Requirements), while the thresholds for NO₂ and CO represent the allowable increase in concentrations above background levels in the vicinity of the Project site that would not cause or contribute to an exceedance of the relevant ambient air quality standards. The significance thresholds for PM_{2.5} are intended to constrain emissions so as to aid in the progress toward attainment of the ambient air quality standards.⁵⁵ The applicable thresholds are shown below in Table 4.1-6. For the purposes of this analysis, the localized construction emissions resulting from development of the proposed Project are assessed with respect to the thresholds in Table 4.1-6 using detailed dispersion modeling (i.e., AERMOD).

The SCAQMD provides mass rate look-up tables in Appendix C of the *Final Localized Significance Threshold Methodology*, which allows a lead agency to readily determine if the daily emissions for proposed construction or operational activities could result in significant localized air quality impacts that could exceed the concentration-based thresholds in Table 4.1-6. For the purposes of this analysis, the incremental localized operational emissions resulting from the difference in travel distance for towing or taxiing aircraft to the maintenance area(s) between the existing conditions and the proposed Project are assessed with respect to the mass rate look-up tables in Appendix C of the *Final Localized Significance Threshold Methodology*.

Finally, the health risk thresholds established by SCAQMD used in this evaluation are a maximum incremental cancer risk greater than or equal to 10 in one million people, as well as chronic and acute non-cancer hazard indices greater than or equal to 1.

⁵³ South Coast Air Quality Management District, *CEQA Air Quality Handbook*, 1993; as updated by SCAQMD *Air Quality Significance Thresholds*, March 2011, Available: <http://www.aqmd.gov/CEQA/handbook/signthres.pdf>.

⁵⁴ South Coast Air Quality Management District, *Final Localized Significance Threshold Methodology*, (2008).

⁵⁵ South Coast Air Quality Management District, *Final Methodology to Calculate Particulate Matter (PM) 2.5 and PM 2.5 Significance Thresholds*, (2006).

Table 4.1-6

SCAQMD CEQA Thresholds of Significance for Air Pollutant Concentrations in the South Coast Air Basin

Pollutant	Project-Related Concentration Thresholds			
	Averaging Period	Construction	Operation	Project Only or Total ^a
PM ₁₀	Annual	1.0 µg/m ³	1.0 µg/m ³	Project Only
PM ₁₀	24-hour	10.4 µg/m ³	2.5 µg/m ³	Project Only
PM _{2.5}	24-hour	10.4 µg/m ³	2.5 µg/m ³	Project Only
CO	1-hour	20 ppm (23 mg/m ³)	20 ppm (23 mg/m ³)	Total incl. Background
CO	8-hour	9.0 ppm (10 mg/m ³)	9.0 ppm (10 mg/m ³)	Total incl. Background
NO ₂	1-hour (State)	0.18 ppm (339 µg/m ³)	0.18 ppm (339 µg/m ³)	Total incl. Background
NO ₂	1-hour (Federal) ^c	0.100 ppm (188 µg/m ³)	0.100 ppm (188 µg/m ³)	Total incl. Background
NO ₂	Annual (State) ^b	0.030 ppm (57 µg/m ³)	0.030 ppm (57 µg/m ³)	Total incl. Background
SO ₂	1-hour (State)	0.25 ppm (655 µg/m ³)	0.25 ppm (655 µg/m ³)	Total incl. Background
SO ₂	1-hour (Federal) ^d	0.075 ppm (196 µg/m ³)	0.075 ppm (196 µg/m ³)	Total incl. Background
SO ₂	24-hour	0.04 ppm (105 µg/m ³)	0.04 ppm (105 µg/m ³)	Total incl. Background

Notes:

- ^a The concentration threshold for CO and NO₂ is the CAAQS, which is at least as stringent as the NAAQS. The concentration threshold for PM₁₀ and PM_{2.5} has been developed by SCAQMD for construction or operational impacts associated with the proposed Project.
- ^b The state standard is more stringent than the federal standard.
- ^c To evaluate impacts of the proposed Project to ambient 1-hour NO₂ levels, the analysis includes both the current SCAQMD 1-hour state NO₂ threshold and the more stringent revised 1-hour federal ambient air quality standard of 188 µg/m³. To attain the federal standard, the 3-year average of 98th percentile of the daily maximum 1-hour average at a receptor must not exceed 0.100 ppm.
- ^d To attain the SO₂ federal 1-hour standard, the 3-year average of the 99th percentile of the daily maximum 1-hour averages at a receptor must not exceed 0.075 ppm.

Source: SCAQMD, 1993, 2011; USEPA, 2010a (75 FR 6474, Primary National Ambient Air Quality Standards for Nitrogen Dioxide, Final Rule, February 9, 2010) and 2010b (75 FR 35520, Primary National Ambient Air Quality Standard for Sulfur Dioxide, Final Rule, June 22, 2010).

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4.1.5 Applicable LAX Master Plan Commitments and Mitigation Measures

As part of the LAX Master Plan, LAWA adopted commitments and mitigation measures pertaining to air quality (denoted with "AQ") in the LAX Master Plan MMRP. Those Master Plan commitments and mitigation measures were later integrated with additional air quality measures for projects at LAX to form a comprehensive list of LAWA Air Quality Control Measures. Of the LAWA Air Quality Control Measures, three of the control measures are applicable to the proposed Project and were considered in the air quality analysis herein (denoted below as LAX-AQ-1, LAX-AQ-2, and LAX-AQ-4). The transportation-related control measure (denoted as LAX-AQ-3) is not applicable to the proposed Project because the Project does not include ground transportation access components; thus LAX-AQ-3 was not considered in the air quality analysis herein. The portions of the three air quality control measures that would be applicable to the proposed Project are summarized below in **Table 4.1-7**, **Table 4.1-8**, and **Table 4.1-9**.

LAX-AQ-1 – General Air Quality Control Measures

- This measure describes a variety of specific actions to reduce air quality impacts associated with projects at LAX, and applies to all projects. Some components of LAX-AQ-1 are not readily quantifiable, but would be implemented as part of LAX Master Plan projects. Specific measures applicable to the Project are identified in Table 4.1-7.

Table 4.1-7

General Air Quality Control Measures ^a

Measure Number	Measure	Type of Measure	Quantified Emissions Reductions
1a	Watering (per SCAQMD Rule 403 and CalEEMod default) – twice daily.	Fugitive Dust	55% PM ₁₀ and PM _{2.5}
1b	Ultra-low sulfur diesel (ULSD) fuel will be used in construction equipment.	On- and Off-Road Mobile	Assumed in modeling
1c	Post a publicly visible sign with the telephone number and person to contact regarding dust complaints; this person shall respond and take corrective action within 24 hours.	Fugitive Dust	NQ
1d	Prior to final occupancy, the applicant demonstrates that all ground surfaces are covered or treated sufficiently to minimize fugitive dust emissions.	Fugitive Dust	NQ
1e	All roadways, driveways, sidewalks, etc., being installed as part of the project should be completed as soon as possible; in addition, building pads should be laid as soon as possible after grading.	Fugitive Dust	NQ

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Table 4.1-7

General Air Quality Control Measures^a

1f	Prohibit idling or queuing of diesel-fueled vehicles and equipment in excess of five minutes. This requirement will be included in specifications for any LAX projects requiring on-site construction. ^b	On- and Off-Road Mobile	NQ
1g	Require that all construction equipment working on-site is properly maintained (including engine tuning) at all times in accordance with manufacturers' specifications and schedules.	Mobile and Stationary	NQ

NQ = Not Quantified

^a These measures are from LAX Master Plan Mitigation Measure MM-AQ-2, unless otherwise noted.

^b From LAX Master Plan Mitigation Measure MM-AQ-2 and Community Benefits Agreement Measure X.M and LAWA's Design and Construction Handbook, Section 1.31.9.

Source: PCR Services Corporation, 2013

LAX-AQ-2 – LAX Master Plan - Mitigation Plan for Air Quality; Construction-Related Measures

- This measure describes numerous specific actions to reduce fugitive dust emissions and exhaust emissions from on-road and off-road mobile and stationary sources used in construction. Some components of LAX-AQ-2 are not readily quantifiable, but would be implemented as part of LAX Master Plan projects. These control strategies are expected to reduce construction-related emissions. Specific measures applicable to the Project are identified in Table 4.1-8.

Table 4.1-8

Construction-Related Control Measures^a

Measure Number	Measure	Type of Measure	Quantified Emissions Reductions
2a	All diesel-fueled equipment used for construction will be outfitted with the best available emission control devices, where technologically feasible, primarily to reduce emissions of diesel particulate matter (PM), including fine PM (PM _{2.5}), and secondarily, to reduce emissions of NO _x . This requirement shall apply to diesel-fueled off-road equipment (such as construction machinery), diesel-fueled on-road vehicles (such as trucks), and stationary diesel-fueled engines (such as electric generators). (It is unlikely that this measure will apply to equipment with Tier 4	Off-Road Mobile	85% PM ₁₀ and PM _{2.5} , adjusted for compatibility

4.1 Air Quality

Table 4.1-8
Construction-Related Control Measures^a

Measure Number	Measure	Type of Measure	Quantified Emissions Reductions
	engines.) The emission control devices utilized in construction equipment shall be verified or certified by California Air Resources Board or US Environmental Protection Agency for use in on-road or off-road vehicles or engines. For multi-year construction projects, a reassessment shall be conducted annually to determine what constitutes a best available emissions control device. ^b		
2b	Watering (per SCAQMD Rule 403 and CalEEMod default) – three times daily.	Fugitive Dust	61% PM ₁₀ and PM _{2.5}
2c	Pave all construction access roads at least 100 feet onto the site from the main road.	Fugitive Dust	NQ
2d	To the extent feasible, have construction employees' work/commute during off-peak hours.	On-Road Mobile	NQ
2e	Make available on-site lunch trucks during construction to minimize off-site worker vehicle trips.	On-Road Mobile	NQ
2f	Utilize on-site rock crushing facility, when feasible, during construction to reuse rock/concrete and minimize off-site truck haul trips.	On-Road Mobile	NQ
2g	Specify combination of electricity from power poles and portable diesel- or gasoline-fueled generators using "clean burning diesel" fuel and exhaust emission controls. ^c	Stationary Point Source Controls	NQ
2h	Suspend use of all construction equipment during a second- stage smog alert in the immediate vicinity of LAX.	Mobile and Stationary	NQ
2i	Utilize construction equipment having the minimum practical engine size (i.e., lowest appropriate horsepower rating for intended job).	Mobile and Stationary	NQ
2j	Prohibit tampering with construction equipment to increase horsepower or to defeat emission control devices.	Mobile and Stationary	NQ
2k	The contractor or builder shall designate a person or persons to ensure the implementation of all components of the construction-related measure through direct inspections, record reviews, and investigations of complaints.	Administrative	NQ

Table 4.1-8
Construction-Related Control Measures^a

Measure Number	Measure	Type of Measure	Quantified Emissions Reductions
2l	LAWA will locate rock-crushing operations and construction material stockpiles for all LAX-related construction in areas away from LAX-adjacent residents, to the extent possible, to reduce impacts from emissions of fugitive dust. ^d	Stationary	Can be quantified in modeling assumptions
2m	LAWA will ensure that there is available and sufficient infrastructure on-site, where not operationally or technically infeasible, to provide fuel to alternative-fueled vehicles to meet all requests for alternative fuels from contractors and other users of LAX. This will apply to construction equipment and to operations-related vehicles on-site. This provision will apply in conjunction with construction or modification of passenger gates related to implementation of the LAX Master Plan relative to the provision of appropriate infrastructure for electric GSE. ^e	Mobile	NQ
2n	On-road trucks used on LAX construction projects with a gross vehicle weight rating of at least 19,500 pounds shall, at a minimum, comply with USEPA 2007 on-road emissions standards for PM ₁₀ and NO _x . ^f	On-Road Mobile	Assumed in modeling
2o	Prior to January 1, 2015, all off-road diesel-powered construction equipment greater than 50 horsepower shall meet USEPA Tier 3 off-road emission standards. After December 31, 2014, all off-road diesel-power construction equipment greater than 50 horsepower shall meet USEPA Tier 4 off-road emissions standards. Tier 4 equipment shall be considered based on availability at the time the construction bid is issued. LAWA will encourage construction contractors to apply for SCAQMD "SOON" funds to accelerate clean-up of off-road diesel engine emissions. ^g	Off-Road Mobile	Assumed in modeling

NQ = Not Quantified

^a These measures are from LAX Master Plan Mitigation Measure MM-AQ-2, unless otherwise noted.

^b From LAX Master Plan Mitigation Measure MM-AQ-2 and Community Benefits Agreement Measure X.F.

^c From LAX Master Plan Mitigation Measure MM-AQ-2 and LAWA's Design and Construction Handbook, Section 1.31.9.

^d From Community Benefits Agreement Measure X.L.

^e From Community Benefits Agreement Measure X.N.

^f From LAX Specific Plan Amendment Study Measure MM-AQ (SPAS)-1.

^g From LAX Specific Plan Amendment Study Measure MM-AQ (SPAS)-1.

Source: PCR Services Corporation, 2013

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LAX-AQ-4 – Operations-Related Control Measures

- The principal feature of this measure is the conversion of LAX GSE to low and ultra-low emission technology (e.g., electric, fuel cell, and other future low-emission technologies). It should be noted that no estimate of the air quality benefit (i.e., emission reductions) of other secondary measures is made in this analysis. Specific operations-related control measures applicable to the Project are identified in Table 4.1-9.

Table 4.1-9
Operations-Related Air Quality Control Measures^a

Measure Number	Measure	Type of Measure
4a	LAX GSE will be converted to low- and ultra-low emission technology (e.g., electric, fuel cell, and other future low-emission technologies). Both LAWA- and tenant-owned equipment will be included in this conversion program, which will be implemented in phases. LAWA will assign a GSE coordinator whose responsibility it will be to ensure the successful conversion of GSE in a timely manner. This coordinator will have adequate authority to negotiate on behalf of the City and have sufficient technical support to evaluate technical issues that arise during the implementation of this measure. ^b	Airside Operations
4d	LAWA will require the use of electric lawn mowers and leaf blowers, as these units become available for commercial use, for landscape maintenance associated with the proposed project. ^c	General
4e	LAWA will require the conversion of sweepers to alternative fuels or electric power for ongoing airfield and roadway maintenance. In the 2006 GSE inventory, two of ten sweepers were electric powered and one was either CNG or LPG fueled. HEPA filters will be installed on airport sweepers where the use of HEPA filters is technologically and financially feasible and does not pose a safety hazard to airport operations. ^d	General
4f	LAWA will ensure that there is available and sufficient infrastructure on-site, where not operationally or technically infeasible, to provide fuel to alternative-fueled vehicles to meet all requests for alternative fuels from contractors and other users of LAX. This will apply to construction equipment and to operations-related vehicles on-site. This provision will apply in conjunction with construction or modification of passenger gates related to implementation of the LAX Master Plan relative to the provision of appropriate infrastructure for electric GSE. ^e	Operational Vehicles.

Table 4.1-9

Operations-Related Air Quality Control Measures^a

NQ = Not Quantified

^a These measures are from LAX Master Plan Mitigation Measure MM-AQ-4, unless otherwise noted.

^b From Community Benefits Agreement Measure X.F.

^c From LAX Specific Plan Amendment Study Measure MM-AQ (SPAS)-3.

^d From LAX Specific Plan Amendment Study Measure MM-AQ (SPAS)-3.

^e From Community Benefits Agreement Measure X.N.

Source: PCR Services Corporation, 2013

4.1.6 Impact Analysis

4.1.6.1 Construction Emissions

4.1.6.1.1 Regional Construction Impacts

The peak daily emissions were calculated for each phase of construction, and are presented in **Table 4.1-10** for all criteria and precursor pollutants studied (VOC, NO_x, CO, SO_x, PM₁₀, and PM_{2.5}). As shown therein, construction-related daily (short-term) emissions of NO_x would exceed SCAQMD significance thresholds for unmitigated construction emissions. These calculations include reductions achieved with implementation of mandated dust control measures, as required by SCAQMD Rule 403 (Fugitive Dust).

Table 4.1-10

Estimate Maximum Unmitigated Construction Emissions^a
(pounds/day)

Quarter/Activity	VOC	NO _x	CO	SO _x	PM ₁₀ ^b	PM _{2.5} ^b
Qtr. 1, Fencing/Mass Grading						
On-site	10	170	200	<1	11	6
Off-site	9	164	43	<1	11	3
Total	19	334	243	1	22	10
Qtr. 2, Mass Grading/Hangar #1 Utilities						
On-site	9	148	175	<1	11	6
Off-site	9	164	44	<1	11	3
Total	18	312	244	1	22	10
Qtr. 3, Hangar #1/Utilities/Apron						
On-site	42	429	489	1	16	9
Off-site	9	7	30	<1	4	1
Total	52	436	518	1	19	10

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Table 4.1-10

Estimate Maximum Unmitigated Construction Emissions ^a
(pounds/day)

Quarter/Activity	VOC	NO _x	CO	SO _x	PM ₁₀ ^b	PM _{2.5} ^b
Qtr. 4, Hangar #1/Apron/Infrastructure						
On-site	30	383	433	1	16	10
Off-site	9	7	29	<1	4	1
Total	39	390	462	1	20	11
Qtr. 5, Hangar #1/Apron/Infrastructure						
On-site	34	208	360	1	14	7
Off-site	6	6	27	<1	4	1
Total	40	213	386	1	17	8
Qtr. 6, Hangar #1/Apron/Lighting and Signage						
On-site	22	121	229	<1	6	4
Off-site	3	1	16	<1	2	1
Total	26	122	245	<1	8	4
Qtr. 7, Hangar #1/Apron						
On-site	22	79	137	<1	5	4
Off-site	3	1	11	<1	2	<1
Total	25	81	148	<1	7	4
Qtr. 8 – Qtr. 11						
No Project-Related Construction Activity						
Qtr. 12, Hangar #2 Foundation						
On-site	3	37	73	<1	10	5
Off-site	2	1	5	<1	1	<1
Total	5	37	78	<1	11	6
Qtr. 13, Hangar #2 Superstructure						
On-site	3	20	34	<1	3	2
Off-site	2	1	5	<1	1	<1
Total	5	21	39	<1	4	2
Qtr. 14, Hangar #2 Enclosure						
On-site	3	20	34	<1	3	2
Off-site	2	1	5	<1	1	<1
Total	5	21	39	<1	4	2
Qtr. 15, Hangar #2 Roof/Interior						
On-site	5	25	40	<1	4	2
Off-site	2	1	7	<1	1	<1
Total	7	26	46	<1	5	3
Qtr. 16, Hangar #2 Interior						
On-site	5	36	60	<1	4	2
Off-site	4	1	10	<1	2	<1
Total	9	37	69	<1	5	3

Table 4.1-10

**Estimate Maximum Unmitigated Construction Emissions^a
(pounds/day)**

Quarter/Activity	VOC	NO _x	CO	SO _x	PM ₁₀ ^b	PM _{2.5} ^b
Qtr. 17, Hangar #2 Finalize/Parking						
On-site	5	36	58	<1	4	2
Off-site	3	1	9	<1	2	<1
Total	8	36	66	<1	5	3
Maximum Project Emissions	52	436	518	1	22	11
Regional Significance Threshold	75	100	550	150	150	55
Over (Under)	(23)	336	(32)	(149)	(128)	(44)
Exceed Threshold?	No	Yes	No	No	No	No

Notes:

^a Compiled using the CalEEMod emissions inventory model. Totals may not add up exactly due to rounding. The equipment mix and use assumption for each phase is provided in Appendix B of this EIR.

^b PM₁₀ emissions estimates are based on compliance with SCAQMD Rule 403 requirements for fugitive dust suppression.

Source: PCR Services Corporation, 2013.

These calculations also include reductions achieved with implementation of exhaust controls. The proposed Project would implement measures to reduce emissions from the combustion of fossil fuels. The proposed Project would use equipment that meet stringent emission standards for NO_x, PM₁₀, and PM_{2.5}, which would result in emission reductions compared to fleet-wide average emissions for heavy-duty construction equipment and trucks in the southern California region. As discussed in Section 4.1.5, on-road trucks would comply with the USEPA 2007 on-road emissions standards for NO₂ and DPM (primarily PM_{2.5}). Compliance with the USEPA 2007 on-road emission standards result in a reduction of NO₂ and DPM by approximately 40 percent and 22 percent, respectively, compared to fleet-wide average emissions for heavy-duty trucks. Due to the high number of trucks needed for the export of on-site stockpiles, the proposed Project has additionally committed to using only haul trucks that would comply with the USEPA 2007 on-road emissions standards for NO₂ and DPM during the mass grading phase of construction. Off-road diesel-powered construction equipment greater than 50 horsepower (hp) would meet USEPA Tier 3 off-road emissions standards prior to January 1, 2015, and Tier 4 standards after December 31, 2014. Compliance with the USEPA Tier 3 and Tier 4 off-road emissions standards would also result in substantial reduction in emissions of NO₂ and DPM compared to fleet-wide average emissions for heavy-duty construction equipment.

In order to characterize the change in construction emissions over time, the construction emissions calculations were estimated by performing emissions modeling runs using CalEEMod for each type of construction activity (e.g., grading, excavation, utility installation, hangar interior construction, etc.) and calculating the sum of the emissions from all activities that would occur simultaneously throughout the construction schedule. This allows the assessment to capture the changes in maximum daily construction emissions over time. The results of the construction

4.1 Air Quality

emissions analysis are presented in Table 4.1-10, which shows the maximum daily emissions by calendar quarter, with the first quarter representing the maximum daily emissions that would occur in the first three months of construction activity. It should be noted that the maximum daily emissions are predicted values for the peak day within that quarter and do not represent the emissions that would occur for every day within that quarter. The peak day is calculated based on the assumption that construction activities that could overlap would, in fact, overlap. Therefore, days in which the construction activities do not overlap would have lower emissions than those shown in Table 4.1-10.

As shown in Table 4.1-10, construction of the proposed Project is predicted to result in maximum daily emissions that exceed the SCAQMD regional construction thresholds for NO_x during six quarters and is not predicted to exceed the thresholds during the other seven quarters of construction activity. Construction of the proposed Project is not predicted to exceed the SCAQMD regional construction thresholds for VOC, CO, SO_x, PM₁₀, or PM_{2.5} during any quarter with construction activity. As shown, the NO_x exceedance is limited to the initial and middle stages of construction, when grading and hangar construction would occur. As the maximum daily construction emissions are projected to exceed the SCAQMD threshold for NO_x during the initial and middle stages of construction, the NO_x impact would be significant.

As discussed in Chapter 2, *Project Description*, the proposed Project includes the development of taxiways, aircraft parking apron areas, aircraft maintenance hangars, and related structures. The proposed construction schedule was designed to enable the consolidation and modernization of existing aircraft maintenance facilities at LAX to occur at the earliest possible time. Due to the large size of development and the intensity of the proposed construction schedule, the initial and middle stages of construction would respectively exceed significance thresholds for NO_x, as shown in Table 4.1-10. These phases require a large equipment fleet or entail intensive earthmoving activities such as the export of on-site stockpiles. It is important to note that these emission forecasts reflect a specific set of conservative assumptions in which the proposed apron areas, hangar, and related facilities would be built out over approximately 18-21 months. However, construction rarely proceeds at this optimized manner, and delays may occur. This may allow for the availability of a more modern, cleaner burning, construction equipment fleet mix as time progresses, which may reduce emissions from the construction fleet, or a less intensive build-out schedule may result in lower daily emissions occurring over a longer time interval. Thus, actual daily emissions could be less than those forecasted.

4.1.6.1.2 Localized Construction Impacts

As discussed in Section 4.1.2, Methodology, above, the localized effects from the on-site portion of daily emissions are evaluated at nearby sensitive receptor locations potentially impacted by the proposed Project consistent with the methodologies in the SCAQMD's *Final Localized Significance Threshold Methodology*. The SCAQMD recommends that lead agencies perform project-specific air quality modeling for larger projects.⁵⁶ The Project area exceeds five acres in total size; therefore, Project-specific dispersion modeling was used to assess localized construction impacts rather than the mass emission rate look-up tables. The Project-specific air quality modeling of localized construction impacts was done in a manner consistent with the mass emission rate look-up tables in the SCAQMD's *Final Localized Significance Threshold Methodology* (June 2008). The results of the LST dispersion modeling are summarized in

⁵⁶ South Coast Air Quality Management District, *Final Localized Significance Threshold Methodology*, (2008) 1-5.

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Table 4.1-11A and **Table 4.1-11B**. As shown therein, emissions from construction activities would not result in exceedances of the localized concentration-based thresholds for NO₂, CO, PM₁₀, or PM_{2.5} at nearby sensitive receptors.⁵⁷ It should be noted that the dispersion modeling of localized impacts resulting from construction emissions from the proposed Project was performed using conservative assumptions, which included modeling impacts for the peak day emissions, and actual impacts are likely to be less than those predicted by this analysis.

Table 4.1-11A

Construction Localized Significance Threshold Analysis (Maximum Daily Emissions)

Stage	NO2 1-hour		CO 1-hour		CO 8-hour		PM10 24-hour	PM2.5 24-hour
	µg/m3	ppm	µg/m3	ppm	µg/m3	ppm	µg/m3	µg/m3
Maximum Daily On-Site Emissions (Construction Stage - Finish Hangar Retaining Walls/Utilities for Apron Areas/Infrastructure)								
El Segundo Sensitive Receptor Area (Residential)	40.12	0.02	60.16	0.05	10.27	0.01	0.42	0.20
Playa del Rey/Westchester Sensitive Receptor Area (Residential)	11.34	0.006	19.35	0.02	3.45	0.003	0.30	0.14
St. Bernard High School Sensitive Receptor Area (School)	13.40	0.007	21.43	0.02	4.18	0.004	0.31	0.14
Peak Background ^a	113.24	0.060	3,433	3	2,506	2.19	n/a	n/a
Maximum Project + Background	153.36	0.082	3,493	3.05	2,516	2.20	0.42	0.20
CAAQS/NAAQS	188^b	0.100^b	23,000	20	10,000	9.0	10.4	10.4
Over (Under)	(34.64) ^b	(0.018) ^b	(19,507)	(16.95)	(7,484)	(6.80)	(9.98)	(10.20)
Exceed Threshold?	No	No	No	No	No	No	No	No

⁵⁷ California Air Resources Board, Ambient Air Quality Standards Chart, June 2012, Available: <http://www.arb.ca.gov/research/aaqs/aaqs2.pdf>, accessed April 12, 2013.

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Table 4.1-11A

Construction Localized Significance Threshold Analysis (Maximum Daily Emissions)

Stage	NO ₂ 1-hour		CO 1-hour		CO 8-hour		PM ₁₀ 24-hour	PM _{2.5} 24-hour
	µg/m ³	ppm	µg/m ³	ppm	µg/m ³	ppm	µg/m ³	µg/m ³

- ^a The peak background concentration for NO₂ is based on the highest 3-year average of the 98th-percentile of the annual distribution of daily maximum 1-hour concentrations for the past three years of data (2010 - 2012). The peak background concentrations for CO are based on the maximum 1-hour and 8-hour concentrations between 2010 and 2012.
- ^b The data presented above for NO₂ is based on the federal standards (i.e., NAAQS). With respect to the state standards, the CAAQS for NO₂ is 339 µg/m³ or 0.18 ppm. The maximum background concentration for the period of 2010 – 2012 is 183.49 µg/m³ or 0.098 ppm (see Table 4.1-4). Based on this, construction of the proposed Project would be under the threshold by approximately 115.39 µg/m³ or 0.061 ppm. Thus, the proposed Project would not exceed the SCAQMD LST for NO₂ based on the CAAQS.

Source: PCR Services Corporation, (2013).

Table 4.1-11B

Construction Localized Significance Threshold Analysis (Maximum Annual Emissions)

Stage	NO ₂ Annual		PM ₁₀ Annual
	µg/m ³	ppm	µg/m ³
Maximum Annual On-Site Emissions (Year 2014)			
El Segundo Sensitive Receptor Area (Residential)	0.21	0.0001	0.0059
Playa del Rey/Westchester Sensitive Receptor Area (Residential)	0.10	0.00005	0.0052
St. Bernard High School Sensitive Receptor Area (School)	0.06	0.00003	0.0020
Peak Background	24.44	0.013	n/a
Maximum Project + Background	24.65	0.013	0.006
CAAQS/NAAQS ^a	57.00	0.030	1.0
Over (Under)	(32.35)	(0.017)	(0.99)
Exceed Threshold?	No	No	No

- ^a The SCAQMD Final Localized Significance Threshold Methodology (2008) does not provide a concentration-based localized annual threshold for construction emissions of PM₁₀ pursuant to Rule 403. Therefore, the annual concentration threshold from Rule 1303, Table A-2, which is applicable to operational emissions, is used. This is a conservative (i.e., health protective) approach because operational thresholds are typically lower than construction thresholds, as is the case with the 24-hour PM₁₀ concentration-based thresholds (e.g., 10.4 µg/m³ for construction vs. 2.5 µg/m³ for operations).

Source: PCR Services Corporation, (2013).

As shown in Table 4.1-10, emissions of SO₂ from construction would be minimal and well below the SCAQMD mass emission thresholds; therefore, SO₂ emissions were not further analyzed through dispersion modeling. Thus, given minimal SO₂ emissions, the proposed Project would result in a less than significant localized impact during construction.

4.1.6.1.3 Construction TAC Human Health Risk Assessment

Cancer risk estimates from exposure to construction sources are presented below for on-airport workers (occupational exposure), and off-airport workers, residents, and school children. Acute and chronic non-cancer health hazards are also presented.

On-Site Worker Concentrations Compared to OSHA Limits

Impacts to on-site workers were evaluated by comparing estimated maximum 1-hour air concentrations of TAC to the CalOSHA 8-hour Permissible Exposure Limits - Time-Weighted Average (PEL-TWAs)⁵⁸. Estimated on-site air concentrations and PEL-TWAs for TAC of concern for the proposed Project are presented in **Table 4.1-12**.

Table 4.1-12

**Comparison of CalOSHA Permissible Exposure Limits to
Maximum Estimated 8-Hour On-Site Air Concentrations**

Toxic Air Contaminant ^a	Controlled Project Concentrations (mg/m ³) ^b	CalOSHA PEL TWA (mg/m ³) ^c
acetaldehyde	0.017	45
acrolein (2-propenal)	0.000058	0.25
benzene	0.0046	0.32 ^d
Butadiene, 1-3-	0.00045	2.2
ethylbenzene	0.00076	435
formaldehyde	0.034	0.37 ^d
hexane, n-	0.00044	180
methanol	0.000071	260
methyl ethyl ketone (mek) (2-butanone)	0.0033	590
naphthalene	0.00021	50
propylene	0.0060	NA ^e
styrene	0.00014	215
toluene	0.0036	37
xylene (total)	0.0027	435
arsenic	0.000002	0.01
cadmium	0.000004	0.005
chlorine	0.00043	1.5
Chromium VI	0.000001	0.005
copper	0.000015	1
lead	0.000071	0.05
manganese	0.00012	0.2

⁵⁸ California Occupational Safety and Health Administration, Permissible Exposure Limits for Chemical Contaminants, Table AC 1, Available: <http://www.dire.ca.gov/title8/5155.html>.

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Table 4.1-12

**Comparison of CalOSHA Permissible Exposure Limits to
Maximum Estimated 8-Hour On-Site Air Concentrations**

Toxic Air Contaminant ^a	Controlled Project Concentrations (mg/m ³) ^b	CalOSHA PEL TWA (mg/m ³) ^c
mercury	0.000002	0.025
nickel	0.000008	0.5
selenium	0.0000004	0.2
silicon	0.025	6
sulfates	0.00085	NA ^e
vanadium	0.000033	0.05

Notes:

^a All TACs for which PEL-TWAs are available are listed. PEL-TWAs are not available for diesel exhaust, propylene, and sulfates.

^b Maximum 1-hour concentrations at on-airport location converted to 8-hour averages by multiplying by a factor of 0.7.

^c California Occupational Safety and Health Administration. Permissible Exposure Limits for Chemical Contaminants, Table AC-1, 2008, http://www.dir.ca.gov/title8/5155table_ac1.html.

^d CalOSHA does not have a value; value is from American Conference of Governmental Industrial Hygienists (ACGIH), Documentation of the Threshold Limit Values and Biological Exposure Indices, 8th ed., Cincinnati, Ohio, 1998.

^e NA = Not Available

Source: CDM Smith 2013

Estimated maximum 1-hour air concentrations at the on-site location under the proposed Project for controlled⁵⁹ construction were converted to 8-hour averages by multiplying the 1-hour average by a factor of 0.7.⁶⁰ The resulting 8-hour averages are a few to several orders of magnitude below PELs for all TAC. This result suggests that air concentrations from airport emissions with implementation of the proposed Project would not exceed those considered "acceptable" by CalOSHA standards; hence, the proposed Project impacts related to on-site worker concentrations would be less than significant.

Cancer Risks and Chronic Non-Cancer Hazards

For the proposed Project, 330 grid points were analyzed along the airport fence-line and in the vicinity of the airport. These locations are shown on **Figure 4.1-3**. Concentrations at the 326 fence-line locations represent maximum concentrations of TAC predicted by the air dispersion modeling that can be used to evaluate exposure to a MEI, and provide a ceiling for risks and hazards for off-airport residential, commercial, and student receptors. In essence, these calculations assumed that people live, work, and go to school at the LAX fence-line. Although this assumption is unrealistic, it is intended to provide a very conservative analysis.

⁵⁹ Emission estimates for the proposed Project assume that mitigation measures identified in the LAX Master Plan EIR are in place. These measures are now part of all plans for renovation of the airport.

⁶⁰ California Air Resources Board. 2003. HARP User Guide: Appendix H Recommendations for Estimating Concentrations of Longer Averaging Periods from the Maximum One-Hour Concentration for Screening Purposes. December. Available: <http://www.arb.ca.gov/toxics/harp/harpug.htm>.

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Air concentrations for TAC from construction sources were developed using emissions estimates and dispersion modeling as described above and in Appendix B.3 of this EIR. Using these emission estimates, exposure parameters for potential receptors and current toxicity values, cancer risks and chronic non-cancer health hazards were calculated for adult residents, resident children ages 0 to 6 years, and for elementary-aged school children at fence-line locations where air concentrations for TAC were predicted. Off-site worker risks and hazards were estimated at the fence-line receptors, and at three on-airport locations to represent LAWA, tenant, and contractor personnel. Peak cancer risks and chronic non-cancer health hazards for MEI at the fence-line and on-airport locations are summarized in **Table 4.1-13**.

Table 4.1-13

Incremental Cancer Risk and Chronic Non-Cancer Human Health Hazards for Maximally Exposed Individuals from Project Construction

Receptor Type	Incremental Cancer Risks^a (per million people)
Child Resident	0.01
School Child	0.002
Adult Resident	0.1
Adult Worker	0.03
Receptor Type	Incremental Non-Cancer Chronic Hazards^b
Child Resident	0.0004
School Child	0.00007
Adult Resident	0.0004
Adult Worker	0.0002

Notes:

^a Values provided are changes in the number of cancer cases per million people exposed as compared to baseline conditions. All estimates are rounded to one significant figure.

^b Hazard indices are totals for all TACs that may affect the respiratory system. This incremental hazard index is essentially equal to the total for all TACs.

Source: CDM Smith, 2013

Residents and school children were evaluated at all 326 off-airport grid nodes. Estimated peak incremental cancer risks for adult residents and child residents for the proposed Project range from 0.01 in one million to 0.1 in one million. Estimated incremental cancer risks are higher for adults than for children, because exposure duration for adults is longer. Incremental cancer risk for school children at the peak location was estimated to be 0.004 in one million. Adult worker risks were evaluated at all 326 off-airport grid nodes as well as at three on-airport/off-site grid nodes. The peak adult (non-Project) worker cancer risk would be 0.03 in one million. Exposure to DPM released during construction contributed 89 percent of the peak cancer risks to these receptors. These estimates indicate that Project-related cancer risks for adults and for young children would be below the threshold of significance of 10 in one million for Project

4.1 Air Quality

construction; hence, the proposed Project impacts related to cancer risks would be less than significant.⁶¹

Project-related chronic non-cancer hazard indices for construction impacts associated with the Project for adult residents and child residents living at the peak TAC concentration location were estimated to be 0.0004. Project-related chronic non-cancer hazard index for chemicals affecting the same target (i.e., the respiratory system) for MEI school children is 0.00007. The peak adult (non-Project) worker chronic hazard index was estimated to be 0.0002. At the peak hazard index location, hazard indices are primarily attributable to silicon (52 percent) and DPM (18 percent) and to a lesser extent to chlorine (14 percent) and manganese (8 percent). DPM is primarily an emission from diesel construction equipment, haul trucks, and concrete trucks. Silicon, chlorine, and manganese are components of construction dust. The target organ for chronic toxicity of manganese is the nervous system and its actions would not be expected to be additive to the effects of DPM, silicon, and chlorine which target the respiratory system. These estimates indicate that Project-related chronic non-cancer hazards would be less than the hazard index threshold of 1; hence, the proposed Project's impact related to chronic non-cancer hazards would be less than significant.

Acute Hazards

As with cancer risks and chronic non-cancer health hazards, acute health hazards were analyzed at 330 grid points within the study area. Short-term concentrations of TAC for the proposed Project sources were estimated using AERMOD with the model option for 1-hour maximum concentrations selected. Acute health hazards were estimated at each grid point by comparison of the modeled TAC concentration at each grid point with the acute REL. All TAC identified in Project construction emissions and for which CalEPA has developed acute RELs were evaluated for potential acute health hazards. All acute health hazard estimates are specific for airport emissions and are independent of county-wide estimates developed by USEPA.

Land use distinctions and different exposure scenarios are irrelevant for assessment of acute health hazards. For example, someone visiting a commercial establishment would potentially be subject to the same acute health hazards as someone working at the establishment. Fence-line concentrations of TAC are likely to represent the highest concentrations and therefore the greatest impacts for residents, school children, or off-airport workers. The four on-airport grid points were assumed to be commercial receptors (workers). One of the four on-airport receptors is located in the middle of the proposed Project construction site; this grid point was assumed to be the on-site worker location.

Formaldehyde and manganese are the only TAC of concern in construction emissions from the Project that might be present at concentrations approaching the thresholds for acute health hazards. Acute health hazards for other TAC are orders of magnitude below their respective acute RELs and thus would not contribute substantially to health hazards. Formaldehyde and manganese are responsible for 43 to 50 percent and 42 to 48 percent, respectively, of all predicted acute non-cancer health hazards. Maximum acute health hazards associated with

⁶¹ Controlled emissions include emission reductions associated with control measures required by the South Coast Air Quality Management District, as well as mitigation measures required as part of the LAX Master Plan Mitigation Monitoring & Report Program, Community Benefits Agreement, and Stipulated Settlement Agreement.

exposure to these two chemicals from Project construction are summarized in **Table 4.1-14**. Hazards quotients due to acute exposure to formaldehyde and manganese are below 1 for all off-site evaluated grid nodes within the study area under the proposed Project; hence, Project impacts related to acute health hazards would be less than significant.

Table 4.1-14

Maximum Incremental Acute Hazard Indices for Project Construction

Receptor Type	Summary of Incremental Acute Hazard Indices	
	Manganese	Formaldehyde
Residential/School		
Maximum HI ^a	0.4	0.5
Minimum HI	0.004	0.003
Average HI	0.09	0.1
Off-Site Worker		
Maximum HI	0.7	0.8
Minimum HI	0.01	0.01
Average HI	0.4	0.5
Overall Off-Site Maximum HI	0.7	0.8

Notes:
^a HI = Hazard Index
 Source: CDM Smith, 2013

4.1.6.1.4 Odors

Potential sources that may emit odors during construction activities include the use of architectural coatings and solvents and from diesel emissions. SCAQMD Rule 1113 limits the amount of VOCs from architectural coatings and solvents. As discussed previously, the proposed Project would comply with DPM reduction strategies such as compliance with USEPA 2007 on-road emission standards for heavy-duty trucks and USEPA Tier 3 and Tier 4 off-road emission standards for heavy-duty construction equipment. Due to mandatory compliance with SCAQMD Rules and compliance with the DPM reduction strategies, no construction activities or materials are proposed which would create objectionable odors affecting a substantial number of people. In addition, the nearest sensitive receptors are located beyond the LAX property line and would be further buffered by the dissipation of odors with distance and prevailing winds. Therefore, no impact would occur and no mitigation measures would be required.

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4.1.6.2 Operational Emissions

4.1.6.2.1 Regional Operational Impacts

Operation of the proposed Project is not expected to generate new emissions associated with aircraft maintenance because the proposed Project simply redirects and consolidates existing aircraft maintenance operations. However, the redirection and consolidation of maintenance operations to the Project site does result in longer distances between gates and maintenance with some additional taxi/towing emissions. The modeling of emissions associated with towing activities is based on the use of diesel-fueled GSE, which provides for a conservative analysis. LAX has committed to converting GSE to low and ultra-low emission technology (e.g., electric, fuel cell, and other future low-emission technologies). The program to convert the LAX GSE fleet is currently being implemented. Thus, future actual emissions associated with towing are likely to be lower than the emissions estimated in this EIR.

The number of run-ups from aircraft engine testing is not expected to increase compared to the current condition, nor is additional on-road vehicle traffic expected as a result of the proposed Project. Improvements associated with the LAX Master Plan would consolidate, relocate and modernize existing maintenance operations and run-ups in the western area of LAX. The proposed Project would shift an estimated 60 annual (five monthly) existing run-ups in the western area of LAX to the Project site, also located in the western area of LAX. However, there would no net increase in the number of run-ups or associated emissions. Therefore, only emissions associated with the incremental taxi/tow distance are presented in this emissions inventory.

Estimated operational emissions for the proposed Project are presented in **Table 4.1-15**. Future regional emissions resulting from operation of the proposed Project are substantially below applicable thresholds for VOC, NO_x, CO, SO_x, PM₁₀ and PM_{2.5}. As a result, impacts related to regional emissions from operation of the proposed Project would be less than significant.

4.1.6.2.2 Localized Operational Impacts

As shown in Table 4.1-15, net on-site operational emissions from taxiing and towing would generally be less than one order-of-magnitude below the SCAQMD operational emission thresholds for VOC, NO_x, CO, SO_x, PM₁₀, and PM_{2.5}. Net operational emissions of these low levels would not result in localized impacts to off-site sensitive receptors especially given the distance between the Project site and the nearest sensitive receptors, which was discussed previously as approximately 1,550 feet to the south of the Project boundary for residents in El Segundo, approximately 4,800 feet to the north for residents in Playa del Rey/Westchester, and 4,500 feet to the north for St. Bernard High School (measured relative to the Project site boundary). According to Appendix C of the SCAQMD *Final Localized Significance Threshold Methodology*, the mass rate look-up tables provide the following screening levels for a five acre project site at a distance of 500 meters in the Project area (Southwest Coastal Los Angeles County): (1) 277 pounds per day of NO_x; (2) 9,852 pounds per day of CO; (3) 41 pounds per day of PM₁₀; and (4) 24 pounds per day of PM_{2.5}. As shown in Table 4.1-15, the incremental net operational emissions would be less than these screening levels. As a result, operation of the proposed Project would result in less than significant localized operational impacts.

Table 4.1-15

**Unmitigated Proposed Project
Operational Emissions^a
(Pounds per Day)**

Emission Source	VOC	NO_x	CO	SO_x	PM₁₀	PM_{2.5}
Regional Emissions						
Aircraft Taxi/Tow						
Stage 3 Aircraft (Taxiing)	7	8	36	1	<1	<1
Wide-Body Aircraft Tug (Towing)	<1	4	1	<1	<1	<1
Total Net	7	12	37	1	<1	<1
SCAQMD Significance Threshold	55	55	550	150	150	55
Over/(Under)	(48)	(43)	(513)	(149)	(150)	(55)
Exceed Threshold?	No	No	No	No	No	No

Notes: Numbers may not add up exactly due to rounding.

Source: PCR Services Corporation, 2013.

As the proposed Project is not expected to increase the number of run-ups from aircraft engine testing compared to the current condition and would not result in net new emissions from run-ups. The proposed Project would shift a limited number of existing run-ups (i.e., an estimated 60 annual or five monthly) in the western area of LAX to the Project site, also located in the western area of LAX. As noted above, the distance between the Project site and the nearest sensitive receptors are approximately 1,550 feet to the south of the Project site boundary for residents in El Segundo, approximately 4,800 feet to the north for residents in Playa del Rey/Westchester, and 4,500 feet to the north for St. Bernard High School (measured relative to the Project site boundary). Given the distance between the Project site and nearest sensitive receptors, and given that the proposed Project would not increase the number of run-ups over existing conditions and that the number of relocated run ups in the western area of LAX would be minimal, localized effects from the relocated run-ups would not be substantially different than existing conditions and would not substantially contribute to localized impacts. Thus, localized operational impacts would be less than significant.

4.1.6.2.3 Toxic Air Contaminants

The proposed Project would consolidate, relocate, and modernize existing aircraft maintenance activities occurring at LAX. Operation of the proposed Project would not result in additional or increased operational or maintenance activities at LAX. The future operation of the proposed Project would not result in long-term operational changes to traffic activity and traffic flows within the airport study area as, in the long-term, the proposed Project would not increase the number of employees or airline passengers traveling to/through LAX. A slight increase in taxiing or towing emissions, compared to baseline conditions, would occur due to slightly longer distances between gates and the Project site. Furthermore, according to meteorological data provided by the SCAQMD, the average daily (daytime and nighttime) prevailing winds at LAX are generally directed along a southwest-to-northeast axis. As such, the prevailing winds, relative to the Project site, would generally disperse pollutants over LAX property prior to reaching distant off-

4.1 Air Quality

site sensitive receptors, or the Pacific Ocean. This dispersion effect would reduce the potential for exposures to TACs at sensitive receptors.

However, the SCAQMD's Tier 2 screening method for assessing potential health risks, which provides conservative results for health risk, was applied to the incremental operational emissions. The Tier 2 method assumes that the wind blows primarily from the emission source to the receptor and considers only the distance between the source and the nearest receptors. The health risk results from the Tier 2 screening analysis for proposed Project increments above the baseline are:

- Cancer risks: 3 per million for residential receptors and 0.6 per million for workers;
- Maximum chronic non-cancer hazard index: 0.03 (respiratory system); and
- Maximum acute hazard index: 0.07 (eye).

Thus, based on the results above, the proposed Project would result in a less than significant impact.

4.1.6.2.4 Odors

According to the SCAQMD *CEQA Air Quality Handbook*, land uses associated with odor complaints typically include agricultural uses, wastewater treatment plants, food processing plants, chemical plants, composting, refineries, landfills, dairies, and fiberglass molding. The proposed Project does not include any uses identified by the SCAQMD as being associated with odors. As the proposed Project activities would not be a source of odors, potential odor impacts would be less than significant.

4.1.7 Cumulative Impacts

The SCAQMD has provided guidance on an acceptable approach to addressing the cumulative impacts issue for air quality.⁶²

“As Lead Agency, the AQMD uses the same significance thresholds for project specific and cumulative impacts for all environmental topics analyzed in an Environmental Assessment or EIR. The only case where the significance thresholds for project specific and cumulative impacts differ is the HI significance threshold for TAC emissions. Projects that exceed the Project-specific significance thresholds are considered by the SCAQMD to be cumulatively considerable. This is the reason project-specific and cumulative significance thresholds are the same. Conversely, projects that do not exceed the project-specific thresholds are generally not considered to be cumulatively significant.”

As shown in Table 4.1-10, construction of the proposed Project would exceed the Project-specific significance threshold for NO_x. As a result, the proposed Project would have a cumulatively considerable contribution for construction emissions and would result in a cumulatively significant construction impact. As shown in Table 4.1-15, operation of the proposed Project would not exceed the Project-specific significance thresholds. Thus, the proposed Project would not have a cumulatively considerable contribution for operational emissions and would result in a cumulatively less than significant operational impact.

⁶² Available at: <http://www.aqmd.gov/hb/2003/030929a.html>. Accessed: March, 2013.

For disclosure purposes, a list of past, present, and probable future LAWA projects that could overlap in time for construction are provided in **Table 4.1-16** along with estimated mass emissions. The projects listed in Table 4.1-16 include other LAWA projects planned on the entire LAX property (3,650 acres) and not just the Project site. Emissions for several of these related LAWA projects were estimated or obtained from publicly available and readily accessible environmental documents. Construction emissions for other projects were estimated based on the ratio of the project costs as compared to other similar type projects at LAX for which detailed construction emissions estimates were available. As shown in Table 4.1-16, the cumulative construction project emissions would exceed the SCAQMD daily thresholds of significance. Calculation details are provided in Appendix B of this EIR. The calculations are considered to be conservative because it assumes overlapping construction emissions from the related LAWA projects listed in Table 4.1-16.

As noted in Section 2.4 of Appendix B.3, cumulative health risks and hazards are expected to be less than significant.

4.1.8 Mitigation Measures

LAWA is committed to mitigating temporary construction-related emissions to the extent practicable and has established some of the most aggressive construction emissions reduction measures in southern California, particularly with regard to requiring construction equipment to be equipped with emissions control devices. The air quality control measures set forth by LAWA for development projects at LAX take into account LAX Master Plan commitments and mitigation measures, Community Benefits Agreement and Stipulated Settlement measures, and measures identified in EIRs for other projects at LAX. In addition, the Los Angeles Green Building Code Tier 1 standards, which are applicable to all projects with a Los Angeles Department of Building and Safety permit-valuation over \$200,000, require the proposed Project to implement a number of measures that would reduce criteria pollutant and greenhouse gas emissions. LAWA has not identified any additional feasible mitigation measures that could be adopted at this time. Therefore, no additional Project-specific mitigation measures are recommended in connection with the proposed Project.

4.1.9 Level of Significance After Mitigation

Even with incorporation of feasible construction-related control measures as described above in Section 4.1.5, the maximum peak daily construction-related regional mass emissions resulting from the proposed Project would be significant for NO_x during the initial and middle stages of proposed Project construction, as shown by the emissions inventory. LAWA has not identified any additional feasible mitigation measures that could be adopted at this time to further reduce this impact to below significance.

Dispersion modeling demonstrates that Project construction-related airborne concentrations would remain below the most stringent ambient air quality standards. The HHRA conducted for construction impacts indicates that health risks would be less than the risk thresholds. Operational emissions for all criteria pollutants and precursors are below applicable mass thresholds, resulting in less than significant impacts.

4.1 Air Quality

Table 4.1-16

Cumulative Construction Projects Peak Daily Emissions Estimates

Related LAWA Projects Occurring During Construction ^a	Peak Potentially Overlapping Emissions, (tons/quarter)					
	VOC	NO _x	CO	SO _x	PM ₁₀	PM _{2.5}
1 Runway Safety Area Improvements-South Airfield	-- ^b	-- ^b	-- ^b	-- ^b	-- ^b	-- ^b
2 Runway Safety Area Improvements-North Airfield	0.3	1.4	4.9	<1	0.2	0.0
3 LAX Bradley West Project – Remaining Work	1.1	8.1	6.4	<1	2.0	0.7
4 Terminal 3 Connector (Part of Bradley West Project)	-- ^b	-- ^b	-- ^b	-- ^b	-- ^b	-- ^b
5 North Terminals Major Renovation (T-1)	0.1	0.4	-- ^b	<1	0.1	0.0
6 South Terminals Major Renovation (T-5 through T-8)	0.3	0.8	0.6	<1	0.1	0.1
7 Midfield Satellite Concourse: Phase 1 - North Concourse Project	1.2	9.0	7.1	<1	2.2	0.7
8 Central Utility Plant Replacement Project – Remaining Work	-- ^b	-- ^b	-- ^b	-- ^b	-- ^b	-- ^b
9 Miscellaneous Projects/Improvements	6.4	32.3	23.9	<1	4.2	1.7
10 LAX Northside Area Development ^c	4.0	5.5	25.3	<1	0.8	0.2
11 LAX Master Plan Alt. D/SPAS Alt. 3 ^c	12.2	157.2	61.7	<1	64.5	10.2
12 Metro Crenshaw / LAX Transit Corridor and Station	1.0	8.8	4.9	<1	1.0	0.6
Total from Other Construction Projects, lbs/day	26.7	223.6	134.7	<1	75.0	14.2
Proposed Project Peak Overlapping Daily Emissions, tons/quarter	0.1	1.2	1.8	<1	0.3	0.2
Total Cumulative Construction Project Emissions, tons/quarter	26.8	224.8	136.4	<1	75.3	14.4
SCAQMD Construction Emission Significance Thresholds, converted into tons/quarter ^d	3.42	4.56	25.09	6.84	6.84	2.51
Emissions Exceed SCAQMD Project-Level Threshold?	Yes	Yes	Yes	No	Yes	Yes

Notes:

^a Project construction is estimated to occur from 2014 to 2018, with the peak Project construction activity occurring in 2014 and 2015.

^b Project is not anticipated to result in overlapping construction emissions from this related project during the estimated combined peak day.

^c Improvements contemplated under this Project still require a number of federal and local approvals, including completion of environmental review documents and processes, and are several years away from implementation. For the purposes of this cumulative impacts analysis, conservative assumptions were made relative to construction of such improvements beginning early enough to overlap construction of the proposed Project.

^d The SCAQMD daily construction emission significance thresholds were converted into tons per quarter by multiplying the daily threshold by 365 days, dividing by 4, and applying the conversion rate of 2,000 pounds per ton.

Sources: CDM Smith (list and characteristics of proposed Project and concurrent projects), September 2013; Crenshaw/LAX Transit Corridor Project FEIR (Metro Crenshaw/LAX Transit Corridor cost), August 2011; www.metro.net/projects/crenshaw_corridor.com (Metro Crenshaw/LAX Transit Corridor schedule), accessed September 2013; Ricondo & Associates, Inc., September 2013.

4.2 Greenhouse Gas Emissions

4.2.1 Introduction

This greenhouse gas (GHG) analysis examines potential GHG emissions associated with the proposed Project, as may contribute to global climate change (GCC) impacts. The analysis addresses the change in GHG emissions from construction and operational activities associated with the proposed Project. This section describes applicable federal, State, and local regulations that address GHG emissions and GCC in California and the City of Los Angeles. Existing climate conditions and influences on GCC are also described, and an analysis is provided to assess potential cumulative and Project-related GHG contributions to GCC that could result from the proposed Project. The analysis accounts for energy and resource conservation measures that have been incorporated into the proposed Project and pertinent State mandated GHG emission reduction measures. Air quality effects associated with criteria pollutant (ambient air pollutant) emissions and emissions of toxic air contaminants are discussed in Section 4.1, *Air Quality*, of this Environmental Impact Report (EIR). GHG emission calculations prepared for the proposed Project are provided in Appendix B, *Air Quality, Greenhouse Gas, and Human Health Risk Assessment*, of this EIR.

4.2.1.1 Global Climate Change

Briefly stated, GCC is a change in the average climatic conditions of the earth, as characterized by changes in wind patterns, storms, precipitation, and temperature. The baseline by which these changes are measured originates in historical records identifying temperature changes that have occurred in the past, such as during previous ice ages. Many of the recent concerns over GCC use these data to extrapolate a level of statistical significance, specifically focusing on temperature records from the last 150 years (the Industrial Age) that differ from previous climate changes in rate and magnitude.

The United Nations Intergovernmental Panel on Climate Change (IPCC) developed several emission projections of GHGs needed to stabilize global temperatures and climate change impacts. The IPCC predicted that the range of global mean temperature change from 1990 to 2100, given six scenarios, could range from 1.1 to 6.4 degrees Celsius (C).¹ Regardless of analytical methodology, global average temperature and mean sea level are expected to rise under all scenarios.

Climate models applied to California's conditions project that, under different scenarios, temperatures in California are expected to increase by 3 to 10.5 degrees Fahrenheit (F).² Almost all climate scenarios include a continuing trend of warming through the end of the century given the substantial amounts of GHGs already released, and the difficulties associated with reducing emissions to a level that would stabilize the climate. According to the 2006 *California Climate Action Team Report*, the following climate change effects are predicted in California over the course of the next century.³

¹ Intergovernmental Panel on Climate Change, Climate Change 2007: Synthesis Report. Contribution of Working Groups I, II and III to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change, 2007.

² California Climate Change Center, Our Changing Climate: Assessing the Risks to California, 2006.

³ California Environmental Protection Agency, Climate Action Team, Report to Governor Schwarzenegger and the

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- A diminishing Sierra snowpack declining by 70 to 90 percent, threatening the state's water supply.
- Increasing temperatures, as noted above, of up to approximately 10 degrees F under the higher emission scenarios, leading to a 25 to 35 percent increase in the number of days ozone pollution levels are exceeded in most urban areas.
- Coastal erosion along the length of California and seawater intrusion into the Sacramento-San Joaquin River Delta from a 4- to 33-inch rise in sea level. This would exacerbate flooding in already vulnerable regions.
- Increased vulnerability of forests due to pest infestation and increased temperatures.
- Increased challenges for the state's important agricultural industry from water shortages, increasing temperatures, and saltwater intrusion into the Sacramento-San Joaquin River Delta.
- Increased electricity demand, particularly in the hot summer months.

As such, temperature increases would lead to adverse environmental impacts in a wide variety of areas, including: sea level rise, reduced snowpack resulting in changes to existing water resources, increased risk of wildfires, and public health hazards associated with higher peak temperatures, heat waves, and decreased air quality.

4.2.1.2 Greenhouse Gases

Parts of the earth's atmosphere act as an insulating blanket, trapping sufficient solar energy to keep the global average temperature in a suitable range. The blanket is a collection of atmospheric gases called GHGs. These gases – primarily water vapor, carbon dioxide (CO₂), methane (CH₄), nitrous oxide (N₂O), ozone, chlorofluorocarbons (CFCs), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), and sulfur hexafluoride (SF₆) – all act as effective global insulators, reflecting back to earth visible light and infrared radiation. Human activities, such as producing electricity and driving vehicles, have elevated the concentrations of these gases in the atmosphere. Many scientists believe that these elevated levels, in turn, are causing the earth's temperature to rise. A warmer earth may lead to changes in rainfall patterns, much smaller polar ice caps, a rise in sea level, and a wide range of impacts on plants, wildlife, and humans.

Climate change is driven by “forcings” and “feedbacks.” A feedback is “an internal climate process that amplifies or dampens the climate response to a specific forcing.”⁴ Radiative forcing is the difference between the incoming energy and outgoing energy in the climate system. The global warming potential (GWP) is the potential of a gas or aerosol to trap heat in the atmosphere; it is the “cumulative radiative forcing effects of a gas over a specified time horizon resulting from the emission of a unit mass of gas relative to a reference gas.”⁵ Individual GHG species have varying GWP and atmospheric lifetimes. The carbon dioxide equivalent (CO₂e) -- the mass emissions of an individual GHG multiplied by its GWP -- is a consistent methodology for comparing GHG emissions because it normalizes various GHG emissions to a consistent

⁴ California Legislature, March 2006.

⁴ National Research Council of the National Academies, Radiative Forcing of Climate Change: Expanding the Concept and Addressing Uncertainties, 2005.

⁵ U.S. Environmental Protection Agency, Glossary of Climate Terms, Available: <http://www.epa.gov/climatechange/glossary.html>, Accessed February 14, 2012.

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metric. The reference gas for GWP is CO₂; CO₂ has a GWP of 1. Compared to CH₄'s GWP of 21,⁶ CH₄ has a greater global warming effect than CO₂ on a molecule-per-molecule basis. **Table 4.2-1** identifies the GWP of several select GHGs.

Table 4.2-1

Global Warming Potentials and Atmospheric Lifetimes of Select Greenhouse Gases

Gas	Atmospheric Lifetime (Years)	Global Warming Potential (100 Year Time Horizon)
Carbon Dioxide	50 - 200	1
Methane	12 ± 3	21
Nitrous Oxide	120	310
HFC-23	264	11,700
HFC-134a	14.6	1,300
HFC-152a	1.5	140
PFC: Perfluoromethane (CF ₄)	50,000	6,500
PFC: Perfluoroethane (C ₂ F ₆)	10,000	9,200
Sulfur Hexafluoride (SF ₆)	3,200	23,900

Source: Intergovernmental Panel on Climate Change, Climate Change 1995: The Science of Climate Change. Contribution of Working Group I to the Second Assessment Report (SAR) of the Intergovernmental Panel on Climate Change, 1996.⁷

4.2.2 Methodology

A number of methodologies and significance thresholds have been proposed for analyzing impacts on GCC. However, at this time no definitive thresholds or methodologies that are applicable to the proposed Project have been adopted for determining the significance of the proposed Project's cumulative contribution to GCC in California Environmental Quality Act (CEQA) documents.

For the purposes of this EIR, as is explained in more detail below, total GHG emissions from the proposed Project were quantified to determine whether the proposed Project would be consistent with the Global Warming Solutions Act of 2006, also known as Assembly Bill (AB) 32 (i.e., reduction of statewide GHG emissions to 1990 levels by 2020). The mandate of AB 32 demonstrates California's commitment to reducing GHG emissions and the State's associated contribution to climate change, without intending to limit population or economic growth within the State.

⁶ Intergovernmental Panel on Climate Change (IPCC), Climate Change 1995: The Science of Climate Change. Contribution of Working Group I to the Second Assessment Report (SAR) of the Intergovernmental Panel on Climate Change, 1996.

⁷ GWP values have been updated in IPCC's subsequent assessment reports (e.g., Third Assessment Report [TAR], etc.). However, in accordance with international and U.S. convention to maintain the value of the carbon dioxide 'currency', GHG emission inventories are calculated using the GWPs from the IPCC SAR.

4.2 Greenhouse Gas Emissions

Various guidance documents, such as The Climate Registry *General Reporting Protocol* (GRP) (version 2.0, March 2013), the joint California Air Resources Board (CARB), California Climate Action Registry (CCAR), and International Council for Local Environmental Initiatives (ICLEI) *Local Government Operations Protocol* (LGOP) (version 1.1, May 2010), and the Association of Environmental Professionals (AEP) *Community-wide GHG Emissions Protocol*, propose generally consistent methodologies for preparing GHG inventories. However, these methodologies have been developed for varying purposes and not specifically for CEQA. Relying on these guidance documents, this analysis addresses both direct and indirect GHG emissions, which are defined as follows:

- Direct Emissions: Direct sources of GHG emissions from the proposed Project include the consumption of natural gas for airport operations, including heating/cooling; worker, and vendor car/truck trips; construction and operation equipment; and landscape activities.
- Indirect Emissions: Indirect sources of GHG emissions related to the proposed Project include the consumption of purchased electricity and water usage.

CARB believes that consideration of so-called indirect emissions provides a more complete picture of the GHG footprint of a facility: “As facilities consider changes that would affect their emissions – addition of a cogeneration unit to boost overall efficiency even as it increases direct emissions, for example – the relative impact on total (direct plus indirect) emissions by the facility should be monitored. Annually reported indirect energy usage also aids the conservation awareness of the facility and provides information” to CARB to be considered for future strategies by the industrial sector.⁸ For these reasons, CARB has proposed requiring the calculation of direct and indirect GHG emissions as part of the AB 32 reporting requirements. Additionally, the California Office of Planning and Research (OPR) directs lead agencies to “make a good-faith effort, based on available information, to calculate, model, or estimate...GHG emissions from a project, including the emissions associated with vehicular traffic, energy consumption, water usage and construction activities.”⁹ Therefore, direct and indirect emissions have been calculated for the proposed Project.

In estimating the GHG emissions of an individual business or facility, the *GHG Protocol Corporate Accounting and Reporting Standard*, developed by the World Business Council for Sustainable Development and World Resources Institute,¹⁰ provides standards and guidance for companies and other organizations preparing a GHG emissions inventory. The standard is written primarily from the perspective of a business developing a GHG inventory. The *GHG Protocol* provides the accounting framework for nearly every GHG standard and program in the world from the International Standards Organization to the European Union Emissions Trading

⁸ California Air Resources Board (ARB), 2007a. Initial Statement of Reasons for Rulemaking, Proposed Regulation for Mandatory Reporting of Greenhouse Gas Emissions Pursuant to the California Global Warming Solutions Act of 2006 (Assembly Bill 32). Planning and Technical Support Division Emission Inventory Branch, October 19, 2007.

⁹ Office of Planning and Research (OPR), Technical Advisory, CEQA and Climate Change: Addressing Climate Change Through California Environmental Quality Act (CEQA) Review, June 2008, p. 5, Available: <http://opr.ca.gov/docs/june08-ceqa.pdf>. Accessed: April 2013.

¹⁰ World Business Council for Sustainable Development and World Resources Institute, The Greenhouse Gas Protocol: A Corporate Accounting and Reporting Standard, Revised Edition, April 2004, Available: <http://www.ghgprotocol.org/files/ghgp/public/ghg-protocol-revised.pdf>.

4.2 Greenhouse Gas Emissions

Scheme to the CCAR, as well as hundreds of GHG inventories prepared by individual companies.

The *GHG Protocol* divides GHG emissions into three source types or “scopes,” ranging from GHGs produced directly by the business to more indirect sources of GHG emissions, such as employee travel and commuting. Direct and indirect emissions can be generally separated into three broad scopes as follows:

- Scope 1: All direct GHG emissions.
- Scope 2: Indirect GHG emissions from consumption of purchased electricity, heat, or steam (i.e., GHG emissions generated at the power plant that provides electricity at the demand of the site/facility).
- Scope 3: Other indirect (optional) GHG emissions, such as the extraction and production of purchased materials and fuels, transport-related activities in vehicles not owned or controlled by the reporting entity, electricity-related activities (e.g., transmission and distribution losses) not covered in Scope 2, outsourced activities, waste disposal, and construction.

As relates to the proposed Project, direct, or Scope 1, GHG emissions would include the incremental increase in emissions from the towing and taxiing of aircraft to the proposed Project site. Scope 2 emissions would include those from the use of electricity and natural gas by the proposed hangars. Scope 3 emissions would include emissions from employee commutes, the disposal and decomposition of waste generated by the operation and construction of the proposed Project, construction activities, water consumption and wastewater treatment. For purposes of this analysis, it is considered reasonable and consistent with criteria pollutant calculations to consider only those GHG emissions resulting from the proposed Project that would contribute to an incremental (net) increase compared to existing conditions. This includes proposed Project construction activities such as demolition, hauling, and construction worker trips (Scope 3), as well as the operational emissions from energy use from the proposed aircraft hangars (Scope 2) and waste generation from hangar activities (Scope 3). The future operation of the proposed Project would not result in long-term operational changes to traffic activity and traffic flows within the airport study area as, in the long-term, the proposed Project would not increase the number of employees or airline passengers traveling to/through the Los Angeles International Airport (LAX). Thus, new on-road vehicle traffic would not be generated and emissions from vehicle traffic are not included. Since potential impacts resulting from GHG emissions are long-term rather than acute, GHG emissions are calculated on an annual basis.

4.2.2.1 Construction

GHG emissions associated with construction of the proposed Project were calculated based on methodologies provided in The Climate Registry GRP Version 2.0.¹¹ The GRP is the guidance document that Los Angeles World Airports (LAWA) and other members of The Climate Registry must use to prepare annual GHG inventories for the Registry. Therefore, for consistency, the GRP also was used in this study. However, to adapt the GRP for CEQA purposes, a modification to the GRP operational and geographical boundaries was necessary. The GRP requires all emissions to be reported, as well as all direct and indirect emissions owned or controlled by the reporting entity (in this case, LAWA). Since GHG emissions were

¹¹ The Climate Registry, General Reporting Protocol, Version 2.0, March 2013.

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restricted to only those that could be affected by the proposed Project, this represents an appropriate and necessary deviation from the GRP, consistent with the requirements of CEQA.

The proposed Project-related construction sources for which GHG emissions were calculated include:

- Off-road construction equipment.
- On-road trucks.
- Construction worker commute vehicles.

Emissions were calculated using the California Emissions Estimator Model (CalEEMod), Version 2013.2. CalEEMod is a Statewide land use emissions computer model that calculates criteria pollutant and GHG emissions associated with a variety of land use projects. The model was developed in collaboration with the air districts of California including the South Coast Air Quality Management District (SCAQMD). CalEEMod incorporates the on-road Emissions Factor (EMFAC2011) model and the 2011 Inventory Model for Off-Road Diesel Equipment (OFFROAD2011),¹² which are emissions estimation models developed by the CARB to calculate emissions from motor vehicles and heavy-duty equipment. CalEEMod generates GHG emissions results for CO₂, CH₄, and N₂O, which are the GHGs associated with and relevant to the proposed Project. In CalEEMod, GHG emissions for certain sources, such as solid waste, are derived from emission factors published in the *2006 Intergovernmental Panel on Climate Change (IPCC) Guidelines for National Greenhouse Gas Inventories*. These emissions are then converted to units of metric tons of CO₂e (MTCO₂e) for consistency. The CO₂e values are calculated for the entire construction period in order to generate a net change in GHG emissions caused by Project construction (refer to Appendix B of this EIR). In accordance with SCAQMD guidance¹³, GHG emissions from construction have been amortized over the 30-year lifetime of the proposed Project (i.e., total construction GHG emissions were divided by 30 to determine an annual construction emissions estimate comparable to operational emissions).

4.2.2.2 Operations

Operational sources of emissions are generally divided into two categories: mobile and stationary. Examples of LAX-related mobile sources include aircraft, ground support equipment (GSE), and on-road motor vehicles. Examples of LAX-related stationary sources include natural gas space heaters. Operational GHG impacts were assessed based on the net new incremental increase in emissions compared to existing conditions. In accordance with the *CEQA Guidelines* and the *L.A. CEQA Thresholds Guide*, the impacts of the proposed Project were compared to baseline conditions to determine significance under CEQA.

As discussed in Chapter 2, *Project Description*, the intent of the proposed Project is to consolidate, relocate, and modernize some of the existing aircraft maintenance facilities at LAX consistent with the LAX Master Plan. Operation of the proposed Project would not result in additional or increased operational or maintenance activities and would not result in net new

¹² OFFROAD 2007 emission factors were used in this analysis as CARB's 2011 Inventory Model for Off-Road Diesel Equipment does not provide emission factors for GHG emissions.

¹³ South Coast Air Quality Management District, Draft Guidance Document – Interim CEQA Greenhouse Gas (GHG) Significance Threshold, October 2008.

4.2 Greenhouse Gas Emissions

vehicle trips to LAX. The proposed Project is not expected to increase the number of run-ups from aircraft engine testing compared to the current condition. Improvements associated with the LAX Master Plan would consolidate, relocate and modernize existing maintenance operations and run-ups in the western area of LAX. The proposed Project would shift an estimated 60 annual (five monthly) existing run-ups in the western area of LAX to the Project site, also located in the western area of LAX. Thus, the proposed Project would not result in net new GHG emissions from run-ups. The proposed Project would not increase passenger or gate capacity and would not increase flights and/or aircraft operations at LAX. Thus, on-road motor vehicle GHG emissions were not included in the inventory, since there would be no new vehicle trips associated with the proposed Project. In addition, emissions from aircraft landing and takeoff operations (LTO) would not increase and were not included in this inventory. The future operation of the proposed Project would not result in long-term operational changes to traffic activity and traffic flows within the airport study area as, in the long-term, the proposed Project would not increase the number of employees or airline passengers traveling to/through LAX.

However, compared to baseline conditions, the distance between the terminal gates and maintenance area is further under the proposed Project. Aircraft being maintained at the proposed Project facilities would need to taxi or be towed further; thus, some incremental emissions would be generated from either aircraft engines for those taxiing or from the aircraft tugs that tow the aircraft to and from maintenance. The use of the existing maintenance areas that would be replaced with proposed Project was reviewed, and the following assumptions and methodology were developed to calculate these incremental emissions:

- On a daily basis, 26 aircraft would move between the gates and the maintenance areas:
 - 20 aircraft would be towed per day, using a towbarless aircraft tractor represented by a model year 2005, 400 horsepower wide body aircraft tug, at an average speed of 15 miles per hour (mph); and
 - 6 aircraft per day would taxi at an average speed of 17 mph. These aircraft were represented by a Boeing 737-300 with CFM56-3-B1 engines, a Boeing 757-300 with RB211-535E4B Phase 5 engines, and a Boeing 767-300 with CF6-80A2 engines. For each pollutant, the engine with the highest emission factor was assumed for all 6 daily aircraft movements.
- Incremental distances (proposed Project minus baseline) ranged from 1.0 to 2.4 miles, one way.
- Aircraft engine emission factors were obtained from FAA's Emissions and Dispersion Modeling System (i.e., EDMS model), version 5.1.4.
- Aircraft tug emission factors and load factors were obtained from CARB's OFFROAD 2011 and OFFROAD 2007¹⁴ emission models.
- The modeling of emissions associated with towing activities is based on the use of diesel-fueled GSE, which provides for a conservative analysis. LAX has committed to converting GSE to low and ultra-low emission technology (e.g., electric, fuel cell, and other future low-emission technologies). The program to convert the LAX GSE fleet is currently being implemented. Thus, future actual emissions associated with towing are likely to be lower as this program is implemented.

¹⁴ OFFROAD 2007 emission factors were used in this analysis as CARB's 2011 Inventory Model for Off-Road Diesel Equipment does not provide emission factors for GHG emissions.

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While the proposed Project would develop the site with taxiways and aircraft parking apron areas, maintenance hangars, and related facilities, and consolidate and modernize existing aircraft maintenance activities, these activities already occur at LAX. Since the activities that would occur in the new maintenance area already generate emissions through current activities, any net change in such emissions due to their relocation to the site would be negligible in comparison to the emissions that occur from existing maintenance activities. For the purposes of this assessment, the proposed aircraft maintenance hangar building is assumed to result in no net new (no additional) emissions. Therefore, no incremental stationary source GHG emissions were included in the operational impact analysis.

4.2.3 Existing Conditions

4.2.3.1 Regulatory Context Setting

4.2.3.1.1 International and Federal Regulations and Directives

International Governmental Panel on Climate Change

In 1988, the United Nations and the World Meteorological Organization established the IPCC to assess "the scientific, technical and socioeconomic information relevant to understanding the scientific basis of risk of human-induced climate change, its potential impacts, and options for adaptation and mitigation."

United Nations Framework Convention on Climate Change

On March 21, 1994, the United States (U.S.) joined other countries around the world in signing the United Nations Framework Convention on Climate Change (UNFCCC). Under the Convention, governments gather and share information on GHG emissions, national policies, and best practices; launch national strategies for addressing GHG emissions and adapting to expected impacts, including the provision of financial and technological support to developing countries; and cooperate in preparing for adaptation to the impacts of climate change.

Kyoto Protocol

The Kyoto Protocol (or Protocol) is a treaty made under the UNFCCC. Countries can sign the treaty to demonstrate their commitment to reduce their emissions of GHGs or engage in emissions trading. More than 160 countries, accounting for 55 percent of global emissions, are under the protocol. The U.S. symbolically signed the Protocol in 1998. However, in order for the Protocol to be formally ratified, it must be adopted by the U.S. Senate, which has not been done to date. The original GHG reduction commitments made under the Protocol expired at the end of 2012. A second commitment period was agreed to at the Doha, Qatar, meeting held December 8, 2012, which extended the commitment period to December 31, 2020.

Massachusetts et al. v. United States Environmental Protection Agency et al.

Massachusetts et. al. v. Environmental Protection Agency et. al. (549 U.S. 497 [2007]) was argued before the U.S. Supreme Court on November 29, 2006, in which it was petitioned that

4.2 Greenhouse Gas Emissions

U.S. Environmental Protection Agency (USEPA) regulate four GHGs, including CO₂, under Section 202(a)(1) of the federal Clean Air Act (CAA). The Court issued an opinion on April 2, 2007, in which it held that petitioners have standing to challenge the USEPA, that the USEPA has statutory authority to regulate emissions of GHGs from motor vehicles, and that the USEPA had not adequately justified its decision not to regulate GHGs.

Endangerment Finding

The USEPA subsequently published its endangerment finding for GHGs in the Federal Register,¹⁵ which responds to this court case. The USEPA Administrator determined that six GHGs, taken in combination, endanger both the public health and welfare of current and future generations. Although the endangerment finding discusses the effects of six GHGs, it acknowledges that transportation sources only emit four of the key GHGs: CO₂, CH₄, N₂O, and HFCs. Further, the USEPA Administrator found that the combined emissions of these GHGs from new motor vehicles contribute to air pollution that endangers the public health and welfare under the CAA, Section 202(a).

GHG and Fuel Efficiency Standards for Passenger Cars and Light-Duty Trucks

In April 2010, the USEPA and National Highway Traffic Safety Administration (NHTSA) finalized GHG standards for new (model year 2012 through 2016) passenger cars, light-duty trucks, and medium-duty passenger vehicles. Under these standards, CO₂ emission limits would decrease from 295 grams per mile (g/mi) in 2012 to 250 g/mi in 2016 for a combined fleet of cars and light trucks. If all of the necessary emission reductions were made from fuel economy improvements, then the standards would correspond to a combined fuel economy of 30.1 miles per gallon (mpg) in 2012 and 35.5 mpg in 2016. The agencies issued a joint Final Rule for a coordinated National Program for model years 2017 to 2025 light-duty vehicles on August 28, 2012, that would correspond to a combined fuel economy of 36.6 mpg in 2017 and 54.5 mpg in 2025.

GHG and Fuel Efficiency Standards for Medium- and Heavy-Duty Engines and Vehicles

In October 2010, the USEPA and NHTSA announced a program to reduce GHG emissions and to improve fuel efficiency for medium- and heavy-duty vehicles (model years 2014 through 2018). These standards were signed into law on August 9, 2011. The two agencies' complementary standards form a new Heavy-Duty National Program that has the potential to reduce GHG emissions by 270 million metric tons and to reduce oil consumption by 530 million barrels over the life of the affected vehicles.

¹⁵ U.S. Environmental Protection Agency, Endangerment and Cause or Contribute Findings for Greenhouse Gases Under Section 202(a) of the CAA, Federal Register 74 (15 December 2009): 66496-66546.

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4.2.3.1.2 State Regulations and Directives

Title 24 Energy Standards

Although not originally intended to reduce GHG emissions, California's Energy Efficiency Standards for Residential and Nonresidential Buildings (California Code of Regulations, Title 24, Part 6) were first established in 1978 in response to a legislative mandate to reduce California's energy consumption. The standards are updated periodically to allow consideration and possible incorporation of new energy efficient technologies and methods. The latest amendments were made in April 2008 and went into effect on January 1, 2010. The premise for the standards is that energy efficient buildings require less electricity, natural gas, and other fuels. Electricity production from fossil fuels and on-site fuel combustion (typically for water heating) results in GHG emissions. Therefore, increased energy efficiency in buildings results in fewer GHG emissions on a building-by-building basis.

California Assembly Bill 1493 (AB 1493) - Pavley

Enacted on July 22, 2002, this bill required CARB to develop and adopt regulations that reduce GHGs emitted by passenger vehicles and light-duty trucks. Regulations adopted by CARB apply to 2009 and later model year vehicles. CARB estimates that the regulation will reduce GHG emissions from the light-duty and passenger vehicle fleet by an estimated 18 percent in 2020 and by 27 percent in 2030, compared to recent years. In 2011, the U.S. Department of Transportation, USEPA, and California announced a single timeframe for proposing fuel and economy standards, thereby aligning the Pavley standards with the federal standards for passenger cars and light-duty trucks.

Executive Order S-3-05

California Governor Arnold Schwarzenegger announced on June 1, 2005, through Executive Order S-3-05, the following GHG emission reduction targets for all of California: by 2010, reduce GHG emissions to 2000 levels; by 2020, reduce GHG emissions to 1990 levels; and by 2050, reduce GHG emissions to 80 percent below 1990 levels.

California Assembly Bill 32 (AB 32)

AB 32, titled The California Global Warming Solutions Act of 2006 and signed by Governor Schwarzenegger in September 2006, requires CARB to adopt regulations to require the reporting and verification of statewide GHG emissions and to monitor and enforce compliance with the program. In general, the bill requires CARB to reduce statewide GHG emissions to the equivalent of those in 1990 by 2020. CARB adopted regulations in December 2007 for mandatory GHG emissions reporting. On August 24, 2011, CARB adopted the scoping plan indicating how emission reductions will be achieved. Part of the scoping plan includes an economy-wide cap-and-trade program. The final cap-and-trade plan was approved on October 21, 2011 and went into effect on January 1, 2013.

California Senate Bill 375 (SB 375)

SB 375 requires CARB to set regional targets for 2020 and 2035 to reduce GHG emissions from passenger vehicles. A regional target will be developed for each of the 18 metropolitan

4.2 Greenhouse Gas Emissions

planning organizations (MPOs) in the State; the Southern California Association of Governments (SCAG) is the MPO that has jurisdiction over the Project area. A Regional Targets Advisory Committee (RTAC) was appointed by CARB to provide recommendations to be considered and methodologies to be used in CARB's target setting process. The final RTAC report was released on January 23, 2009.

Each MPO is required to develop Sustainable Community Strategies through integrated land use and transportation planning and to demonstrate an ability to attain the proposed reduction targets by 2020 and 2035. CARB issued an eight percent per capita reduction target to the SCAG region for 2020 and a target of 13 percent by 2035. SCAG adopted the Regional Transportation Plan/Sustainable Community Strategies for the six-county Southern California region on April 4, 2012.

Executive Order S-01-07 and the Low Carbon Fuel Standard (LCFS)

California Executive Order S-01-07 established a statewide goal to reduce the carbon intensity of transportation fuels sold in California by at least 10 percent by 2020 from 2005. The Executive Order also mandated the creation of an LCFS for transportation fuels. The LCFS requires that the life-cycle GHG emissions for the mix of fuels sold in California decline on average. Each fuel provider may meet the standard by selling fuel with lower carbon content, using previously banked credits from selling fuel that exceeded the LCFS, or purchasing credit from other fuel providers who have earned credits.¹⁶ On December 29, 2011, U.S. District Judge Lawrence O'Neill granted an injunction to prevent CARB from implementing the LCFS because it violates a federal law on interstate commerce. The Ninth Circuit Court of Appeals vacated the preliminary injunction on September 19, 2013, and found that the LCFS did not discriminate against interstate commerce under the Commerce Clause. (*Rocky Mountain Farmers Union v. Corey*, No. 12-15135).

Senate Bill 97 (SB 97)

SB 97 requires the OPR to prepare guidelines to submit to the California Natural Resources Agency (CNRA) regarding feasible mitigation of GHG emissions or the effects of GHG emissions as required by CEQA. The CNRA adopted amendments to the *CEQA Guidelines* for GHG emissions on December 30, 2009. The amendments became effective on March 18, 2010. The guidelines apply retroactively to any incomplete EIR, negative declaration, mitigated negative declaration, or other related document, and are reflected in this EIR.¹⁷

Renewables Portfolio Standard

Senate Bill 1078 (SB 1078) (Chapter 516, Statutes of 2002) requires retail sellers of electricity, including investor-owned utilities and community choice aggregators, to provide at least 20 percent of their supply from renewable sources by 2017. SB 107 (Chapter 464, Statutes of 2006) changed the target date to 2010. In November 2008, the Governor signed Executive Order S-14-08, which expands the State's Renewable Energy Standard (the Renewable Portfolio Standard - RPS) to 33 percent renewable power by 2020. On September 15, 2009, the Governor issued Executive Order S-21-0911 requiring CARB, under its AB 32 authority, to

¹⁶ 17 California Code of Regulations, Section 95480 et seq., "Low Carbon Fuel Standard."

¹⁷ Senate Bill 97, August 24, 2007.

4.2 Greenhouse Gas Emissions

adopt regulations to meet a 33 percent RPS target by 2020. The CARB regulations would use a phased-in or tiered requirement to increase the amount of electricity from eligible renewable sources over an eight year period beginning in 2012. CARB adopted the regulations in September 2010. In March 2011, the Legislature passed SB X1-2, which was signed into law by the Governor the following month. SB X1-2 requires utilities to procure renewable energy products equal to 33 percent of retail sales by December 31, 2020 and also establishes interim targets: 20 percent by December 31, 2013 and 25 percent by December 31, 2016. SB X1-2 also applies to publicly-owned utilities in California. According to the most recent data available from the Los Angeles Department of Water and Power (LADWP), the utility provider for the City of Los Angeles, approximately 19 percent of its electricity purchases in 2011 were from eligible renewable sources.¹⁸

4.2.3.1.3 Local Regulations and Directives

Green LA

In May 2007, the City of Los Angeles introduced *Green LA - An Action Plan to Lead the Nation in Fighting Global Warming*.¹⁹ *Green LA* presents a framework targeted to reduce the City's GHG emissions by 35 percent below 1990 levels by 2030. The plan calls for an increase in the City's use of renewable energy to 35 percent by 2020 in combination with promoting water conservation, improving the transportation system, reducing waste generation, greening the ports and airports, creating more parks and open space, and greening the economic sector. *Green LA* identifies objectives and actions in various focus areas, including airports. The goal for airports is to "green the airports," and the following actions are identified: 1) fully implement the Sustainability Performance Improvement Management System (discussed below); 2) develop and implement policies to meet the U.S. Green Building Council's Leadership in Energy and Environmental Design (LEED®) green building rating standards in future construction; 3) improve recycling, increase use of alternative fuel sources, increase use of recycled water, increase water conservation, reduce energy needs, and reduce GHG emissions; and 4) evaluate options to reduce aircraft-related GHG emissions.

Climate LA

In 2008, the City of Los Angeles followed up *Green LA* with an implementation plan called *Climate LA - Municipal Program Implementing the Green LA Climate Action Plan*.²⁰ A Departmental Action Plan for LAWA is included in *Climate LA*, which identifies goals to reduce CO₂ emissions 35 percent below 1990 levels by 2030 at LAX and the other three LAWA airports, implement sustainability practices, and develop programs to reduce the generation of waste and pollutants. Actions are specified in the areas of aircraft operations, ground vehicles, electrical consumption, building, and other actions.

¹⁸ Los Angeles Department of Water and Power, "Power Content Label," <https://www.ladwp.com>. Accessed August 2013.

¹⁹ City of Los Angeles, *Green LA - An Action Plan to Lead the Nation in Fighting Global Warming*, 2007.

²⁰ City of Los Angeles, *Climate LA - Municipal Program Implementing the Green LA Climate Action Plan*, 2008.

City of Los Angeles Green Building Code (LAGBC)

In December 2010, the Los Angeles City Council approved Ordinance No. 181,481, which amended Chapter IX of the Los Angeles Municipal Code (LAMC) by adding a new Article 9 to incorporate various provisions of the 2010 CALGreen Code. The requirements of the adopted LAGBC apply to new building construction, building renovations, and building additions within the City of Los Angeles. Specific mandatory requirements and elective measures are provided for three categories: (1) low-rise residential buildings; (2) nonresidential and high-rise residential buildings; and (3) additions and alterations to nonresidential and high-rise residential buildings. Key measures in the LAGBC that apply to nonresidential buildings include, but are not limited to, the following:

- Construction – A Storm Water Pollution Prevention Plan conforming to the State Storm Water National Pollutant Discharge Elimination System Construction Permit or local ordinance, whichever is stricter, is required for a project regardless of acreage disturbed;
- Construction – Construction waste reduction of at least 50 percent of construction debris;
- Construction – 100 percent of trees, stumps, rocks and associated vegetation and soils resulting primarily from land clearing shall be reused or recycled;
- Transportation Demand – Designated parking for any combination of low emitting, fuel-efficient, and carpool/vanpool vehicles shall be provided;
- Energy Conservation – Electric vehicle supply wiring for a minimum of 5 percent of the total number of parking spaces shall be provided;
- Energy Conservation – Energy conservation for new buildings must exceed the California Energy Code (CEC) requirements, based on the 2008 Energy Efficiency Standards, by 15 percent using an Alternative Calculation Method approved by the CEC;
- Energy Conservation – Each appliance provided and installed shall meet Energy Star requirements, if an Energy Star designation is applicable for that appliance;
- Renewable Energy – Future access, off-grid prewiring, and space for electrical solar systems shall be provided;
- Water – A schedule of plumbing fixtures and fixture fittings shall be provided that will reduce the overall use of potable water within the building by at least 20 percent based on the maximum allowable water use per plumbing fixture and fittings as required by the California Building Standards Code; and
- Wastewater – Each building shall reduce wastewater by 20 percent based on the maximum allowable water use per plumbing fixture and fittings as required by the California Building Standards Code.

Los Angeles World Airports Sustainability

LAWA defines sustainability (and measures our sustainable performance) as the Triple Bottom Line, consistent with the Global Reporting Initiative (GRI) and CEQA, which are the social, economic, and environmental impacts of our organization. All projects are subject to various sustainable requirements in the City of Los Angeles and at LAWA, including, but not limited to:

4.2 Greenhouse Gas Emissions

- LAGBC (Ordinance 181479);
- Low Impact Development (Ordinance 181899);
- Standard Urban Stormwater Mitigation Plan (Ordinance 173494);
- Demolition Debris Recycling Program (Ordinance 181519);
- LAX Construction & Maintenance Services – Recycling Program; and
- LAX Master Plan – Mitigation Monitoring and Reporting Program (MMRP). Highlights of the LAX Master Plan MMRP include, but are not limited to the following measures:
 - C-1: Work with LAWA to approve and coordinate staging areas, haul routes, etc.;
 - MM-AQ-2: Utilize on-site rock-crushing facility, when feasible, during construction to reuse rock/concrete and minimize off-site truck-haul trips; and
 - W-1: Maximize use of Reclaimed Water.

All building projects in the City of Los Angeles are subject to the LAGBC, which is based on CALGreen with some modifications unique to the City of Los Angeles. The LAGBC is a code-requirement that is part of Title 24, and is enforced by the Los Angeles Department of Building & Safety (LADBS).

Given that the LAGBC has replaced LEED in the LAMC, LAWA has based its new sustainable construction standards on the mandatory and voluntary tiers defined in the LAGBC. All building projects with an LADBS permit-valuation over \$200,000 shall achieve LAGBC Tier 1 conformance, to be certified by LADBS during final plan check (on the issued building permit) and validated by the LADBS inspector during final inspection (on the Certificate of Occupancy). Should a project pose unique issues/circumstances based on the scope and/or location of work, LAWA may require more prescriptive approaches to resolving issues such as energy performance, site drainage, etc.

For tenant projects, the permittee shall submit copies of all LADBS Green Building Forms to the LAWA Project Manager prior to issuance of a Notice-To-Proceed. This information may be published in our Annual Sustainability Reports in accordance with the GRI Sustainability Reporting Guidelines and Airport Operators Sector Supplement.

The proposed Project would comply with the mandatory requirements for nonresidential buildings including the mandatory requirements for Tier 1 conformance, which are provided in **Table 4.2-2**. Not all measures are applicable to the proposed Project, as some measures provide requirements for residential buildings or facilities not present at the proposed Project. The specific measures that are applicable to the proposed Project and would be included as parts of the design of the proposed Project are indicated in the right-hand column in Table 4.2-2.

4.2 Greenhouse Gas Emissions

Table 4.2-2

City of Los Angeles Green Building Code Tier 1 Requirements for Newly-Constructed Nonresidential Buildings

Checklist for the City of Los Angeles	Measures		
	Mandatory	CALGreen Tier 1	Applicable to Proposed Project
Requirements			
Project meets all of the requirements of Divisions 5.1 through 5.5.	X		X (Not including measures for residential buildings or uses not associated with the Project; See below) ^a
Planning and Design			
A5.106.4 Bicycle parking and changing rooms. Comply with Sections 5.106.4.1 through 5.106.4.2; or meet local ordinance, whichever is stricter.	X		X See A5.106.4.1 and A5.106.4.2
A5.106.4.1 Short –term bicycle parking. If the project is anticipated to generate visitor traffic, provide permanently anchored bicycle racks within 200 feet of the visitors' entrance, readily visible to passers-by, for 5 percent of visitor motorized vehicle parking capacity, with a minimum of one two-bike capacity rack.	X		X Applicable only if there would be visitor traffic to the West Aircraft Maintenance Area Facility
A5.106.4.2 Long-term bicycle parking. For buildings with over ten tenant-occupants, provide secure bicycle parking for 5 percent of motorized vehicle parking capacity, with a minimum of one space.	X		X Applicable only if there would be buildings with over ten tenant-occupants
A5.106.5.1 Designated parking. Provide designated parking, by means of permanent marking or a sign, for any combination of low-emitting, fuel-efficient, and carpool/van pool vehicles as shown in Table A5.106.5.1.1 for Tier 1 at ten percent of total spaces.		X	X
A5.106.5.3.2 Electric vehicle supply wiring. Provide a minimum number of 208/240 volts 40 amp, grounded AC outlet(s), that is equal to 5 percent of the total number of parking spaces.	X		X

4.2 Greenhouse Gas Emissions

Table 4.2-2

**City of Los Angeles Green Building Code Tier 1 Requirements
for Newly-Constructed Nonresidential Buildings**

Checklist for the City of Los Angeles	Measures		
	Mandatory	CALGreen Tier 1	Applicable to Proposed Project
A5.106.8 Light pollution reduction. Comply with lighting power requirements in the California Energy Code and design interior and exterior lighting such that zero direct-beam illumination leaves the building site. Meet or exceed exterior light levels and uniformity ratios for lighting zones 1-4 as defined in Chapter 10 of the following strategies:	X		X
1. Shield all exterior luminaires or use cutoff luminaires.	X		X
2. Contain interior lighting within each source.	X		X
3. Allow no more than 0.01 horizontal foot candle 15 feet beyond the site.	X		X
4. Contain all exterior lighting within property boundaries.	X		X
A5.106.10 Grading and paving. The site shall be planned and developed to keep surface water away from buildings. Construction plans shall indicate how site grading or a drainage system will manage all surface water flows.	X		X
Energy Efficiency			
A5.203.1 Energy performance. Using an Alternative Calculation Method approved by the California Energy Commission, calculate each nonresidential building's time dependent valuation for energy and CO ₂ emissions, and compare it to the standard or "budget" building.			
A5.203.1.1 Tier 1. Exceed California Energy Code requirements, based on the 2008 Energy Efficiency Standards, by 15 percent		X	X
A5.203.1.3 Energy Efficiency. Exceed California Energy Code requirements, based on the 2008 Energy Efficiency Standards, by 15 percent.	X (6/01/11)		Measure included in A5.203.1.1

4.2 Greenhouse Gas Emissions

Table 4.2-2

**City of Los Angeles Green Building Code Tier 1 Requirements
for Newly-Constructed Nonresidential Buildings**

Checklist for the City of Los Angeles	Measures		
	Mandatory	CALGreen Tier 1	Applicable to Proposed Project
<i>Energy Systems</i>			
A.5.210.1 ENERGY STAR equipment and appliances. All residential grade equipment and appliances provided and installed shall be ENERGY STAR labeled if ENERGY STAR is applicable to that equipment or appliance.	X		X
<i>Renewable Energy</i>			
A5.211.4 Prewiring for future solar. Install conduit from the building roof or eave to a location within the building identified as suitable for future installation of a charge controller (regulator) and inverter.	X		X
A5.211.4.1 Off-grid prewiring for future solar. If battery storage is anticipated, conduit shall run to a location within the building that is stable, weather-proof, insulated against very hot and very cold weather, and isolated from occupied spaces.	X		Not Applicable: Project does not include battery storage for off-grid energy
<i>Water Efficiency and Conservation</i>			
<i>Indoor Water Use</i>			
A5.303.1.1 Buildings in excess of 50,000 square feet. Separate submeters shall be installed as follows:			
1. For each individual leased, rented, or other tenant space within the building project to consume more than 100 gallons per day.	X		X
2. For spaces used for laundry or cleaners, restaurant or food service, medical or dental office, laboratory or beauty salon or barber shop projected to consume more than 100 gallons per day.	X		Not Applicable: Project does not include these facilities/uses
A5.303.1.2 Excess consumption. Any building within a project or space within a building that is projected to consume more than 1,000 gallons per day.	X		X

4.2 Greenhouse Gas Emissions

Table 4.2-2

**City of Los Angeles Green Building Code Tier 1 Requirements
for Newly-Constructed Nonresidential Buildings**

Checklist for the City of Los Angeles	Measures		
	Mandatory	CALGreen Tier 1	Applicable to Proposed Project
A5.303.2. 20 Percent Savings. A schedule of plumbing fixtures and fixture fittings that will reduce the overall use of potable water within the building by 20 percent shall be provided. (Calculate savings by Water Use Worksheets.)	X		X
A5.303.2.1 Multiple showerheads serving one shower. When single shower fixtures are served by more than one showerhead, the combined flow rate of all the showerheads shall not exceed the maximum flow rates specified in the 20 percent reduction column contained in Table 5.303.2.3 or the shower shall be designed to only allow one showerhead to be in operation at a time.	X		Not Applicable: Project does not include showers
A5.303.2.3.1 Tier 1 – 30 percent savings. A schedule of plumbing fixtures and fixture fittings that will reduce the overall use of potable water within the building by 30 percent shall be provided.		X	X
A5.303.4 Wastewater reduction. Each building shall reduce the generation of wastewater by one of the following methods:			
1. The installation of water-conserving fixtures or	X		X
2. Utilizing non-potable water systems	X		X
A5.303.6 Plumbing fixtures and fittings. Plumbing fixtures (water closets and urinals) and fittings (faucets and showerheads) shall comply with the requirements listed for each type in Items listed in Table 5.303.6.			
1. Water closets (toilets) – flushometer type	X		X
2. Water closets (toilets) – tank type	X		X
3. Urinals	X		X
4. Public lavatory faucets	X		Not Applicable: Project does not include public faucets

4.2 Greenhouse Gas Emissions

Table 4.2-2

**City of Los Angeles Green Building Code Tier 1 Requirements
for Newly-Constructed Nonresidential Buildings**

Checklist for the City of Los Angeles	Measures		
	Mandatory	CALGreen Tier 1	Applicable to Proposed Project
5. Public metering self-closing faucets	X		Not Applicable: Project does not include public faucets
6. Residential bathroom lavatory sink faucets	X		Not Applicable: Project does not include residential faucets
7. Residential kitchen faucets	X		Not Applicable: Project does not include residential faucets
8. Residential shower heads	X		Not Applicable: Project does not include residential showers
9. Single shower fixtures served by more than one showerhead	X		Not Applicable: Project does not include showers
Outdoor Water Use			
A5.304.1 Water budget. A water budget shall be developed for landscape irrigation use. ^a	X		X
A5.304.2 Outdoor potable water use. Building on sites with 1,000 square feet or more of cumulative landscaped area shall have separate meters or submeters for indoor and outdoor potable water use.	X		X
A5.304.3 Irrigation design. Buildings on site with 1,000 square feet or more of cumulative irrigated landscaped area shall have irrigation controllers and sensors which include the following criteria, and meet manufacturer's recommendations.			

4.2 Greenhouse Gas Emissions

Table 4.2-2

**City of Los Angeles Green Building Code Tier 1 Requirements
for Newly-Constructed Nonresidential Buildings**

Checklist for the City of Los Angeles	Measures		
	Mandatory	CALGreen Tier 1	Applicable to Proposed Project
A5.304.3.1 Irrigation controllers. Automatic irrigation system controllers installed at the time of final inspection shall comply with the following:			
1. Controllers shall be weather- or soil moisture-based controllers that automatically adjust irrigation in response to changes in plants' needs as weather conditions change.	X		X
2. Weather –based controllers without integral rain sensors or communication systems that account for local rainfall shall have a separate wired or wireless rain sensor which connects or communicates with the controllers(s). Soil moisture-based controllers are not required to have rain sensor input.	X		X
A5.304.4 Potable water reduction. Provide water efficient landscape irrigation design that reduces by use of potable water.			
A5.304.4.1 Tier 1 – Reduce the use of potable water to a quantity that does not exceed 60 percent of evapotranspiration times the landscape area.		X	X
A5.304.4.3 Verification of compliance. A calculation demonstrating the applicable potable water use reduction required by this section shall be provided.		X	X
Material Sources			
A5.405.4 Recycled content, Tier 1. Use materials, equivalent in performance to virgin materials, with post-consumer or pre-consumer recycled content value.		X	X
Weather Resistance and Moisture Management			
A5.407.1 Weather protection. Provide a weather-resistant exterior wall and foundation envelope as required by Los Angeles Building Code Section 1403.2 and California Energy Code Section 150, manufacturer's installation instructions, or local ordinance, whichever is more stringent. ^a	X		X

4.2 Greenhouse Gas Emissions

Table 4.2-2

**City of Los Angeles Green Building Code Tier 1 Requirements
for Newly-Constructed Nonresidential Buildings**

Checklist for the City of Los Angeles	Measures		
	Mandatory	CALGreen Tier 1	Applicable to Proposed Project
A5.407.2 Moisture control. Employ moisture control measures by the following methods:			
A5.407.2.1 Sprinklers. Prevent irrigation spray on structures.	X		X
A5.407.2.2 Entries and openings. Design exterior entries and openings to prevent water intrusion into buildings.	X		X
Construction Waste Reduction, Disposal and Recycling			
A5.408.1 Construction waste diversion. Comply with Section 66.32 of the LAMC.	X		X
A5.408.3.1 Enhanced construction waste reduction. Divert to recycle or salvage non-hazardous construction and demolition debris generated at the site in compliance with Tier 1 – at least 65 percent reduction.		X	X
A5.408.4 Excavated soil and land clearing debris. 100 percent of trees, stumps, rocks and associated vegetation and soils resulting primarily from land clearing shall be reused or recycled.	X		X
Building Maintenance and Operation			
A5.410.1 Recycling by occupants. Provide readily accessible areas that serve the entire building and are identified for the depositing, storage, and collection of non-hazardous materials for recycling. ^a	X		X
A5.410.2 Commissioning. For new buildings 10,000 square feet and over, building commissioning for all building systems covered by T24, Part 6, process systems, and renewable energy systems shall be included in the design and construction processes of the building project. Commissioning requirements shall include as a minimum items listed in 5.410.2.	X		X

4.2 Greenhouse Gas Emissions

Table 4.2-2

**City of Los Angeles Green Building Code Tier 1 Requirements
for Newly-Constructed Nonresidential Buildings**

Checklist for the City of Los Angeles	Measures		
	Mandatory	CALGreen Tier 1	Applicable to Proposed Project
A5.410.2.1 Owner's Project Requirements. Documented before the design phase of the project begins the Owner's Project Requirements shall include items listed in 5.410.4.	X		X
A5.410.2.2 Basis of Design. A written explanation of how the design of the building systems meets the Owner's Project Requirements shall be completed at the design phase of the building project and shall include as a minimum items listed in 5.410.2.3.	X		X
A5.410.2.3 Commissioning plan. A commissioning plan describing how the project will be commissioned shall be started during the design phase of the building project and shall include as a minimum items listed in 5.410.2.3.	X		X
A5.410.2.4 Functional performance testing shall demonstrate the correct installation and operation of each component system, and system-to-system interface in accordance with the approved plans and specifications.	X		X
A5.410.2.5 Post construction documentation and training. A systems manual and systems operations training are required.	X		X
A5.410.2.5.1 Systems manual. The systems manual shall be delivered to the building owner and facilities operator and shall include the items listed in 5.410.2.5.1	X		X
A5.410.2.5.2 Systems operations training. The training of the appropriate maintenance staff for each equipment type and/or system shall include the items listed in 5.410.2.5.1.	X		X
A5.410.2.6 Commissioning report. A complete report of commissioning process activities undertaken through the design, construction and post-construction phases of the building project shall be completed and provided to the owner or representative.	X		X

4.2 Greenhouse Gas Emissions

Table 4.2-2

**City of Los Angeles Green Building Code Tier 1 Requirements
for Newly-Constructed Nonresidential Buildings**

Checklist for the City of Los Angeles	Measures		
	Mandatory	CALGreen Tier 1	Applicable to Proposed Project
A5.410.4 Testing, adjusting and balancing. Testing and adjusting of systems shall be required for buildings less than 10,000 square feet.			
A5.410.4.2 Systems. Develop a written plan of procedures for testing and adjusting systems. Systems to be included for testing and adjusting shall include at a minimum, as applicable to the project, the systems listed in 5.410.3.2.	X		X
A5.410.4.3 Procedures. Perform testing and adjusting in accordance with industry best practices and applicable national standards on each system.	X		X
A5.410.4.3.1 HVAC balancing. Before a new space-conditioning system serving a building or space is operated for normal use, the system should be balanced in accordance with the procedures defined by national standards listed in 5.410.3.3.1.	X		X
A5.410.4.4 Reporting. After completion of testing, adjusting and balancing, provide a final report of testing signed by the individual responsible for performing these services.	X		X
A5.410.4.5 Operation and maintenance manual. Provide the building owner with detailed operating and maintenance instructions and copies of guaranties/warranties for each system prior to final inspection.	X		X
A5.410.4.5.1 Inspections and reports. Include a copy of all inspection verifications and reports required by the Department.	X		X

4.2 Greenhouse Gas Emissions

Table 4.2-2

**City of Los Angeles Green Building Code Tier 1 Requirements
for Newly-Constructed Nonresidential Buildings**

Checklist for the City of Los Angeles	Measures		
	Mandatory	CALGreen Tier 1	Applicable to Proposed Project
Fireplaces			
A5.503.1 Fireplaces. Install only a direct-vent sealed-combustion gas or sealed wood-burning fireplace, or a sealed woodstove, and refer to residential requirements in the California Energy Code, Title 24, Part 6, Subchapter 7, Section 150.	X		Not Applicable: Project does not include fireplaces or woodstoves
A5.503.1.1 Woodstoves. Woodstove shall comply with USEPA Phase II emission limits.	X		Not Applicable: Project does not include woodstoves
Pollutant Control			
A5.504.3 Covering of duct openings and protection of mechanical equipment during construction. At the time of rough installation, or during storage on the construction site and until final startup of the heating and cooling equipment, all duct and other related air distribution component openings shall be covered with tape, plastic, sheetmetal or other methods acceptable to the Department to reduce the amount of dust or debris which may collect in the system.	X		X
A5.504.4 Finish material pollutant control. Finish materials shall comply with Sections 5.504.4.1 through 5.504.4.4.			
A5.504.4.1 Adhesives, sealants, caulks. Adhesives and sealants used on the project shall meet the requirements of the following standards.			
1. Adhesives, adhesive bonding primers, adhesive primers sealants, sealant primers, and caulks shall comply with local or regional air pollution control or air quality management district rules where applicable, or SCAQMD Rule 1168 VOC limits, as shown in Tables 5.504.4.1 and 5.504.4.2.	X		X

4.2 Greenhouse Gas Emissions

Table 4.2-2

**City of Los Angeles Green Building Code Tier 1 Requirements
for Newly-Constructed Nonresidential Buildings**

Checklist for the City of Los Angeles	Measures		
	Mandatory	CALGreen Tier 1	Applicable to Proposed Project
2. Aerosol adhesives, and smaller unit sizes of adhesive and sealant or caulking compounds (in units of product, less packaging, which do not weigh more than one pound and do not consist of more than 16 fluid ounces) shall comply with Statewide VOC standards and other requirements, including prohibitions on use of certain toxic compounds, or California Code of Regulations, Title 17, commencing with Section 94507.	X		X
A5.504.4.3 Paints and coatings. Architectural paints and coatings shall comply with Table 5.504.4.3 unless more stringent local limits apply.	X		X
A5.504.4.3.1 Aerosol Paints and Coatings. Aerosol paints and coatings shall meet the Product-Weighted MIR Limits for reactive organic compounds in section 94522(a)(3) and other requirements, including prohibitions on use of certain toxic compounds and ozone depleting substances (California Code of Regulations [CCR], Title 24, Section 94520 <i>et seq.</i>).	X		X
A5.504.4.3.2 Verification. Verification of compliance with this section shall be provided at the request of the Department.	X		X
A5.504.4.4 Carpet systems. All carpet installed in the building interior shall meet the testing and product requirements of one of the standards listed in 5.504.4.4.	X		X
A5.504.4.4.1 Carpet cushion. All carpet cushion installed in the building interior shall meet the requirements of the Carpet and Rug Institute Green Label program.	X		X
A5.504.4.4.2 Carpet adhesive. All carpet adhesive shall meet the requirements of Table 804.4.1.	X		X

4.2 Greenhouse Gas Emissions

Table 4.2-2

**City of Los Angeles Green Building Code Tier 1 Requirements
for Newly-Constructed Nonresidential Buildings**

Checklist for the City of Los Angeles	Measures		
	Mandatory	CALGreen Tier 1	Applicable to Proposed Project
A5.504.4.5 Composite wood products. Hardwood plywood, particleboard, and medium density fiberboard composite wood products used on the interior or exterior of the building shall meet the requirements for formaldehyde as specified in Table 5.504.4.	X		X
A5.504.4.5.2 Documentation. Verification of compliance with this section shall be provided as requested by the Department. Documentation shall include at least one of the following.	X		X
1. Product certification and specifications	X		X
2. Chain of custody certifications	X		X
3. Other methods acceptable to the Department	X		X
A5.504.4.6 Resilient flooring systems. Comply with the VOC-emission limits defined in the 2009 Collaborative for High Performance Schools (CHPS) criteria and listed on its Low-emitting Materials List (or Product Registry) or certified under the FloorScore program of the Resilient Floor Covering Institute.	X		X
A5.504.4.6.1 Verification of compliance. Documentation shall be provided verifying that resilient flooring materials meet pollutant emission limits.	X		X
A5.504.4.7 Resilient flooring systems Tier 1. For 80 percent of floor area receiving resilient flooring, install resilient flooring complying with the VOC-emission limits defined in the 2009 CHPS criteria and listed on its Low-emitting Materials List or certified under the FloorScore program of the Resilient Floor Covering Institute.		X	X
A5.504.4.7.2 Verification of compliance. Documentation shall be provided verifying that resilient flooring materials meet pollutant emission limits.		X	X

4.2 Greenhouse Gas Emissions

Table 4.2-2

**City of Los Angeles Green Building Code Tier 1 Requirements
for Newly-Constructed Nonresidential Buildings**

Checklist for the City of Los Angeles	Measures		
	Mandatory	CALGreen Tier 1	Applicable to Proposed Project
A5.504.4.8 Thermal Insulation, Tier 1. Comply with Chapter 12-13 in Title 24, Part 12 and with the VOC-emission limits defined in 2009 CHPS criteria listed on its Low-emitting Materials List.		X	X
A5.504.4.8.2 Verification of compliance. Documentation shall be provided verifying that thermal insulation materials meet pollutant emission limits.		X	X
A5.504.5 Hazardous particulates and chemical pollutants. Minimize and control pollutant entry into buildings and cross-contamination of regularly occupied areas.			
A5.504.5.3 Filters. In mechanically ventilated buildings, provide regularly occupied areas of the building with air filtration media for outside and return air prior to occupancy that provides at least a Minimum Efficiency Reporting Value of 8.	X		X
Indoor Moisture and Radon Control			
A5.505.1 Indoor moisture control. Buildings shall meet or exceed the provisions of Los Angeles Building Code, Sections 1203 and Chapter 14. ^b	X		X
Air Quality and Exhaust			
A5.506.1 Outside air delivery. For mechanically or naturally ventilated spaces in buildings, meet the minimum requirements of Section 121 of the California Energy Code, CCR, Title 24, Pat 6 and Chapter 4 of CCR, Title 8, or the applicable local code, and Division 1, whichever is more stringent. ^b	X		X

4.2 Greenhouse Gas Emissions

Table 4.2-2

**City of Los Angeles Green Building Code Tier 1 Requirements
for Newly-Constructed Nonresidential Buildings**

Checklist for the City of Los Angeles	Measures		
	Mandatory	CALGreen Tier 1	Applicable to Proposed Project
A5.506.2 Carbon dioxide (CO₂) monitoring. For buildings equipped with demand control ventilation, CO ₂ sensors and ventilation controls shall be specified and installed in accordance with the requirements of the latest edition of the California Energy Code, CCR, Title 24, Part 6, Section 121(c). ^b	X		X
Outdoor Air Quality			
A5.508.1 Ozone depletion and global warming reductions. Installations of HVAC, refrigeration, and fire suppression equipment shall comply with Sections 5.508.1.1 and 5.508.1.2.			
A5.508.1.1 CFCs. Install HVAC/refrigeration equipment that does not contain CFCs. ^b	X		X
A5.508.1.2 Halons. Install fire suppression equipment that does not contain Halons. ^b	X		X

Note:

^a Not all measures are applicable to the proposed Project, as some measures provide requirements for residential buildings or facilities not present at the proposed Project.

^b These measures are currently required by statute or in regulation.

Source: City of Los Angeles, Los Angeles Green Building Code, Article 9 of Chapter IX of the LAMC.

http://ladbs.org/LADBSWeb/LADBS_Forms/Publications/LAGreenBuildingCodeOrdinance.pdf, 2010.

4.2.3.2 Existing Greenhouse Gas Setting

According to the IPCC in 2007, worldwide man-made emissions of GHGs were approximately 40,000 MMTCO₂e²¹, including ongoing emissions from industrial and agricultural sources, but excluding emissions from land use changes (i.e., deforestation, biomass decay). Total U.S. GHG emissions in 2010 were 6,822 MMTCO₂e, or about 17 percent of worldwide GHG emissions.²² California is a substantial contributor of global GHGs as it is the second largest contributor in the United States (Texas is number one). CARB compiles GHG inventories for the State of California. Based on the 2010 GHG inventory data, California emitted 452 MMTCO₂e *including* emissions resulting from imported electrical power in 2010 and

²¹ IPCC, *Fourth Assessment Report: Climate Change 2007*.

²² USEPA, *Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990-2010*, (2012).

4.2 Greenhouse Gas Emissions

408 MMTCO₂e *excluding* emissions related to imported power.²³ **Table 4.2-3, State of California GHG Emissions**, identifies and quantifies statewide anthropogenic GHG emissions in 1990 and 2010. California emissions are due in part to its large size and large population. By contrast, California had the fifth lowest CO₂ emissions per capita from fossil fuel combustion in the U.S., due to the success of its energy efficiency and renewable energy programs and commitments that have lowered the State's GHG emissions rate of growth by more than half of what it would have been otherwise.²⁴

Table 4.2-3

State of California GHG Emissions ^a

Category	Total 1990 Emissions (MMTCO₂e)	Percent of Total 1990 Emissions	Total 2010 Emissions (MMTCO₂e)	Percent of Total 2010 Emissions
Transportation	150.7	35%	173.2	38%
Electric Power	110.6	26%	93.3	21%
Commercial	14.4	3%	14.5	3%
Residential	29.7	7%	29.4	7%
Industrial	103.0	24%	86.0	19%
Recycling and Waste ^b	—	—	7.0	2%
High GWP/Non-Specified ^c	1.3	<1%	15.7	3%
Agriculture	23.4	5%	32.5	7%
Forestry	0.2	<1%	0.2	<1%
Forestry Sinks	-6.7	—	— ^d	—
Net Total	426.6	100%	451.6	100%

Notes:

^a Numbers may not add up exactly due to rounding.

^b Included in other categories for the 1990 emissions inventory.

^c High GWP gases are not specifically called out in the 1990 emissions inventory.

^d Revised methodology under development (not reported for 2010).

Source: CARB, 2007, 2013

Between 1990 and 2010, the population of California grew by approximately 7.5 million (from 29.8 to 37.3 million).²⁵ This represents an increase of approximately 25 percent from 1990 population levels. In addition, the California economy, measured as gross state product, grew from \$773 billion in 1990 to \$1.88 trillion in 2010 representing an increase of approximately 143 percent (over twice the 1990 gross state product).²⁶ Despite the population and economic

²³ California Air Resources Board, California Greenhouse Gas 2000-2010 Inventory by Scoping Plan Category - Summary, Available: <http://www.arb.ca.gov/cc/inventory/data/data.htm>. 2012, accessed April 2013.

²⁴ Ibid.

²⁵ U.S. Census Bureau, Data Finders, Available: <http://www.census.gov/>, Accessed April 2013; California Department of Finance, E-5 Population and Housing Estimates for Cities, Counties and the State, January 2011 and 2012, with 2000 Benchmark, Available: <http://www.dof.ca.gov/research/demographic/reports/estimates/e-5/2011-20/view.php>, Accessed April 2013.

²⁶ California Department of Finance, Gross Domestic Product, California, Available:

4.2 Greenhouse Gas Emissions

growth, California's net GHG emissions only grew by approximately 6 percent. The CEC attributes the slow rate of growth to the success of California's renewable energy programs and its commitment to clean air and clean energy.²⁷

4.2.4 Thresholds of Significance

The *L.A. CEQA Thresholds Guide* does not contain significance thresholds or criteria for use in evaluating environmental impacts related to GHG emissions. Appendix G of the *CEQA Guidelines* provides sample checklist questions for use in an Initial Study to determine a project's potential for environmental impacts. The most recent amendments relating to climate change and GHG emissions encourage lead agencies to consider many factors in performing a CEQA analysis, but preserve the discretion granted by CEQA to lead agencies in making their own determinations based on substantial evidence. The amendments augmented Appendix G of the *CEQA Guidelines*, the sample environmental checklist form, to include a section on GHG emissions. The amendments to the *CEQA Guidelines* suggested the following questions:

Would the project:

- Generate GHG emissions, either directly or indirectly, that may have a significant impact on the environment, based on any applicable threshold of significance?
- Conflict with any applicable plan, policy or regulation of an agency adopted for the purpose of reducing the emissions of GHGs?

Section 15064.7 of the *CEQA Guidelines* defines a threshold of significance as an identifiable quantitative, qualitative or performance level of a particular environmental effect, compliance with which determines the level of impact significance. CEQA gives wide latitude to lead agencies in determining what impacts are significant and does not prescribe thresholds of significance, analytical methodologies, or specific mitigation measures. CEQA leaves the determination of significance to the reasonable discretion of the lead agency and encourages lead agencies to develop and publish thresholds of significance to use in determining the significance of environmental effects. However, neither the SCAQMD nor the City of Los Angeles has yet established specific quantitative significance thresholds for GHG emissions for residential or commercial projects. In the latest CEQA Guidelines amendments, which went into effect on March 18, 2010, OPR encourages lead agencies to make use of programmatic mitigation plans and programs from which to tier when they perform individual project analyses. However, the City of Los Angeles has not yet developed a Greenhouse Reduction Plan meeting the requirements set forth in the latest OPR guidelines.

As noted above, there are currently no widely-established or readily accepted thresholds of significance for GHG. SCAQMD released a draft guidance document regarding interim CEQA GHG significance thresholds in October 2008 and adopted this proposal in December 2008. SCAQMD proposed a tiered approach, whereby the level of detail and refinement needed to determine significance increases with a project's total GHG emissions. SCAQMD also proposed a screening level of 10,000 MTCO₂e per year for industrial projects, under which

http://www.dof.ca.gov/html/fs_data/latestsecondata/FS_Misc.htm, Accessed April 2013. Estimated gross state product for 1990 and 2012 are based on current dollars as of June 2012.

²⁷ California Energy Commission, *Inventory of California Greenhouse Gas Emissions and Sinks 1990 to 2004*, (2006).

project impacts are considered “less than significant.” The 10,000 MTCO₂e per year screening level was intended to achieve the same policy objective of capturing 90 percent of the GHG emissions from new development projects in the industrial sector.²⁸ For projects with GHG emissions increases greater than 10,000 MTCO₂e per year, the use of a percent emission reduction target (e.g., 30 percent) was proposed to determine significance. This emission reduction target is a reduction below what is considered “business as usual.” SCAQMD also proposes that projects amortize construction emissions over the 30-year lifetime of any given project. Proposed Project construction emissions can be amortized by calculating total construction period emissions and dividing by the 30-year lifetime of the project. Given that the proposed Project consists of aircraft maintenance facilities, it is reasonable to consider it as an industrial project; hence, the threshold of 10,000 MTCO₂e per year will be used for determining significance on a project level, in accordance with Appendix G amendments discussed above.

While it is difficult to predict the specific impact of one project's incremental contribution to the global effects of GHG emissions due to a variety of factors, including the complex and long term nature of such effects and the global scale of climate change, it is possible to quantify a project's incremental increase in GHG emissions. The thresholds of significance proposed by the SCAQMD GHG Working Group are considered most appropriate for the proposed Project. Based on the foregoing, the proposed Project would have a significant impact if the proposed Project's emissions exceed the threshold of 10,000 MTCO₂e per year.

4.2.5 Applicable LAX Master Plan Commitments and Mitigation Measures

As part of the LAX Master Plan, LAWA adopted commitments and mitigation measures pertaining to air quality (denoted with "AQ") in the LAX Master Plan MMRP. Those Master Plan commitments and mitigation measures were later integrated with additional air quality measures for projects at LAX to form a comprehensive list of LAWA Air Quality Control Measures. Of the LAWA Air Quality Control Measures, three of the control measures are applicable to the proposed Project and were considered in the GHG analysis herein (denoted below as LAX-AQ-1, LAX-AQ-2, and LAX-AQ-4). The transportation-related control measure (denoted as LAX-AQ-3) is not applicable to the proposed Project because the Project does not include ground transportation access components; thus, LAX-AQ-3 was not considered in the GHG analysis herein. The portions of the three air quality control measures that would be applicable to the proposed Project and that would provide co-benefits of reducing GHG emissions are summarized in **Table 4.2-4**, **Table 4.2-5**, and **Table 4.2-6**.

LAX-AQ-1 – General Air Quality Control Measures

- This measure describes a variety of specific actions to reduce air quality impacts associated with projects at LAX, and applies to all projects. Some components of LAX-AQ-1 are not readily quantifiable, but would be implemented as part of LAX Master Plan projects. Specific measures applicable to the proposed Project are identified in Table 4.2-4.

²⁸ South Coast Air Quality Management District, Draft Guidance Document – Interim CEQA Greenhouse Gas (GHG) Significance Threshold, (2008).

4.2 Greenhouse Gas Emissions

Table 4.2-4

General Air Quality Control Measures ^a

Measure Number	Measure	Type of Measure	Quantified Emissions Reductions
1f	Prohibit idling or queuing of diesel-fueled vehicles and equipment in excess of five minutes. This requirement will be included in specifications for any LAX projects requiring on-site construction. ^b	On- and Off-Road Mobile	NQ
1g	Require that all construction equipment working on-site is properly maintained (including engine tuning) at all times in accordance with manufacturers' specifications and schedules.	Mobile and Stationary	NQ

NQ = Not Quantified

^a These measures are from LAX Master Plan Mitigation Measure MM-AQ-2, unless otherwise noted.

^b From LAX Master Plan Mitigation Measure MM-AQ-2 and Community Benefits Agreement Measure X.M and LAWA's Design and Construction Handbook, Section 1.31.9.

Source: PCR Services Corporation, 2013

LAX-AQ-2 – LAX Master Plan - Mitigation Plan for Air Quality; Construction-Related Measures

- This measure describes numerous specific actions to reduce fugitive dust emissions and exhaust emissions from on-road and off-road mobile and stationary sources used in construction. Some components of LAX-AQ-2 are not readily quantifiable, but would be implemented as part of LAX Master Plan projects. These control strategies are expected to reduce construction-related emissions. Specific measures applicable to the proposed Project are identified in Table 4.2-5.

Table 4.2-5

Construction-Related Control Measures ^a

Measure Number	Measure	Type of Measure	Quantified Emissions Reductions
2d	To the extent feasible, have construction employees' work/commute during off-peak hours.	On-Road Mobile	NQ
2e	Make available on-site lunch trucks during construction to minimize off-site worker vehicle trips.	On-Road Mobile	NQ
2f	Utilize on-site rock crushing facility, when feasible, during construction to reuse rock/concrete and minimize off-site truck haul trips.	On-Road Mobile	NQ

4.2 Greenhouse Gas Emissions

Table 4.2-5

Construction-Related Control Measures ^a

2g	Specify combination of electricity from power poles and portable diesel- or gasoline-fueled generators using “clean burning diesel” fuel and exhaust emission controls. ^b	Stationary Point Source Controls	NQ
2i	Utilize construction equipment having the minimum practical engine size (i.e., lowest appropriate horsepower rating for intended job).	Mobile and Stationary	NQ
2j	Prohibit tampering with construction equipment to increase horsepower or to defeat emission control devices.	Mobile and Stationary	NQ
2k	The contractor or builder shall designate a person or persons to ensure the implementation of all components of the construction-related measure through direct inspections, record reviews, and investigations of complaints.	Administrative	NQ
2m	LAWA will ensure that there is available and sufficient infrastructure on-site, where not operationally or technically infeasible, to provide fuel to alternative-fueled vehicles to meet all requests for alternative fuels from contractors and other users of LAX. This will apply to construction equipment and to operations-related vehicles on-site. This provision will apply in conjunction with construction or modification of passenger gates related to implementation of the LAX Master Plan relative to the provision of appropriate infrastructure for electric GSE. ^c	Mobile	NQ
2o	Prior to January 1, 2015, all off-road diesel-powered construction equipment greater than 50 horsepower shall meet USEPA Tier 3 off-road emission standards. After December 31, 2014, all off-road diesel-power construction equipment greater than 50 horsepower shall meet USEPA Tier 4 off-road emissions standards. Tier 4 equipment shall be considered based on availability at the time the construction bid is issued. LAWA will encourage construction contractors to apply for SCAQMD “SOON” funds to accelerate clean-up of off-road diesel engine emissions. ^d	Off-Road Mobile	Assumed in modeling

NQ = Not Quantified

^a These measures are from LAX Master Plan Mitigation Measure MM-AQ-2, unless otherwise noted.

^b From LAX Master Plan Mitigation Measure MM-AQ-2 and LAWA’s Design and Construction Handbook, Section 1.31.9.

^c From Community Benefits Agreement Measure X.N.

^d From LAX Specific Plan Amendment Study Measure MM-AQ (SPAS)-1.

Source: PCR Services Corporation, 2013

4.2 Greenhouse Gas Emissions

LAX-AQ-4 – Operations-Related Control Measures

- The principal feature of this measure is the conversion of LAX GSE to low and ultra-low emission technology (e.g., electric, fuel cell, and other future low-emission technologies). It should be noted that no estimate of the air quality benefit (i.e., emission reductions) of other secondary measures is made in this analysis. Specific measures applicable to the proposed Project are identified in Table 4.2-6.

Table 4.2-6

Operations-Related Air Quality Control Measures ^a

Measure Number	Measure	Type of Measure
4a	LAX GSE will be converted to low- and ultra-low emission technology (e.g., electric, fuel cell, and other future low-emission technologies). Both LAWA- and tenant-owned equipment will be included in this conversion program, which will be implemented in phases. LAWA will assign a GSE coordinator whose responsibility it will be to ensure the successful conversion of GSE in a timely manner. This coordinator will have adequate authority to negotiate on behalf of the City and have sufficient technical support to evaluate technical issues that arise during the implementation of this measure. ^b	Airside Operations
4d	LAWA will require the use of electric lawn mowers and leaf blowers, as these units become available for commercial use, for landscape maintenance associated with the proposed project. ^c	General
4e	LAWA will require the conversion of sweepers to alternative fuels or electric power for ongoing airfield and roadway maintenance. In the 2006 GSE inventory, two of ten sweepers were electric powered and one was either CNG or LPG fueled. HEPA filters will be installed on airport sweepers where the use of HEPA filters is technologically and financially feasible and does not pose a safety hazard to airport operations. ^d	General
4f	LAWA will ensure that there is available and sufficient infrastructure on-site, where not operationally or technically infeasible, to provide fuel to alternative-fueled vehicles to meet all requests for alternative fuels from contractors and other users of LAX. This will apply to construction equipment and to operations-related vehicles on-site. This provision will apply in conjunction with construction or modification of passenger gates related to implementation of the LAX Master Plan relative to the provision of appropriate infrastructure for electric GSE. ^e	Operational Vehicles.

4.2 Greenhouse Gas Emissions

Table 4.2-6

Operations-Related Air Quality Control Measures ^a

NQ = Not Quantified

^a These measures are from LAX Master Plan Mitigation Measure MM-AQ-4, unless otherwise noted.

^b From Community Benefits Agreement Measure X.F.

^c From LAX Specific Plan Amendment Study Measure MM-AQ (SPAS)-3.

^d From LAX Specific Plan Amendment Study Measure MM-AQ (SPAS)-3.

^e From Community Benefits Agreement Measure X.N.

Source: PCR Services Corporation, 2013

4.2.6 Impact Analysis

4.2.6.1 Construction

Annual construction GHG emissions for the proposed Project before mitigation are presented in **Table 4.2-7**. To be consistent with guidance from the SCAQMD for calculating criteria pollutants from construction activities, GHG emissions from on-site construction activities and off-site hauling, vendor deliveries, and construction worker commuting are considered as generated by the proposed Project. The SCAQMD recommends that amortized GHG construction emissions (i.e., total construction emissions divided by the lifetime of the Project, assumed to be 30 years) be added to operational emissions to evaluate significance.²⁹ Construction of the proposed Project is estimated to emit a total of 12,971 MTCO₂e during construction. When amortized over 30 years, construction results in approximately 432 MTCO₂e per year. Construction-related significance is not determined on an individual basis for GHG emissions; rather, Section 4.2.6.2 below evaluates the significance of the combined construction-related and operations-related GHG emissions for the proposed Project.

Table 4.2-7

Construction Greenhouse Gas Emissions

Emission Source	MTCO ₂ e
Construction (Total)	12,971
Construction (Amortized – 30 years)	432

Source: PCR Services Corporation, 2013.

²⁹ South Coast Air Quality Management District, Draft Guidance Document - Interim CEQA Greenhouse Gas (GHG) Significance Threshold, October 2008.

4.2 Greenhouse Gas Emissions

4.2.6.2 Operations

Operation of the proposed Project is not expected to generate new emissions associated with aircraft maintenance because the proposed Project simply consolidates, relocates and modernizes existing aircraft maintenance operations. However, the redirection and consolidation of maintenance operations to the proposed Project does result in longer distances between gates and maintenance with some additional taxi/towing emissions. As previously discussed, the modeling of emissions associated with towing activities is based on the use of diesel-fueled GSE, which provides for a conservative analysis. LAX has committed to converting GSE to low and ultra-low emission technology (e.g., electric, fuel cell, and other future low-emission technologies). The program to convert the LAX GSE fleet is currently being implemented. Thus, future actual emissions associated with towing are likely to be lower than the GHG emissions estimated in this EIR.

The number of run-ups from aircraft engine testing is not expected to increase compared to the current condition, nor is additional on-road vehicle traffic expected as a result of the proposed Project. Improvements associated with the LAX Master Plan would consolidate, relocate and modernize existing maintenance operations and run-ups in the western area of LAX. The proposed Project would shift an estimated 60 annual (five monthly) existing run-ups in the western area of LAX to the Project site, also located in the western area of LAX. However, there would no net increase in the number of run-ups or associated GHG emissions. Therefore, only emissions associated with the incremental taxi/tow distance are presented in this operational GHG emissions inventory.

Operational GHG emissions, plus amortized construction GHG emissions, for the proposed Project are presented in **Table 4.2-8**. Future operational GHG emissions are 98 metric tons CO₂e per year, which when combined with the amortized construction emissions indicated above, would contribute to a total of 530 MTCO₂e per year.

Table 4.2-8

Annual Greenhouse Gas Emissions

Emission Source	MTCO₂e Emissions (per year)^a
Construction (Amortized)	432
Stage 3 Aircraft (Taxiing)	7
Wide-body Aircraft Tug (Towing)	91
Total Net	530
GHG Threshold	10,000
Above the Threshold?	No

Note:

^a Numbers may not add up exactly due to rounding.

Source: PCR Services Corporation, 2013.

4.2 Greenhouse Gas Emissions

As shown in Table 4.2-8, GHG emissions from amortized construction and operation of the proposed Project would be below SCAQMD's proposed threshold of 10,000 MTCO₂e per year. Based on the above analysis, GHG emissions resulting from proposed Project construction and operations would not directly or indirectly have a significant GHG impact. Therefore, the proposed Project would result in a less than significant impact with regard to GHG emissions.

4.2.6.3 Consistency with Greenhouse Gas Reduction Plans

As discussed previously, the proposed Project would comply with the LAGBC Tier 1 requirements. LAWA has based its new sustainable construction standards on the mandatory and voluntary tiers defined in the LAGBC. All building projects with an LADBS permit-valuation over \$200,000 shall achieve LAGBC Tier 1 conformance, to be certified by LADBS during final plan check (on the issued building permit) and validated by the LADBS inspector during final inspection (on the Certificate of Occupancy).

As discussed previously, the requirements of the adopted LAGBC apply to new building construction, building renovations, and building additions within the City of Los Angeles. Specific mandatory requirements and elective measures are provided for three categories: (1) low-rise residential buildings; (2) nonresidential and high-rise residential buildings; and (3) additions and alterations to nonresidential and high-rise residential buildings. The proposed Project would comply with the mandatory requirements for nonresidential buildings including the mandatory requirements for Tier 1 conformance. Specific measures that would be included as part of the Project design are listed in Table 4.2-2. Certain measures of note include but are not limited to compliance with enhanced construction waste reduction goals, exceeding the California Energy Code requirements (based on the 2008 Energy Efficiency Standards) by 15 percent, use of plumbing fixtures and fixture fittings that will reduce the overall use of potable water within the building by 30 percent, providing readily accessible areas that serve the entire building and are identified for the depositing, storage, and collection of non-hazardous materials for recycling, and use of low-emitting adhesives, adhesive bonding primers, adhesive primers, sealants, sealant primers, caulks, and other materials. As a result, the proposed Project would be consistent with plans to reduce GHG emissions and impacts would be less than significant.

4.2.6.4 Impacts from Climate Change

As indicated above in Section 4.2.1.1, temperature increases anticipated to occur in conjunction with climate change would lead to environmental impacts in a wide variety of areas, including: sea level rise, reduced snow pack resulting in changes to existing water resources, increased risk of wildfires, and public health hazards associated with higher peak temperatures, heat waves, and decreased air quality. Of these potential climate change-related impacts, sea level rise is most relevant to the proposed Project. The Project site would have a finish surface elevation of approximately 110 feet above sea level and is located within approximately one mile of the coast. It is not anticipated that the Project site would be subject to a 100+ foot (30+ meter) increase in sea level rise in the foreseeable future. Additionally, it is not feasible to design and construct the project at a higher elevation (i.e., adaptive management for long-term GCC impacts such as sea level rise), due to the need for the Project to maintain elevations comparable to those of the existing taxiway system at LAX.

4.2 Greenhouse Gas Emissions

4.2.7 Cumulative Impacts

As discussed previously in Section 4.2.4, *Thresholds of Significance*, the *CEQA Guidelines* do not include or recommend any particular threshold of significance; instead, they leave that decision to the discretion of the lead agency (Section 15064.4).³⁰ The CNRA noted in its Public Notice for the added sections on GHG, that the impacts of GHG emissions should be considered in the context of a cumulative impact, rather than a project impact. The Public Notice states:³¹

“While the Proposed Amendments do not foreclose the possibility that a single project may result in greenhouse gas emissions with a direct impact on the environment, the evidence before [CNRA] indicates that in most cases, the impact will be cumulative. Therefore, the Proposed Amendments emphasize that the analysis of greenhouse gas emissions should center on whether a project’s incremental contribution of greenhouse gas emissions is cumulatively considerable.”

It is the accumulation of GHGs in the atmosphere that may result in global climate change. Climate change impacts are cumulative in nature, and thus no typical single project would result in emissions of such a magnitude that it, in and of itself, will be significant on project basis. A typical single project’s GHG emissions will be small relative to total global or even statewide GHG emissions. Thus, the analysis of significance of potential impacts from GHG emissions related to a single project is already representative of the long-term impacts on a cumulative basis. Therefore, projects that exceed the project-specific significance thresholds are considered to be cumulatively considerable. Conversely, projects that do not exceed the project-specific thresholds for GHG emissions are not considered to be cumulatively considerable.

As discussed in Section 4.2.6, *Impact Analysis*, the proposed Project’s combined amortized construction and operational GHG emissions would not exceed the threshold of 10,000 MTCO₂e per year promulgated by the SCAQMD for industrial projects. The proposed Project would consolidate, relocate, and modernize existing aircraft maintenance facilities at LAX in conformance with Tier 1 requirements, provide for more efficient and effective maintenance of existing aircraft at the airport, and support consistency with the LAX Master Plan by providing an aircraft maintenance area in the southwest portion of the airport. Therefore, in accordance with the discussion above, the proposed Project would not cause cumulatively considerable impacts with respect to GHG emissions.

4.2.8 Mitigation Measures

As discussed above, construction and operation of the proposed Project would not result in significant impacts related to GHG emissions; hence, no mitigation measures are required. Notwithstanding, the proposed Project includes design features to reduce construction equipment operations/duration, as described above. Additionally, GHG emissions associated

³⁰ Natural Resources Agency, Guidelines for Implementation of the California Environmental Quality Act, Available at: http://ceres.ca.gov/ceqa/docs/FINAL_Text_of_Proposed_Amendments.pdf. Accessed: March, 2013.

³¹ Natural Resources Agency, Guidelines for Implementation of the California Environmental Quality Act, Available at: http://ceres.ca.gov/ceqa/docs/Notice_of_Proposed_Action.pdf Accessed: March, 2013.

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with the proposed Project would be reduced directly or indirectly through compliance with the Tier 1 requirements of the LAGBC. For operational impacts, the proposed Project would comply with the Tier 1 requirements of the LAGBC, as presented in Table 4.2-2, to address GHG emissions and climate change impacts within an EIR,³² and with LAWA policies and programs related to sustainability and reducing GHG emissions that are implemented on a project-specific and on an airport-wide basis.

4.2.9 Level of Significance After Mitigation

Not applicable. Impacts are less than significant, as indicated above; therefore, no additional mitigation measures are required.

³² LAWA, LAWA Memorandum on New Sustainability Guidelines, November 7, 2012.

4.2 Greenhouse Gas Emissions

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4.3 Hazards and Hazardous Materials

4.3.1 Introduction

This analysis addresses potential impacts associated with hazards and hazardous materials that could occur with implementation of the proposed Project.

Prior to the preparation of this Environmental Impact Report (EIR), an Initial Study (Appendix A of this EIR) was prepared using the California Environmental Quality Act (CEQA) Environmental Checklist Form to assess potential environmental impacts associated with hazards and hazardous materials. For several of these thresholds of significance, the Initial Study (IS) found that the proposed Project would result in “no impact” or a “less than significant impact”, and thus, no further analysis of these topics in an EIR was required. The analysis that supports these conclusions is set forth in Appendix A of this EIR. Refinements have been made to the proposed Project to reflect additional information and coordination with the public and the FAA. The refinements do not represent a material change to the proposed Project that was described in the IS/NOP and do not change any of the conclusions in the IS. Therefore, recirculation of the IS/NOP is not required. The thresholds not addressed further include:

- Potential impacts from the handling of hazardous materials within a quarter mile of a school were evaluated and determined to have “No Impact” in the IS, as no schools exist or are proposed within one-quarter mile of the Project site.
- Potential impacts from hazardous materials sites compiled pursuant to California Government Code Section 65962.5 were also evaluated and determined to have “No Impact” as the site is not listed on any of these regulatory databases.
- Potential impacts to airport land use plans and private airstrips were evaluated and determined to have “No Impact” as the proposed Project would comply with applicable Federal Aviation Administration (FAA) regulations.
- The IS further evaluated whether the proposed Project could impair implementation of, or physically interfere with, an adopted emergency response plan or emergency evacuation plan and determined that the proposed Project would result in “No Impact”.
- Lastly, the potential exposure of people or structures involving wildland fires was evaluated in the IS and found to have “No Impact” as the Project site is not within a City of Los Angeles Wildfire Hazard Area, as delineated in the Safety Element of the General Plan.¹

4.3.2 Methodology

The determinations and assessments contained herein are based on information presented in:

- *Report of Screening-Level Sampling and Analyses of Selected Stockpiles: West Aircraft Maintenance Area* by Geosyntec Consultants, June 2013.
- *Jet Fuel Remedial Action Plan (RAP) Former Continental Airlines Aircraft Maintenance Facility*, by Haley and Aldrich, Inc., December 2012.

¹ City of Los Angeles Planning Department, Safety Element of the City of Los Angeles General Plan, Exhibit D, Selected Wildfire Hazard Areas In the City of Los Angeles, April 1996.

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- *Fuel Facility Tank Removal Report: Mercury Air Center (aka Atlantic Aviation)*, by Madison Environmental Group, October 2012.
- *Jet Fuel Plume Supplemental Characterization Completion Report, Continental Airlines Aircraft Maintenance Facility*, by Haley and Aldrich, Inc., April 2012.
- *Vacuum Enhanced Free Product Recovery System Performance and Semiannual Groundwater Monitoring Report, 1 July 2011 – 31 December 2011, Continental Airlines Aircraft Maintenance Facility*, by Haley and Aldrich, Inc., February 2012.
- *Report of Findings Environmental and Geotechnical Testing and Pavement Design Recommendations and Options for the Southwest RON Project*, by Kleinfelder, May 2011.
- *Draft Report of Findings Environmental and Geotechnical Testing and Pavement Design Recommendations and Options for the Southwest Remain Overnight (RON) Parking Apron Project*, by Kleinfelder, April 2011.
- *Response to CDM Letter Report HVOCs in Groundwater in the Vicinity of Continental Airlines Maintenance Facility*, March 31, 2006 by Environmental Data Solutions Group (EDSG), August 2007.
- *HVOCs in Groundwater in the Vicinity of Continental Airlines Maintenance Facility*, by CDM, March 2006.
- *2003/2004 HVOC Investigation for Continental Airlines*, by EDSG, October 2004.
- Los Angeles International Airport (LAX) Master Plan Final EIR, Chapter 4.24.3, *Safety*, April 2004.
- LAX Master Plan Final EIR, Chapter 4.23, *Hazardous Materials*, April 2004.
- LAX Master Plan Final EIR, Chapter 4.20, *Construction Impacts*, April 2004.
- *Soil Matrix, Soil Gas and Groundwater Free Product Investigation at Undeveloped Lot West of Continental Airlines Maintenance Facility*, by CDM, October 2003.
- LAX Master Plan Final EIR, Technical Report S-8, *Supplemental Hazardous Materials Technical Report*, June 2003.
- LAX Master Plan Final EIR, Technical Report 13, *Hazardous Materials Technical Report*, January 2001.
- *Report of Supplemental Soil Sampling of Taxiway 75 Stockpiled Soils – Los Angeles International Airport*, by CDM, June 1995.
- *Underground Tanks and Hazardous Substances (UTAHs) Program Review of Completion Report, Soil Treatment Project, Dated October 31, 1988, Prepared for Delta Airlines (LAX) by CDM, December 1988.*

Based on the findings of the above-referenced studies, the analysis presented below identifies recognized environmental conditions and assesses the potential for significant impacts associated with hazards or hazardous materials during construction and/or operation of the proposed Project. More specifically, impacts are assessed in relation to: the type of hazardous materials that would be transported, used, generated, or stored as a result of the proposed Project; the potential for accidents involving hazardous materials releases; worker exposure to hazards or hazardous materials; and, the ability of known disposal facilities to accommodate the volume of hazardous materials generated during the proposed Project's construction and operation. In assessing potential impacts, the analysis accounts for various regulatory requirements that would apply to the proposed Project, as well as applicable LAX Master Plan commitments and mitigation measures. Where potentially significant impacts are identified after

4.3 Hazards and Hazardous Materials

consideration of the above, mitigation measures are proposed where warranted and feasible to reduce or avoid significant impacts.

A description of existing conditions relative to hazardous materials usage and waste generation within the LAX Master Plan study area, and hazardous materials contamination and remediation is presented in Section 4.23, Hazardous Materials, of the LAX Master Plan Final EIR. This information is incorporated herein by reference. The Project site is located in the western portion of the airport, which is generally removed from most of the airport activity areas that involve hazards and hazardous materials. The following summarizes the types of hazardous materials found at LAX. The most common hazardous materials used and stored at the airport are fuels. The most common types of hazardous waste generated at the airport include waste oil and fuel, used solvents, and used maintenance fluids. Existing soil and groundwater contamination and remediation activities are located throughout the airport property. In addition, many of the buildings on the airport may contain hazardous building materials, such as asbestos, polychlorinated biphenyls (PCBs), and lead-based paints. Also, sulfuric acid, an acutely hazardous material, is used at the airport's Central Utility Plant (CUP) located in the Central Terminal Area. The conditions associated with the types of hazardous materials used and generated, ongoing remediation activities, and the potential for soil contamination, have not changed from those presented in the LAX Master Plan Final EIR in a manner that would alter the basic findings presented in this section of the EIR.

4.3.3 Existing Conditions

4.3.3.1 Regulatory Context

4.3.3.1.1 Hazardous Materials Management

Numerous federal, state, and local authorities regulate the transport, use, and storage of hazardous materials at the airport. A description of the general regulatory context as it applies to the conditions in the Project area and the potential impacts being assessed is provided below.

4.3.3.1.2 Federal and State Regulatory Overview

The Federal Resource Conservation and Recovery Act (RCRA) (42 United States Code Sections 6901-6992k) regulates the generation, transportation, treatment, storage, and disposal of hazardous waste. Under RCRA regulations, hazardous wastes must be tracked from the time of generation to the point of disposal. At a minimum, each generator of hazardous waste must register and obtain a hazardous waste activity identification number. If hazardous wastes are stored for more than 90 days or treated or disposed at a facility, any treatment, storage, or disposal unit must be permitted under RCRA.

RCRA allows individual states to develop their own program for the regulation of hazardous waste as long as it is at least as stringent as RCRA. The State of California has developed the California Hazardous Waste Control Law (HWCL) (Health and Safety Code Section 25100 et seq. and 22 California Code of Regulations [CCR] Section 66260.1 et seq.) and the United States Environmental Protection Agency (USEPA) has authorized RCRA enforcement to the State of California. Primary authority for the statewide administration and enforcement of HWCL rests with California Environmental Protection Agency's Department of Toxic Substances Control (DTSC).

4.3 Hazards and Hazardous Materials

Release of Hazardous Materials

Releases of hazardous materials are subject to a complex set of reporting requirements, including, but not limited to, notification to the City of Los Angeles Fire Department (LAFD) and the state Office of Emergency Services (OES). Remediation of contamination is subject to stringent oversight by federal, state, county, and city agencies, depending on the nature of contamination. There are no contaminated sites at or near LAX that are subject to federal oversight. The LAFD oversees contamination resulting from leaking underground storage tanks (USTs). The Los Angeles Regional Water Quality Control Board (LARWQCB) has the authority to require remediation of sites where groundwater quality may be degraded by hazardous materials or substances, including releases from USTs or other sources. These agencies require that remediation continue until regulatory requirements are met and closure is granted. At this time, there is only one known release in the vicinity of the Project site under the continuing authority of the LARWQCB, which is a jet fuel free product recovery system comprised of groundwater wells to remove petroleum hydrocarbon free product jet fuel from the underlying groundwater. A detailed description of this recovery system is found below in Section 4.3.3.2.2 of this EIR.

Releases of hazardous materials during construction are also subject to Section 5.5 of the LAX Master Plan Mitigation Monitoring and Reporting Program (MMRP), *Procedure for the Management of Contaminated Materials Encountered During Construction* (the "Procedure") prepared for the LAX Master Plan Environmental Impact Statement (EIS)/EIR. The Procedure was approved in 2005 to facilitate implementation of LAX Master Plan Commitment HM-2, Handling of Contaminated Materials Encountered During Construction. The Procedure requires implementation of best management practices (BMPs) as part of the Stormwater Pollutant Prevention Plan (SWPPP) required by the LARWQCB during construction to contain any hazardous materials spills. The Procedure also requires the presence of sufficient trained hazardous waste operations and emergency response (HAZWOPER) trained personnel to initiate spill and release response, and contact proper regulatory agencies, such as the LAFD and OES.

Additionally, the Procedure provides detailed guidance for implementing LAX Master Plan Commitment HM-2, especially for projects involving excavation and grading of soils. The Procedure requires the preparation of detailed plans for handling previously unknown contaminated soil encountered during construction, as well as spills of hazardous materials or substances that may occur during construction. It also requires preparation of a detailed Health and Safety Plan, and provisions for testing and segregation of contaminated soils for proper disposal. LAX Master Plan Commitment HM-2 is presented in Section 4.3.5, below.

Exposure of Workers to Hazardous Materials

In the event that soil contamination is encountered during proposed Project development, the handling of that soil has the potential to expose workers to hazardous materials or substances. The South Coast Air Quality Management District (SCAQMD) regulates emissions associated with the excavation and remediation of certain contaminated soils through Rule 1166, Volatile Organic Compound Emissions from Decontamination of Soil. This rule requires development and approval of a mitigation plan, monitoring of volatile organic compound (VOC) concentrations, and implementation of the mitigation plan if VOC-contaminated soil is detected. Worker safety and health are also regulated by the federal Occupational Safety and Health Act (OSHA) of 1970 and the California Occupational Safety and Health Act (CalOSHA). OSHA and CalOSHA standards establish exposure limits for certain air contaminants. Exposure limits

4.3 Hazards and Hazardous Materials

define the maximum amount of hazardous airborne chemicals to which an employee may be exposed over specific periods. When administrative or engineering controls cannot achieve compliance with exposure limits, protective equipment or other protective measures must be used. Employers are also required to provide a written health and safety program, worker training, emergency response training, and medical surveillance.

Worker exposure to methane is regulated by OSHA under 29 Code of Federal Regulations Section 1910.146. This section regulates worker exposure to a “hazardous atmosphere” within confined spaces where the presence of flammable gas vapor or mist is in excess of 10 percent of the lower explosive limit. The CalOSHA program regulates worker exposure to airborne contaminants (such as hydrogen sulfide) during construction under Title 8, Section 5155, Airborne Contaminants, which establishes which compounds are considered a health risk, the exposure limits associated with such compounds, protective equipment, workplace monitoring, and medical surveillance required for compliance.

Methane

The Project site is located in the City of Los Angeles-designated Hyperion Field Methane Zone.² The Los Angeles Municipal Code (LAMC), Chapter IX, Article 1, Division 71, Section 91.7103, also known as the Los Angeles Methane Seepage Regulations, became effective March 29, 2003. Subsequent to the adoption of the Methane Seepage Regulations, the City of Los Angeles Department of Building Safety (LADBS) issued an Information Bulletin on November 30, 2004, requiring that a methane site investigation shall be performed onsite prior to any grading activities in designated methane zones. The Methane Seepage Regulations outline requirements for buildings and paved areas located in areas classified as being located either in a methane zone or a methane buffer zone. Requirements for new construction within such zones include methane gas sampling and, depending on the detected concentrations of methane and gas pressure at the site, installing a barrier (i.e., a membrane shield) between the building and underlying earth, installing a vent system(s) beneath the barrier and/or within the building, and installing a gas (methane) detection system as required by the LADBS. The Methane Seepage Regulations base the required methane mitigation system on the Site Design Level, with more involved mitigation systems required at the higher Site Design Levels. There are five site design levels based on the methane concentration at a project site. The Seepage Regulations also require that paved areas over 5,000 square feet in area and within 15 feet of an exterior wall of a building also be vented in accordance with the Methane Mitigation Standards. If the proposed development is an impervious membrane, such as a parking lot, that is not within 15 feet of a building, no measures are required. Achievement of the appropriate level of methane mitigation, if warranted, is reviewed and confirmed by the LADBS through the building permit process.

Oil Wells

With respect to oil wells, the California State Division of Oil, Gas, and Geothermal Resources (DOGGR) administers the regulatory program that oversees the drilling, operation, maintenance, plugging, and abandonment of oil, natural gas, and geothermal wells. The regulatory program emphasizes the wise development of oil, natural gas, and geothermal resources in the state through sound engineering practices that protect the environment,

² City of Los Angeles, Bureau of Engineering. [Methane and Methane Buffer Zone Map](#). March 2004

4.3 Hazards and Hazardous Materials

prevent pollution, and ensure public safety.³ DOGGR implements the regulations set forth in Section 3200 et seq., of the California Public Resources Code, including the review of construction site plans in areas of known, existing, or abandoned oil wells.

4.3.3.2 Existing Conditions

4.3.3.2.1 Site Geology and Hydrogeology

The Project site is underlain by the Older Dune Sand from ground surface to approximately 120 feet below ground surface (bgs). The Older Dune Sand is composed of fine to medium sand occasionally interbedded with sandy silt, clay, and gravel.⁴

The Older Dune Sand transitions into the Lakewood Formation at approximately 120 feet bgs. The Lakewood Formation consists of the Manhattan Beach Aquitard and the Gage Aquifer (also known as the "200-Foot Sand"). The Gage Aquifer consists of sand with occasional gravel and thin beds of silt and clay.

The San Pedro Formation underlies the Lakewood Formation and is thought to start approximately 200 feet bgs beneath the Project site. The San Pedro Formation includes the fine-grained El Segundo Member and the underlying Silverado Aquifer, which consists of fine to coarse-grained sands and gravels.

Groundwater is encountered beneath the Project site within the Older Dune Sand at approximately 100 to 105 feet bgs, and generally flows to the west at an approximate gradient of 0.0006 to 0.0008 feet per foot. Historically, groundwater flows to the northwest, west, and southwest at the Project site, and has generally risen over 3 feet since 1994. A groundwater divide, created by the West Coast Basin Barrier,⁵ is located approximately 0.5 mile east of the Project site, near Sepulveda Boulevard. East of Sepulveda Boulevard, groundwater is observed to flow to the east.

4.3.3.2.2 Hazardous Materials

As discussed in the LAX Master Plan Final EIR, hazardous materials are currently utilized throughout the airport for the routine fueling and maintenance of airplanes as well as other activities that take place at LAX in association with terminals, cargo areas and ancillary facilities. The most common hazardous materials used are fuel and solvents, although lubricants, cleaners, paints, compressed gasses, peroxides, caustics, alcohols, and foams are also used. These materials are used for many activities, including aircraft fueling, maintenance, painting, and stripping; fuel storage; ground vehicle fueling; and aircraft maintenance. Hazardous materials generated during the maintenance of aircraft typically include materials such as oil, transmission, and hydraulic fluid. Hazardous materials are handled in accordance with applicable federal, state, and local regulations to prevent the release of these materials into the environment through a spill or other release. Hazardous wastes generated at LAX are removed by licensed waste haulers and transported for treatment, disposal, or recycling at off-site facilities. For the most part, hazardous wastes generated at LAX that are intended to be

³ DOGGR, Resources Summary. Available at <http://www.conservation.ca.gov/dog/Pages/Index.aspx>, Accessed December 18, 2012.

⁴ Haley & Aldrich, Inc. Jet Fuel Plume Supplemental Characterization Completion Report, Continental Airlines Aircraft Maintenance Facility, Los Angeles International Airport April 30, 2012.

⁵ The West Coast Basin Barrier consists of injection wells that inject fresh water into aquifers along the Santa Monica Bay to build up a line of pressure and thereby block saltwater intrusion into the aquifers from occurring.

4.3 Hazards and Hazardous Materials

recycled are sent to recycling facilities in Los Angeles County or elsewhere in the Los Angeles region. As discussed in detail below in Section 4.3.6.4, there are no known capacity constraints at these facilities.

Land Farming

Land farming is a bioremediation treatment process that is performed in bio-treatment cells to treat contaminated soils. Specifically, contaminated soils or sediments are stockpiled on top of plastic liners and periodically turned over (tilled) to aerate the mixture. Fertilizers are occasionally applied to speed the remediation process.

Portions of the Project site were utilized in land farming operations to remediate contaminated soils originating at the airport. Specifically, soils from other areas of LAX known to be impacted by petroleum hydrocarbons were imported to the Project site, stockpiled upon plastic sheeting, aerated, and fertilized to enhance biodegradation. Three separate land farming operations were undertaken on the Project site: one by United Airlines, one by LAXFUEL, and one by Delta Airlines.⁶

With respect to the United Airlines land farming effort, a work plan to treat contaminated soils excavated from the United Airlines Terminal at LAX was drafted by SCS Engineers in May 1987 and implemented over a three-month period in 1988.⁷ According to the work plan, 1,000 cubic yards of soil were to be hauled to the Project site, where the soil would be treated over a one-acre treatment area. The petroleum-impacted soils were derived from leaking underground storage tank excavations. The soils were spread to an approximate depth of 8 to 12 inches, after which a commercial fertilizer was added to encourage growth of microorganisms that would biologically degrade the hydrocarbon compounds. The soils were also watered and mixed to maintain moisture and aerate the soils to further promote hydrocarbon compound degradation. Numerous regulatory agencies, including the LARWQCB, the California Department of Health Services, the SCAQMD, and the LAFD were contacted regarding the treatment program. Soil samples were taken before, during, and after implementation of the remediation program. The analytical results of the soil treatment program indicated that the treatment process was effective in reducing the concentration of petroleum hydrocarbons in the soils. The levels had been reduced such that they were no longer considered hazardous. Additionally, there was no indication that the soil treatment process affected the underlying soils.

A second land farming effort was completed on the Project site by LAXFUEL from 1993 to 1996. Soil treated at the LAXFUEL facility originated from several LAX locations, including the Bulk Fuel Storage Facility, Fuel Day Storage Facilities, Terminal Areas, and the former LAX Fire Drill Pit Area. A review of associated analytical results indicated detectable concentrations of total recoverable petroleum hydrocarbons (TRPH), total petroleum hydrocarbons (TPH) (predominantly jet fuel), benzene, toluene, ethylbenzene, and total xylenes. According to these records, none of the soil treated contained halogenated volatile organic compounds (HVOCs).⁸

⁶ Camp Dresser & McKee, Inc. Underground Tanks and Hazardous Substances (UTAHS) Program Review of "Completion Report, Soil Treatment Project" Dated October 31, 1988, Prepared for Delta Airlines(LAX) by Hekimian & Associates. December 30, 1988.

⁷ SCS Engineers. Report for Soil Treatment Program for United Airlines at Los Angeles International Airport. December 1988.

⁸ CDM. Subsurface Investigation at Soil Treatment Sites West of Continental Airlines Maintenance Facility. pg 1-1. June 2003.

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The construction and operation of the LAXFUEL bioremediation facility was approved in a letter from the LARWQCB in November 1992. An area of approximately 420 feet by 440 feet was cleaned, grubbed and graded. The grading was done such that a slope of approximately one degree from west to east was created. The slope was terminated with a trench that was five feet wide, three feet deep and runs the length of the treatment cell. A polyvinyl chloride (PVC) liner was welded together on-site to form a single impervious sheet approximately 203 feet by 400 feet. The sheet was placed on top of the cleaned and graded area. At the edges, the liner was wrapped over straw bales to form a berm around the perimeter of the cell. The trench area was also covered with the liner and separated by a row of PVC wrapped straw bales to form a totally enclosed system. Construction of the land farming facility was completed on April 1, 1993. The hydrocarbon-impacted soil was inoculated with facultative anaerobic bacteria and treated with a nutrient solution. The soil was tilled and mixed using a skip loader with plow attachments at least twice a week. Adequate soil moisture was maintained by pumping water onto the cell at least three times a week. Approximately 2,000 cubic yards of treated soil was retained in the cell after each treatment process to act as a buffer between the PVC liner and the petroleum-impacted soil being newly placed at the facility. In a letter to Los Angeles World Airports (LAWA) dated June 28, 1996, LAXFUEL indicated that the remediation contractor advised them that the treatment of soil was completed on June 27, 1996, and that the LARWQCB reviewed the results of the soils samples from the treated stockpiles and certified that the soil could be reused.⁹

A third land farming effort was completed by Hekimian & Associates on behalf of Delta Airlines in 1988 to treat 2,000 cubic yards of contaminated soils from the Terminal 5 Expansion Project on the Project site. The work plan for this effort indicated that contaminated soils were to be placed in a bermed and lined pit where they would be mechanically agitated to enhance volatilization of petroleum hydrocarbons. The soils were to be treated until the contamination level dropped below 100 parts per million (ppm) TPH.¹⁰ Hekimian & Associates indicated that all contaminated soil was removed from the Project site by September 14, 1988, and approximately 720 cubic yards of treated soil was used as backfill for a tank excavation project at the Continental Airlines Maintenance lease.¹¹ An Underground Tanks and Hazardous Substances (UTAH) Program Review of the Delta Airlines land farming effort identified two concerns with the remediation activities. First, prior to treatment, contaminated soils were stockpiled near the land farm area with no impermeable material placed beneath the stockpiled soil. In addition, after stockpiling was completed, soil treatment was delayed two weeks for rain, and contaminants may have been driven into underlying soils. The second area of concern identified was in the screening of soils prior to removal from the treatment area. The summary of activities lists several dates when the "top layer of clean soil" was removed from the treatment area. However, there was no record of soil analysis showing the basis on which this determination was made and conflicting information is available. Nonetheless, investigations of the Project site subsequent to the Delta Airlines land farming effort, including the June 2013 site survey completed by Geosyntec and discussed, did not reveal any visual indicators (e.g., stained soils, soil depressions, stressed vegetation) that the Delta Airlines land farming effort resulted in a hazardous materials concern.

⁹ Letter correspondence from Lawrence M. McMahon, General Manager, LAXFUEL, to John Malloy, City of Los Angeles Department of Airports, June 28, 1996.

¹⁰ Camp Dresser & McKee, Inc. Underground Tanks and Hazardous Substances (UTAHS) Program Review of "Completion Report, Soil Treatment Project" Dated October 31, 1988, Prepared for Delta Airlines(LAX) by Hekimian & Associates. December 30, 1988.

¹¹ Ibid.

4.3 Hazards and Hazardous Materials

In addition to the above conclusions, LAWA completed a soil gas investigation of the Project site in September 2003 to determine if former land farming activities had resulted in HVOC contamination to on-site subsurface soils. The work plan for this investigation originally consisted of 40 sampling locations, but was halted after 24 sampling locations returned no detectable contamination. Samples were taken at depths of 10, 25, and 40 bgs at each location. While this investigation focused on potential HVOC contamination, no other hazardous materials concerns with the previous land farming effort were identified.¹² Based on available information, as summarized above, there is no evidence to suggest that past land farming activities have resulted in contamination that poses a significant hazard at the Project site.

Stockpile Areas/Construction Staging

The Project site is currently used as a construction staging area that includes stockpiled soils and various materials excavated from previous and ongoing projects at LAX. A recent investigation performed by Geosyntec (June 2013) found no indication that the stockpiles contain hazardous materials requiring special handling and disposal/treatment at a Class I landfill (i.e., a hazardous waste landfill). Rather, all stockpiled materials may be disposed of at a Class III municipal solid waste (MSW) landfill.

Figure 4.3-1 delineates the locations of stockpiles evaluated at the Project site. Geosyntec sampled Stockpile Areas #2A, #2B, and #3 at 18 locations for the presence of TPH in the full-carbon range (C4–C44), TPH in the gasoline range (C4–C12), TPH in the diesel range (C13–C22), TPH in the oil fractions range (C23–C44), metals, and VOCs. These three materials (i.e., TPH, metals, VOCs) were considered the most likely constituents of concern (COC) based on the origin of the stockpiled materials and previous sampling efforts. Additionally, one sample was taken from Area #1, near the location of stained soil and two drums with hazard waste placards. No evidence of hazardous materials was found at Area #1 and no asbestos containing materials was observed on the surface of any of the stockpiles.¹³ Stockpile Area #2C was previously surveyed by Kleinfelder & Associates and the results of this survey effort were incorporated into the Geosyntec investigation. Stockpile Areas #2C, #5, #6A, and #6B have been determined by LAWA to contain no hazardous materials and as part of ongoing use of the Project site as a construction staging area are expected to be removed/disposed of as part of another project. As such, they would not be present during implementation of the proposed Project. Stockpile Area #4 and Stockpile Areas #6C through #6I were no longer present by the June 2013 field investigations, being previously removed as part of the ongoing construction staging efforts.

With regard to TPH, the sampling results were compared to the contamination thresholds established in LARWQCB Order No. R4-2011-0052 to determine if stockpiled materials are suitable for disposal at a MSW landfill. If contaminant levels exceed the threshold for disposal at a MSW landfill, they are considered hazardous waste under Chapter 11 of the California

¹² CDM. HVOCs in Groundwater in the Vicinity of the Continental Airlines Maintenance Facility, Los Angeles International Airport, California, pg. 5. March 31, 2006.

¹³ The stained area and two drums with hazardous waste placards were observed during a February 27, 2013 site visit. As part of the normal course of activities associated with the use of the Project site for temporary construction staging and stockpiling of materials, the stained area and two drums were removed contemporaneously by others during Geosyntec's April 2013 field efforts. Based on LAWA's *Procedure for the Management of Contaminated Materials Encountered During Construction* (refer to Section 4.3.5, LAX Master Plan commitment HM-2 for details on LAWA's handling of hazardous materials), LAWA cleaned and handled the stained area following BMPs and industry practices for handling and disposal of dried asphalt emulsion. In addition, the two drums were disposed of as non-RCRA waste at an US Ecology facility.

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Code of Regulations, Title 22, and must be disposed of at a lined Class I landfill. Two disposal options are available at MSW landfills based on the following thresholds (i.e., maximum allowable contaminant concentrations):

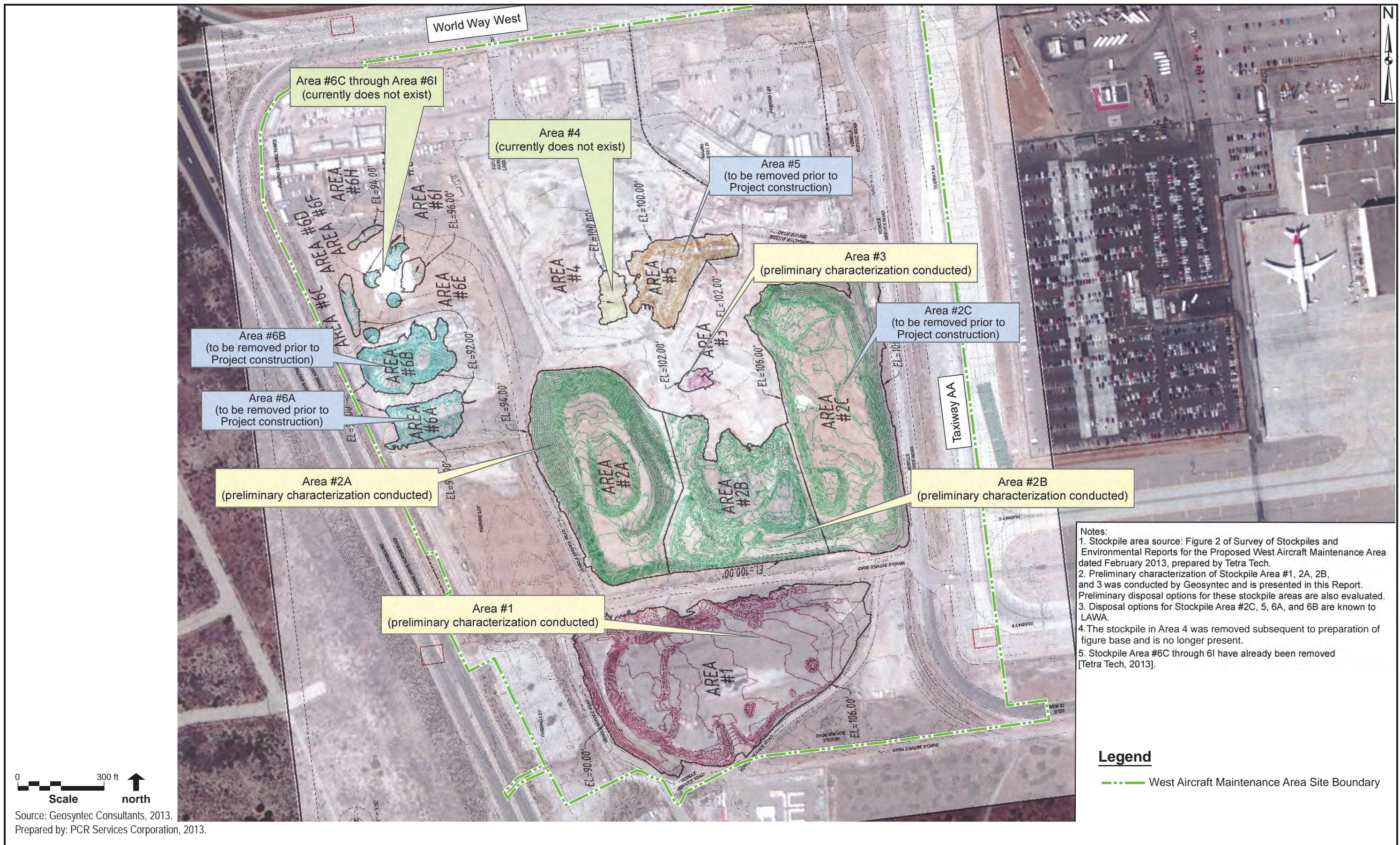
- Unrestricted use (i.e., disposal) of contaminated soil at any portion of an active MSW landfill:
 - 10 milligrams per kilogram (mg/kg) for TPH gasoline (C4–C12) or TPH diesel (C13–C22); and
 - 500 mg/kg in the heavier hydrocarbon (C23 or greater) carbon-chain range.
- Disposal of contaminated soil to unlined MSW landfill (with restricted use):
 - 500 mg/kg for TPH gasoline (C4–C12);
 - 1,000 mg/kg for TPH diesel (C13–C22); and
 - 50,000 mg/kg for a full chain TPH (C4–C44) concentrations.

Sampling of the existing stockpiled materials found TPH (diesel) at a concentration of 26 mg/kg in the northern portion of Area #2B. This concentration is well below the aforementioned threshold of 1,000 mg/kg. No other sampling locations contained TPH (diesel) above detection limits. TPH (full chain) was detected in all stockpile areas above its detection limit, at a range of 12 to 7,400 mg/kg. Portions of Stockpile Areas #1 and #2B contained TPH (full chain) at concentrations exceeding 500 mg/kg, primarily in the C23–C44 range, which is typical of asphalt, oil, or grease. At a maximum of 7,400 mg/kg, TPH (full chain) was also well below the aforementioned threshold of 50,000 mg/kg. As a result, stockpiled materials are acceptable for disposal at a MSW landfill with respect to TPH concentrations.

With regard to metals, as recommended by LARWQCB Order No. R4-2011-0052, the sampling results were compared to both USEPA Regional Screening Levels (RSLs) and California Human Health Screening Levels (CHHSLs) for residential sites, which is applicable for disposal at MSW landfills. Detectable concentrations of 13 metallic elements were present in the samples analyzed, 12 of which were at concentrations below the RSL and CHHSLs for residential sites. The one exception was arsenic, which was found in stockpiled soils at concentrations ranging from 1.43–5.15 mg/kg. Although higher than the established RSLs and CHHSLs, these concentrations are within the background level range typically found in California soils (i.e., between 0.6–11.0 mg/kg). Additionally, the detected concentrations of arsenic are below the California Total Threshold Limit Concentration (TTLC) and Soluble Threshold Limit Concentration (STLC), and thus, do not classify the stockpiled soils as a hazardous material.¹⁴ As a result, stockpiled materials are acceptable for disposal at a MSW landfill with respect to metal concentrations.

With regard to VOCs, sampling results were compared to USEPA Region 9 RSLs for residential sites, which is applicable for disposal at MSW landfills. Detectable concentrations of VOCs were present in 2 samples. In Area #1, xylene was detected at 2.2 micrograms per kilogram (µg/kg), while tetrachloroethene and trichloroethene were detected at concentrations of 2.6 µg/kg and 14 µg/kg, respectively. In Stockpile Area #2C, VOCs were detected in two samples at concentrations of 48 and 60 µg/kg. Toluene was detected in one sample at Area #2C at a concentration of 3.2 µg/kg. Each of these detections is below the RSL for residential sites, and therefore, acceptable for disposal at a MSW landfill.

¹⁴ CCR Title 22 identifies any material that exceeds the TTLC threshold as hazardous and its disposal at a Class III MSW is prohibited under LARWQCB Order No. R4-2011-0052. The STLC is a test that mimics what happens to a material as it is exposed to normal climatic conditions over time. If the TTLC test results do not exceed 10 times the STLC limit, then no further analysis is normally required.



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In summary, the June 2013 Geosyntec investigation indicates that existing soils stockpiles contain detectable concentrations of TPH, metals, and VOCs; however, these constituents were not present in quantities that would quantify the samples as hazardous waste. With the exception of Area #2B, all sampled materials qualify for unrestricted disposal at Class III MSW landfills. Materials stockpiled at Area #2B meet the criteria for restricted disposal at a MSW landfill because the TPH (diesel) levels of 26 mg/kg exceed the concentration threshold for disposal at a MSW landfill (10 mg/kg), but fall below levels classifying them as hazardous waste and requiring disposal at a Class I hazardous materials landfill (1,000 mg/kg).

Oil Wells

The online database search of the DOGGR Regional Wildcat Map showed that the Project site is located in the Former Hyperion Oilfield. The Former Hyperion Oilfield Map suggests that there may be two abandoned/plugged oil wells on the Project site and four other abandoned/plugged oil wells south and east of the Project site.¹⁵ These abandoned/plugged oil wells are owned by Chevron USA, Inc. and are included in their Six Companies Fee lease. Based on the limited information shown on the DOGGR maps, it is assumed, but not certain, that the oil wells have been abandoned or plugged.

Methane Zone

The online database search conducted for the proposed development site showed that the proposed Project is within the Hyperion Field Methane Zone.¹⁶ The presence of subsurface methane gas is common within former oil production areas and other locations where organic material is present in the soil. Methane is generated by the biodegradation of organic matter in the absence of oxygen. Methane is not toxic; however, it is combustible and potentially explosive at concentrations above 50,000 ppm in the presence of oxygen. While non-pressurized methane is normally not problematic, if the gas accumulates to high concentrations and becomes pressurized, detectable levels may enter the interior of a structure through cracks or other penetrations present in the floor slabs. The LADBS information bulletin dated November 30, 2004, requires that methane site investigation should be performed onsite prior to any grading activities for projects located within City of Los Angeles designated methane zones. The results of the methane site testing are required to be included in the application for building permits. The results of this investigation would inform building and parking apron design in accordance with LAMC Section 91.7101 (Methane Seepage Regulations). Any recommendations contained therein would be incorporated during proposed Project construction to prevent hazards associated with methane release into the environment.

Jet Fuel Plume (Continental Airlines ACMX)

As discussed above and in the LAX Master Plan Final EIR, activities at the former Continental Airlines Aircraft Maintenance area (ACMX) resulted in a subsurface jet fuel plume in the vicinity of the Project site. The Continental Airlines¹⁷ ACMX is situated at 7300 World Way West, located east of the Project site across Taxiway AA in the western portion of LAX. The free-phase jet fuel plume in the southwest portion of the former Continental Airlines ACMX was first

¹⁵ Information presented by DOGGR varies in accuracy, scale, and origin, and may represent the approximate location of former abandoned oil wells.

¹⁶ City of Los Angeles, Bureau of Engineering. [Methane and Methane Buffer Zone Map](#). March 2004

¹⁷ As of 2010, Continental Airlines is a part of United Continental Holdings.

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discovered in 1988 with the removal of USTs at the former maintenance facility. Subsequent environmental investigations determined that this jet fuel plume originated from leaking fuel hydrant lines, USTs, and fuel distribution lines at the Continental Airlines ACMX facility, and that the jet fuel plume was moving westward from its point of origin (towards the Project site).

Subsequent to these investigations, a full-scale vacuum-enhanced free product system (VEFPR) system was selected to remove recoverable jet fuel from beneath the ACMX facility to the maximum extent practicable. The selection of this technology and the design of the VEFPR system were approved by the LARWQCB in 2002 and 2003, respectively, as well as by LAWA. The installation of the VEFPR system was completed by EDSG in November 2007 under the oversight of the LARWQCB.

The VEFPR system originally included 221 recovery wells spaced on a 60-foot spacing grid. The VEFPR system also includes 36 operating groundwater monitoring wells, including three that are located west of Taxiway AA on the Project site (i.e., Wells CMW-31, CMW-32, CMW-33). The VEFPR is designed to operate in conformance with the following criteria:

- The optimized operation of the VEFPR system is greater than 90 percent uptime;
- The jet fuel recovery rates at individual recovery wells are greater than 5 percent of the initial recovery rates (95 percent recovery) and at least one gallon per minute (gpm).

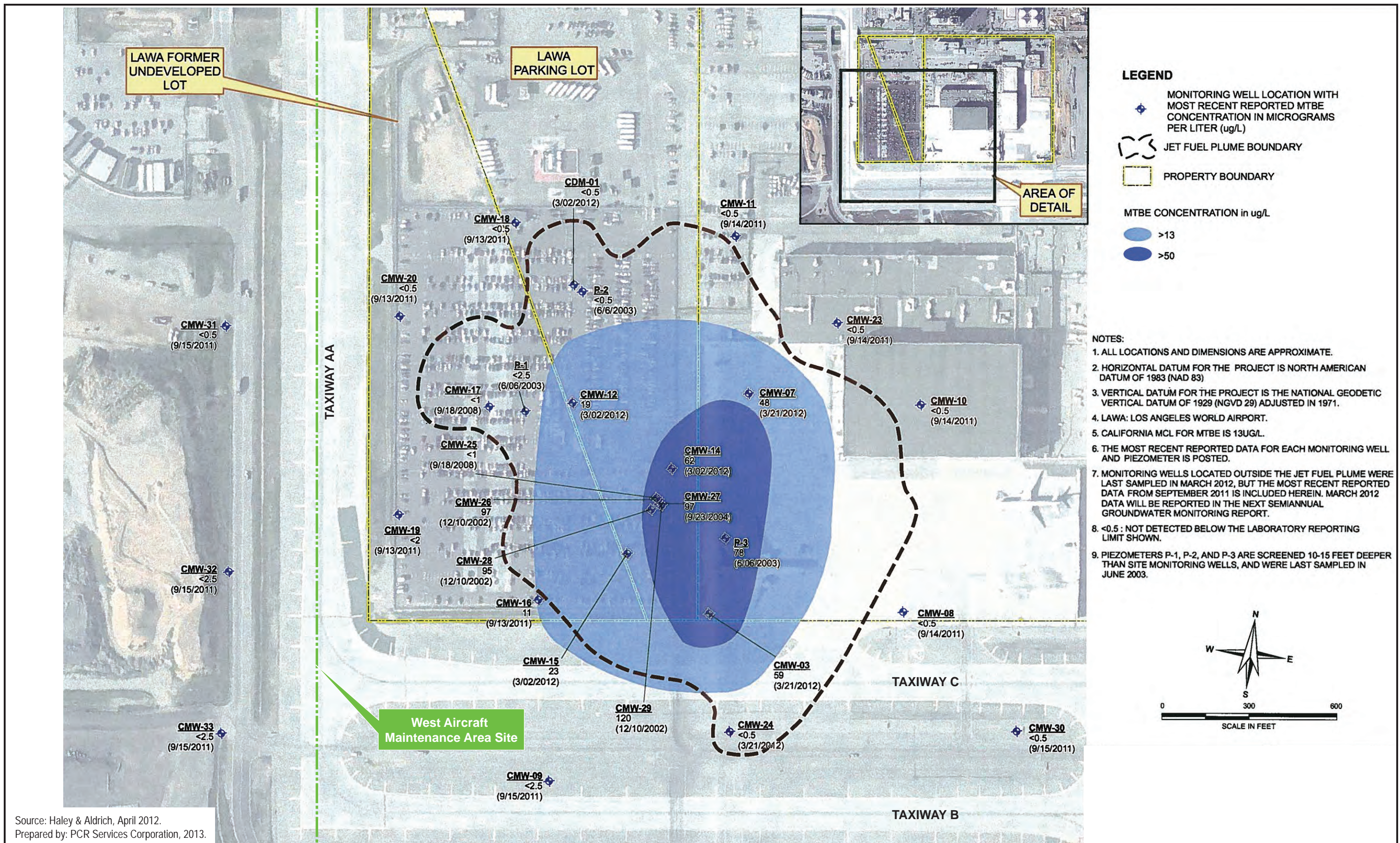
Using these criteria, once the recovery rate at an individual recovery well falls below 5 percent, or one gallon per day, active operation of that recovery well is suspended and the well is removed from the gauging program. As stated in the most recent quarterly report, active operations at 101 recovery wells have been suspended after meeting the above criteria. The most recent VEFPR semi-annual report confirms that the lateral extent of the jet fuel plume is stable and does not encroach into the Project site, and although continued remediation is required to remove free phase jet fuel to the criteria level established above, the lateral extent of the plume is not expanding. The location and extent of the jet fuel plume is depicted in **Figure 4.3-2**. The location of the VEFPR groundwater remediation wells is depicted in **Figure 4.3-3**. As shown therein, Groundwater Monitoring Wells CMW-31, CMW-32, and CMW-33 are within the boundaries of the Project site.

HVOC Plume

Groundwater east and south of the Project site is known to be contaminated with HVOCs.¹⁸ The source of this HVOC contamination was originally thought to be the leaking USTs at the former Continental Airlines ACMX. However, other investigations into the source of the HVOC contamination have concluded that the HVOC plume could be originating from a different source. For instance, recent investigations have found that upgradient concentrations of the HVOC tetrachloroethene (PCE) have increased to historically high concentrations at monitoring wells upgradient (east) of the Continental Airlines ACMX, and the concentration of the HVOC cis-1,2-Dichloroethene (cis-1,2-DCE) has also steadily increased in concentrations to historical maximums at monitoring wells upgradient (southeast) of the Continental Airlines ACMX.¹⁹ These findings indicate that there may be multiple sources of HVOC contamination in the vicinity of the Project site and additional study is likely required to determine the source of the

¹⁸ Environmental Data Solutions Group, LLC. Response to CDM Letter Report "HVOCs in Groundwater in the Vicinity of the Continental Airlines Maintenance Facility." August 29, 2007.

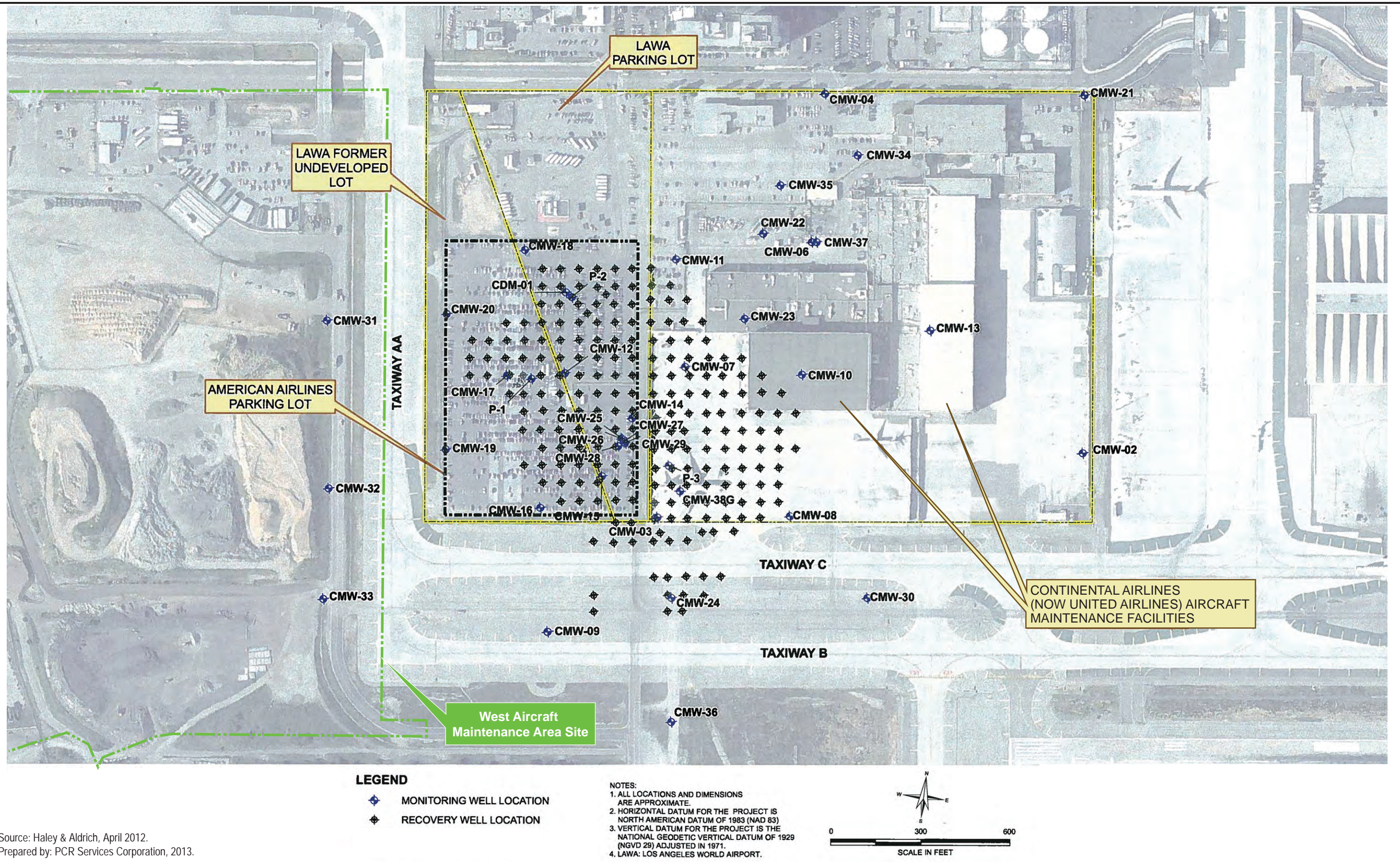
¹⁹ Haley & Aldrich, Inc. Vacuum Enhanced Free Product Recovery System Performance and Semi-Annual Groundwater Monitoring Report, 1 July 2011 – 31 December 2011, Continental Airlines Aircraft Maintenance Facility, 7300 World Way West, Los Angeles, California (SCP File 0349A; Site ID 1841200). February 2012.



Source: Haley & Aldrich, April 2012.
Prepared by: PCR Services Corporation, 2013.

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Source: Haley & Aldrich, April 2012.
Prepared by: PCR Services Corporation, 2013.

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HVOC plume. Although the lateral extent of the HVOC plume has not been fully delineated and is disputed by various parties, there is reason to suspect that delectable levels of HVOCs occur at the eastern edge of the Project site in the vicinity of the Monitoring Well CMW-33, at a depth of approximately 90 bgs.²⁰ No HVOCs or soil off-gassing was detected in shallow soils (i.e. up to 40 bgs) at the Project site.²¹ Because the lateral extent, source, and precise makeup of HVOCs have not been agreed upon, no remediation program has been proposed for the HVOC plume.

4.3.4 Thresholds of Significance

Based on thresholds of significance established by the LAX Master Plan EIS/EIR which are consistent with those found in the *L.A. CEQA Thresholds Guide*, a significant hazardous materials impact would occur if the direct and indirect changes in the environment that may be caused by the proposed Project would result in one or more of the following future conditions:

- An unauthorized and uncontrolled release of a hazardous material that created a hazard to the public or the environment.
- Exposure of workers to hazardous materials in excess of OSHA permissible exposure limits.
- Contamination of soil or groundwater or prevention of clean up of sites that are currently undergoing soil or groundwater remediation.
- An exceedance in the capacity of regional treatment, storage, and disposal facilities due to project related increases in hazardous waste generation.

4.3.5 Applicable LAX Master Plan Commitments and Mitigation Measures

As part of the LAX Master Plan, two commitments pertaining to hazards and hazardous materials were adopted by the LAX Master Plan's MMRP. The two commitments are identified below.

HM-1. Ensure Continued Implementation of Existing Remediation Efforts.

- Prior to initiating construction of a Master Plan component, LAWA will conduct a pre-construction evaluation to determine if the proposed construction will interfere with existing soil or groundwater remediation efforts. For sites currently on LAX property, LAWA will work with tenants to ensure that, to the extent possible, remediation is complete prior to the construction. If remediation must be interrupted to allow for Master Plan-related construction, LAWA will notify and obtain approval from the regulatory agency with jurisdiction, as required, and will evaluate whether new or increased monitoring will be necessary. If it is determined that contamination has migrated during construction, temporary measures will be taken to stop the migration. As soon as practicable following completion of construction in the area, remediation will be reinstated, if required by the Regional Water Quality Control Board (RWQCB) or another

²⁰ Environmental Data Solutions Group, LLC. 2003/2004 HVOC Investigation Report: Continental Airlines Aircraft Maintenance Facility Los Angeles International Airport, 7300 World Way West, Los Angeles, California. pg. 3-6. October 2004.

²¹ Ibid.

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agency with jurisdiction. In such cases, LAWA will coordinate the design of the Master Plan component and the re-design of the remediation systems to ensure that they are compatible and to ensure that the proposed remediation system is comparable to the system currently in place. If it is determined during the pre-construction evaluation that construction will preclude reinstatement of the remediation effort, LAWA will obtain approval to initiate construction from the agency with jurisdiction.

- For properties to be acquired as part of the LAX Master Plan, LAWA will evaluate the status of all existing soil and groundwater remediation efforts. As part of this evaluation, LAWA will assess the projected time required to complete the remediation activities and will coordinate with the land owner and the agency with jurisdiction to ensure that remediation is completed prior to scheduled demolition and construction activities, if possible. In cases where remediation cannot be completed prior to demolition and construction activities, LAWA will undertake the same steps required above, namely, an evaluation of the need to conduct monitoring; implementation of temporary measures to stop migration, if required; and reinstatement of remediation following completion of construction, if required.

HM-2. Handling of Contaminated Materials Encountered During Construction.

- Prior to the initiation of construction, LAWA will develop a program to coordinate all efforts associated with the handling of contaminated materials encountered during construction. The intent of this program will be to ensure that all contaminated soils and/or groundwater encountered during construction are handled in accordance with all applicable regulations. As part of this program, LAWA will identify the nature and extent of contamination in all areas where excavation, grading, and pile-driving activities are to be performed. LAWA will notify the appropriate regulatory agency when contamination has been identified. If warranted by the extent of the contamination, as determined by the regulatory agency with jurisdiction, LAWA will conduct remediation prior to initiation of construction. Otherwise, LAWA will incorporate provisions for the identification, segregation, handling and disposal of contaminated materials within the construction bid documents. In addition, LAWA will include a provision in all construction bid documents requiring all construction contractors to prepare site-specific Health and Safety Plans prior to the initiation of grading or excavation. Each Health and Safety Plan would include, at a minimum, identification/description of the following: site description and features; site map; site history; waste types encountered; waste characteristics; hazards of concern; disposal methods and practices; hazardous material summary; hazard evaluation; required protective equipment; decontamination procedures; emergency contacts; hospital map and contingency plan.

In the event that any threshold of significance listed in the Hazardous Materials section of the EIS/EIR for the LAX Master Plan is exceeded due to the discovery of soil or groundwater contaminated by hazardous materials or if previously unknown contaminants are discovered during construction or a spill occurs during construction, LAWA will notify the lead agency(ies) with jurisdiction and take immediate and effective measures to ensure the health and safety of the public and workers and to protect the environment, including, as necessary and appropriate, stopping work in the affected area until the appropriate agency has been notified.

Note: Subsequent to the approval of the LAX Master Plan, LAWA adopted the *Procedure for the Management of Contaminated Materials Encountered During Construction* for application to all LAX Master Plan projects. The Procedure,

which is discussed in detail in Section 4.3.3.1, above, provides further guidance for implementing LAX Master Plan Commitment HM-2, especially for projects involving excavation and grading of soils.

4.3.6 Impact Analysis

The proposed Project includes the development of features to consolidate, relocate, and modernize existing aircraft maintenance facilities at LAX. The proposed Project would remove or relocate existing on-site uses, including the existing soil stockpiles (an estimated 295,000 cubic yards that would be exported for off-site re-use or disposal), and develop the Project site with a concrete aircraft apron, hangars and aircraft maintenance areas, and an aircraft wash rack. Existing on-site construction staging activities and associated equipment would be relocated to other existing staging areas located to the south of Westchester Parkway and west of Lincoln Boulevard, however, staging for development of the proposed Project would occur on-site. Stockpiled soil and construction rubble stockpiles existing within and immediately adjacent to the Project site would be re-used on-site as backfill material and/or exported off-site for reuse or disposal, as appropriate. Although fuel dispensing of aircraft by tanker truck could occur on the apron area of the Project site, no fuel storage would occur on the Project site.

The following analysis evaluates the environmental impacts of the proposed Project related to hazards and hazardous materials. An evaluation of the potential for the proposed Project to impact water quality (through contamination or release) is found in Section 4.4, *Hydrology and Water Quality*.

4.3.6.1 Release of Hazardous Materials

4.3.6.1.1 Construction

Stockpile Areas and Potentially Contaminated Soils

As discussed above, Area #2B contains TPH (diesel) at a concentration of 26 mg/kg and all stockpiled soils contain TPH (full chain) typical of asphalt, oil, or grease at concentrations ranging from 12 to 7,400 mg/kg. Detectable concentrations of 13 metallic elements were present in all stockpiled soils, 12 of which were at concentrations below the RSL and CHHSLs for residential sites. Arsenic concentrations were above the RSL and CHHSLs for residential sites, but were within the background range for California soils and below the California TTLC and STLC limits. Further, Area #1 contains concentrations of xylene (2.2 µg/kg), tetrachloroethene (2.6 µg/kg), and trichloroethene (14 µg/kg) below the RSL for residential sites. Area #2C also contains concentrations of VOCs (at 48 and 60 µg/kg in two samples) and toluene (3.2 µg/kg) below the RSL for residential sites. As a result, based on recent sampling efforts, the stockpiled soils do not appear to contain contaminants at levels which would qualify them as Class I hazardous materials. Nonetheless, the stockpiled materials are not homogeneous in nature and there is the potential that concentrations of contaminants may differ from sampling locations.

The on-site stockpile areas would be removed during construction, and would be re-used on-site as backfill material and/or exported for reuse or for off-site disposal at a regional MSW landfill. In the event there are hazardous materials within the stockpiles that were undetected during the recent investigation and are encountered during future excavation activities,

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construction activities, including the removal of stockpile areas and ground-disturbing activities, would be conducted in accordance with applicable federal, state, and local regulations, including LAWA's Procedure which complies with LAX Master Plan Commitment HM-2, and LAWA's BMPs.

Specifically, in the event that previously undetected hazardous materials are discovered during construction, the Procedure includes detailed plans for handling previously unknown contaminated soil encountered during construction. The Procedure also requires, among other things, the identification of the nature and extent of contamination in all areas where excavation, grading, and pile-driving activities are to be performed up to the level of exposed soil; and the characterization of areas where contaminated soils are encountered through preparation of Site Sampling and Analyses Plans and a Soil Stockpile Characterization. This requirement was satisfied by the June 2013 Geosyntec *Screening-Level Sampling and Analyses of Selected Stockpiles Report*, the results of which are discussed above. Moreover, the Procedure requires the preparation of a site-specific Health and Safety Plan that incorporates OSHA and CalOSHA regulations, as well as FAA and LAWA health and safety requirements in order to minimize the risk of injury to site workers and the general public; trained HAZWOPER personnel to be on site during construction; as well as specific procedures for handling such materials, identifying risks, and monitoring site conditions; and implementation of BMPs and spill prevention and control measures to prevent spills. Lastly, the Procedure outlines emergency response procedures and notification requirements in the event of a spill.

In the event that Project-related excavation unexpectedly encounters VOC-contaminated soil, the continuation of such excavation would be carried out in accordance with SCAQMD Rule 1166. Any hazardous materials found at the Project site that would be transported off-site would be done by licensed operators in accordance with all applicable federal, state, and local regulations. These regulations include the transportation provisions of the RCRA and Section 5.7.3 of the Procedure, which requires Contractors to utilize only hazardous waste service vendors and transporters approved by LAWA for the handling and transportation of hazardous materials.

Compliance with the Procedure, LAWA's BMPs, and applicable regulations would ensure that construction would not result in an unauthorized release of hazardous materials through the use or transport of these materials that would create a hazard to the public or the environment. In the absence of any known hazardous materials within the existing soil stockpiles and the requirements of LAWA's existing Procedure related to unexpectedly encountering hazardous materials during construction, as well as with other existing regulatory requirements described above, no significant impacts related to hazards and hazardous materials would occur.

Oil Wells

As discussed above, the DOGGR Regional Wildcat Map showed that the Project site is located in the Former Hyperion Oilfield and there may be two abandoned/plugged oil wells on the Project site and four more in the general vicinity of the Project site. DOGGR implements the regulations set forth in Section 3200 et seq., of the Public Resources Code, including the review of construction site plans in areas of known, existing, or abandoned oil wells. Specifically, compliance with Section 3229, Division 3, of the Public Resources Code requires that prior to commencing any work to abandon any well, the owner or operator shall file with DOGGR a written notice of intention to abandon the well (DOGGR form OG108). Abandonment cannot proceed until compliance with DOGGR requirements is completed. As such, the DOGGR would review the proposed Project's construction plans since the Project site is located within the

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Former Hyperion Oilfield, and is suspected to contain abandoned oil wells. Nonetheless, as the locations of abandoned/plugged oil wells on the Project site are not known and the wells might not have been properly abandoned/plugged, impacts associated with these wells are considered significant. Therefore, Mitigation Measure MM-HAZ (WAMA)-1 is recommended below.

Mitigation Measure MM-HAZ (WAMA)-1 requires that additional research and a magnetometer survey shall be undertaken to confirm the location of abandoned/plugged wells as provided by the DOGGR and to determine if they were abandoned per the current regulations. The mitigation also requires proper abandonment per DOGGR authority and a survey to determine if any further action is required to mitigate the risk posed by these abandoned wells. Additionally, if portions of the former oil wells are determined to be disturbed by Project excavation and construction activities, the LAFD would also be provided an opportunity to investigate the oil wells encountered and make a determination as to whether re-abandonment would be required. Any re-abandonment activities required during construction would occur in accordance with DOGGR regulations set forth in Section 3200 et seq., of the Public Resources Code. Therefore, with the implementation of Mitigation Measure MM-HAZ (WAMA)-1, impacts would be reduced to a less than significant level.

Methane

The Project site is located within a City-designated methane zone. In accordance with City requirements, a methane site investigation would be performed at the Project site prior to any grading activities to determine whether elevated concentrations of methane are present. In the event elevated concentrations of methane are present, grading or construction activities on-site could pose a potential to encounter methane that could result in a possible hazard. Prior to construction, the construction Contractor would be required by LAWA and the City of Los Angeles Department of Building and Safety to prepare a Health and Safety Plan. The Health and Safety Plan shall comply with OSHA Safety and Health Standards (29 Code of Federal Regulations 1910.120) and CalOSHA requirements (described below in Section 4.3.6.2.1) shall address, as appropriate, safety requirements that would serve to avoid significant impacts in the event that elevated levels of these soil gases are encountered during grading and construction. The OSHA and CalOSHA requirements include air monitoring to be conducted during all subsurface work activities. Should potentially elevated levels of soil gases be encountered during subsurface work activities, the Health and Safety Plan would provide for the immediate implementation of appropriate safety measures. Based on such monitoring and safety provisions, grading and construction activities associated with development on-site are not expected to substantially expose workers or nearby residents to elevated levels of methane. Therefore, construction impacts related to methane would be less than significant and no mitigation is required.

4.3.6.1.2 Operation

Handling of Hazardous Materials

As the maintenance activities that would occur on the Project site already occur on the airport in the same general area, the consolidation of these activities under the proposed Project would not increase the chances of a spill or release of substances that could result in contamination of soil or groundwater. The types of hazardous materials used during maintenance operations are anticipated to be similar to those currently used, such as motor oils, transmission fluids,

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cleaning solvents, and similar wastes. Although fuel dispensing of aircraft by tanker truck could occur on the apron area of the Project site, no fuel storage would occur on the Project site. As discussed in the LAX Master Plan Final EIR, LAWA has procedures already in place to reduce hazardous materials-related incidents and spills. If a spill were to occur, emergency response procedures would be implemented to contain and clean up the spill. These regulations and provisions are in place so potential spills and releases would not create a hazard to the public or the environment, and would not result in contamination of soil or groundwater. For instance, maintenance operations on the Project site would be required to follow the regulations set forth in RCRA, the Emergency Planning and Community Right-to-Know Act, OSHA, federal and state UST regulations, and LAFD regulations. These regulations encompass storage and handling, as well as worker training and emergency response. In addition, the existing LAWA SWPPP includes measures to prevent spills and to respond to spills that do occur. Therefore, impacts with respect to the handling of hazardous materials would not create a hazard to the public or the environment and impacts would be less than significant.

Methane

The Project site is located in a City-designated methane zone. In accordance with City requirements, a methane site investigation would be performed at the Project site prior to any grading activities to determine whether elevated concentrations of methane are present and, if so, to identify the appropriate level of methane safety measures to incorporate into the final site design and construction specifications. Review and confirmation of the sufficiency of the proposed methane safety measures, if warranted, would occur by LADBS through the building permit process. Based on adherence to existing City regulations and requirements, implementation of the proposed Project would not result in a significant impact related to methane.

4.3.6.2 Exposure of Workers to Hazardous Materials

4.3.6.2.1 Construction

As discussed above, contaminated soils could be unexpectedly encountered during grading and excavation; however, compliance with the Procedure currently in place by LAWA sets forth appropriate procedures and requirements for the identification and handling of excavated contaminated materials. The Procedure requires, among other things, preparation of a site-specific Health and Safety Plan that incorporates OSHA and CalOSHA regulations, as well as FAA and LAWA health and safety requirements in order to minimize the risk of injury to site workers. Implementation of this Procedure would ensure that if unexpected contaminated materials are encountered during construction, they are properly identified, stored, and remediated and disposed of in accordance with applicable regulations, including those governing worker health and safety. In the event that Project-related excavation unexpectedly encounters VOC-contaminated soil, the continuation of such excavation would be carried out in accordance with SCAQMD Rule 1166. In addition, based on the depth of groundwater at the Project site (i.e., the Gage Aquifer is 100 to 105 feet bgs and shallow perched groundwater is 35 to 40 feet bgs), the construction of the proposed Project would not encounter contaminated groundwater. As such, impacts associated with the excavation of contaminated materials would be less than significant.

The off-gassing of methane is considered a possibility during construction activities because of the Project site's location on a former oil field and in the City of Los Angeles designated

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Hyperion Field Methane Zone. As discussed above, in the event that elevated concentrations of methane are found to be present, a significant hazard associated with construction activities is generally not expected to occur because the methane hazard (combustion) occurs at concentrations above 50,000 ppm, at which subsurface methane concentrations would quickly disperse (reduce) to concentrations much lower than this once released to the surface. In addition, the exposure of workers to methane is regulated by OSHA and CalOSHA, as well as through the Procedure. In accordance with OSHA and CalOSHA standards, worker exposure to a “hazardous atmosphere” within confined spaces (e.g., trenches, bore holes) where the presence of flammable gas vapor or mist exceeding 10 percent of the lower explosive limit is not permitted without proper personal protective equipment. CalOSHA also establishes which compounds are considered a health risk, the exposure limits associated with such compounds, protective equipment, workplace monitoring, and medical surveillance required for compliance. Compliance with applicable regulations would ensure that workers are not exposed to hazardous levels of methane and a less than significant impact would result.

4.3.6.2.2 Operation

The proposed Project would accommodate the same types of routine maintenance activities that are currently occurring at various places throughout LAX airport. As with current operations, maintenance workers would continue to comply with all applicable regulations. For instance, exposure of maintenance workers to contaminated materials would be minimized by implementing the measures required by federal, state, and local laws and regulations. As discussed above, these include OSHA and CalOSHA standards, which establish exposure limits for workers; require protective equipment or other protective measures, when warranted; and require employers to provide a written health and safety program, worker training, emergency response training, and medical surveillance. Therefore, the proposed Project would result in less than significant impacts with respect to maintenance worker exposure to hazardous materials.

As discussed above, the Project site is located in the City-designated Hyperion Methane Zone. Nonetheless, interior methane levels would be regulated in accordance with Los Angeles Methane Seepage Regulations, which could require design features such as methane barriers, methane detection systems, and venting systems should hazardous levels of methane be detected during pre-construction investigations. Adherence with the applicable regulations would ensure that interior methane levels do not reach limits that would pose a threat to maintenance workers or rise to explosive levels, and a less than significant impact would result.

4.3.6.3 Contamination of Soil & Groundwater/Prevention of Cleanup

4.3.6.3.1 Construction

Only one ongoing remediation effort is occurring in the vicinity of the Project site; the groundwater remediation efforts for a jet fuel plume originating from the former Continental Airlines ACMX. Specifically, as discussed above, the groundwater remediation consists of the VEFPR system for a jet fuel plume centered at the former Continental Airlines ACMX located east of the Project site. Although studies have concluded that the jet fuel plume does not encroach the boundaries of the Project site, the VEFPR system includes three on-site groundwater monitoring wells (i.e., CMW-31, CMW-32, CMW-33). As part of the construction of

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the proposed Project, these monitoring wells would be protected in place, and enclosed in concrete vaults with load bearing grates at the surface to provide for continued access. LAWA would continue to coordinate with the third-party operator of the remediation system. Because the wells would not be relocated by the proposed Project, but rather protected in place in enclosed concrete vaults, permits or approvals from the LARWQCB would not be required. Impacts, if any, to the remediation system would be less than significant and therefore construction impacts would be less than significant.

As it relates to the discovery of unknown contamination during construction, the Procedure (that facilitates implementation of LAX Master Plan Commitment HM-2, Handling of Contaminated Materials Encountered During Construction) provides detailed guidance for especially for projects involving excavation and grading of soils. The Procedure requires the preparation of detailed plans for handling previously unknown contaminated soil encountered during construction, as well as spills of hazardous materials or substances that may occur during construction. It also requires preparation of a detailed Health and Safety Plan, and provisions for testing and segregation of contaminated soils for proper disposal. Therefore, the proposed Project would result in less than significant impacts with respect to unknown contamination.

4.3.6.3.2 Operation

Maintenance activities would occur within the boundaries of the Project site, where no remediation efforts are currently taking place. As mentioned above, construction of the proposed Project would include the protection-in-place of the three existing on-site monitoring wells. Proposed Project operations would not result in any additional impacts to these monitoring wells, or other remediation efforts occurring in the proposed Project vicinity. Impacts, if any, to the remediation system would be less than significant and therefore operational impacts would be less than significant.

4.3.6.4 Impacts Related to Landfill Capacity

4.3.6.4.1 Construction

While a portion of the existing stockpiled soil and construction rubble within and immediately adjacent to the Project site would be re-used on-site as backfill material during construction, the proposed Project would still require the removal of soils from the Project site. In total, it is estimated that 295,000 cubic yards of stockpiled materials would need to be hauled from the Project site and disposed of at regional MSW landfills. Based on the findings of the recent Geosyntec Report, all stockpiled soils would be suitable for disposal at Class III MSW landfills, with most of the materials suitable for unrestricted disposal at such landfills. Soils at Stockpile Areas #1 and #2B with TPH (full chain) concentrations in excess of 500 mg/kg would still be suitable for disposal at Class III MSW landfills. However, they would be restricted to portions of the landfill that implement a SWPPP in accordance with Storm Water General Permit No. 97-03-DWQ. The SWPPP outlines BMPs to ensure soils contamination does not enter stormwater flows leaving the landfill site. As of December 31, 2011, the most recent information available, the MSW capacity of landfills in Los Angeles County is estimated at 127 million tons.²² As a result, MSW landfills in Los Angeles County have ample capacity to accommodate the 295,000 cubic yards of soil required to be hauled from the Project site.

²² County of Los Angeles Department of Public Works. County of Los Angeles Countywide Integrated Waste Management Plan: 2011 Annual Report. August 2012.

4.3 Hazards and Hazardous Materials

As mentioned above, the June 2013 Geosyntec Report found no indication that existing on-site stockpiles contain hazardous materials requiring special handling and disposal/treatment at a lined Class I (hazardous materials) landfill.²³ Should hazardous materials be unexpectedly encountered during construction activities, they would be disposed of in accordance with the Procedure, which would identify disposal options for previously unidentified hazardous materials. Therefore, construction of the proposed Project would not generate hazardous materials which would exceed the available disposal capacity and a less than significant impact would result.

4.3.6.4.2 Operation

The proposed Project would accommodate the same types of the routine maintenance activities that are currently occurring elsewhere at the airport; hence, the types of hazardous wastes generated under the proposed Project are expected to be similar to those now generated. Because proposed Project operations would relocate existing maintenance operations, there would not be an increase in the amount of hazardous materials generated at LAX as a whole. Hazardous waste generated at LAX is removed by private contractors and delivered to treatment, recycling, and disposal facilities both within and outside the Los Angeles region. As existing disposal capacity adequately meets the needs of routine maintenance activities currently occurring at LAX, the proposed Project would not result in an exceedance of hazardous waste disposal capacity and a less than significant impact would result.

4.3.7 Cumulative Impacts

Impacts associated with hazardous materials include the potential exposure of construction workers to contamination, interference with ongoing remediation efforts, the potential for related projects to result in soil or groundwater contamination, and the potential for impairment to the implementation of emergency response activities. The exposure of construction workers to contaminated substances or hazardous building materials, air transport of hazardous substances, and interference with ongoing soil and groundwater remediation generation are not subject to cumulative effects, as this impact is site-specific and limited to particular construction workers that are employed at a construction site where contaminated materials may be uncovered. Development of the related projects in the area, in conjunction with the proposed Project could result in a potential increase in impacts relative to the ground transport of hazardous materials and wastes and increased demand for hazardous waste treatment, recycling, and disposal. Proper packaging and handling of hazardous materials and wastes, coupled with employee training and emergency response, would reduce cumulative impacts of increased ground transport of hazardous materials/wastes to a level that is less than significant. With respect to the cumulative demand for treatment, recycling, and disposal from related projects, sufficient capacity is expected to be available to accommodate related projects. As discussed above, as of December 31, 2011 (the most recent information available) the County of Los Angeles Countywide Integrated Waste Management Plan 2011 Annual Report indicates that MSW capacity of landfills in Los Angeles County is estimated at 127 million tons. Furthermore, the 2011 Annual Report indicates that there would be adequate landfill capacity

²³ Geosyntec Consultants. Report of Screening-Level Sampling and Analyses of Selected Stockpiles: West Aircraft Maintenance Area by Geosyntec Consultants. June 2013

4.3 Hazards and Hazardous Materials

for the 15-year planning period ending in 2025 through the use of the following strategies: expansion of existing landfills; the study, promotion, and development of conversion technologies; the expansion of transfer and processing infrastructure; development of a waste-by-rail system to efficiently transfer solid waste to out-of-county landfills; and the maximization of waste reduction and recycling.²⁴ The waste-by-rail system will allow the remote disposal of waste in areas with abundant landfill capacity and is currently being developed by the sanitation districts within Los Angeles County. The waste-by-rail system will provide long-term disposal capacity to replace local landfills as they reach capacity and close. The starting point of the Waste-by-Rail System is the Puente Hills Intermodal Facility, located near the Puente Hills Materials Recovery Facility, which already accepts residual wastes from transfer stations and transports them by rail to the Mesquite Regional Landfill for disposal. Therefore, the impact of cumulative increases in hazardous waste generation would be less than significant.

As discussed above, groundwater remediation is occurring on the former Continental Airlines ACMX. However, the extent of the jet fuel plume is static and does not encroach on the Project site. An HVOC plume is currently located south and east of the Project site, with HVOC concentrations increasing at groundwater monitoring wells upgradient (east) of the VEFPR system. No conclusive source of the HVOC contamination has been identified and additional study is likely required to identify its source and lateral extent. Although HVOC contamination may encroach on the eastern portion of the Project site, because lateral extent, source, and precise makeup of HVOCs have not been agreed upon, no remediation plan has been established. Any future remediation of the HVOC plume would occur in accordance with the applicable regulatory requirements. As long as existing groundwater monitoring wells are not relocated and temporary disruptions to well access, such as the construction of concrete vaults around the wells, do not disrupt scheduled monitoring schedules, approval from the LARWQCB would not be required. Further, the presence of the HVOC plume in combination with the proposed Project would not impede existing groundwater remediation efforts currently underway with the VEFPR system. Therefore, there would be no cumulative impacts related to ongoing remediation efforts.

Cumulative increases in the use of hazardous materials can result in increased potential for a spill or release that, in turn, may result in soil or groundwater contamination. Because the proposed Project would consolidate some of the existing maintenance activities within LAX, no notable increase in the use and storage of hazardous materials is anticipated to result from the proposed Project. Compliance with existing regulations and operating procedures in accordance with LAWA's Procedure and BMPs for hazardous materials would continue to reduce the potential for releases to occur and would minimize the impact of a release were one to occur. Therefore, this impact would be less than significant. Related projects would be subject to the same regulations and operating procedures. Therefore, cumulative impacts would also be less than significant.

4.3.8 Mitigation Measures

The following mitigation measure beyond those required by the LAX Master Plan MMRP is recommended to reduce impacts associated with the proposed Project:

²⁴ County of Los Angeles Department of Public Works. County of Los Angeles Countywide Integrated Waste Management Plan: 2011 Annual Report. August 2012

4.3 Hazards and Hazardous Materials

- **MM-HAZ (WAMA)-1.** Prior to construction at the Project site, additional research shall be undertaken to determine if abandoned/plugged wells at the Project site were abandoned per the current regulations. If necessary, these wells shall be properly abandoned per current regulations. Since the Division of Oil, Gas, and Geothermal Resources (DOGGR) maps are not guaranteed to be accurate, a magnetometer survey shall be completed to determine the exact location of these abandoned/plugged oil wells. If the magnetometer survey successfully determines the location of these oil wells, a subsurface investigation in coordination with the DOGGR and City of Los Angeles Fire Department, as applicable, will be performed to determine if the abandoned wells pose a risk during the grading and construction activities.

Specific DOGGR regulations and requirements for the inspection, testing, plugging, and abandonment of oil wells are contained within Chapter 4, Development, Regulation, and Conservation of Oil and Gas Resources, Article 3 of the State of California Code of Regulations. These regulations require a specific set of actions be taken, dependent on the found state of the abandoned oil wells (e.g. for open holes, a cement plug must extend from the total depth of the well or from at least 100 feet below the bottom of each oil or gas zone to at least 100 feet above the top of each oil or gas zone, for cased holes, all perforations are to be plugged with cement, with the plug extending at least 100 feet above the top of a landed liner, the uppermost perforations, the casing cementing point, the water shut-off holes, or the oil or gas zone, whichever is highest). Chapter V, Article 7, (Fire Code) (57.90.01-45) of the Los Angeles City Municipal Code further regulates the location, drilling safeguards, and abandonment of oil wells in the City. In the event oil wells are found that have not been properly abandoned, the procedures and agency oversight prescribed in these regulations would serve as performance standards to ensure that significant impacts associated with the potential migration of fluids and groundwater contamination would be avoided during construction of the proposed Project. Construction will comply with all applicable requirements of DOGGR and the City of Los Angeles Fire Department for the investigation and/or re-abandonment of the well(s).

4.3.9 Level of Significance After Mitigation

With implementation of the LAX Master Plan MMRP programs and existing regulatory programs and requirements related to hazards and hazardous materials, along with Mitigation Measure MM-HAZ (WAMA)-1, impacts would be mitigated to a less than significant level. Prior to the start of construction, the magnetometer survey required under Mitigation Measure MM-HAZ (WAMA)-1 would determine if abandoned/plugged wells at the Project site were abandoned per the current regulations and shall be completed to determine the location of these abandoned/plugged oil wells. Compliance with the results of this survey, as well as with DOGGR and LAFD regulations, would ensure that these wells are properly abandoned.

4.3 Hazards and Hazardous Materials

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4.4 Hydrology and Water Quality

4.4.1 Introduction

This analysis addresses the potential for the proposed Project to result in significant hydrology (drainage, groundwater) and water quality impacts. The analysis of potential drainage impacts in this section is based in part on the *West Maintenance Area, Los Angeles International Airport, Engineer's Design Report: Appendix F, Drainage Design Report* prepared by Atkins in August 2013.

Prior to the preparation of this Environmental Impact Report (EIR), an Initial Study (IS – in Appendix A of this EIR) was prepared using the California Environmental Quality Act (CEQA) Environmental Checklist Form to assess potential environmental impacts associated with hydrology and water quality. For several issues related to hydrology and water quality, the IS found that the proposed Project would result in “no impact”, and thus, no further analysis of these topics in an EIR was required. Refinements have been made to the proposed Project to reflect additional information and coordination with the public and the FAA. The refinements do not represent a material change to the proposed Project that was described in the IS/NOP and do not change any of the conclusions in the IS. The thresholds not addressed further include:

- Potential Impacts related to placing housing or structures within a 100-year flood plain were evaluated and determined to have “No Impact” in the IS because the proposed Project would not include the development of housing or other uses within a 100-year flood plain.
- Potential impacts related to exposing people or structures to a significant loss, injury, or death involving flooding, including flooding as a result of the failure of a levee or dam, were evaluated and determined to have “No Impact” in the IS because the Project site is not located within a boundary of an inundation area from a flood control basin. Further, the Project site is not located within the downstream influence of any levee or dam.
- Potential impacts related to inundation by seiche, tsunami, or mudflow were evaluated and determined to have “No Impact” in the IS because the Project site is located approximately 0.5-mile east of the Pacific Ocean and is not delineated as a potential inundation or tsunami impacted area in the City of Los Angeles Inundation and Tsunami Hazard Areas map. Further, the Project vicinity is relatively flat and developed, and not subject to mudflows.

Accordingly, no further analysis of these issues is provided in this section.

4.4.2 Methodology

4.4.2.1 Hydrology

4.4.2.1.1 Drainage

The objective of the drainage analysis is to assess the potential for localized flooding and substantial erosion/siltation to occur under the proposed Project. Specifically, the drainage analysis first evaluates the existing drainage patterns, stormwater peaks, volumes, and capacity of the existing storm drainage systems. The analysis then estimates the stormwater peak, volume and flow direction resulting from the proposed Project and describes the proposed

4.4 Hydrology and Water Quality

improvements under the proposed Project. Finally, the analysis evaluates whether the proposed drainage systems have adequate capacity to accommodate the proposed Project's stormwater runoff so that flooding and/or substantial erosion/siltation does not result.

Although the Project site is located within the City of Los Angeles (City), the Los Angeles County Department of Public Works (LACDPW) Modified Rational Method (MODRAT) analysis methodology was utilized for the purposes of this analysis because it allows for the calculation of peak volumes and because the receiving stormwater drainage system is under LACDPW jurisdiction.¹ Two separate storm events are utilized in this section to evaluate whether stormwater drainage systems are adequate to accommodate stormwater flows. Specifically, the LACDPW Urban Flood event is used to assess the adequacy of proposed on-site storm drains, while the LACDPW Capital Flood event is used to evaluate the adequacy of proposed detention/infiltration basins and downstream stormwater drainage systems.²

Peak flows are estimated using the MODRAT as defined by the LACDPW Hydrology Manual and United States (U.S.) Department of Transportation Federal Aviation Administration (FAA) Surface Drainage Manual design requirements, and take into account precipitation levels during the Urban Flood and Capital Flood events, soil type(s), acreage, and percentage of impervious surfaces at the 84-acre Project site and greater Pershing Sub-basin. Both existing and existing with proposed Project conditions are modeled.

4.4.2.1.2 Groundwater

The groundwater analysis examines the potential for the proposed Project to interfere substantially with groundwater recharge by estimating both the groundwater recharge that occurs at the Project site under existing conditions and the groundwater recharge that would occur at the Project site under the proposed Project. The analysis then compares the change in groundwater recharge resulting from the proposed Project to the overall annual groundwater recharge within the basin to determine if a substantial reduction in groundwater level would occur. Conclusions as to the significance of changes in groundwater recharge under the proposed Project are informed by the conclusions regarding groundwater impacts in the Los Angeles International Airport (LAX) Master Plan EIR and other relevant studies.

4.4.2.2 Water Quality

Potential pollutant loads can be associated with two types of surface water runoff; wet weather flows (e.g., flows from stormwater runoff flowing over impervious urban uses) and dry weather flows (e.g., flows associated with non-stormwater surface runoff from areas treated with fertilizers and herbicides, potential spills of hazardous materials, and the outdoor washing of motor vehicles, aircraft, etc.). Within this section, potential pollutant loads associated with surface water flows are addressed qualitatively by characterizing the practices that can contribute to these flows and describing measures proposed to reduce pollutants in such flows.

¹ City of Los Angeles, West Maintenance Area, Los Angeles International Airport, Engineer's Design Report: Appendix F, Drainage Design Report, prepared for Los Angeles World Airports by Atkins, August 9, 2013.

² The LACDPW 2006 Hydrology Manual defines an Urban Flood event as runoff from a 25-year frequency design storm falling on a saturated watershed (soil moisture at field capacity). A Capital Flood event is defined as the runoff produced by a 50-year frequency design storm falling on a saturated watershed.

4.4 Hydrology and Water Quality

The pollutants of concern associated with wet weather flow (i.e., stormwater runoff) are evaluated and based upon studies of the Santa Monica Bay, the primary receiving water body for runoff from LAX, including the *Characterization Study of the Santa Monica Bay Restoration Plan - State of the Bay 1993*,³ and the Santa Monica Bay Restoration Commission's (SMBRC)⁴ Santa Monica Bay Restoration Plan in 2008.⁵ These studies identified 19 pollutants of concern for the Santa Monica Bay. Thirteen of these pollutants were selected for analysis based on the reasonable likelihood that they would be present in stormwater runoff from LAX and the Project site, including total suspended solids, phosphorus, total Kjeldahl nitrogen, copper, lead, zinc, oil and grease, biochemical oxygen demand, chemical oxygen demand, ammonia, coliform bacteria, fecal coliform bacteria, and fecal enterococcus.⁶

The analysis of dry weather flows (i.e., non-stormwater surface water runoff) is limited to the identification of factors that are likely to increase or decrease the potential for pollutants to enter dry weather flows originating from the Project site. Sources of dry weather flows at airports may include outdoor maintenance of planes and vehicles; building and ground maintenance; irrigation; aircraft and ground vehicle fueling, painting, stripping, and washing; chemical and fuel transport and storage; and any hazardous materials spilled on-site. For the purposes of this analysis, the pollutants of concern for the receiving water body (i.e., the Santa Monica Bay) are the same as those identified above for wet weather flows. Potential water quality impacts from dry weather flows were evaluated by identifying potential sources of dry weather flows at the Project site and evaluating whether the proposed Project would introduce pollutants of concern into these flows. The analysis of potential impacts takes into account Project-specific design features, regulatory requirements, and applicable LAX Master Plan commitments and mitigation measures.

4.4.3 Existing Conditions

4.4.3.1 Regulatory Context

4.4.3.1.1 Hydrology

Hydraulics and Surface Drainage Manuals

Both the LACDPW Hydraulics Manual and FAA Surface Drainage Manual (AC 150/5320-5C) set forth methodologies and design standards to be used in hydraulic analyses and drainage improvements for development projects at LAX. The drainage design for the proposed Project has been prepared in accordance with the methodologies included in these manuals. Some of the key methodologies and standards include:

- Drainage design is an integral part of the proposed Project. Projects shall maintain compatibility and minimize interference with existing drainage patterns.

³ Santa Monica Bay Restoration Project, Characterization Study of the Santa Monica Bay Restoration Plan - State of the Bay 1993, January 1994.

⁴ In 2003, the Santa Monica Bay Restoration Project formally became the Santa Monica Bay Restoration Commission (SMBRC). The commission is an independent non-regulatory state agency consisting of a coalition of governments, scientists, industry, and the public.

⁵ Santa Monica Bay Restoration Commission, Santa Monica Bay Restoration Plan, 2008.

⁶ City of Los Angeles, Final EIR for the LAX Bradley West Project, Section 5.3, May 2009.

4.4 Hydrology and Water Quality

- All existing pipe and other conveyance elements shall be investigated in accordance with acceptable hydraulic performance criteria including, but not necessarily limited to, Manning's equation for open channel and full flows. The Water Surface Pressure Gradient program shall be utilized for hydraulics of the pipes and channels.
- The Capital Flood event is defined as the runoff produced by a 50-year frequency design storm.
- Proposed on-site detention/infiltrations basins should be designed to accommodate the Capital Flood event.
- The Urban Flood event is defined as the runoff produced by a 25-year frequency design storm. Proposed on-site storm drains should be designed to accommodate runoff flows from the Urban Flood event.
- Investigation for hydraulic capacity of conduits shall be completed using the water surface pressure gradient program and verification of inlet capacity calculations shall be accomplished by utilizing the Federal Highway Administration HEC-22 Urban Drainage Manual and culvert charts.
- Inlets are spaced based on longitudinal slopes and design spread.
- All inlets shall be checked for a minimum freeboard of 0.75 foot. Energy loss due to entrance loss (calculated as 1.2 times the velocity head) would be included at the upstream inlet.
- Maximum permissible velocity for reinforced concrete pipe (RCP) should be 45 feet per second.

4.4.3.1.2 Water Quality

Water Quality Control Plan

The agency with jurisdiction over water quality at LAX is the Los Angeles Regional Water Quality Control Board (LARWQCB). The LARWQCB developed the Water Quality Control Plan Basin Plan for the Los Angeles Region (Basin Plan),⁷ which guides conservation and enhancement of water resources and establishes beneficial uses for inland surface waters, tidal prisms, harbors, and groundwater basins within the region. Beneficial uses are designated so that water quality objectives can be established and programs that enhance or maintain water quality can be implemented. The Basin Plan was amended in December 2002 to incorporate implementation provisions for the region's bacteria objectives and to incorporate a wet weather Total Maximum Daily Load⁸ (TMDL) and dry weather TMDL⁹ for bacteria at Santa Monica beaches. In the future, the Basin Plan will be further amended after the U.S. Environmental Protection Agency (USEPA) approves recently adopted TMDLs, such as the debris TMDL for Santa Monica Bay nearshore.

⁷ California Regional Water Quality Control Board, Los Angeles Region 4, Water Quality Control Plan, Los Angeles Region - Basin Plan for the Coastal Watersheds of Los Angeles and Ventura Counties, June 13, 1994.

⁸ State of California, California Regional Water Quality Control Board, Los Angeles Region, Resolution No. 2002-022, December 12, 2002.

⁹ State of California, California Regional Water Quality Control Board, Los Angeles Region, Resolution No. 02-004, January 24, 2002.

4.4 Hydrology and Water Quality

The Basin Plan also incorporates State Water Resources Control Board (SWRCB) statewide Water Quality Control Plans. The only applicable statewide plan at this time is the California Ocean Plan. Like the Basin Plan, the California Ocean Plan was created to establish beneficial uses and associated water quality objectives for California's ocean waters and to provide a basis for regulation of wastes discharged to coastal waters by point and non-point source discharges. In December 2009, the SWRCB adopted amendments to the plan and is currently in the process of considering additional amendments related to desalination facilities, trash, and fecal coliform.

National Pollutant Discharge Elimination System Program

The Clean Water Act (CWA) prohibits the discharge of pollutants to waters of the United States from any point source unless the discharge is in compliance with a National Pollutant Discharge Elimination System (NPDES) permit. In accordance with the CWA, the USEPA promulgated regulations for permitting stormwater discharges by municipal and industrial facilities and construction activities through the NPDES program. The Phase I NPDES municipal stormwater program applies to urban areas with a population greater than 100,000 while the industrial program applies to specific types of industry, including airports. The NPDES program for construction applies to activities that involve ground disturbance over an area of one acre or more. The NPDES permits for municipal, industrial, and construction activities are described below.

NPDES - Municipal Permit

In accordance with the CWA, a Phase I NPDES permit is required for certain municipal storm sewer system (MS4) discharges to surface waters. LAX is within the region covered by NPDES Permit No. CAS004001 (MS4 stormwater permit). The permit is a joint permit, with the County of Los Angeles as the "Principal Permittee" and 84 incorporated cities within the County of Los Angeles, including the City, as "Permittees." The objective of the permit, and the associated stormwater management program, is to effectively prohibit non-stormwater discharges and to reduce pollutants in urban stormwater discharges to the "maximum extent practicable" in order to attain water quality objectives and to protect the beneficial uses of receiving waters in the County of Los Angeles.

As part of the municipal stormwater program associated with the NPDES Phase 1 Permit, LARWQCB adopted the Standard Urban Stormwater Mitigation Plan (SUSMP) to address stormwater pollution from new development and redevelopment projects. The SUSMP is a model guidance document for use by permittees to select post-construction Best Management Practices (BMPs). BMPs are defined in the SUSMP as any program, technology, process, siting criteria, operational methods or measures, or engineered systems, which, when implemented, prevent, control, remove or reduce pollution.¹⁰ The general requirements of the SUSMP include:

- Controlling peak stormwater runoff discharge rates

¹⁰ Regional Board Executive Officer, Standard Urban Storm Water Mitigation Plan for Los Angeles County and Cities in Los Angeles County, March 8, 2000. Subsequently, the City of Los Angeles adopted an ordinance authorizing implementation of the SUSMP for public and private development projects in the City (Ordinance No. 173494, passed by the Council of the City of Los Angeles on September 6, 2000).

4.4 Hydrology and Water Quality

- Conserving natural areas
- Minimizing stormwater pollutants of concern
- Protecting slopes and channels
- Properly designing outdoor material storage areas
- Properly designing trash storage areas
- Providing proof of ongoing BMP maintenance

Three types of BMPs are described in the SUSMP: source control, structural, and treatment control BMPs. The SUSMP also specifies design standards for structural or treatment control BMPs to either infiltrate or treat stormwater runoff and to control peak flow discharge.

The NPDES Phase 1 Permit has been amended a number of times since 2001 to incorporate requirements of approved TMDLs and address other issues. The LARWQCB adopted major revision and updates to the MS4 Permit on November 9, 2012. One of the major changes in the New Development and Significant Redevelopment section of the Permit which puts primary emphasis on Low Impact Development (LID) practices over treatment control BMPs. LID practices place a priority on preserving the pre-development hydrology of a project site by using BMPs that store, infiltrate, evaporate, and detain runoff. Revision of the MS4 Permit will bring the Los Angeles County Permit into consistency with other MS4 Permits that have been adopted in the past several years. Further, in May 2012, the City implemented its LID Ordinance with the intent of ensuring that development and redevelopment projects mitigate runoff in a manner that captures rainwater at its source, while utilizing natural resources. Specifically, the City's ordinance requires that the volume of stormwater runoff produced by a 0.75-inch storm event be infiltrated, evapotranspired, captured and used, treated through high removal efficiency BMPs, onsite, through stormwater management techniques that comply with the provisions of the City's *Low Impact Development Best Management Practices Handbook*. To the maximum extent feasible, onsite stormwater management techniques must be properly sized, at a minimum, to treat the volume of stormwater runoff produced by a 0.75-inch storm without any stormwater runoff leaving a project site. In accordance with *Low Impact Development Best Management Practices Handbook*, the City Watershed Protection Division has established infiltration systems as the first priority type of BMP as they provide reduction in stormwater runoff and, in some cases, provide groundwater recharge.

NPDES - Industrial Permit

The SWRCB issued a statewide Industrial Activities Storm Water General Permit (Industrial Permit) that applies to all industrial facilities (including airside operations at airports) that discharge stormwater and require a NPDES permit. This Permit requires that Permittees eliminate or reduce non-stormwater discharges, develop and implement a Storm Water Pollution Prevention Plan (SWPPP), and perform monitoring of discharges to the stormwater system from their facilities. Los Angeles World Airports (LAWA) has prepared a SWPPP to address the permitting of stormwater discharges associated with industrial activities at LAX. Numerous tenants, who conduct a variety of airport-related support functions, occupy leaseholds, and also perform these activities, are included as co-Permittees under LAWA's SWPPP program. The LAX SWPPP contains general information, such as drainage system layout and tenant and site activities; describes past and present potential sources of pollutants in stormwater; designates programs to identify and eliminate non-stormwater discharges; and

4.4 Hydrology and Water Quality

describes the stormwater management controls being implemented at LAX and the ongoing stormwater monitoring program.

NPDES - Construction Permit

In addition to the municipal and industrial permits, the SWRCB issued a statewide NPDES general permit for stormwater discharges associated with construction activities (Construction Permit), in accordance with federal stormwater regulations. The most recent update to the Construction Permit adopted by the SWRCB became effective July 2012. Project proponents planning construction activities that disturb an area greater than one acre are required to file a Notice of Intent (NOI) to discharge under the Construction Permit. After a NOI has been submitted, the discharger is authorized by the SWRCB to discharge stormwater under the terms and conditions of the general permit.

Total Maximum Daily Load (TMDL) Program

Under Section 303(d) of the CWA, states are required to identify the water bodies that do not meet water quality objectives through control of point source discharges under NPDES permits. For these water bodies, states are required to develop appropriate TMDLs. TMDLs are the sum of the individual pollutant load allocations for point sources, nonpoint sources,¹¹ and natural background conditions, with an appropriate margin of safety for a designated water body. The TMDLs are established based on a quantitative assessment of water quality problems, the contributing sources, and load reductions or control actions needed to restore and protect an individual water body. TMDLs provide an analytical basis for planning and implementing pollution controls, land management practices, and restoration projects needed to protect water quality. When TMDLs are adopted, particularly in California, they contain implementation requirements for permitted dischargers that are intended to meet the load reductions identified in the TMDL. In the case of LAX, TMDL requirements may be implemented through the MS4 Permit, the Industrial Permit, and the Construction Permit.

A list indicating which pollutants are priorities for each water body, called a 303(d) list, has been developed by the State of California, and is updated and re-adopted on a regular basis. The 303(d) list, as it has been updated over the years, indicates that both non-point and point sources of pollution degrade the water quality of the receiving water body of stormwater flows from the Project site, the Santa Monica Bay.¹² Once a TMDL is completed and approved for a particular water body and pollutant, it is taken off of the list at the next listing period since the implementation of the TMDL is expected to bring the water body back into compliance with the Water Quality Objectives. The TMDLs that have been completed by the LARWQCB for Santa Monica Bay are shown in **Table 4.4-1** below.

¹¹ Discharges originating from single sources, like power and wastewater treatment plants, are referred to as point source discharges, while storm water and/or urban runoff are non-point sources of water pollution since their origins cannot be attributed to a single identifiable source.

¹² California State Water Resources Control Board, 2010 Integrated Report (Clean Water Act Section 303(d) List/305(b) Report) – Statewide, 2010 California 303(d) List of Water Quality Limited Segments, 2010, Available: http://www.waterboards.ca.gov/water_issues/programs/tmdl/integrated2010.shtml, accessed March 7, 2013.

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Table 4.4-1

Adopted TMDLs for Santa Monica Bay

Water Body	Pollutant(s)
Santa Monica Bay	Dry Weather Bacteria Wet Weather Bacteria Debris

Source: City of Los Angeles, Hydrology and Water Quality Report for the LAX Specific Plan Amendment Study, prepared by CDM Smith for LAWA, March 2012.

A revised 2010 303(d) list (the most recent available) was approved by the USEPA in November 2011. On this list, pollutants and TMDL priority schedules have been assigned that differ from the previous 303(d) list developed by the SWRCB in February 2003. The pollutants and expected TMDL completion date for Santa Monica Bay Offshore and Nearshore are shown in **Table 4.4-2** below. Expected completion schedule dates were established by the SWRCB based on a combination of factors that include the degree of nonattainment/complexity of the problem, the relative importance of the watershed, and the resources available at the LARWQCB to complete the TMDL. While the 2009 303(d) list included debris for Santa Monica Bay, this is not shown in the table as the TMDLs have been adopted since the listing.

Table 4.4-2

**Future TMDL Completion Schedule for Santa Monica Bay
Offshore and Nearshore**

Pollutant/Stressor	Expected Completion
Dichlorodiphenyltrichloroethane (i.e., DDT) (tissue and sediment)	01/01/2019
Fish Consumption Advisory	01/01/2019
Polychlorinated Biphenyls (i.e., PCBs) (tissue and sediment)	01/01/2019
Sediment Toxicity	01/01/2019

Source: State of California, State Water Resources Control Board, August 4, 2010.

4.4.3.2 Setting

4.4.3.2.1 Hydrology

Drainage

At LAX, surface water runoff is discharged to both Los Angeles County Flood Control District (LACFCD) and City drainage structures. LACFCD facilities include the Dominguez Channel, which discharges areas east of Sepulveda Boulevard to San Pedro Bay, as well as some of the individual drains that discharge into Santa Monica Bay. The City is the owner and operator of all drainage structures at the airport. Within the City, stormwater drainage, sanitary wastewater, and industrial wastewater are handled by three separate systems. All stormwater drainage infrastructure operated by the City at LAX ultimately discharges to the Santa Monica Bay.

The existing stormwater drainage system at LAX consists of catch basins, subsurface storm drains and open channels and outfalls. The principal stormwater outfalls for surface runoff at the airport are the Dominguez Channel and the Argo, Imperial and Culver Drains. The service boundaries for each of these outfalls form distinct sub-basins that collect surface water runoff. Some of these sub-basins extend off the airport property and collect surface water runoff from surrounding communities. Surface water runoff from the Argo, Imperial and Pershing Sub-basins is collected in stormwater drainage facilities owned by the City and contributes to the total surface water flow in the Santa Monica Watershed and flow to Santa Monica Bay, while surface flow from the Dominguez Channel Sub-basin discharges to San Pedro Bay. The average annual precipitation at LAX is 12 to 15 inches per year,¹³ and the total amount of existing impervious area within the main drainage areas at LAX, including the Argo, Imperial, Pershing, and Dominguez Channel Sub-Basins at airport, is approximately 3,510 acres.¹⁴ Based on LACDPW isohyets, the Capital Flood event (i.e., a 50-year frequency design storm) would result from 5.0 inches of rainfall over a 24-hour period, while the Urban Flood event (i.e., a 25-year frequency design storm) would result from 4.39 inches of rain over a 24-hour period.

Surface water runoff from portions of the airport west of Sepulveda Boulevard (including the Project site) flows to the Santa Monica Bay. Conversely, surface water runoff from portions of the airport east of Sepulveda Boulevard flows to the Dominguez Channel, and ultimately to the San Pedro Bay. As the proposed Project would only affect airport areas west of Sepulveda Boulevard, surface water runoff to the Dominguez Channel is not considered in this analysis. **Figure 4.4-1** delineates the boundaries of the drainage sub-basins at LAX west of Sepulveda Boulevard and indicates the location of the Project site relative to these sub-basins. As indicated, the 84-acre Project site is located within the western portion of the Pershing Sub-basin. The Pershing Sub-basin includes approximately 700¹⁵ acres of airport property which contains, in addition to the Project site, the Tom Bradley International Terminal (TBIT), maintenance hangars between the TBIT and the Project site, remote aircraft gates, Taxiway AA,

¹³ City of Los Angeles, West Maintenance Area, Los Angeles International Airport, Engineer's Design Report Appendix F: Drainage Design Report, prepared for Los Angeles World Airports by Atkins, August 9, 2013.

¹⁴ City of Los Angeles, Final EIR for the LAX Bradley West Project, Section 5.3, May 2009. Acreage indicated in statement does not include the Vista Del Mar Sub-Basin and the small portion of the Culver Sub-Basin that extends onto airport property, given that these sub-basins are peripheral to, and generally unaffected by, airport operations.

¹⁵ Ibid.

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portions of Taxiways B and C, World Way West, area south of the Project site and west of the South Airfield Complex (containing vacant area, parking lot, stormwater quality retention basin, and other small miscellaneous airport uses), and a portion of the Los Angeles/El Segundo Dunes (dunes). The Pershing Sub-basin also contains a portion of Pershing Drive and the Pershing Drive/World West Way intersection. The total existing impervious area within the Pershing Sub-basin is approximately 665 acres,¹⁶ of which approximately 12 acres currently occur on the Project site.¹⁷

Surface water runoff from the Pershing Sub-basin generally flows, via a network of storm drains, north or south to World Way West; the existing storm drain infrastructure system proximate to the Project site is shown in **Figure 4.4-2**. The main drainage collection trunk line in World Way West, a 7'-1"x 8' reinforced concrete box (RCB) drains westward to an RCB in Pershing Drive which measures 9'-2"x11' for the segment extending north of World Way West and 8'-6"x10' extending south of World Way West.¹⁸ The Pershing RCB, in turn, flows south and combines with the 9' diameter Imperial Sub-basin drainage pipe along the north side of Imperial Highway. From there, the Imperial Sub-basin drainage pipe flows to Santa Monica Bay via the Imperial Outfall located near the west end of Imperial Highway.¹⁹ Wet-weather flows (i.e., stormwater runoff) from the Project site currently sheet flows to the north, south, and west. The majority of this sheet flow is from northeast and drains towards the southwest, consistent with the prevailing topography of the Project site, which ranges from approximately 105 feet above mean sea level (msl) in the northeast to approximately 80 feet msl in the southwest. This results in the majority of Project site runoff flowing directly to the Pershing RCB. Stormwater runoff from a 6-acre portion of the Project site flows northward to the World Way West RCB, and a small portion of the Project site adjacent to the west side of Taxiway AA flows eastward to a small drainage channel running along the east side of Taxiway AA, which in turn drains to the World Way West RCB. No drainage from the Project site is collected in the 54-inch RCP that bisects the southern portion of Project site, as shown in **Figure 4.4-2**.²⁰ This 54-inch RCP, constructed in 1991 as part of the Taxiway 75 improvements, originates at Taxiway C and conveys surface water runoff flows from this area across the Project site to the existing RCB in Pershing Drive. Dry weather flows (i.e., non-stormwater runoff) follow the same pattern as wet-weather flows, but rarely occur in flow volumes that result in sheet flow.

The Pershing Sub-basin includes an existing water quality basin located in the southwest corner of the airport property, east of Pershing Drive and south of the Project site, and a stormwater detention basin located in the southeastern-most corner of the Dunes, along the west side of Pershing Drive. Although the water quality basin east of Pershing Drive is located in the Pershing Sub-basin, its primary purpose is to provide collection and treatment of all dry weather flows and a portion of wet weather flows that are diverted from the Imperial Sub-basin. Dry weather flows from this water quality basin are discharged to the Hyperion Wastewater

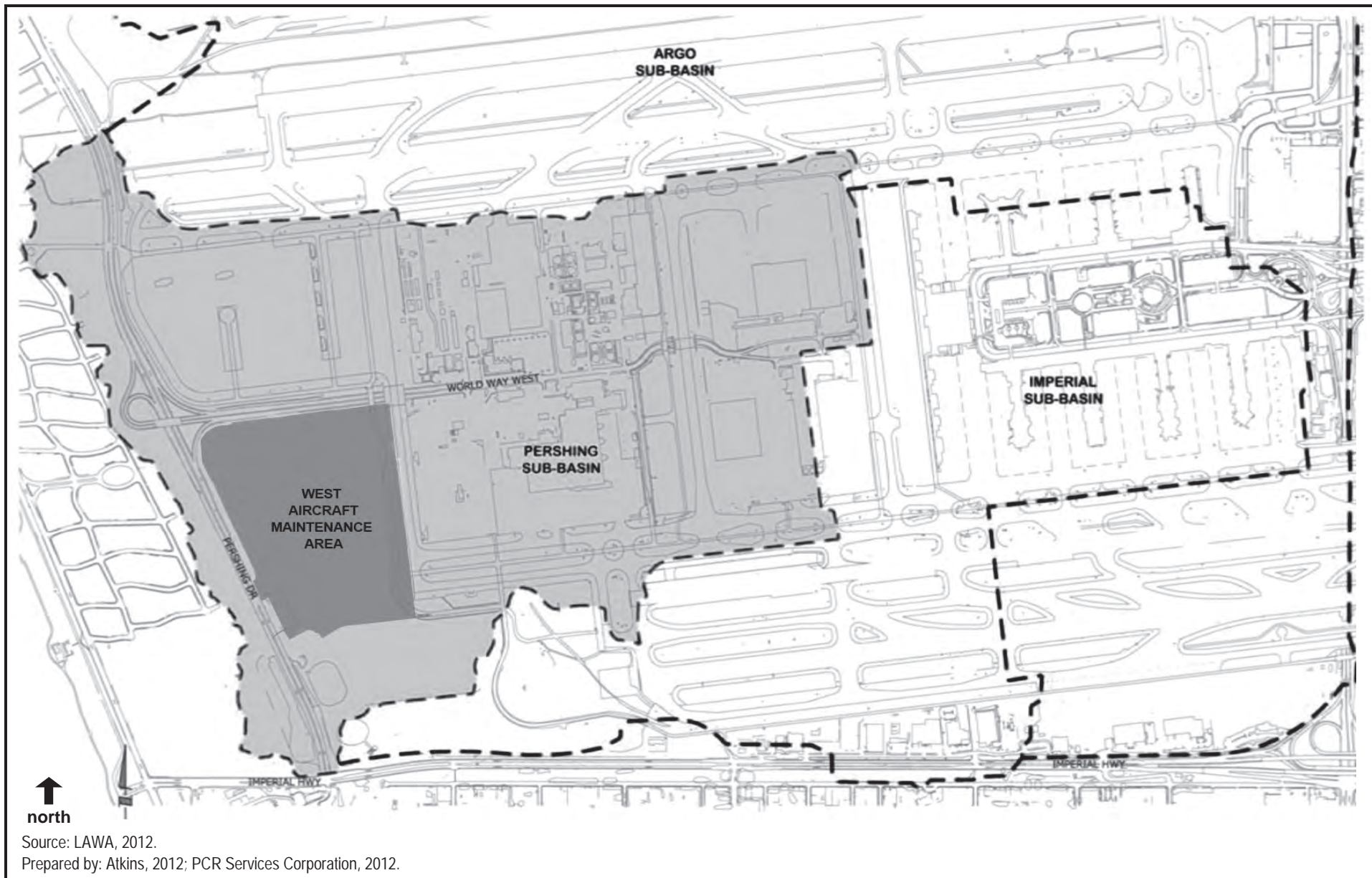
¹⁶ Ibid.

¹⁷ In addition to containing 12 acres of impervious surface area (i.e., paved area), the Project site also currently contains 72 acres of pervious surface area (i.e., unpaved areas) that have been compacted to an imperviousness of 60 percent by on-site staging/stockpiling operations.

¹⁸ City of Los Angeles, West Maintenance Area, Los Angeles International Airport, Engineer's Design Report – Appendix F - Drainage Design Report, prepared for Los Angeles World Airports by Atkins, August 9, 2013.

¹⁹ City of Los Angeles, Final EIR for the LAX Master Plan, Technical Report 6. Hydrology and Water Quality Technical Report, page 7, prepared for LAWA by CDM, January 2001.

²⁰ The 54-inch RCP was constructed in 1991 as part of the Taxiway 75 improvements, and supplements the World Way West RCB.



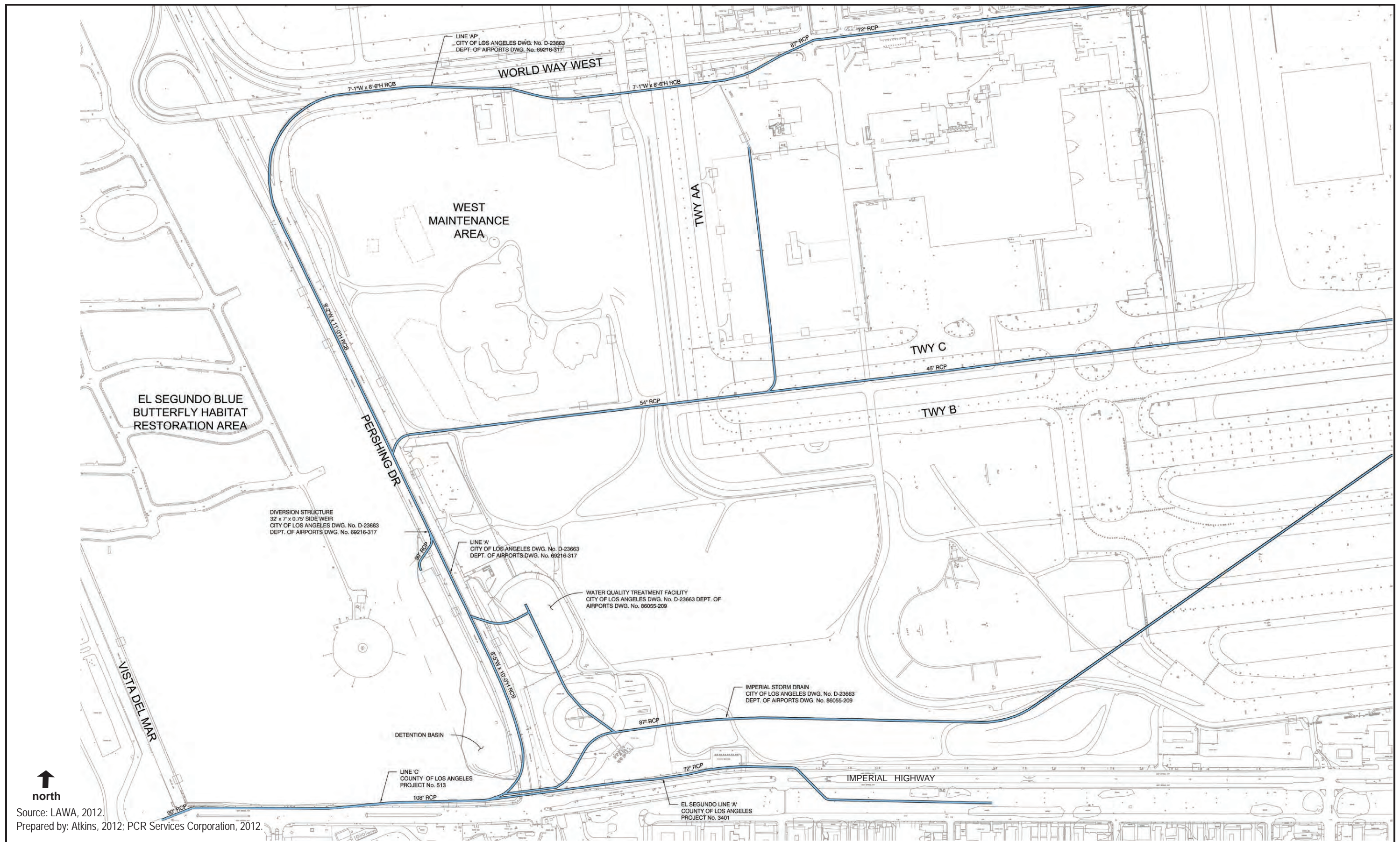
**West Aircraft Maintenance Area Project
Draft EIR**

Drainage Sub-basins

Figure
4.4-1

4.4 Hydrology and Water Quality

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**West Aircraft Maintenance Area Project
Draft EIR**

Existing Drainage Facilities

**Figure
4.4-2**

4.4 Hydrology and Water Quality

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4.4 Hydrology and Water Quality

Treatment Plant under an existing industrial waste permit from the City's Industrial Waste Division, rather than to Santa Monica Bay. The purpose of the stormwater detention basin west of Pershing Drive is to retain and slow peak flows coming from the RCB in Pershing Drive during storm events before discharging to the 108-inch diameter drainage pipeline along the north side of Imperial Highway. Downstream of these two basins, two storm drain trunk lines from outside the Pershing Sub-basin join the Imperial drainage pipe near Pershing Drive, including an 87-inch RCP that conveys flows from the airport's Imperial Sub-basin and a 72-inch RCP identified by LACFCD as El Segundo Drain Line A. The Imperial drainage pipe outfalls at the Santa Monica Bay. The location of this infrastructure is shown in **Figure 4.4-2**.

Table 4.4-3 identifies the estimated existing peak flows in the Pershing Drive RCB, 54-inch RCP, and World Way West RCB during a Capital Flood event. The modeling indicates that there are existing peak flow deficiencies in all four conveyance structures during the Capital Flood event.²¹ Deficiency is when the hydraulic grade line exceeds the set elevation along the storm drain conduit. Typically, this elevation is determined with the depth from the finish surface to allow all inlets and laterals to work properly (assumed to be three feet below the finish surface per the Drainage Report). When this occurs, flooding can result, and ponding has been documented during heavy storm events at the World Way West RCB where it dips under Taxiway AA.²²

The Project site does not contain streams, rivers or water bodies, and is not located in a floodplain mapped under the National Flood Insurance Program of the Federal Emergency Management Agency.²³

Groundwater

Surface recharge of groundwater occurs when precipitation or surface water runoff contacts pervious surfaces and infiltrates through the subsurface to replenish groundwater in aquifers below. The Natural Resources Conservation Service (NRCS, formerly Soil Conservation Services) of the U.S. Department of Agriculture has investigated the hydrologic characteristics of soils as related to runoff potential, and has developed a system to classify soils into four hydrologic soils groups: Group A through D. Group A has the lowest runoff potential and a high infiltration rate and Group D has the highest runoff potential and a low infiltration rate. In the Los Angeles County, this investigation was further detailed with field testing in the early 1960s to determine the actual infiltration capacities. The project area is generally comprised of Soil Type 010, Oakley Fine Sand, and Soil Type 014, Ramona Sandy Loam. These types of soil have moderate to high infiltration rates when thoroughly wetted, and moderate and high rate of water transmission.

Groundwater occurs beneath LAX, at approximately 100 feet below the ground surface, within what is known as the West Coast Groundwater Basin.²⁴ Perched groundwater also occurs beneath LAX in pockets ranging from 20 to 60 feet below the ground surface.²⁵

²¹ City of Los Angeles, West Maintenance Area, Los Angeles International Airport, Engineer's Design Report: Appendix F, Drainage Design Report, prepared for Los Angeles World Airports by Atkins, August 9, 2013..

²² Ibid.

²³ Ibid.

²⁴ City of Los Angeles, Final EIR for the LAX Master Plan, Technical Report 6, Hydrology and Water Quality Technical Report, page 7, prepared for LAWA by CDM, January 2001.

²⁵ Ibid.

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Table 4.4-3

Existing Peak Stormwater Runoff Flows

Storm Drain	Storm Drain Size	Node	Jurisdiction	Existing Flow (cfs)
				Q50 ^{a,b}
Pershing Dr. RCB (downstream [south] of confluence with 54-inch RCP) ^c	8'-6"x10'	280A	City of Los Angeles	687
54-inch RCP (upstream [east] of confluence with Pershing Dr. RCB)	54"	250B	City of Los Angeles	104
Pershing Dr. RCB (at confluence with 54-inch RCP) ^c	9'-2"x11'	225AB	City of Los Angeles	573
World Way West RCB (at confluence with Pershing Dr. RCB)	7'-1"x8'	205A	City of Los Angeles	512
World Way West RCB (upstream [east] of confluence with Pershing Dr. RCB)	7'-1"x 8'	155A	City of Los Angeles	305

^a The stormwater flow volume that would be conveyed during a 50-year design storm (i.e. a LACDPW Capital Flood event).

^b This calculation is conservative in that it does not consider the stormwater detention basin adjacent to the west side of Pershing Drive. More detailed analysis is required to determine the capacity of this detention basin.

^c At (and subsequently downstream of) the confluence of the Pershing Drive RCB and the 54-inch RCP, all stormwater from the Project site is being conveyed through the Pershing Drive RCB, having either been directly conveyed to the Pershing Drive RCB or having been conveyed by the World Way West RCB to the Pershing Drive RCB.

Source: City of Los Angeles, West Maintenance Area, Los Angeles International Airport, Engineer's Design Report: Appendix F, Drainage Design Report, prepared for Los Angeles World Airports by Atkins, August 9, 2013.

Groundwater in the Project vicinity generally flows to the west at an approximate gradient of 0.0006 to 0.0008 feet per foot. Historically, groundwater flows to the northwest, west, and southwest at the Project site, and has generally risen over 3 feet since 1994. A groundwater divide, created by the West Coast Basin Barrier,²⁶ is located approximately 0.5 mile east of the Project site beneath LAX, near Sepulveda Boulevard. East of Sepulveda Boulevard, groundwater is observed to flow to the east.

Designated beneficial uses for groundwater in the Los Angeles Region, as defined by the LARWQCB Basin Plan, include municipal, industrial process, and agricultural use.²⁷ However, groundwater beneath LAX is not used for municipal or agricultural purposes, and industrial and process uses are limited to the removal of small amounts of groundwater extracted incidental to a vacuum-enhanced free product recovery (VEFPR) system operating throughout portions of LAX to remediate a jet fuel leak that occurred east of the Project site.²⁸ Please refer to Section 4.3, *Hazards and Hazardous Materials*, for a detailed description of the VEFPR system.

²⁶ The West Coast Basin Barrier consists of injection wells that inject fresh water into aquifers along the Santa Monica Bay to build up a line of pressure and thereby block saltwater intrusion into the aquifers from occurring.

²⁷ California Regional Water Quality Control Board, Los Angeles Region 4, Water Quality Control Plan, Los Angeles Region – Basin Plan for the Coastal Watersheds of Los Angeles and Ventura Counties, June 13, 1994.

²⁸ City of Los Angeles, Final EIR for the LAX Bradley West Project, Section 5.3, May 2009.

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To characterize the components that contribute to the groundwater supplies in the West Coast Groundwater Basin, a water budget was developed as part of a water management study of the West Coast Groundwater Basin Barrier Project by the West Basin Municipal Water District. Based on this water budget, 6,700 acre-feet/year (AFY) of groundwater inflows to the West Coast Groundwater Basin are attributed to surface recharge, which represents approximately 13 percent of the total estimated inflows.²⁹ Sources for surface recharge include precipitation, surface water streams, irrigation water from fields and lawns, industrial and commercial wastes, and other applied surface waters. Within the LAX area, there are no surface water streams and industrial and commercial waste discharges are prohibited on the airport. Sources for recharge at the airport property itself include precipitation and its associated runoff, and applied irrigation.³⁰

The estimated surface recharge volume within the West Coast Groundwater Basin is approximately 6,700 AFY, and the total pervious area within the Basin is estimated at 28,271 acres.³¹ Using these figures, the estimated recharge rate through the pervious surfaces of the Basin is approximately 0.24 AFY per pervious acre.³² Within the airport's overall hydrology and water quality study area, pervious surfaces are estimated to provide 171 AFY of surface recharge, or approximately 0.3 percent of the total inflows estimated for the West Coast Groundwater Basin.³³ As discussed previously, approximately 12 acres of the 84-acre Project site is currently comprised of impervious surface area, leaving 72 acres of the Project site covered with pervious surface area. Based on the above figures, existing recharge associated with the Project site is currently approximately 17.76 AFY, or approximately 0.27 percent, of total annual West Coast Groundwater Basin inflows. This estimate is conservative in that the existing 72 acres of pervious surface area on the Project site are compacted to an imperviousness of approximately 60 percent from staging and stockpiling efforts currently ongoing at the Project site, and thus, the Project site may not infiltrate groundwater at the same rate as the remainder of the West Coast Groundwater Basin.

4.4.3.2.2 Water Quality

The water quality of surface water runoff is a function of pollutants carried in both wet weather flows (e.g., flows from stormwater runoff flowing over impervious urban uses) and dry weather flows (e.g., flows primarily associated with non-stormwater runoff from areas treated with fertilizers and herbicides, potential spills of hazardous materials, and the outdoor washing of motor vehicles, aircraft, etc.). Existing land uses at LAX and the Project site generate both types of flows.

The 84-acre Project site is currently used as a construction staging area for airport construction and maintenance projects. Existing uses on the Project site include aggregate and soil stockpiles, modular construction trailers/offices, an airfield access security post, several paved/unpaved roads leading to paved/unpaved truck loading/unloading areas, and several paved/unpaved outdoor storage areas. The Project site is also the location where portable

²⁹ Ibid.

³⁰ City of Los Angeles, Final EIR for Los Angeles International Airport (LAX) Proposed Master Plan Improvements, April 2004, Section 4.7, page 4-759.

³¹ City of Los Angeles, Final EIR for the LAX Bradley West Project, Section 5.3, May 2009.

³² Ibid.

³³ City of Los Angeles, Final EIR for Los Angeles International Airport (LAX) Proposed Master Plan Improvements, April 2004, Section 4.7, page 4-759.

4.4 Hydrology and Water Quality

concrete batch plant and rock crushing facilities periodically operate in conjunction with LAX improvement projects involving large quantities of concrete production. Surface water quality BMPs at the Project site are currently administered through the construction SWPPP(s) associated with NOIs under the state's NPDES – General Construction Permit and include, but are not limited to, erosion/sedimentation control measures, protection of storm drain inlets, and good housekeeping practices. The existing potential for pollutants of concern in wet and dry weather flows from the Project site is considered low.

Existing surface water runoff from the Project site and greater airport property are discharged to the local stormwater drain system under NPDES Permit No. CAS004001 consistent with the BMP requirements set forth in the County's SUSMP. The existing water quality basin south of the Project site and east of Pershing Drive is the primary structural BMP for dry weather flows diverted from the Imperial Sub-basin. As mentioned above, dry weather flows from this detention basin are discharged into the sanitary sewer system under an industrial waste permit from the City's Industrial Waste Division, to the Hyperion Wastewater Treatment Plant for treatment rather than directly to Santa Monica Bay.

4.4.4 Thresholds of Significance

Based on thresholds of significance established by the LAX Master Plan EIS/EIR, which are consistent with those found in the *L.A. CEQA Thresholds Guide*, a significant hydrology or water quality impact would occur if the direct and indirect changes in the environment that may be caused by the proposed Project would potentially result in one or more of the following future conditions:

- An increase in runoff that would cause or exacerbate flooding with the potential to harm people or damage property.
- Substantial interference with groundwater recharge such that there would be a net decrease in the aquifer volume or a change in groundwater storage that would adversely affect the quantity, water level, or flow of the underlying groundwater relative to beneficial uses of the basin.
- Substantial alteration of the existing drainage pattern of the site in a manner which would result in substantial erosion or siltation on- or off-site.
- An increased load of a pollutant of concern delivered to a receiving water body by surface water runoff.

Therefore, the thresholds of significance evaluated are based on whether a significant hydrology and water quality impact would occur if the direct and indirect changes in the environment that may be caused by the proposed Project would potentially result in one or more of the future conditions described below.

4.4.4.1 Hydrology

4.4.4.1.1 Drainage

A significant drainage impact would occur if the proposed Project would:

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- Result in an increase in runoff that would cause or exacerbate flooding with the potential to harm people or damage property.
- Substantially alter the existing drainage pattern of the site in a manner which would result in substantial erosion or siltation on- or off-site.

4.4.4.1.2 Groundwater

A significant groundwater impact would occur if the proposed Project would:

- Substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g., the production rate of pre-existing nearby wells would drop to a level which would not support existing or planned land uses for which permits have been granted).

4.4.4.2 Water Quality

A significant water quality impact would occur if the proposed Project would:

- Result in an increased load of pollutants of concern delivered to a 303(d)-listed receiving water body by surface water runoff.

4.4.5 Applicable LAX Master Plan Commitments and Mitigation Measures

As part of the LAX Master Plan, one commitment and one mitigation measure pertaining to hydrology and water quality (denoted by "HWQ" and "MM-HWQ", respectively) were adopted by the LAX Master Plan's Mitigation Monitoring and Reporting Program (MMRP). The commitment and the mitigation measure are identified below.

HWQ-1. Conceptual Drainage Plan

- Once a Master Plan alternative is selected, and in conjunction with its design, LAWA will develop a Conceptual Drainage Plan (CDP) of the area within the boundaries of the Master Plan (in accordance with FAA guidelines and to the satisfaction of the City of Los Angeles Department of Public Works [LADPW], Bureau of Engineering). The purpose of the drainage plan will be to assess area-wide drainage flows as related to the Master Plan area, and at a level of detail sufficient to identify the overall improvements necessary to provide adequate drainage capacity to prevent flooding. The CDP will provide the basis and specifications from which detailed drainage improvement plans will be designed in conjunction with site engineering specific to each Master Plan. BMPs will be incorporated to minimize the effect of airport operations on surface water quality and to prevent a net increase in pollutant loads to surface water resulting from the selected Master Plan alternative.
- To evaluate drainage capacity, LAWA will use either the Peak Rate Method specified in Part G - Storm Drain Design of the City of Los Angeles' Bureau of Engineering Manual or the Los Angeles County Modified Rational Method, both of which are acceptable to the LADPW and the City of Los Angeles Bureau of Engineering. In areas within the boundary of the selected alternative where the surface water runoff rates are found to exceed the capacity of the

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storm water conveyance infrastructure with the potential to cause flooding, LAWA will take measures to either reduce peak flow rates or increase the structure's capacity. These drainage facilities will be designed to ensure that they adequately convey storm water runoff and prevent flooding by adhering to the procedures set forth by the Peak Rate Method/Los Angeles County Modified Rational Method. Methods to reduce the peak flow could include:

- Decreasing impervious area by removing unnecessary pavement or utilizing porous concrete or modular pavement
- Building storm water detention structures
- Diverting runoff to pervious areas (reducing directly-connected impervious areas)
- Diverting runoff to outfalls with additional capacity
- Redirecting storm water flows to increase the time of concentration
- Measures to increase drainage capacity could include:
 - Increasing the capacity of storm water conveyance structures
 - Increasing the number of storm water conveyance structures and/or outfalls
- To evaluate the effect of the selected Master Plan alternative on surface water quality, LAWA will prepare a specific Standard SUSMP for the selected alternative, as required by the LARWQCB. The SUSMP addresses water quality and drainage issues by specifying source control, structural, and treatment control BMPs with the objective of reducing the discharge of pollutants from the storm water conveyance system to the maximum extent practicable. Once BMPs are identified, an updated pollutant load estimate will be calculated that takes into account reductions from treatment control BMPs.
- These BMPs will be applied to both existing and future sources with the goal of achieving no net increase in loadings of pollutants of concern to receiving water bodies. LAWA will therefore address water quality issues, including erosion and sedimentation, and comply with the SUSMP requirements, by incorporation of the BMPs specified in the SUSMP, including:
 - Vegetated swales and strips
 - Oil/Water separators, clarifiers and Media filtration
 - Detention basins, and catch basin inserts and screens
 - Continuous flow deflective systems
 - Bioretention and infiltration
 - Manufactured treatment units and hydrodynamic devices
- Other structural BMPs may also be selected from the literature and the many federal, state and local guidance documents available. Performance of structural BMPs varies considerably based on their design. USEPA has published estimated ranges of pollutant removal efficiencies for structural BMPs based on substantial document review.
- In addition to the structural BMP types that will be used, non-structural/source control BMPs will continue to be a part of the LAX program to reduce pollutant loadings. Existing practices and potentially new ones will be extended to acquisition areas and to the areas where airport operations will increase in frequency or duration.

4.4 Hydrology and Water Quality

- These source control BMPs will be incorporated into the SWPPP and will consequently be required of LAWA and all airport tenants at all locations where industrial activities occur that have the potential to impact water quality.

The overall result of LAX Master Plan Commitment HWQ-1 will be drainage infrastructure that provides adequate drainage capacity to prevent flooding and control peak flow discharges, that incorporates BMPs to minimize the effect of airport operations on surface water quality, and that prevents a net increase of pollutant loads to receiving waters.

Note: Subsequent to approval of the LAX Master Plan, LAWA prepared the CDP (2005) for the LAX Master Plan in accordance with the provisions of LAX Master Plan Commitment HWQ-1. The CDP is anticipated to be revised to incorporate current project, such as the proposed Project. The proposed Project would incorporate the recommendations of the LAX Master Plan CDP and SWPPP, as specified in HWQ-1, into a site-specific Drainage Design Report and SUSMP. The analysis in this EIR section is based, in part, on the findings of the site-specific Drainage Design Report and requirement of a SUSMP.

MM-HWQ-1. Update Regional Drainage Facilities.

- Regional drainage facilities should be upgraded, as necessary, in order to accommodate current and projected future flows within the watershed of each storm water outfall resulting from cumulative development. This could include upgrading the existing outfalls, or building new ones. The responsibility for implementing this mitigation measure lies with the LACDPW and/or LADPW, Bureau of Engineering. A portion of the increased costs for the upgraded flood control and drainage facilities would be paid by LAX tenants and users in accordance with the possessory interest tax laws and other legal assessments, consistent with federal airport revenue diversion laws and regulations and in compliance with state, county and city laws. New facilities should be designed in accordance with the drainage design standards of each agency.

4.4.6 Impacts Analysis

The proposed Project includes development of approximately 68 acres of the Project site with taxiways and aircraft parking apron areas, maintenance hangars, employee parking, and related storage, equipment and facilities. The remaining 16 acres of the Project site would be graded but would remain undeveloped. The proposed Project would involve relocation of existing on-site construction staging uses and activities, removal of approximately 12 acres of on-site paving, mass grading of the 84-acre Project site, trenching of the Project site for utility lines, and development of the Project site with approximately 68 acres of impervious area to support aircraft circulation and parking, maintenance uses, and employee parking. The proposed Project would also include development of stormwater drainage/water quality improvements, and implementation of the water quality BMPs, listed below. Preliminary design layouts for the drainage improvements are provided in the Drainage Design Report.

- **Drainage Improvements**
 - Construct a system of series trench and slotted drains to capture surface water runoff from the proposed Project. Surface water runoff collected in these features would then be conveyed through a series of proposed on-site 18-inch, 24-inch, 36-inch, and 42-inch RCPs to the proposed detention/infiltration basin (described further below).

4.4 Hydrology and Water Quality

- Impacts to the World Way West RCB and Pershing Drive RCB are minimized by draining 78 acres of the Project site to a proposed detention/infiltration facility prior to discharge to the Pershing Drive RCB. Because of existing drainage patterns in the Pershing Sub-basin, the proposed detention/infiltration basin would also receive surface water runoff from 14 acres of off-site area. Therefore, the study area analyzed (related to drainage to the detention/infiltration basin) is approximately 92 acres. Of the 84-acre Project site, six acres along the northern border of the Project site (i.e., proposed employee parking lot and northerly portion of the service road) would drain to the World Way West RCB.
- Hangar roof drains would be designed to drain to the proposed detention/infiltration basin through the proposed drainage system.
- The proposed detention/infiltration basin would have a capacity of approximately 1.6 acre-feet and would be located in the northern portion of the existing airport surface parking lot located immediately south of the Project site. A pipeline from the basin to the Pershing Drive RCB would also be constructed to drain the basin during non-peak periods. The functions of the detention/infiltration basin would be to shave peak stormwater runoff flows from the Project site to the 54-inch RCP and Pershing Drive RCB, provide some groundwater recharge, and remove contaminants from proposed Project surface water flows before discharging to the Pershing RCB.
- Water Quality BMPs (e.g., SUSMP/LID Measures consistent with LADPW and FAA Surface Drainage Manual AC 150/5320-5C requirements):
 - Construct a detention/infiltration basin as described above using a pre-screening unit, hydrodynamic separators, and StormTrap as the primary infiltration mechanism. An infiltration system would be the priority BMP type in the basin as it would be the preferred treatment option (per the BOS Watershed Protection Division).³⁴
 - Construct a water recycling system that utilizes recycled water and a portion of the first-flush stormwater runoff (from approximately 15 acres along the western and northern airside portion of the Project site) for operation of the proposed aircraft wash rack, with non-returnable product to be conveyed to the sanitary sewer system for disposal (under an industrial waste permit from the City's Industrial Waste Division).
 - Divert returnable wash water from the wash-rack and the portion of the first-flush stormwater runoff that exceeds the holding capacity of the recycling system into an oil-water separator prior to either re-use or discharge to the sanitary sewer system.
 - For areas of the Project site that cannot drain to the new detention/infiltration basin (e.g., northerly six acres), use porous pavement, media filters, hydrodynamic separators or a combination of these treatment systems.
 - Periodically street-sweep the on-site aircraft apron, streets and employee parking areas.

All proposed storm drainage facilities would be designed in accordance with FAA Surface Drainage Manual AC 150/5320-5C (Surface Drainage Design), City of Los Angeles requirements, and LAWA direction. In addition, because the proposed storm drain system would have a connection point to the existing storm drain system, a connection permit would be obtained from the City. Pershing Drive is located within the Coastal Zone. In conjunction with the design process for the proposed Project, the Coastal Commission was consulted regarding the potential for the proposed improvements to impact the Coastal Zone/Pershing

³⁴ City of Los Angeles, Final EIR for the LAX Bradley West Project, Section 5.3, May 2009.

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Drive. Although no further coordination with the Coastal Commission is anticipated, should additional coordination be necessary it would be expected to be minimal because improvements to the eastern portion of Pershing Drive are minimal (i.e., a stormwater pipe extending from the proposed detention/infiltration basin to the Pershing Drive RCB) and the work would likely qualify for permit exemption.

The potential for hydrology and water quality impacts associated with construction and operation of the proposed Project with consideration of the above proposed storm drain system and water quality BMPs are evaluated below.

4.4.6.1 Hydrology

4.4.6.1.1 Drainage

The Project site currently contains approximately 12 acres of impervious surface area. Under the proposed Project, the existing 12 acres of on-site impervious surface area would be removed and replaced with approximately 68 acres of impervious surface area consisting of aircraft parking apron, aircraft hangars, service roads, and employee parking lots. As discussed above, the total tributary area to the proposed detention/infiltration basin is 92 acres, which includes 78 acres of the Project site and 14 acres of off-site area south of the Project Site. Upon completion of the proposed Project, the total impervious area in the tributary area for the proposed detention/infiltration basin would be 82 acres, of which 68 acres of impervious surface area would occur on the Project site and 14 acres would occur at the off-site area south of the Project site.

The proposed Project would result in minor modifications to the on-site drainage pattern. Under existing conditions, the majority of surface water runoff from the Project site flows south and west to the 8'-6" x 10' RCB along Pershing Drive. The remainder of surface water runoff flows north to the 7'-1" x 8' RCB along World Way West, which ultimately drains to the RCB along Pershing Drive. Under the proposed Project, on-site surface runoff flows from 78 acres of the Project Site would be conveyed through a new 24-inch RCP along Pershing Drive directly to the proposed detention/infiltration basin, rather than through the existing RCB in Pershing Drive. The proposed 24-inch RCP would be fed by a curb and cutter with catch basins spaced at approximately every 16 feet parallel to the western side of the Project site. The northern 6 acres of the Project site would continue to flow northward towards World Way West, which ultimately drains to the existing RCB in Pershing Drive, as under existing conditions. The proposed Project's conveyance infrastructure would outfall to the existing RCB in Pershing Drive through a proposed pipe connecting the proposed detention/infiltration basin to the existing RCB. Therefore, the proposed Project would result in only minor changes to the existing drainage pattern and would continue to ultimately flow to the existing RCB along Pershing Drive.

Table 4.4-4 identifies the Capital Flood event stormwater runoff flows expected in the storm drains serving the Project site under the proposed Project. As indicated, with the development of the proposed detention/infiltration basin and other proposed drainage improvements (e.g., system of on-site trench or slotted drains serving 18-inch, 24-inch, 36-inch, and 42-inch RCPs; draining hangar roofs directly to the proposed 24-inch RCP along the western border of the Project site, approximately 20 cubic feet per second (cfs) of additional runoff would be routed to

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Table 4.4-4

Peak Stormwater Runoff Flows Under the Proposed Project

Storm Drain	Node	Existing Flow (cfs)	Existing + Project Flow (cfs)	Existing + Project Flow with Detention/Infiltration Basin (cfs)
		Q50^{a,b}	Q50^{a,b}	Q50^{a,b}
Pershing Dr. RCB (downstream [south] of confluence with 54-inch RCP) ^c	280A	687	712	682
54-inch RCP (upstream [east] of confluence with Pershing Dr. RCB)	250B	104	95	95
Pershing Dr. RCB (at confluence with 54-inch RCP) ^c	225AB	573	555	555
World Way West RCB (at confluence with Pershing Dr. RCB)	205A	512	495	495
World Way West RCB (upstream [east] of confluence with Pershing Dr. RCB)	155A	305	305	305

^a The stormwater flow volume that would be conveyed during a 50-year design storm (i.e. a LACDPW Capital Flood event).

^b This calculation is conservative in that it does not consider the stormwater detention basin adjacent to the west side of Pershing Drive. More detailed analysis is required to determine the capacity of this detention basin.

^c At (and subsequently downstream of) the confluence of the Pershing Drive RCB and the 54-inch RCP, all stormwater from the Project site is being conveyed through the Pershing Drive RCB, having either been directly conveyed to the Pershing Drive RCB or having been conveyed by the World Way West RCB to the Pershing Drive RCB.

Source: City of Los Angeles, West Maintenance Area, Los Angeles International Airport, - Drainage Design Report, 100% Design Submittal, prepared for Los Angeles World Airports by Atkins, August 2013.

the Pershing Drive RCB, which would be offset by the proposed 1.6 acre-foot detention/infiltration basin.

In addition, the proposed Project would reduce existing peak flows in three of the four storm drains that serve the Project site. It is important to note that the design features will not fully relieve the existing storm drain capacity issues upstream of the Project site; however, there will be no increase in flow to the Pershing Drive RCB and a decrease in flow to the World Way West RCB and 54-inch RCP. Thus, with the implementation of design features, the proposed Project would not increase flows to the drainage system over existing conditions such that existing upstream capacity issues would be exacerbated during the Capital Flood event. Further, flows to the Pershing Drive RCB, World Way West RCB, and 54-inch RCP would be reduced during the Capital Flood event through the implementation of minor changes to on-site drainage patterns and the proposed 1.6 acre-foot capacity detention/infiltration basin. Additionally, because the majority of stormwater would flow across impervious surfaces, the only exceptions being the unpaved ovals between the extensions of Taxiways B and C (as Taxilane C) at the south end of the Project site, and all conveyance infrastructure serving the Project site is concrete lined, the proposed Project would not result in substantial erosion or siltation. Therefore, the proposed Project would not result in an increase in runoff that would cause or

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exacerbate flooding or result in erosion/siltation, and impacts on drainage would be less than significant.

4.4.6.1.2 Groundwater

The proposed Project would not include new water production wells which could impact groundwater supply.

The proposed Project would increase the amount of impervious surface area at the 84-acre Project site by replacing the existing 12 acres of paved area under existing conditions with 68 acres of taxiways and aircraft parking apron areas, maintenance hangars, employee parking areas, and related storage facilities. As such, the pervious surface area at the Project site would be reduced from 72 acres under existing conditions to 16 acres under the proposed Project. This would result in a corresponding decrease in the on-site volume of surface recharge to groundwater, from an estimated 17.76 AFY under existing conditions to 3.84 AFY under the proposed Project. Although this reduction would account for a 78.4 percent reduction in on-site groundwater inflows when compared to existing conditions, this reduction in surface recharge would not substantially deplete groundwater supplies or interfere substantially with groundwater recharge as the Project site only represents a negligible contribution (0.2 percent) to groundwater inflows under existing conditions and the reduction would represent a 0.21 percent reduction in the total average annual inflows (6,700 AFY) to the West Coast Groundwater Basin. It is important to note that this estimated reduction does not take into account the proposed Project's detention/infiltration basin, which would infiltrate a portion of the stormwater that currently infiltrates to the groundwater table at the Project site. Moreover, this estimate is conservative in that it does not take into account that the existing 72 acres of pervious surface area on the Project site are compacted to an imperviousness of 60 percent from staging and stockpiling efforts currently ongoing at the Project site. Thus, the negligible reduction in groundwater recharge that would occur under the proposed Project would not interfere with the productivity of pre-existing water wells as no water production wells occur in the vicinity and groundwater under LAX is not utilized for the identified beneficial uses of the West Coast Groundwater Basin (i.e., municipal, agricultural, industrial).³⁵

Based on the above, the proposed Project would not substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level. In addition, as mentioned above, there are no water production wells in the vicinity and planned uses in the West Coast Groundwater Basin rely on the Los Angeles municipal water system for water supply. Lastly, as mentioned above, groundwater in the Project vicinity has generally been rising since the mid-1990s, due in part to groundwater introduced to the area by the West Coast Basin Barrier to prevent salt water intrusion. Hence, the proposed Project's impacts on groundwater supply and recharge would be less than significant.

³⁵ Several groundwater quality monitoring wells operate throughout LAX in association with a jet fuel free product recovery system, but these wells do not provide water for existing or planned land uses.

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4.4.6.2 Water Quality

4.4.6.2.1 Construction

Construction of the proposed Project could include sources of pollution that could potentially affect the quality of the receiving water (e.g., Santa Monica Bay) during the construction period. Potential sources of pollutants would include sediment, spills or leaks of fuels or hazardous materials, and contaminants associated with construction materials.

Construction of the proposed Project would require mass grading, fine grading, and other earthmoving activities on the 84-acre Project site. The proposed Project would also require the export from the Project site of approximately 295,000 cubic yards of material. These activities would expose soils to erosion and present the potential for sedimentation of the receiving water. Project construction would also require the on-site use and maintenance of construction vehicles that use fuels and oils, the on-site use of construction materials such as asphalt, concrete, paints and strippers that contain hazardous or toxic materials, and the washing of construction equipment with soaps and solvents, and these substances could either flow or be carried by stormwater runoff to the receiving water.

Because proposed Project construction activities would affect an area of greater than one acre, development and implementation of a Project-specific construction SWPPP would be required in order to meet the requirements of the statewide General Permit for Construction. BMPs within the construction SWPPP are anticipated to include, but not be limited to, the following:

- Sediment control methods such as sand/gravel bags, silt fences, and dust control;
- Construction training programs;
- Material transfer practices (e.g., covering of soil loads, watering of exposed soil, etc.);
- Waste management practices such as providing designated storage areas and containers for specific wastes for regular collection;
- Roadway cleaning/tracking control practices;
- Vehicle and equipment cleaning and maintenance practices; and
- Fueling practices.
- Inlet protection

With implementation of the required Project-specific SWPPP, the proposed Project construction-related hydrology and water quality impacts would be less than significant.

4.4.6.2.2 Operation – Wet Weather Pollutant Loads

Under the proposed Project, the impervious surface area at the Project site would increase from 12 to 68 acres, resulting in an increase in stormwater runoff from the Project site. Under the proposed Project, aircraft maintenance, washing and parking activities would replace the existing staging activities. The proposed Project's uses have the potential to increase pollutant concentrations in on-site stormwater flows. However, as discussed above, the proposed Project would be developed in accordance with LAX Master Plan Commitment HWQ-1, Conceptual Drainage Plan, which requires that a range of BMPs should be incorporated into development projects at LAX to reduce pollutant concentrations in on-site stormwater flows. The nature,

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types, and design of such BMPs are identified and implemented through compliance with SUSMP requirements, as further described below.

In accordance with LAX Master Plan Commitment HWQ-1, Conceptual Drainage Plan, and applicable regulations, the proposed Project would incorporate site-specific BMPs into a Project-specific SUSMP during the design phase of the proposed Project. The SUSMP would require approval by the City of Los Angeles Bureau of Sanitation – Watershed Protection Division prior to the start of construction. As discussed above, preliminary site-specific BMPs identified in the proposed Project's Drainage Design Report include a detention/infiltration basin, oil-water separators, media filters, a water recycling system, porous pavement, and hangar roof drains. For the proposed Project, BMPs also include dedicated connections to the sanitary sewer system at the proposed wash rack. Additional measures may also include but are not necessarily limited to drain inserts/water quality inlets in combination with the media filters, or other equivalent measures, as determined adequate by the Los Angeles Bureau of Sanitation in the final SUSMP. All BMPs would be required to be designed in accordance with the LAWA Design and Construction Handbook, which requires projects to be in compliance with the City's LID Ordinance and includes technical approaches and BMPs to reduce stormwater pollutants in first-flush flows.

Since the proposed Project would be required to comply with the MS4 Permit (through identification of Project-specific BMPs in a SUSMP that serve to avoid a net increase in pollutant loading), it is not anticipated that the proposed Project would result in additional wet-weather pollutant loading of 303(d)-listed water bodies and associated impacts would be less than significant. With respect to debris (e.g., trash) in wet weather flows from the proposed Project, activities associated with aircraft maintenance, as well as aircraft operations in general, require tight controls (i.e., to minimize potential for foreign objects and debris to enter jet engine intakes) and do not generate notable debris.³⁶ Therefore, water quality impacts associated with the proposed Project related to wet weather debris loads would be less than significant.

4.4.6.2.3 Operation - Dry Weather Pollutant Loads

Operation of the proposed Project could result in some minor pollutant loading associated with dry weather "non-stormwater" flows from uses identified in the LAX Master Plan, such as the outdoor washing of aircraft, minimal irrigation runoff from small landscaped areas of the Project site that may be treated with fertilizers and herbicides, and potential spills of fuels, oils, and hazardous materials.

The proposed washing of aircraft would occur within a proposed wash rack on the Project site. Although wash water could potentially contain fuels, oils, cleaning solvents, and/or pollutants for which Santa Monica Bay is 303(d)-listed (i.e., heavy metals, oil and grease), the proposed wash rack would be designed to discharge nonreturnable wash water to the sanitary sewer system for treatment at the Hyperion Wastewater Treatment Plant and any pollutants in nonreturnable wash water would be treated through oil-water separators prior to being discharged to the sanitary sewer system and would not enter dry water flows from the Project site. In addition, a water recycling system is proposed that would utilize recycled water for operation of the proposed aircraft wash rack. The recycling system would process returnable product through

³⁶ City of Los Angeles, Hydrology and Water Quality Report for the LAX Specific Plan Amendment Study, prepared by CDM Smith for LAWA, March 2012.

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oil-water separators for re-use as wash water. An oil-water separator is designed to physically separate captured solids (e.g., trash, debris, suspended solids) and floatables (e.g., oil, grease) from surface runoff flows. These pollutants would be contained within the separator and the resulting filtered stormwater would be allowed to pass through the separator, whether being reused as wash water or disposed of in the sanitary sewer system. The separator would be routinely inspected during operation, and would be cleaned and maintained as required in accordance with manufacturer recommendations. Operation, cleaning, and maintenance of the wash rack and separator unit would only occur during dry weather conditions; cleaning of the separator unit would only occur when the wash rack is not in use. Only when recycled wash water becomes non-returnable would it be conveyed to the sanitary sewer system (under an industrial waste permit from the City's Industrial Waste Division) for treatment and disposal at the Hyperion Wastewater Treatment Plant, rather than to the storm drain system. Because wash water would be treated with an oil/water separator and be disposed of in the sanitary sewer for treatment at the Hyperion Wastewater Treatment Plan when non-returnable, the wash rack would not result in an increase in pollutants to dry weather flows and impacts would be less than significant.

Irrigation of the minimal on-site landscaping associated with the proposed Project could potentially wash over areas to be treated with pesticides or herbicides, and associated runoff could potentially enter the local storm drain system that discharges to Santa Monica Bay. However, any on-site landscaping, and thus any on-site use of pesticides and herbicides, would be minimal. Furthermore, the Project site would be graded so that only the northern 6 acres of the Project site would drain to the World Way West RCB. All remaining dry weather flows, including landscape runoff, would be diverted to the identified on-site BMPs, including the on-site detention/infiltration basin, before being discharged to the local storm drain system. Finally, in the event herbicides and pesticides are used for landscaped areas, their application would occur in accordance with applicable LAWA regulations and with the application directions on the packaging, which have been developed to avoid over-application of the materials, thus reducing their potential to enter dry weather flows. Therefore, dry weather flows associated with the potential on-site use of pesticides and herbicides would be less than significant.

The proposed Project would include the on-site use of lubricating oils and grease, hydraulic oil, degreasers and other cleaning products, and paint and painting-related materials (e.g., thinners, solvents), and chemicals. As such, it is possible that an accidental spill of these materials could occur on the Project site during operation. The transport, use, storage, disposal, and required cleanup of these materials is highly regulated, and these regulations have been formulated to avoid significant impacts associated with hazardous materials. In addition, all dry weather flows would be subject to the BMPs discussed above, which would be included in a Project-specific SUSMP designed in accordance with applicable regulations. Because the use of these materials would comply with these regulations and any pollutants entering dry weather flows would be treated by Project-specific BMPs prior to entering the storm drain system, the potential for any such spills (and for any related dry weather flow impacts) would be less than significant. Please see Section 4.3, *Hazards and Hazardous Materials*, for further discussion of hazardous materials.

4.4.7 Cumulative Impacts

As identified in Chapter 3, *Overview of Project Setting*, of this EIR, there are 13 related projects within the vicinity of the proposed Project. Most of those related projects are located within the same watershed as the proposed Project that drains to Santa Monica Bay, which could potentially increase the volume of stormwater runoff and contribute to pollutant loading of the stormwater runoff, resulting in cumulative hydrology and water quality impacts. The majority of those related projects are, however, located on developed land with impervious surface area and pollutant loading of an urban nature. Such related projects include the remaining work on the Bradley West Project, the Terminal 3 Connector, the major renovations at the north and south terminals within the CTA, the Midfield Satellite Concourse-Phase I: North Concourse Project, the remaining work on the Central Utility Plant Replacement Project, the vast majority of the Miscellaneous Projects/Improvements, and the Metro Crenshaw/LAX Transit Corridor and Station. It is anticipated that implementation of those projects would have negligible, if any, contribution to cumulative hydrology and water quality impacts. Related projects draining to Santa Monica Bay that may, in conjunction with the proposed Project, result in cumulative hydrology and water quality impacts include the Runway Safety Area (RSA) Improvements, the LAX Northside Area Development, and the LAX Master Plan Alternative D/SPAS Alternative 3. In particular, the LAX Northside Project is one of the few sizeable projects in the vicinity proposed on undeveloped land with little impervious surfaces.³⁷ As indicated in Table F4.7-5 of the LAX Master Plan Final EIR, implementation of Alternative D would increase the amount of impervious area within LAX that drains to Santa Monica Bay to 2,174 acres compared to the Master Plan 1996 Baseline Conditions of 2,050 acres, with the majority of that increase being attributable to development of the LAX Northside area. The subsequent completion of the LAX CDP required by LAX Master Plan Commitment HWQ-1 identified drainage system improvements and water quality BMPs to address the hydrology and water quality impacts associated with that increase in impervious area draining to Santa Monica Bay.³⁸ Implementation of the RSA – South Improvements project is anticipated to convert 8.3 acres of permeable area to impermeable/paved surface, which will result in an increase in surface runoff within that project area; however, the stormdrain system improvements recommended for that project include a combination of an underground infiltration basin, which would reduce hydrology impacts to the existing drainage system, as well as address potential surface water quality impacts, and stormwater treatment filters, which would further address and reduce the water quality impacts of that project. Relative to the RSA-North Improvements project, the design engineering for that project has not yet been finalized; however, the proposed realignment of the existing vehicle service road is not expected to materially change existing hydrology or water quality characteristics of the affected area, and the proposed reconfiguration of a 516 foot-long segment of the Argo Drainage Channel for placement of a box culvert (i.e., cover the open channel segment within the RSA area) is also not expected to substantially change the local hydrology and water quality characteristics of the area (i.e., the project would add approximately 1.3 acres of impervious area within the 2,300+ acre Argo Sub-basin). While it is not anticipated that implementation of the related projects described above would result in

³⁷ City of Los Angeles, LAX Specific Plan Amendment Study Draft EIR, prepared by CDM Smith for LAWA, July 2012.

³⁸ The LAX Conceptual Drainage Plan also addresses LAX Master Plan-related hydrology and water quality impacts to Dominguez Channel; however, such impacts are not related to cumulative impacts associated with the West Aircraft Maintenance Area given that the proposed Project does not drain to that channel.

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significant cumulative hydrology or water quality impacts, it should be noted that, for hydrology, the related projects would be reviewed by the lead agencies for those projects (e.g., the applicable departments of LAWA, City of Los Angeles, and Los Angeles County) on a case-by-case basis to ensure that sufficient local and regional drainage capacity is available. For water quality, as with the proposed Project, the related projects would be subject to State NPDES permit requirements for both construction and operation which have been formulated to avoid significant water quality impacts. Each project greater than one-acre in size would also be required to develop a SWPPP/SUSMP plan and would be evaluated individually to determine appropriate BMPs and treatment measures to avoid impacts to water quality. Moreover, with adherence to applicable regulations and the implementation of LAX Master Plan Commitment HWQ-1, Conceptual Drainage Plan, and LAX Master Plan Mitigation Measure MM-HWQ-1, Update Regional Drainage Facilities, the proposed Project would not generate an incremental increase in either peak stormwater runoff or pollutants of concern in 303(d)-listed receiving waters, and thus would not contribute to any potential hydrology and water quality impacts of the related projects if such impacts were to occur. Finally, groundwater in the Project vicinity is not utilized as a domestic water supply and the proposed Project would only negligibly reduce groundwater recharge within the West Coast Groundwater Basin. For all these reasons, cumulative hydrology and water quality impacts would be less than significant.

4.4.8 Mitigation Measures

With compliance with regulatory requirements pertaining to the design of drainage facilities and the provision of short-term and permanent water quality BMPs, and preparation of a site-specific Drainage Design Report, SWPPP, and SUSMP, no significant impacts on hydrology or water quality would occur with implementation of the proposed Project. Therefore, no mitigation measures other than those required by the LAX Master Plan MMRP, which are discussed in Section 4.4.5 above and included as project design features under the proposed Project, are required.

4.4.9 Level of Significance After Mitigation

Not applicable. Impacts are less than significant, as indicated above; therefore, no additional mitigation measures are required.

4.5 Noise

4.5.1 Introduction

This section analyzes potential noise and ground-borne vibration impacts that would result from the development of the proposed Project. The analysis describes the existing noise environment within the Project area, estimates future noise and ground-borne vibration levels at surrounding land uses resulting from construction and operation of the proposed Project, and evaluates the potential for significant impacts. Noise calculation and data sheets for the proposed Project are included in Appendix C of this Environmental Impact Report (EIR). The analysis of potential operational noise impacts in this section is based in part on the following technical reports: *Noise Analysis Results for the Proposed WAMA at LAX* prepared by Harris Miller Miller & Hanson Inc. (HMMH) and the *West Aircraft Maintenance Area – Taxi Noise* memorandum prepared by Ricondo & Associates. These reports are included in Appendix C of this EIR.

Prior to the preparation of this EIR, an Initial Study (IS) was prepared (Appendix A of this EIR) using the California Environmental Quality Act (CEQA) Environmental Checklist Form to assess potential environmental impacts associated with noise. The IS found that for one of six noise-related thresholds the proposed Project would result in “no impact” and that no further analysis of that topic in an EIR was required. The determination of “no impact” was made for the following threshold because it is focused on projects within the vicinity of a private airstrip, whereas the proposed Project is located within a public airport, which is addressed by a separate threshold. Refinements have been made to the proposed Project to reflect additional information and coordination with the public and the Federal Aviation Administration (FAA). The refinements do not represent a material change to the proposed Project that was described in the IS/Notice of Preparation (NOP) and do not change any of the conclusions in the IS. The threshold not addressed further is as follows:

- For a project within the vicinity of a private airstrip, would the project expose people residing or working in the project area to excessive noise levels?

4.5.1.1 Noise Descriptors

Noise levels are measured using a variety of scientific metrics. As a result of extensive research into the characteristics of aircraft noise and human response to that noise, standard noise descriptors have been developed for aircraft noise exposure analyses. The descriptors used in this noise analysis are described below.

A-Weighted Sound Pressure Level (dBA): The decibel (dB) is a unit used to describe sound pressure level. When expressed in dBA, the sound has been filtered to reduce the effect of very low and very high frequency sounds, much as the human ear filters sound frequencies. Without this filtering, calculated and measured sound levels would include events that the human ear cannot hear (e.g., dog whistles and low frequency sounds, such as the groaning sounds emanating from large buildings with changes in temperature and wind). With A-weighting, calculations and sound monitoring equipment approximate the sensitivity of the human ear to sounds of different frequencies.

4.5 Noise

Some common sounds on the dBA scale are listed in **Table 4.5-1**. As shown in Table 4.5-1, the relative perceived loudness of a sound doubles for each increase of 10 dBA, although a 10-dBA change in the sound level corresponds to a factor of 10 change in relative sound energy.

Table 4.5-1
Common Sounds On The A-Weighted Decibel Scale

Sound	Sound level (dBA)	Relative loudness (approximate)	Relative sound energy
Rock music, with amplifier	120	64	1,000,000
Thunder, snowmobile (operator)	110	32	100,000
Boiler shop, power mower	100	16	10,000
Orchestral crescendo at 25 feet, noisy kitchen	90	8	1,000
Busy street	80	4	100
Interior of department store	70	2	10
Ordinary conversation, 3 feet away	60	1	1
Quiet automobiles at low speed	50	1/2	.1
Average office	40	1/4	.01
City residence	30	1/8	.001
Quiet country residence	20	1/16	.0001
Rustle of leaves	10	1/32	.00001
Threshold of hearing	0	1/64	.000001

Source: U.S. Department of Housing and Urban Development, Aircraft Noise Impact--Planning Guidelines for Local Agencies, 1972

In general, humans find a change in sound level of 3 dB is just noticeable, a change of 5 dB is clearly noticeable, and a change of 10 dB is perceived as doubling or halving sound level. Because of the logarithmic scale of the decibel unit, sound levels cannot be added or subtracted arithmetically. If a sound's physical intensity is doubled, the sound level increases by 3 dB, regardless of the initial sound level. For example, 60 dB plus 60 dB equals 63 dB, 80 dB plus 80 dB equals 83 dB. However, where ambient noise levels are high in comparison to a new noise source, there will be a small change in noise levels. For example, when 70 dB ambient noise levels are combined with a 60 dB noise source the resulting noise level equals 70.4 dB.

Maximum Noise Level (L_{\max}): L_{\max} is the maximum or peak sound level during a noise event. The metric only accounts for the instantaneous peak intensity of the sound, and not for the duration of the event. As an aircraft passes by an observer, the sound level increases to a maximum level and then decreases. Some sound level meters measure and record the maximum or L_{\max} level.

Sound Exposure Level (SEL): SEL, expressed in dBA, is a time integrated measure, expressed in decibels, of the sound energy of a single noise event at a reference duration of one second. The sound level is integrated over the period that the level exceeds a threshold. Therefore, SEL accounts for both the maximum sound level and the duration of the sound. The standardization of discrete noise events into a one-second duration allows calculation of the cumulative noise exposure of a series of noise events that occur over a period of time. Because of this compression of sound energy, the SEL of an aircraft noise event is typically 7 to 12 dBA greater than the L_{\max} of the event. SELs for aircraft noise events depend on the location of the

aircraft relative to the noise receptor, the type of operation (landing, takeoff, or overflight), and the type of aircraft.

Equivalent Continuous Noise Level (L_{eq}): L_{eq} is the sound level, expressed in dBA, of a steady sound which has the same A-weighted sound energy as the time-varying sound over the averaging period. Unlike SEL, L_{eq} is the average sound level for a specified time period (e.g., 24 hours, 8 hours, 1 hour, etc.). L_{eq} is calculated by integrating the sound energy from all noise events over a given time period and applying a factor for the number of events. L_{eq} can be expressed for any time interval, for example the L_{eq} representing an averaged level over an 8 hour period would be expressed as $L_{eq(8)}$.

Day-Night Average Sound Level (DNL): DNL, formerly referred to as L_{dn} , is expressed in dBA and represents the noise level over a 24-hour period. Because environmental noise fluctuates over time, DNL was devised to relate noise exposure over time to human response. DNL is a 24-hour average of the hourly L_{eq} , but with penalties to account for the increased sensitivity to noise events that occur during the more sensitive nighttime periods. Specifically, DNL penalizes noise 10 dB during the nighttime time period (10:00 p.m. to 7:00 a.m.). The U.S. Environmental Protection Agency (USEPA) introduced the metric in 1976 as a single number measurement of community noise exposure. The FAA adopted DNL as the noise metric for measuring cumulative aircraft noise under Federal Aviation Regulations (FAR) Part 150, Airport Noise Compatibility Planning. The Department of Housing and Urban Development, the Veterans Administration, the Department of Defense, the United States Coast Guard, and the Federal Transit Administration have also adopted DNL for measuring cumulative noise exposure.

DNL is used to describe existing and predicted noise exposure in communities in airport environs based on the average daily operations over the year and the average annual operational conditions at an airport. Therefore, at a specific location near an airport, the noise exposure on a particular day is likely to be higher or lower than the annual average noise exposure, depending on the specific operations at an airport on that day. DNL is widely accepted as the best available method to describe aircraft noise exposure and is the noise descriptor required for aircraft noise exposure analyses and land use compatibility planning under FAR Part 150 and for environmental assessments for airport improvement projects (FAA Order 10501.E).

Community Noise Equivalent Level (CNEL): CNEL, expressed in dBA, is the standard metric used in California to represent cumulative noise exposure. The metric provides a single-number description of the sound energy to which a person or community is exposed over a period of 24 hours similar to DNL. CNEL includes penalties applied to noise events occurring after 7:00 p.m. and before 7:00 a.m., when noise is considered more intrusive. The penalized time period is further subdivided into evening (7:00 p.m. through 9:59 p.m.) and nighttime (10:00 p.m. to 6:59 a.m.). When a noise event occurs in the evening, a penalty of 4.77 dBA is added to the nominal sound level (equivalent to a three-fold increase in aircraft operations). A 10 dBA penalty is added to nighttime noise events (equivalent to a ten-fold increase in aircraft operations).

The evening weighting is the only difference between CNEL and DNL. For purposes of aircraft noise analysis in the State of California, the FAA recognizes the use of CNEL.¹

¹ See FAA Order 5050.4B, Page 8, Section 9, Paragraph "n" for FAA's acceptance of the CNEL metric as a suitable substitute for the Day-Night Average Sound Level (DNL).

4.5 Noise

4.5.2 Methodology

4.5.2.1 Construction Noise and Vibration

4.5.2.1.1 Construction Noise

On-site construction and construction trucks staging and hauling route noise impacts are evaluated by determining the noise levels generated by different types of construction activity, calculating the construction-related noise level at nearby sensitive receptor locations, and comparing these construction-related noise levels to existing ambient noise levels (i.e., noise levels without construction noise). More specifically, the following steps were undertaken to calculate construction-period noise levels:

1. Ambient noise levels at surrounding sensitive receptor locations were estimated from field measurement data made in proximity to the nearby noise-sensitive receptors;
2. Typical noise levels for each type of construction equipment as shown in noise calculation sheets included in Appendix C were obtained from the Federal Highway Administration's (FHWA) Roadway Construction Noise Model;
3. Distances between construction site locations (noise source) and surrounding sensitive receptors were measured using Project plans, GIS, and Google Earth;
4. Construction noise levels were calculated for sensitive receptor locations based on the conventional standard point source noise-distance attenuation factor of 6.0 dBA for each doubling of distance; and,
5. Calculated noise levels associated with Project construction at sensitive receptor locations were then compared to estimated existing noise levels and the construction noise significance thresholds identified below.

4.5.2.2 Operational Noise

The proposed Project involves the consolidation, relocation, and modernization of some of the existing aircraft maintenance facilities at LAX, and will not increase passenger or gate capacity, nor flights and/or aircraft operations at LAX. Therefore, the operational noise analysis associated with the proposed Project addresses potential impacts from: aircraft engine run-up activity at the Project site; aircraft taxi operations to and from the Project site; and other maintenance activities compared to existing conditions.

4.5.2.2.1 Aircraft Engine Run-up Activity Noise

The analysis of potential noise impacts associated with aircraft engine run-up activity included estimation of the sound levels and sound directivity associated with aircraft engine ground run-ups specific to particular types of aircraft. Such estimates were developed for the existing ground run-up activities that presently occur at LAX and for future conditions with completion of the proposed Project. Twenty-nine locations in the communities to the north of the airport (i.e., Westchester and Playa del Rey) and to the south of the airport (El Segundo) were selected as representative noise-sensitive receptors where ground run-up noise levels were calculated and

impacts assessed in terms of CNEL. The following describes the approach to that analysis including the computer models used and assumptions made in the evaluation.

Potential noise impacts associated with Project-related aircraft engine run-up activity were addressed primarily through the application of the computer noise model SoundPLAN®, a commercially available software suite specializing in computer simulations of noise propagation from sources such as traffic noise, indoor and outdoor occupational noise, general industrial noise and aircraft noise. SoundPLAN® provides an estimate of sound levels at a distance from a specific noise source, or sources, taking into account the following:

1. Specific characteristics of each noise source including its frequency spectrum and directivity characteristics, which in this case included conducting noise measurements of representative aircraft engine run-up activities as further described below.
2. Terrain features including relative elevations of noise sources, receivers, and intervening objects.
3. Ground effects due to areas of pavement and unpaved ground.
4. Shielding and reflections due to intervening buildings or other structures and diffracted paths around and over structures.
5. Atmospheric effects on sound propagation.

Additional information related to noise source data, topography and ground cover, intervening buildings, and atmospheric conditions is provided below, with more detailed explanations provided in Appendix C of this EIR.

Noise Source Data

The FAA's Integrated Noise Model (INM), and actual aircraft source level measurements, were used to develop the aircraft generated noise data needed as inputs to the SoundPLAN®. The INM provides data on aircraft organized into noise spectral classes for arrival and departure profiles. Aircraft within a specific spectral class have the same shape to their spectrum. The INM was used to develop test run-up scenarios for the specific aircraft conducting run-ups at LAX and then generalized the noise spectrum and directivity for each aircraft based on data validation through aircraft source level measurements and the resulting A-weighted sound pressure levels. Based on the types of aircraft conducting run-up activities at LAX, a total of 11 aircraft run-up source type inputs, considered to be reasonably representative of the variety of aircraft run-up types at LAX, were developed for use in SoundPLAN® to compute sound levels in community locations attributed to the various aircraft run-ups.

Local Topography and Ground Cover

Topographical data were extracted from digital CAD drawing files to develop the base map data used in the run-up analysis. Aerial views of the LAX property were used to define and designate the ground cover in specific geographic sections as either acoustically "hard" (water, concrete, etc.) or "soft" (soil, vegetation, etc.), in order to better estimate the correct sound attenuation over the ground from the noise source to the respective receiver.

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Building Footprints

Footprints of buildings on the airport that may reflect or shield noise energy from the various run-up locations were included in the data base. Additionally for the future scenario, electronic data files were used to remove those buildings that are anticipated to be removed in the future (the former TWA Hangar, the American Airlines Low Bay Hangar, and the US Airways Hangar) and to add new buildings in the proposed Project site (i.e., the two proposed aircraft hangars).

Local Average Meteorological Conditions

The SoundPLAN® model includes several methods of accounting for atmospheric effects on sound propagation. For this evaluation, the model's implementation of the General Prediction Method² was used. The equations used assume propagation under conditions of a "moderate downwind or slight temperature inversion." This provides a realistic, but conservative estimate of community sound levels caused by ground-based airport sources.

Calculation of Community Noise Equivalent Level

As further described below in Section 4.5.4.3 CNEL is the noise metric used to assess the significance of noise impacts associated with ground run-ups. SoundPLAN® uses the annual number of run-ups and run-up durations known or anticipated to occur during certain periods of a 24-hour day to derive annual average daily run-up durations for day, evening, and night periods for all aircraft run-ups at the locations identified. The model then uses all of these annual average daily run-up durations for day, evening, and night periods for all sites and all aircraft to derive the CNEL values at specific locations.

4.5.2.2.2 Aircraft Taxi Operation Noise

As indicated above, implementation of the proposed Project would not increase the number of aircraft operations at LAX, but would result in a change to the normal taxi route that certain aircraft currently take (i.e., as the proposed Project provides for the consolidation and relocation of existing aircraft maintenance and remain overnight (RON)/remain all day (RAD) activities to a new location in the southwest portion of the airport, certain aircraft may travel a different taxi route than what they do today under baseline conditions). Taxi paths delineating the routes of aircraft traveling to and from the Project site were defined based on conservative assumptions (i.e., long taxiing distances) regarding where those taxiing trips would begin or end. Three sets of taxi paths were identified for the noise analysis as follows:

- Terminal 2, representing the approximate mid-point of northern concourses at the Central Terminal Area (CTA), utilizing Taxiway AA and Taxilane C traveling to and from the Project site for RON/RAD parking;
- Terminal 2, again representing the approximate mid-point of northern concourses at the CTA, utilizing Taxiway R and Taxiway/Taxilane C traveling to and from the Project site for RON/RAD parking; and
- Delta Airlines/United Airlines maintenance facilities utilizing Taxiway/Taxilane C traveling to and from the Project site for maintenance activities – this route would also encompass

² "Environmental Noise from Industrial Plants General Prediction Method," Danish Acoustical Laboratory, The Danish Academy of Technical Science, Lyngby, Denmark, 1982.

the travel path of passenger aircraft at Terminal 6, as the approximate mid-point of southern concourses at the CTA, traveling to and from the proposed Project site for RON/RAD parking.

It should be noted that all of the taxiways included in the three paths above are existing taxiways, which would not be modified by the proposed Project, with the exception of the westerly extensions of Taxiways B and C (as Taxilane C) into the Project site (see Figure 2-4 in Chapter 2, *Project Description*).

A taxi profile was created in the INM to represent a taxi operation; the noise-source altitude was assumed to be the average engine-installation height; a constant taxi speed of 15 knots was assumed; and the engine thrust setting was assumed to be 10 percent of the maximum thrust value in the noise power distance curves associated with specific aircraft. Based on the above, sound exposure level (SEL) noise footprints were prepared for a typical Airplane Design Group (ADG) III (Boeing 737-300) and an ADG IV (Boeing 767-300) aircraft. SEL is a time integrated measure that accounts for both the maximum sound level and the duration of the sound. Using the SEL values associated with these taxiing operations, CNEL values were calculated based on the number and time of day operations were estimated to occur.

4.5.2.2.3 Operational Maintenance Noise

The proposed Project would include areas for routine aircraft maintenance. Operation of the Project may include the use of hand tools and pneumatic tools that generate noise. Pneumatic tools are tools that are driven by a gas – usually compressed air. Some examples of pneumatic tools include air impact wrenches, pneumatic drills, and pneumatic nail guns. The FHWA provides estimated noise levels for pneumatic tools. The potential for noise levels from the use of pneumatic tools will be assessed based on the potential to contribute to noise impacts at off-site sensitive receptors.

4.5.2.3 Ground-Borne Vibration

Vibration consists of waves transmitted through solid material. The frequency of a vibrating object describes how rapidly it is oscillating, measured in Hertz (Hz). Most environmental vibrations consist of a composite, or “spectrum,” of many frequencies, and are generally classified as broadband or random vibrations. The normal frequency range of most ground-borne vibration that can be felt generally starts from a low frequency of less than 1 Hz to a high of about 200 Hz. Vibration is often measured in terms of the peak particle velocity (PPV) in inches per second (in/sec), because it is related to the stresses that are experienced by buildings. Vibration is also measured in vibration decibels (VdB). The human threshold of perception is around 65 VdB; the dividing line between barely perceptible and distinctly perceptible is around 75 VdB; and vibration levels are acceptable at 85 VdB if there are an infrequent number of events per day.³

Ground-borne vibration is vibration that is passed into the ground from sources on- or below-ground, and such vibration is transmitted over distances, depending on the source and the ground conditions, and subsequently passes into receptor structures where it can affect both the occupants of the building and the building structure itself. Example sources of ground-borne

³ Federal Transit Administration, Transit Noise and Vibration Impact Assessment, May 2006.

4.5 Noise

vibration include certain types of construction activity, such as pile driving, and certain forms of transportation such as railroads and roadways on which there are substantial volumes of heavy vehicles (i.e., trucks and buses) and/or that have poorly maintained surface conditions (i.e., potholes and bumps).

The analysis of ground-borne vibration impacts related to the proposed Project focused on the potential for construction activities to result in significant impacts. Such vibration impacts were evaluated by identifying potential construction-related vibration sources, measuring the distance between vibration sources and surrounding structure locations, and making an impact determination based on the applicable thresholds of significance, discussed later in this section.

Operations-related ground-borne vibration impacts are not expected to occur. The proposed Project does not include any railroad operations, and the movement of heavy vehicles, such as trucks, ground support equipment, and aircraft would occur at slow speeds, on new and/or smooth surfaces, at distances substantially removed from noise-sensitive receptors (i.e., nearest residence is over 1,500 feet away from edge of Project site).

Public comments were received during the Draft EIR Scoping Period regarding potential vibration impacts associated with aircraft engine ground-run ups. Such vibration is generally not ground-borne, but rather is created by low-frequency noise energy associated with aircraft engine operations. Regardless, it is not anticipated that Project-related ground run-ups would result in notable vibration impacts to sensitive receptors near the airport. The issue of aircraft-generated vibration impacts was addressed in the LAX Master Plan Final EIR. Specifically, as described in Topical Response TR-N-8 of the LAX Master Plan Final EIR (LAX Master Plan Final EIR-Part II page 2-118),⁴ low frequency noise and its energy impacts were studied thoroughly in several studies and included older aircraft, such as the Concord, exhibiting much higher noise levels and low-frequency energy levels than those associated with modern aircraft. In a 2002 report, the FICAN released the report "*FICAN on the Findings of the Minneapolis-St. Paul International Airport (MSP) Low-Frequency Noise (LFN) Expert Panel*," concurring with the opinion that low-frequency noise from civil aircraft will not pose a public health risk, risk of structural damage, or an increase in indoor speech interference. It is important to note that this LAX Master Plan Final EIR discussion and conclusion pertained to the numerous (i.e., several hundred) aircraft takeoffs and landings that occur on a daily basis at LAX, whereas the number of aircraft ground run-ups anticipated to occur in conjunction with the proposed Project is estimated to be around five per month, and would occur at a distance much farther away from nearby communities than the aircraft operations that occur daily on the outboard runways at LAX. Based on the above, notable vibration impacts from Project-related ground run-ups are not expected to occur; hence, the issue is not addressed further in this section.

4.5.3 Existing Conditions

4.5.3.1 Regulatory Context

Many government agencies have established noise standards and guidelines to protect citizens from potential hearing damage and various other adverse physiological and social effects associated with noise and ground-borne vibration. The City of Los Angeles has adopted a

⁴ City of Los Angeles, Los Angeles World Airports, Final Environmental Impact Report for Los Angeles International Airport (LAX) Proposed Master Plan Improvements, April 2004.

number of policies, which are based in part on federal and State regulations and are directed at controlling or mitigating environmental noise effects. There are no City adopted policies or standards that relate to ground-borne vibration, but the Federal Transit Administration (FTA) and the California Department of Transportation (Caltrans) do have such policies and/or standards. The government agency policies that are relevant to Project construction and operation noise levels are discussed below.

4.5.3.1.1 Federal

Federal Aviation Administration

The FAA Order 1050.1E states that a significant noise impact would occur if an analysis shows that the proposed action will cause noise sensitive areas to experience an increase in the DNL of 1.5 dB or more at or above DNL 65 dB noise exposure when compared to the no action alternative for the same timeframe.⁵ DNL values are considered to be comparable to CNEL values.⁶

Federal Transportation Administration

The FTA *Transit Noise and Vibration Impact Assessment* states that heavy-duty equipment may produce temporary ground-borne vibration.⁷ For purposes of evaluating the significance of the vibration impacts, vibration levels that exceed approximately 80 VdB at residential land uses for infrequent events and 72 VdB for frequent events, which are the vibration level that is considered by the FTA to cause an annoyance, would be considered significant.

4.5.3.1.2 State

The State of California mandates the use of CNEL as the required noise metric, which is also accepted by the FAA for airport noise studies in California.⁸ Accordingly, the Aeronautics Division of Caltrans establishes 65 dBA CNEL as a noise impact boundary within which no incompatible land uses should be implemented. Federal and state airport noise regulations, as well as local plans and ordinances, ensure that a buffer of compatible land uses is maintained in the vicinity of LAX.

With respect to vibration, the Caltrans technical publication *Transportation- and Construction-Induced Vibration Guidance Manual* establishes a vibration damage potential criteria of 0.5 inch-per-second PPV for older residential structures, 1.0 inch-per-second PPV for newer residential structures, and 2.0 inch-per-second PPV for modern industrial/commercial buildings.⁹ These vibration criteria for potential damage to structures are generally higher (i.e., less stringent) than

⁵ Federal Aviation Administration Order 1050.1E, March 20, 2006.

⁶ CNEL is used by the State of California and is similar to DNL except that an additional penalty is associated with noise events occurring during evening hours (7:00 p.m. – 10:00 p.m.). Noise events occurring during this period are weighted by 4.77 dBA. FAA Order 5050.4B, accepts the use of CNEL for airport noise studies in California.

⁷ Federal Transit Administration, *Transit Noise and Vibration Impact Assessment*, (2006).

⁸ Federal Aviation Administration, Order 5050.4B, *National Environmental Policy Act (NEPA) Implementing Instructions for Airport Projects*, CH.1(9)(n), June 8, 2004.

⁹ California Department of Transportation, *Transportation- and Construction-Induced Vibration Guidance Manual*, June 2004

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the FTA *Transit Noise and Vibration Impact Assessment* criteria for annoyance, as discussed above.

The California Division of Occupational Safety and Health (CalOSHA) provides guidelines to ensure people employed in the State of California are not exposed to noise levels greater than 85 dBA. An employer is required to administer a continuing effective hearing conservation program whenever employee noise exposures equal or exceed an 8-hour time-weighted average sound level of 85 dBA (referred to as the “action level”), or equivalently, a dose of 50 percent.

4.5.3.1.3 Local

The City of Los Angeles Municipal Code (LAMC) (Section 41.40 and Chapter XI, Articles 1 through 6) establishes regulations regarding allowable increases in noise levels in terms of established noise criteria. Supplementing these LAMC regulations, the City has also established CNEL guidelines that are used for land use planning purposes. Those regulations and guidelines are described in more detail below.

City of Los Angeles Noise Regulation

Chapter XI of the Los Angeles Municipal Code (City of Los Angeles Noise Ordinance) establishes acceptable ambient sound levels to regulate intrusive noises (e.g., stationary mechanical equipment and vehicles other than those traveling on public streets, including, but not limited to, those used for construction activity, as further described below) within specific land use zones. In accordance with the City’s Noise Ordinance, a noise level increase of 5 dBA over the existing average ambient noise level at an adjacent property line is considered a noise violation. For the purposes of determining whether or not a violation of the City of Los Angeles Noise Ordinance is occurring, the sound level measurements of an offending noise that has a duration of five minutes or less during a one-hour period is reduced by 5 dBA to account for people’s increased tolerance for short-duration noise events. In cases in which the actual measured ambient noise level is not known, the presumed ambient noise level, as indicated in **Table 4.5-2** is used.

Table 4.5-2

City of Los Angeles Presumed Ambient Noise Levels

Zone	Daytime Hours (7 a.m. to 10 p.m.) dBA (Leq)	Nighttime Hours (10 p.m. to 7 a.m.) dBA (Leq)
Residential	50	40
Commercial	60	55
Manufacturing (M1, MR1, MR2)	60	55
Heavy Manufacturing (M2, M3)	65	65

Source: Los Angeles Municipal Code, Chapter XI, Article I, Section 111.03.

The City of Los Angeles Noise Ordinance also limits noise from construction equipment within 500 feet of a residential zone to 75 dBA, measured at a distance of 50 feet from the source, unless compliance with the limitation is technically infeasible.¹⁰ The City of Los Angeles Noise Ordinance prohibits construction noise between the hours of 9:00 p.m. and 7:00 a.m. Monday through Friday and on Saturday before 8:00 a.m. and after 6:00 p.m., and does not allow construction noise on Sunday or on a national holiday.¹¹

City of Los Angeles General Plan Noise Element

The City of Los Angeles has developed a Noise Element of the General Plan to guide in the development of noise regulations.¹² The Noise Element of the City of Los Angeles General Plan addresses noise mitigation regulations, strategies, and programs and delineates federal, state, and City jurisdiction relative to rail, automotive, aircraft, and nuisance noise.

The City of Los Angeles has adopted local guidelines based, in part, on the community noise compatibility guidelines established by the State Department of Health Services (CDHS) for use in assessing the compatibility of various land use types with a range of noise levels. CNEL guidelines for specific land uses are classified into four categories: (1) “normally acceptable,” (2) “conditionally acceptable,” (3) “normally unacceptable,” and (4) “clearly unacceptable.” As shown in **Table 4.5-3**, a CNEL value of 65 dBA is the upper limit of what is considered a “normally acceptable” noise environment for multi-family residential uses, although a CNEL as high as 70 dBA is considered “conditionally acceptable.” The upper limit of what is considered “normally unacceptable” for residential uses is set at 75 dBA CNEL.

Table 4.5-3

City of Los Angeles Land Use Compatibility for Community Noise

Land Use	Community Noise Exposure CNEL, dBA			
	Normally Acceptable	Conditionally Acceptable	Normally Unacceptable	Clearly Unacceptable
Single-Family, Duplex, Mobile Homes	50 to 60	55 to 70	70 to 75	Above 70 ^a
Multi-Family Homes	50 to 65	60 to 70	70 to 75	Above 70 ^a
Schools, Libraries, Churches, Hospitals, Nursing Homes	50 to 70	60 to 70	70 to 80	Above 80
Transient Lodging—Motels, Hotels	50 to 65	60 to 70	70 to 80	Above 80
Auditoriums, Concert Halls, Amphitheaters	—	50 to 70	—	Above 65
Sports Arena, Outdoor Spectator Sports	—	50 to 75	—	Above 70

¹⁰ In accordance with the Noise Regulation (LAMC, Section 112.05), “technically infeasible” means that said noise limitations cannot be complied with despite the use of mufflers, shields, sound barriers, and/or other noise reduction devices or techniques during the operation of the equipment.

¹¹ Los Angeles Municipal Code, Section 41.40.

¹² City of Los Angeles, Noise Element of the Los Angeles City General Plan, February 3, 1999.

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Table 4.5-3

City of Los Angeles Land Use Compatibility for Community Noise

Land Use	Community Noise Exposure CNEL, dBA			
	Normally Acceptable	Conditionally Acceptable	Normally Unacceptable	Clearly Unacceptable
Playgrounds, Neighborhood Parks	50 to 70	—	67 to 75	Above 72
Golf Courses, Riding Stables, Water Recreation, Cemeteries	50 to 75	—	70 to 80	Above 80
Office Buildings, Business and Professional Commercial	50 to 70	67 to 77	Above 75	—
Industrial, Manufacturing, Utilities, Agriculture	50 to 75	70 to 80	Above 75	—

Normally Acceptable: Specified land use is satisfactory, based upon the assumption that any buildings involved are of normal conventional construction without any special noise insulation requirements.

Conditionally Acceptable: New construction or development should be undertaken only after a detailed analysis of the noise reduction requirements is made and needed noise insulation features included in the design. Conventional construction, but with closed windows and fresh air supply systems or air conditioning will normally suffice.

Normally Unacceptable: New construction or development should generally be discouraged. If new construction or development does proceed, a detailed analysis of the noise reduction requirements must be made and needed noise insulation features included in the design.

Clearly Unacceptable: New construction or development should generally not be undertaken.

^a This 70 dB figure is quoted directly from the City of Los Angeles L.A. CEQA Thresholds Guide. However, other sources quote this number as 75 dB (i.e., State of California General Plan Guidelines, Preliminary Draft, Governor's Office of Planning and Research, October 2002, p. 258, and Noise Element of the City of Los Angeles General Plan, Department of City Planning Los Angeles, California, February 1999, p. I-1). This may be a typographical error in the L.A. CEQA Thresholds Guide. Note that this potential error does not affect the determination of significant impacts for this report.

Source: California Department of Health Services, Guidelines for the Preparation and Content of the Noise Element of the General Plan, 1999.

4.5.3.2 Environmental Setting

The existing noise environment at and around the Project site consists of noise from airport-related activities including aircraft departing, landing, and taxiing on runways and connecting taxiways; and noise from vehicular traffic movements on local roadways.

Some land uses are considered more sensitive to intrusive noise than others due to the amount of noise exposure and the types of activities typically involved at the receptor location. The *L.A. CEQA Thresholds Guide* states that residences, schools, motels and hotels, libraries, religious institutions, hospitals, nursing homes, and parks are generally more sensitive to noise than commercial and industrial land uses.

Potential noise sensitive locations that may be affected by this proposed Project were identified based on reviews of land use inventories, aerial imagery, and land use maps. Since the proposed Project site is located near the west end of the airport, the identification of representative noise-sensitive receptors focused on areas in El Segundo west of Sepulveda Boulevard and areas in Playa del Rey and Westchester west of Lincoln Blvd. As shown in **Table 4.5-4**, 29 representative noise-sensitive receptors included 13 schools, 1 health care facility, 1 library, and 14 places of worship.

In addition to these receptor locations, two additional sites in the City of El Segundo were chosen for inclusion in the analysis, due to proximity to the Project site. One location, named P-ESG1, is on the roof of a condominium complex located nearest the proposed Project run-up location and at a higher elevation than the proposed Project site (i.e., more direct unobstructed noise path between noise source and noise receptor than might occur at-grade with intervening topography or structures along the noise path); and the second, P-ESG2, is in the greenbelt area north of Imperial Way located at a position along the maximum directivity of the noise emanating from an aircraft run-up within the proposed Project.

Table 4.5-4

Representative Noise-Sensitive Receptor Locations

ID #	Address/Location
School	
1	El Segundo High School 640 Main St.
2	Center St. Elementary School 700 Center St.
3	Richmond Street Elementary 615 Richmond St.
4	Imperial School 540 E. Imperial Ave.
5	St. Anthony's Catholic School 233 Lomita St.
6	El Segundo Middle School 332 Center St.
7	El Segundo Pre-School 301 West Grand Ave.
8	Hilltop Christian School 777 E. Grand Ave.
9	Loyola Village Elementary School Villanova St. and Rayford Dr.
10	Paseo Del Rey Natural Science Magnet 7751 Paseo Del Rey St.
11	Westchester High School 7400 W. Manchester Ave.
12	St. Bernard High School 9100 Falmouth Ave.
13	St. Anastasia School 8631 S. Stanmoor Dr.
Health Care Facility	
14	Playa Del Rey Care and Rehabilitation Center 7716 W. Manchester Ave.
Library	
15	El Segundo Public Library 111 W. Mariposa Ave.
Place of Worship	
16	Pacific Baptist Church 859 Main St.
17	United Methodist Church 54 Main St.
18	First Baptist Church 591 E. Palm Ave.
19	St. John's Lutheran Church 1611 E. Sycamore Ave.
20	Church of Christ of Latter Day Saints 1215 E. Mariposa Ave.
21	St. Anthony's Catholic Church 720 E. Grand Ave.
22	St. Andrew Catholic Church 538 Concord St.
23	St. Michaels Episcopal Church 361 Richmond St.
24	El Segundo Christian Church Franklin Ave. and Concord St.
25	Kingdom Hall of Jehovah's Witnesses 608 E. Grand Ave.
26	St. Anastasia Catholic Church 7390 W. Manchester Ave.
27	Messiah Congregational Church W. Manchester Ave. and Rayford Dr.
28	Hope Chapel Del Rey Foursquare 7299 W. Manchester Ave.
29	Del Rey Hills Evangelical Free Church 8505 Saran Dr.

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Table 4.5-4

Representative Noise-Sensitive Receptor Locations

ID #	Address/Location
El Segundo Residential Area near LAX Boundary	
P-ESG1	Roof of building at 770 West Imperial Ave.
P-ESG2	Greenbelt across from 216 East Imperial Ave.

Source: LAWA, Google Earth, 2013

Existing Run-up Activity Noise Levels

Existing noise levels associated with aircraft engine run-up activity were determined based on the nature and location of run-up activities presently occurring at LAX. **Figure 4.5-1** shows the run-up locations for the existing conditions, and also delineates, by number and symbol, the location and nature of sensitive noise receptors identified above in Table 4.5-4. **Table 4.5-5** shows the data assumptions of run-up activity for existing conditions at the five locations where such activity presently occurs (Qantas Airlines currently conducts run-ups at the United/Continental Airlines ramp¹³ and US Airways conducts run-ups at the American Airlines ramp).

Based on the data identified in Table 4.5-5, and other related assumptions that are detailed in Appendix C of this EIR, the noise levels associated with existing run-up activity at LAX were calculated at each sensitive receptor location using the SoundPLAN® model. In conjunction with use of the SoundPLAN® model, noise measurements of actual aircraft engine run-ups at LAX were completed to provide a basis for comparing modeled noise levels with measured noise levels, as detailed in Appendix C of this EIR. Although the SoundPLAN® model has been validated many times and uses sound propagation parameters consistent with international standards, comparison of the computed results to measured values provides additional confirmation in the model's results for this evaluation. SoundPLAN® was used to compute sound levels at each of the measurement locations used during the close-in source-level measurements described above. On average, the computed A-weighted sound levels for a subject aircraft, such as the Boeing 757-223 aircraft run-ups, agreed to within less than one-half decibel (0.5 dB) of the measured levels. This comparison validated the modeled source-level data in the model. In addition, the measured Lmax noise levels obtained at P-ESG1 for the respective run-up periods were compared to those computed by SoundPLAN at P-ESG1 and the levels from SoundPLAN were about 2-3 dB higher than measured. It was concluded that the SoundPLAN model results were conservatively high, but reasonable and appropriate for use in the noise analysis.

¹³ The United/Continental Airlines ramp refers to the aircraft maintenance area located in the western portion of the airport. The subject area was operated by Continental Airlines which has merged with United Airlines. For brevity, the subject area is identified in the figures presented herein as the "United" area.



0 0.5 Miles
Scale north

Source: Harris Miller Miller & Hanson Inc., 2013
Prepared by: PCR Services Corporation, 2013

- | | |
|--------------------------|------------------------|
| ● Run-up Locations | 📖 Library |
| ● Other Leaseholds | H Medical Facility |
| ▲ Ambient Noise Monitors | 🏛 Places of Worship |
| 🏠 Schools | ⬛ LAX Airport Boundary |

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Existing Run-Up Locations

Figure
4.5-1

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Table 4.5-5

Existing Conditions – Run-up Activity

Airline Aircraft	Location			Parameters			Annual Number		
	Latitude (deg)	Longitude (deg)	True Heading (deg)	Number of Engines	Power Setting (lbs per engine or %) (other engine) ^a	Duration for a single run-up (sec)	Day 7am to 7 pm	Evening 7 pm to 10 pm	Night 10 pm to 7 am
Qantas A380	33° 56'16.88"N	118° 25'16.42"W	263	1	80% (50%)	600	24		
Qantas B747-400	33° 56'16.88"N	118° 25'16.42"W	263	1	80% (50%)	600	12		
American B767-300ER	33° 56'20.03"N	118° 24'48.96"W	263	1	100% (80%)	300	72	28.8	187.2
American B757-200	33° 56'20.03"N	118° 24'48.96"W	263	1	100% (80%)	300	54	21.6	140.4
American B737-800	33° 56'20.03"N	118° 24'48.96"W	263	1	100% (80%)	300	36	14.4	93.6
American B777-200ER	33° 56'20.03"N	118° 24'48.96"W	263	1	100% (80%)	300	9	3.6	23.4
American MD-80	33° 56'20.03"N	118° 24'48.96"W	263	1	100% (80%)	300	9	3.6	23.4
FedEx MD-11	33° 56'44.16"N	118° 25'22.89"W	263	3	100%	300		48	
US Airways A321/320/319	33° 56'20.03"N	118° 24'48.96"W	263	1	100% (idle)	300	6	2.4	15.6
United B737-900ER	33° 56'16.88"N	118° 25'16.42"W	263	1	100% (idle)	300	129.6	32.4	162
United B737-900ER	33° 56'16.55"N	118° 25'23.35"W	083	1	100% (idle)	300	129.6	32.4	162
United B757-200/300	33° 56'16.88"N	118° 25'16.42"W	263	1	100% (idle)	300	129.6	32.4	162
United B757-200/300	33° 56'16.55"N	118° 25'23.35"W	083	1	100% (idle)	300	129.6	32.4	162
United B777-200ER	33° 56'16.88"N	118° 25'16.42"W	263	1	100% (idle)	300	26.4	6.6	33
United B777-200ER	33° 56'16.55"N	118° 25'23.35"W	083	1	100% (idle)	300	26.4	6.6	33
United B787	33° 56'16.88"N	118° 25'16.42"W	263	1	100% (idle)	300	2.4	0.6	3
United B787	33° 56'16.55"N	118° 25'23.35"W	083	1	100% (idle)	300	2.4	0.6	3
Delta B757-200/300	33° 56'36.31"N	118° 23'39.87"W	263	1	80% (50%)	600	30	12	78
Delta B767-300	33° 56'36.31"N	118° 23'39.87"W	263	1	80% (50%)	600	27	10.8	70.2

^a Power setting shown in parentheses is for the engine on the wing opposite the engine being tested, as is necessary to maintain the overall stability of the aircraft during engine run-up activity.

Source: LAWA and Airlines, 2013

4.5 Noise

Community Noise Equivalent Levels

Noise levels associated with existing engine run-up activities at the airport were modeled to determine CNEL values for the noise sensitive locations, and the results are shown in **Table 4.5-6**. These values established the baseline upon which comparisons were made relative to the determination of significant impacts from run-up activity.

Table 4.5-6
Existing Conditions Aircraft Run-up CNEL by Location

ID #	Address/Location	Existing Conditions CNEL (dB)
1	El Segundo High School 640 Main St.	61.7
2	Center St. Elementary School 700 Center St.	62.8
3	Richmond Street Elementary 615 Richmond St.	60.5
4	Imperial School 540 E. Imperial Ave.	69.1
5	St. Anthony's Catholic School 233 Lomita St.	51.3
6	El Segundo Middle School 332 Center St.	58.6
7	El Segundo Pre-School 301 West Grand Ave.	56.0
8	Hilltop Christian School 777 E. Grand Ave.	57.0
9	Loyola Village Elementary School Villanova St. and Rayford Dr.	58.0
10	Paseo Del Rey Natural Science Magnet 7751 Paseo Del Rey St.	53.3
11	Westchester High School 7400 W. Manchester Ave.	47.3
12	St. Bernard High School 9100 Falmouth Ave.	56.8
13	St. Anastasia School 8631 S. Stanmoor Dr.	45.1
14	Playa Del Rey Care and Rehabilitation Center 7716 W. Manchester Ave.	45.5
15	El Segundo Public Library 111 W. Mariposa Ave.	60.5
16	Pacific Baptist Church 859 Main St.	66.3
17	United Methodist Church 54 Main St.	60.4
18	First Baptist Church 591 E. Palm Ave.	63.3
19	St. John's Lutheran Church 1611 E. Sycamore Ave.	64.6
20	Church of Christ of Latter Day Saints 1215 E. Mariposa Ave.	61.6
21	St. Anthony's Catholic Church 720 E. Grand Ave.	56.7
22	St. Andrew Catholic Church 538 Concord St.	59.9
23	St. Michaels Episcopal Church 361 Richmond St.	57.5
24	El Segundo Christian Church Franklin Ave. and Concord St.	55.2
25	Kingdom Hall of Jehovah's Witnesses 608 E. Grand Ave.	56.2
26	St. Anastasia Catholic Church 7390 W. Manchester Ave.	53.3
27	Messiah Congregational Church W. Manchester Ave. and Rayford Dr.	52.9
28	Hope Chapel Del Rey Foursquare 7299 W. Manchester Ave.	53.3
29	Del Rey Hills Evangelical Free Church 8505 Saran Dr.	51.0
P-ESG1	Roof of building at 770 West Imperial Ave.	69.9
P-ESG2	Greenbelt across from 216 East Imperial Ave.	69.1

Source: HMMH, SoundPLAN, June 26, 2013

Single Event Noise Levels

In addition to the CNEL values presented above, single-event noise levels from the six run-up locations (five existing run-up sites and the Project site) were calculated for general informational purposes only. To determine how the noise levels from a single event propagate into the communities, the maximum sound level (L_{max}) emanating from each run-up site was evaluated. For the existing run-up locations, aircraft types were determined from those aircraft using the specific run-up pads. **Table 4.5-7** lists the various aircraft engine run-ups from the existing sites and the resulting L_{max} at each noise sensitive receiver.

4.5.4 Thresholds of Significance

4.5.4.1 Construction Equipment Noise

The following thresholds of significance are set forth in the City's *L.A. CEQA Thresholds Guide*, which states that a project would normally have a significant impact on noise levels from construction if:

- Construction activities lasting more than one day would exceed existing ambient exterior noise levels by 10 dBA or more at a noise-sensitive use;
- Construction activities lasting more than 10 days in a three-month period would exceed existing ambient exterior noise levels by 5 dBA or more at a noise-sensitive use; or
- Construction activities would exceed the ambient noise level by 5 dBA at a noise-sensitive use between the hours of 9:00 p.m. and 7:00 a.m. Monday through Friday, before 8:00 a.m. or after 6:00 p.m. on Saturday, or at any time on Sunday.

These thresholds were utilized because they address physical impacts on the environment and are included in the *L.A. CEQA Thresholds Guide*.

4.5.4.2 Construction Vibration

Construction vibration impacts are assessed in accordance with the FTA *Transit Noise and Vibration Impact Assessment*. According to the document, heavy-duty equipment may produce temporary ground-borne vibration. For purposes of evaluating the significance of vibration impacts associated with Project use of heavy-duty equipment during construction, a significant impact would occur if:

- Vibration levels exceed approximately 80 VdB at residential land uses for infrequent events and 72 VdB for frequent events.

4.5.4.3 Operational Noise

A project would have a potential impact on noise levels from project operation if:

- Noise-sensitive areas are newly exposed to 65 CNEL or greater.
- Noise-sensitive areas at or above 65 dB CNEL noise exposure experience an increase in noise of 1.5 dB CNEL or more when compared to the existing noise levels.

4.5 Noise

Table 4.5-7

Noise Levels for Existing Conditions Run-ups by Aircraft and Location
dBA, L_{max}

ID # (Figure 4.5-1)	Delta		FedEx	American					USAir
	767	757	MD-11	767	757	737	777	MD-80	A320
1	61.4	58.1	55.2	69.6	66.2	70.4	72.7	74.5	65.9
2	60.6	57.2	71.1	72.6	69.2	73.4	75.9	77.6	68.9
3	60.3	57.0	55.7	68.4	65.0	69.0	71.4	73.2	64.7
4	64.8	61.7	77.4	79.5	76.6	79.9	82.1	84.1	75.8
5	41.0	38.0	48.6	59.3	55.8	59.9	63.1	64.2	55.6
6	54.2	50.9	59.2	67.7	64.2	68.7	71.1	72.8	64.0
7	57.1	53.8	52.8	63.8	60.4	64.7	67.1	68.9	60.1
8	61.3	57.9	53.0	64.6	61.2	65.5	68.1	69.8	60.9
9	51.2	47.7	82.5	68.8	65.0	69.7	72.0	73.9	65.1
10	47.5	44.3	74.3	39.2	36.2	39.6	42.5	43.9	35.5
11	50.6	46.9	67.5	53.4	49.9	53.9	57.1	58.1	49.7
12	50.9	47.3	79.4	44.5	41.3	44.6	47.9	48.9	40.8
13	43.2	40.2	71.0	54.1	50.5	54.7	57.7	58.9	50.4
14	37.9	35.0	64.3	39.4	36.7	39.8	42.9	44.1	35.7
15	60.4	57.1	53.7	68.4	65.0	69.1	71.5	73.3	64.7
16	61.7	58.4	58.1	73.8	70.5	74.2	76.5	78.4	70.1
17	60.8	57.4	53.8	68.3	64.9	69.1	71.5	73.3	64.6
18	64.2	60.9	56.8	71.8	68.6	72.8	75.1	76.9	68.2
19	58.0	54.5	62.5	75.8	72.7	76.6	79.4	80.7	72.1
20	57.5	54.1	70.3	71.3	67.9	72.2	74.7	76.3	67.6
21	56.6	53.2	50.2	65.5	62.2	66.7	68.9	70.9	61.8
22	59.5	56.1	54.3	67.9	64.5	68.6	71.0	72.8	64.2
23	58.8	55.5	52.5	65.5	62.1	66.3	68.8	70.5	61.8
24	57.8	54.5	51.8	63.7	60.2	64.5	67.1	68.7	60.0
25	59.9	56.5	50.9	63.5	60.1	64.5	67.0	68.8	59.8
26	49.1	45.7	78.5	63.1	59.6	63.9	66.6	68.1	59.5
27	50.8	47.3	77.3	63.5	59.9	64.4	66.9	68.7	59.8
28	49.2	45.5	77.6	64.1	60.5	65.0	67.5	69.4	60.4
29	51.3	48.0	73.9	43.4	40.0	43.5	46.9	47.9	39.7
P-ESG1	59.0	55.8	56.1	71.3	68.2	71.6	74.0	75.7	67.6
P-ESG2	64.9	61.9	59.8	76.5	73.4	77.0	79.2	81.1	72.8

Source: HMMH, SoundPLAN, 2013

Table 4.5-7 (Continued)

Noise Levels for Existing Conditions Run-ups by Aircraft and Location
dBA, L_{max}

ID #	United (facing east)				United (facing west)				Qantas	
	737	757	777	787	737	757	777	787	A380	747
1	69.3	65.3	71.7	68.7	73.6	69.3	75.9	72.6	69.9	79.6
2	65.9	62.2	68.4	65.5	73.9	69.9	76.9	73.1	70.9	79.7
3	69.5	65.4	72.0	68.8	71.7	67.5	74.0	70.8	68.1	77.8
4	71.4	68.4	73.7	71.3	79.9	75.8	82.2	78.9	76.2	85.8
5	58.8	54.5	61.8	58.2	63.1	59.0	66.3	62.6	60.4	69.0
6	63.6	59.4	66.1	62.9	70.1	66.2	72.9	69.4	66.9	75.9
7	66.2	61.8	68.6	65.2	66.4	62.0	68.8	65.4	62.8	72.3
8	61.9	57.7	64.6	61.2	69.3	65.1	72.0	68.5	66.0	75.1
9	49.3	45.4	52.4	48.8	48.0	44.3	50.9	47.4	44.9	54.2
10	67.6	63.2	70.0	66.6	41.9	38.0	44.5	41.3	38.5	48.1
11	60.1	55.7	63.0	59.2	36.4	32.4	39.6	35.7	33.7	42.4
12	70.6	66.2	73.2	69.8	46.5	42.4	49.2	45.9	43.2	52.5
13	46.4	43.3	50.2	46.0	38.5	34.3	41.2	37.6	35.4	44.6
14	59.9	55.7	62.9	59.0	34.8	31.0	38.0	34.2	32.1	40.8
15	69.2	65.1	71.6	68.5	71.9	67.6	74.2	70.9	68.2	77.9
16	73.8	70.2	76.1	73.4	78.5	74.5	80.8	77.8	74.8	84.8
17	68.5	64.3	70.9	67.8	72.0	67.7	74.4	71.0	68.4	78.0
18	68.9	65.0	71.3	68.3	75.1	71.0	77.6	74.3	71.6	81.0
19	64.2	60.5	66.8	63.7	73.8	70.5	77.4	73.3	71.4	79.8
20	65.1	61.3	67.6	64.6	72.8	68.9	75.8	72.0	69.8	78.6
21	63.3	58.8	65.6	62.3	68.2	63.7	70.5	67.1	64.5	73.9
22	69.4	65.2	71.9	68.6	70.8	66.5	73.1	69.9	67.1	76.8
23	67.0	62.8	69.6	66.2	68.2	63.9	70.6	67.2	64.6	74.1
24	63.8	59.5	66.3	62.9	66.0	61.7	68.5	65.1	62.6	71.9
25	61.7	57.5	64.4	61.0	68.6	64.3	71.2	67.7	65.2	74.4
26	53.8	50.2	57.4	53.4	47.0	42.5	49.7	46.1	43.8	52.9
27	45.8	42.3	49.0	45.3	43.9	39.8	46.4	43.1	40.5	50.1
28	43.4	40.1	46.5	42.9	45.0	40.4	47.1	43.8	41.2	51.1
29	64.5	60.2	67.1	63.5	44.4	40.2	46.8	43.5	42.0	51.4
P-ESG1	83.7	79.8	86.1	83.1	77.2	74.0	79.6	77.2	73.6	84.1
P-ESG2	75.1	72.2	77.5	75.2	81.6	77.9	83.9	80.9	77.9	87.9

Source: HMMH, SoundPLAN, 2013

4.5 Noise

4.5.5 Applicable LAX Master Plan Commitments and Mitigation Measures

LAX Master Plan commitments and mitigation measures are described in the LAX Master Plan's Mitigation Monitoring and Reporting Program (MMRP). Of the commitments and mitigation measures that were designed to address noise impacts, the following four mitigation measures and three LAX Master Plan Commitments are applicable to the proposed Project and are considered in the noise analysis. Although the following noise control measures are applicable to the proposed Project and would be implemented during the course of Project implementation, the noise impacts analysis presented in Section 4.5.6 did not take credit for noise reductions associated with these measures. As such, the noise impacts analysis is considered to be conservative.

MM-N-7. Construction Noise Control Plan.

- A Construction Noise Control Plan will be prepared to provide feasible measures to reduce significant noise impacts throughout the construction period for all projects near noise sensitive uses. For example, noise control devices shall be used and maintained, such as equipment mufflers, enclosures, and barriers. Natural and artificial barriers such as ground elevation changes and existing buildings may be used to shield construction noise.

MM-N-8. Construction Staging.

- Construction operations shall be staged as far from noise-sensitive uses as feasible.

MM-N-9. Equipment Replacement.

- Noisy equipment shall be replaced with quieter equipment (for example, rubber tired equipment rather than track equipment) when technically and economically feasible.

MM-N-10. Construction Scheduling.

- The timing and/or sequence of the noisiest on-site construction activities shall avoid sensitive times of the day, as feasible (9 p.m. to 7 a.m. Monday - Friday; 8 p.m. to 6 a.m. Saturday; anytime on Sunday or Holidays).

N-1. Maintenance of Applicable Elements of Existing Aircraft Noise Abatement Program.

- All components of the current airport noise abatement program that pertain to aircraft noise will be maintained.

Surface Transportation (ST)-16, Designated Haul Routes.

- Every effort will be made to ensure that haul routes are located away from sensitive noise receptors.

Surface Transportation (ST)-22, Designated Truck Routes.

- For dirt and aggregate and all other materials and equipment, truck deliveries will be on designated routes only (freeways and non-residential streets). Every effort will be made for routes to avoid residential frontages. The designated routes on City of Los Angeles streets are subject to approval by LADOT's Bureau of Traffic Management and may include, but will not necessarily be limited to: Pershing Drive (Westchester Parkway to

Imperial Highway); Florence Avenue (Aviation Boulevard to I-405); Manchester Boulevard (Aviation Boulevard to I-405); Aviation Boulevard (Manchester Avenue to Imperial Highway); Westchester Parkway/Arbor Vitae Street (Pershing Drive to I-405); La Cienega Boulevard (north of Imperial Highway); Airport Boulevard (Arbor Vitae Street to Century Boulevard); Sepulveda Boulevard (Westchester Parkway to Imperial Highway); I-405; and I-105.

4.5.6 Impact Analysis

4.5.6.1 **Construction Activities**

4.5.6.1.1 On-site Construction Noise

Noise from construction activities would be generated by vehicles and equipment involved during various stages of construction operations: demolition, excavation, foundation, vertical construction, and paving. The noise levels created by construction equipment would vary depending on factors such as the type of equipment, the specific model, the operation being performed and the condition of the equipment. Construction noise associated with the proposed Project was analyzed using a mix of typical construction equipment, estimated durations and construction phasing.

Table 4.5-8 provides the estimated construction noise levels at nearby noise sensitive receptors where current ambient noise levels were recorded and also provides a comparison with the noise impact criterion.

These noise levels account for the proposed Project contractor(s) construction equipment, fixed or mobile, with properly operating and maintained noise mufflers, consistent with manufacturers' standards in accordance with MM-N-7 of the LAX Master Plan MMRP. The estimated noise levels represent a conservative scenario because construction activities are analyzed as if all of them were occurring along the perimeter of the construction area, whereas construction would typically occur throughout the site, further from noise-sensitive receptors. Detailed noise calculations for construction activities are provided in Appendix C of this EIR. As shown in Table 4.5-3, the highest noise level predicted to occur at the nearest noise-sensitive receptor location in the City of El Segundo during construction would be 59 dBA during the paving phase. Noise levels during all other phases and for all other receptor locations evaluated would be less than 59 dBA. The nearest noise sensitive receptors located north of the Project site in Westchester in the City of Los Angeles are more than 4,000 feet away from the Project site. For all of the noise sensitive receptor locations shown in Table 4.5-4, construction-related noise would not exceed existing ambient noise levels by 5 dBA since measured ambient noise levels at the two closest receptor locations are 69.1 dBA CNEL (P-ESG1) and 69.9 dBA CNEL (P-ESG2). Therefore, impacts from on-site construction would be less than significant.

4.5.6.1.2 Off-Site Construction Noise

Delivery and haul trucks would enter the Project site via Pershing Drive and leave the site via the same driveway. Vehicles are expected to use Imperial Highway to access the regional freeway system (I-405 and I-105), as needed. It is estimated that during the peak month of construction there would be a maximum of 228 haul truck round trips per day. The proposed Project's truck trips would generate noise levels of approximately 59 dBA CNEL at 25 feet

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Table 4.5-8

**Estimate of Construction Noise Levels (Leq)
at Off-Site Sensitive Receiver Locations in the City of El Segundo**

Receptor ^a	Construction Phases	Nearest Distance between Receptor and Construction Site, (feet)	Estimated Construction Noise Levels at the Noise Sensitive Receptor by Construction Phase, ^a Hourly Leq (dBA)	Significance Impacts Threshold, (dBA) ^b	Exceeds Significance threshold?
Nearest Residential Uses in the City of El Segundo	Demolition	1,550	55	74.1 – 74.9	No
	Excavation	1,550	54		No
	Grading	1,550	58		No
	UG Utilities Installation	2,250	52		No
	Foundation	2,250	52		No
	Paving	1,550	59		No

^a Estimated construction noise levels represent a conservative condition when noise generators are at the property boundary, located closest to the receptors.

^b Significance threshold is the ambient noise levels plus 5 dBA.

Source: PCR Services Corporation, 2013.

distance from the right of way of Imperial Highway. However, residential uses along Imperial Highway are located approximately 150 feet from the south edge of Imperial Highway. Therefore, truck related noise levels associated with the Project would be 54 dBA CNEL at the nearest sensitive receptor location, P-ESG1 and P-ESG2 as shown in Table 4.5-6. Based on the LAX Noise Contour Map,¹⁴ the nearest residential uses to the Project site in the City of El Segundo are located within the 70 dBA, CNEL noise contour. Therefore, traffic noise levels generated by truck trips would increase traffic noise levels along Imperial Highway by 0.1 dBA. Therefore, construction haul trucks would not exceed the existing ambient noise by 5 dBA in close proximity of the construction site. As such, construction haul truck related noise would result in a less than significant noise impact.

4.5.6.1.3 Construction Vibration

Construction activities can generate varying degrees of ground vibration, depending on the construction procedures and the construction equipment. The primary and most intensive vibration source associated with the development of the proposed Project would be associated with the use of dozers during construction. The nearest sensitive receptors to the Project site are approximately 1,550 feet to the south (in the City of El Segundo). According to the FTA, large dozers may generate vibration levels of approximately 87 VdB at a distance of 25 feet. At 1,550 feet, the vibration levels would attenuate to less than 35 VdB. A vibration level of less than 35 VdB is below the FTA vibration threshold of significance (i.e., 72 VdB to 80 VdB) and, therefore, construction vibration impacts would be less than significant.

¹⁴ Ibid

4.5.6.2 Operation

4.5.6.2.1 Aircraft Engine Run-up Activity Noise

With implementation of the proposed Project, it is anticipated that the distribution of run-up activity at LAX would change from those of existing conditions. **Figure 4.5-2** shows the run-up locations for future conditions with Project implementation, and also delineate by number and symbol the location and nature of sensitive noise receptors that, for analysis purposes, are assumed to remain the same as in existing conditions. **Table 4.5-9** shows the data assumptions for the future run-up activity with the relocation of certain aircraft run-ups to the Project site, constituting approximately 60 run-ups annually (5 monthly) that would occur at the Project site. The majority of the run-ups remain at their current locations (i.e., approximately 2,436 annually or 203 monthly).

Based on the anticipated redistribution of ground run-up activity anticipated to occur with implementation of the proposed Project, the resultant CNEL value at each noise-sensitive receptor location was calculated. **Table 4.5-10** shows the CNEL results and the differences or change in CNEL from existing conditions. As shown, all of the CNEL changes are between -0.1 and 0.2 dB and less than significant; essentially little to no change in the CNEL values for all locations.

Single Event Noise Levels

In addition to the CNEL analysis presented above, which provides the basis for evaluating whether implementation of the proposed Project would result in a significant impact associated with run-up activity, single-event noise levels from the six run-up locations (five existing run-up sites and the Project site) were calculated. To determine how the noise levels from a single event propagate into the communities, the maximum sound level (L_{max}) emanating from each run-up site was evaluated. For the existing run-up locations, aircraft types were determined from those aircraft using the specific run-up pads. The proposed Project run-ups were represented by those that would relocate to the proposed Project site.

Table 4.5-11 lists the estimated L_{max} values at each noise sensitive receiver with implementation of the proposed Project. The tables show that the single-event noise levels for those run-ups to be relocated to the proposed Project may increase or decrease at the various locations based on the changes in distance or changes in shielding at the proposed Project compared to the existing run-up location. The increases or decreases may or may not be perceptible based on the other noise source levels at the community sites. The sound levels listed in the subject tables are for a single aircraft conducting a run-up at LAX. The values do not include noise from other aircraft events such as departures and arrivals, nor do they account for noise generated by traffic and other community noise sources; hence, they should not be considered representative of what a receptor would experience over the course of a typical day – they are provided for general informational purposes only.

In summarizing the results of the noise analysis completed for Project-related changes in run-up activity at LAX, specifically as related to concluding whether a significant noise impacts would occur, the range of change in CNEL for the proposed Project run-up operational scenario compared to the existing conditions is estimated to be -0.1 to 0.2 dB. Therefore, noise level increases would be less than 1.5 dB CNEL at or above 65 dB CNEL noise exposure areas

4.5 Noise

when compared to existing conditions, so impacts associated with Project-related changes in run-ups would be less than significant.

4.5.6.2.2 Taxi Operation Noise

As described earlier, implementation of the proposed Project would not increase the number of aircraft operations at LAX, but would result in a change to the normal taxi route that certain aircraft currently take to and from aircraft maintenance areas and RON/RAD areas. The evaluation of potential noise impacts associated with that change focuses on the taxi routes aircraft would take going to and from the proposed Project site that would be different from the route they currently take. Given that the vast majority of existing aircraft taxiing operations at LAX would be unaffected by the proposed Project, the evaluation of Project-related impacts focuses specifically on the number, type, and route of aircraft taxiing to and from the Project site, as opposed to modeling the entirety of taxiing operations at LAX with and without the Project (which is unlikely to show any notable difference). Assumptions associated with aircraft movement to and from the proposed Project site are discussed in the Project Description and summarized below:

Morning (AM – 7:00 a.m. to 7:00 p.m.) – 13 total aircraft movements

- Seven aircraft arrive at the Project site from early arrival flights and remain all day awaiting their return to gates for same day PM departure flights; servicing/light maintenance checks may occur while aircraft are parked. These aircraft are assumed to include the four wide-body aircraft that currently use the aircraft parking area at the former TWA Hangar area, and three wide-body aircraft that might typically park at the RON/RAD positions adjacent to Taxiway R.
- Four aircraft that arrived at the Project site the prior PM leave to go to gates for AM departure flights. These include three narrow-body aircraft that might otherwise park overnight at one of the northern concourses in the CTA and one narrow-body aircraft that might otherwise park overnight at one of the southern concourses in the CTA.
- On average, one aircraft arrives each AM for maintenance that will last more than one day (i.e., would go to a maintenance hangar/bay and stay there for several days - assumes that between the total hangar positions and adjacent bays, one position/bay would, on average, be available each day).
- On average, one aircraft leaves each AM after having completed maintenance. This includes the departure of aircraft that have been at the Project site for several days of maintenance, or the departure of aircraft that arrived at the site the previous PM.

Afternoon/Evening (PM – 7:00 p.m. to 7:00 a.m.) – 13 total aircraft movements

- Seven aircraft that arrived at the Project site in the AM return to gates for same day PM departure flights.
- Four aircraft arrive at the Project site and stay overnight (until next AM, awaiting AM departure flights); servicing/light maintenance checks may occur while the aircraft are parked.



0 0.5 Miles
Scale north

Source: Harris Miller Miller & Hanson Inc., 2013
Prepared by: PCR Services Corporation, 2013

- | | |
|------------------------|----------------------|
| Run-up Locations | Medical Facility |
| Ambient Noise Monitors | Places of Worship |
| Schools | LAX Airport Boundary |
| Library | |

**West Aircraft Maintenance Area Project
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**Proposed Future
Run-Up Locations**

Figure
4.5-2

4.5 Noise

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Table 4.5-9

**Proposed Future Conditions Run-up Activity at the proposed Project
(Changes from Existing Conditions Indicated in Bold)**

Airline Aircraft	Location			Parameters			Annual Number		
	Latitude (deg)	Longitude (deg)	True Heading (deg)	Number of Engines	Power Setting (lbs per engine or %) ^a	Duration for a single run-up (sec)	Day 7am to 7 pm	Evening 7 pm to 10 pm	Night 10 pm to 7 am
Qantas A380	33° 56'16.67"N	118° 25'44.97"W	263 WAMA	1	80% (50%)	600	24		
Qantas B747-400	33° 56'16.67"N	118° 25'44.97"W	263 WAMA	1	80% (50%)	600	12		
American B767-300ER	33° 56'20.03"N	118° 24'48.96W	263	1	100% (80%)	300	72	28.8	187.2
American B757-200	33° 56'20.03"N	118° 24'48.96W	263	1	100% (80%)	300	54	21.6	140.4
American B737-800	33° 56'20.03"N	118° 24'48.96W	263	1	100% (80%)	300	36	14.4	93.6
American B777-200ER	33° 56'20.03"N	118° 24'48.96W	263	1	100% (80%)	300	9	3.6	23.4
American MD-80	33° 56'20.03"N	118° 24'48.96W	263	1	100% (80%)	300	9	3.6	23.4
FedEx MD-11	33° 56'44.16"N	118° 25'22.89"W	263	3	100%	300		48	
US Airways A321/320/319	33° 56'16.67"N	118° 25'44.97"W	263 WAMA	1	100% (idle)	300	6	2.4	15.6
United B737-900ER	33° 56'16.88"N	118° 25'16.42"W	263	1	100% (idle)	300	129.6	32.4	162
United B737-900ER	33° 56'16.55"N	118° 25'23.35"W	083	1	100% (idle)	300	129.6	32.4	162
United B757-200/300	33° 56'16.88"N	118° 25'16.42"W	263	1	100% (idle)	300	129.6	32.4	162
United B757-200/300	33° 56'16.55"N	118° 25'23.35"W	083	1	100% (idle)	300	129.6	32.4	162
United B777-200ER	33° 56'16.88"N	118° 25'16.42"W	263	1	100% (idle)	300	26.4	6.6	33
United B777-200ER	33° 56'16.55"N	118° 25'23.35"W	083	1	100% (idle)	300	26.4	6.6	33
United B787	33° 56'16.88"N	118° 25'16.42"W	263	1	100% (idle)	300	2.4	0.6	3
United B787	33° 56'16.55"N	118° 25'23.35"W	083	1	100% (idle)	300	2.4	0.6	3
Delta B757-200/300	33° 56'36.31"N	118° 23'39.87"W	263	1	80% (50%)	600	30	12	78
Delta B767-300	33° 56'36.31"N	118° 23'39.87"W	263	1	80% (50%)	600	27	10.8	70.2

^a Power setting shown in parentheses is for the engine on the wing opposite the engine being tested, as is necessary to maintain the overall stability of the aircraft during engine run-up activity.

Note: Qantas and US Air run-ups at WAMA.

Source: LAWA and Airlines, 2013

4.5 Noise

Table 4.5-10

Comparison of Aircraft Run-up CNELs for Existing Conditions and Proposed Future Conditions with the Proposed Project by Location

ID #	Address/Location	Existing Conditions	Future with Proposed Project	Difference: Proposed Project – Existing Conditions
		CNEL (dB)	CNEL (dB)	Change in CNEL (dB)
1	El Segundo High School 640 Main St.	61.7	61.7	0
2	Center St. Elementary School 700 Center St.	62.8	62.8	0
3	Richmond Street Elementary 615 Richmond St.	60.5	60.5	0
4	Imperial School 540 E. Imperial Ave.	69.1	69.0	-0.1
5	St. Anthony's Catholic School 233 Lomita St.	51.3	51.5	0.2
6	El Segundo Middle School 332 Center St.	58.6	58.5	-0.1
7	El Segundo Pre-School 301 West Grand Ave.	56.0	56.1	0.1
8	Hilltop Christian School 777 E. Grand Ave.	57.0	57.0	0
9	Loyola Village Elementary School Villanova St. and Rayford Dr.	58.0	58.0	0
10	Paseo Del Rey Natural Science Magnet 7751 Paseo Del Rey St.	53.3	53.3	0
11	Westchester High School 7400 W. Manchester Ave.	47.3	47.3	0
12	St. Bernard High School 9100 Falmouth Ave.	56.8	56.8	0
13	St. Anastasia School 8631 S. Stanmoor Dr.	45.1	45.1	0
14	Playa Del Rey Care and Rehabilitation Center 7716 W. Manchester Ave.	45.5	45.5	0
15	El Segundo Public Library 111 W. Mariposa Ave.	60.5	60.5	0
16	Pacific Baptist Church 859 Main St.	66.3	66.3	0
17	United Methodist Church 54 Main St.	60.4	60.4	0
18	First Baptist Church 591 E. Palm Ave.	63.3	63.2	-0.1
19	St. John's Lutheran Church 1611 E. Sycamore Ave.	64.6	64.6	0
20	Church of Christ of Latter Day Saints 1215 E. Mariposa Ave.	61.6	61.6	0
21	St. Anthony's Catholic Church 720 E. Grand Ave.	56.7	56.7	0
22	St. Andrew Catholic Church 538 Concord	59.9	60.0	0.1

Table 4.5-10

Comparison of Aircraft Run-up CNELEs for Existing Conditions and Proposed Future Conditions with the Proposed Project by Location

ID #	Address/Location	Existing Conditions	Future with Proposed Project	Difference: Proposed Project – Existing Conditions
		CNEL (dB)	CNEL (dB)	Change in CNEL (dB)
	St.			
23	St. Michaels Episcopal Church 361 Richmond St.	57.5	57.6	0.1
24	El Segundo Christian Church Franklin Ave. and Concord St.	55.2	55.2	0
25	Kingdom Hall of Jehovah's Witnesses 608 E. Grand Ave.	56.2	56.2	0
26	St. Anastasia Catholic Church 7390 W. Manchester Ave.	53.3	53.3	0
27	Messiah Congregational Church W. Manchester Ave. and Rayford Dr.	52.9	52.9	0
28	Hope Chapel Del Rey Foursquare 7299 W. Manchester Ave.	53.3	53.3	0
29	Del Rey Hills Evangelical Free Church 8505 Saran Dr.	51.0	51.0	0
P-ESG1	Roof of building at 770 West Imperial Ave.	69.9	70.0	0.1
P-ESG2	Greenbelt across from 216 East Imperial Ave.	69.1	69.0	-0.1

Source: HMMH, SoundPLAN, 2013

- On average, one aircraft leaves each PM after having completed maintenance that occurred at the Project site over an extended period (i.e., more than one day).
- On average, one aircraft arrives each PM for maintenance that will last more than one day.

Based on the above, it is estimated that a maximum of 26 aircraft would travel to or from the Project site on a daily basis.

Airlines utilizing RON/RAD spaces at LAX today typically have their aircraft towed from an aircraft passenger gate located in the CTA or the West Remote Gates to a RON/RAD space, and then have them towed back to an aircraft passenger gate when the aircraft is ready for passenger boarding. According to LAWA Operations staff, nearly all large aircraft utilizing RON/RAD spaces at LAX (ADG V and VI aircraft) are towed to and from RON/RAD spaces; however, some smaller aircraft (ADG III and IV aircraft) are taxied to RON/RAD spaces. Thus, aircraft traveling to and from the Project site would mostly be towed with high-speed tugs, but some aircraft may be under power (taxi).

4.5 Noise

Table 4.5-11

Noise Levels for Proposed Future Conditions Run-ups at the
proposed Project by Aircraft
dBA, L_{max}

ID #	Proposed Project		
	A320	A380	747
1	69.3	70.7	79.8
2	66.9	68.9	77.3
3	68.6	69.8	79.2
4	71.6	73.1	82.0
5	61.9	63.7	72.4
6	63.0	64.8	73.5
7	63.5	64.6	73.9
8	62.4	64.2	72.7
9	47.9	49.4	58.3
10	46.4	47.7	56.7
11	31.8	34.1	42.3
12	50.0	51.4	60.1
13	36.6	38.5	47.2
14	42.8	44.3	53.1
15	68.6	69.9	79.2
16	73.1	74.5	83.6
17	68.3	69.6	78.8
18	66.4	68.2	76.8
19	66.6	69.0	76.9
20	66.1	68.1	76.4
21	63.2	64.7	73.6
22	68.0	69.2	78.5
23	64.9	66.2	75.4
24	60.6	62.0	71.2
25	64.3	66.0	74.6
26	44.5	46.0	55.1
27	39.5	40.9	50.1
28	42.0	43.4	53.0
29	39.1	40.6	49.5
P-ESG1	75.6	76.3	86.3
P-ESG2	72.2	73.7	82.8

Source: HMMH, SoundPLAN, 2013

Once leaving the Project site, aircraft would be towed back or taxi to a passenger gate or cargo ramp area to resume normal operation. It is assumed that approximately 80 percent of the aircraft (or 20 per day) that would utilize the proposed Project would be towed to and from the Project site, while approximately 20 percent (or 6 per day) would taxi to and from the site on a

daily basis. The noise levels associated with an aircraft taxiing under its own power is typically much greater than noise levels associated with an aircraft being towed; hence, the focus of this noise analysis is on impacts associated with aircraft taxiing movements.

With the taxiing operations identified above, CNEL values were calculated based on the number and time of day operations were estimated to occur and added to the existing ambient CNELs in residential areas to the north and south of the airport, to determine whether the Project-related aircraft taxiing noise would result in a 1.5 dB CNEL or greater increase at a noise sensitive use. Information regarding existing CNEL values was obtained from LAWA's California State Airport Noise Standards Quarterly Report, Fourth Quarter 2012 (Available: [http://lawa.org/uploadedFiles/LAX/pdf/4Q12 Quarterly Report map.pdf](http://lawa.org/uploadedFiles/LAX/pdf/4Q12%20Quarterly%20Report%20map.pdf), accessed September 16, 2013).¹⁵

The total average daytime noise level associated with Project operations, defined as occurring between 7:00 a.m. and 7:00 p.m., and the total average nighttime noise level associated with proposed Project operations, defined as occurring between 7:00 pm and 7:00 am, were calculated. Those noise levels were compared to the existing daytime ambient noise level and existing nighttime ambient noise levels that occur in residential areas to the north and south of the airport, being the community of Westchester and the City of El Segundo, respectively. Information regarding existing daytime and nighttime ambient noise levels in those areas was obtained from LAWA Noise Monitoring Station records.

Existing ambient noise levels in the southern portion of Westchester, nearest to LAX, range between approximately 63 to 64 dBA during the daytime and 59 to 60 dBA during the nighttime. As also indicated on that page, existing ambient noise levels in El Segundo adjacent to the airport are estimated to be approximately 65 dBA or greater during the daytime and 60 dBA or greater during the nighttime.

Existing ambient noise levels in terms of airport-related CNEL within the southern portion of Westchester range between approximately 65 dBA and 70 dBA. Existing ambient noise levels in terms of airport-related CNEL along the northern edge of El Segundo range between approximately 68 dBA to 75 dBA, with the higher noise levels occurring as one moves from east to west.

Average Hourly Ambient Daytime and Nighttime Noise Levels

The average hourly noise levels associated with Project-related taxiing operations in the daytime and taxiing operations at nighttime were estimated assuming one 737-300 aircraft taxiing between the Project site and the north CTA concourses in the daytime and one 737-300 aircraft taxiing on that route at night, and two 737-300 aircraft taxiing between the Project site and the south concourses or the Delta Airlines/United Airlines aircraft maintenance area in the

¹⁵ Of the six total daily aircraft taxiing operations associated with the proposed Project, half are assumed to occur during daytime hours (i.e., between 7am and 7pm) and half are assumed to occur during nighttime hours (i.e., between 7pm and 7am). Relative to calculating CNEL values associated with such operations, it is unknown whether or how many nighttime operations would occur between 7 pm and 10 pm, which would be assigned a noise penalty of approximately 4.77 dB, or between 10 pm and 7 am, which would be assigned a noise penalty of 10 dB. To provide a conservative (worst-case) analysis, it is assumed that all nighttime taxiing operations would occur between 10 pm and 7 am, therefore incurring the 10 dB noise penalty. To the extent that some or all nighttime taxiing operations actually occur between 7 pm and 10pm, the resultant noise impact, in terms of CNEL, would be less than indicated in this analysis.

4.5 Noise

daytime and two 737-300 aircraft taxiing on that route at night.¹⁶ The resultant Project-related taxiing noise levels at the southern edge of Westchester directly north of the nearest taxi route were estimated to be approximately 39.0 dBA in the daytime and 38.4 dBA at night. As indicated above in Existing Conditions, existing ambient noise levels in the southern portion of Westchester are approximately 63-64 dBA in the day and 59-60 dBA at night. The Project-related aircraft taxiing noise would be substantially less than existing ambient noise levels, and when added to existing ambient noise levels, would increase the existing ambient noise levels by approximately 0.01 dB in the daytime and 0.03 dB at night.¹⁷

At the northern edge of El Segundo directly south of the nearest taxi route, the Project-related taxiing noise levels are estimated to be approximately 42.8 dBA in the daytime and 42.2 dBA at night. Existing ambient noise levels in the northern portion of El Segundo near LAX are approximately 65 dBA or greater in the day and 60 dBA or greater at night. The Project-related aircraft taxiing noise would be substantially less than existing ambient noise levels, and when added to existing ambient noise levels, would increase the existing ambient noise levels by approximately 0.03 dB in the daytime and 0.07 dB at night.

CNEL

Based on the number of taxiing operations and the day/night split described above in the discussion of ambient noise levels, the CNEL value associated with Project-related taxiing was estimated. The resultant CNEL values would be 44.6 dBA at the noise sensitive uses north of the nearest taxi route (Westchester), and 48.3 dBA at the south of the nearest taxi route in the City of El Segundo. When added to the existing CNELs in Westchester and El Segundo, these Project-related CNEL values would increase the existing CNEL in Westchester by approximately 0.04 dB and increase the existing CNEL in El Segundo by approximately 0.07 dB. In both cases, the increase would be substantially less than the threshold of significance of a 1.5 dB increase; hence, the increased Project-related taxiing noise impact would be less than significant.

4.5.6.2.3 Operational Maintenance Noise

As discussed in Chapter 2, Project Description, the proposed Project would include areas for tool storage and welding. Typically, hangars include a maintenance shop and provide areas for routine aircraft maintenance. Operation of the Project may include the use of hand tools and pneumatic tools that generate noise. Pneumatic tools are tools that are driven by a gas – usually compressed air. Some examples of pneumatic tools include air impact wrenches, pneumatic drills, and pneumatic nail guns. Pneumatic hand tools typically generate noise levels ranging from 95 to 115 dBA measured at the source. The FHWA estimates a value of 85 dBA for pneumatic tools at 50 feet from the source,¹⁸ which corresponds to the upper end of the 95 to

¹⁶ While the taxiing noise analysis considered both the Boeing 737-300 aircraft and the Boeing 767-300 aircraft, the ambient noise level and CNEL estimates presented herein are based on only the Boeing 737-300, in order to provide a conservative (worst-case) analysis. As indicated in the SEL noise contour figures presented above, the taxiing noise levels associated with the 737-300 aircraft are comparatively greater than those of the 767-300 aircraft.

¹⁷ Sound levels are expressed in decibels and are based on a logarithmic scale. Sound levels cannot be added directly (i.e., 60 dB + 60 dB does not equal 120 dB; instead it equates to 63 dB). The addition of noise decibels can be computed by the following equation: $(10 \log_{10} (10^{(P1/10)} + 10^{(P2/10)}))$.

¹⁸ Federal Highway Administration, Roadway Noise Construction Model (RCNM), Software Version 1.1

115 dBA range measured at the source. The use of pneumatic tools, like all construction equipment, is highly variable. It is not possible to predict precisely how often a tool or piece of equipment will be used. Over shorter time frames, such as 15 minutes, a pneumatic tool could be in use frequently; however, a 100 percent usage rate is not possible because a pneumatic tool would cease to operate and generate no noise as a worker positions a new nail, screw, or bolt.

As discussed previously, point source noise levels decrease by 6 dBA for every doubling of the distance. An 85 dBA noise level measured at 50 feet would attenuate to approximately 48 dBA when measured at the sensitive receptor nearest to the proposed maintenance hangars (i.e., approximately 3,400 feet).¹⁹ In addition, intervening structures or barriers would block the transmission of operational maintenance noise to off-site noise sensitive receptors by up to 10 dBA or more. Maintenance occurring inside the proposed hangar would also potentially reduce the noise levels by up to 10 dBA or more, depending on the location of the maintenance activity inside the hangar and the relative location of the hangar doors.

Given the basic nature of maintenance activities, it is not possible to delineate what hours of the day noise-intensive activities would occur. However, even with a very conservative assumption that the aforementioned worst-case unattenuated noise level of 85 dBA occurred throughout a 24-hour day, the resultant CNEL value, including noise penalties during evening and nighttime hours, would be 54.7 dBA at the nearest sensitive receptor. Rounded upward, the noise associated with operational maintenance activity would generate noise levels at 55 dBA CNEL or less at the nearest sensitive receptors, which is approximately 13 to 20 dBA less than the existing CNEL (i.e., approximately 68 dBA to 75 dBA in the western portion of El Segundo). Given the logarithmic scale of the decibel unit, the sum of two noise levels with a 10 dBA or more relative difference would result in no perceptible increase in the total noise level (i.e., the sum of two noise levels one being 68 dBA and the other being 55 dBA is 68.2 dBA). Therefore, noise from operational maintenance activity would not result in noise-sensitive receptors being newly exposed to 65 dBA CNEL or result in an increase of 1.5 dBA CNEL or more in areas currently exposed to 65 dBA CNEL; hence, Project-related maintenance noise impacts would be less than significant.

4.5.7 Cumulative Impacts

The geographic context for the analysis of cumulative noise impacts depends on the impact being analyzed. Noise is by definition a localized phenomenon, and substantially reduces in magnitude as the distance from the source increases. As such, only projects and growth due to occur in the immediate Project area, including LAX Master Plan projects as well as other capital improvement projects undertaken by LAWA and other local agencies, would be likely to contribute to cumulative noise impacts. The following cumulative impacts analysis is based on the “list approach” taking into account the projects identified in Section 3.6.1 (in Chapter 3, *Overview of Project Setting*).

¹⁹ (12/08/2008). Although light maintenance and aircraft servicing, such as Maintenance Level A Checks and cabin cleaning, may occur while aircraft are parked on the Project site apron areas, such activities typically do not involve the use of pneumatic tools or other noise-intensive equipment. The use of such equipment is anticipated to occur primarily, if not entirely, within the confines of the proposed maintenance hangars.

4.5 Noise

4.5.7.1 Construction Noise

Noise from construction of the proposed Project and related projects would be localized, thereby potentially affecting areas immediately within 500 feet from the construction site. Due to distance attenuation (more than 1,500 feet away) to the nearest residential uses in the City of El Segundo and intervening structures, construction noise from one site would not result in a noticeable increase in noise at sensitive receptors near the other site, which would preclude a cumulative noise impact. The nearest related project in proximity to the proposed Project that is anticipated to be under construction at the same time as the Project is the Runway Safety Area (RSA) Improvements-South Airfield. As indicated in the construction noise analysis for that project, the highest construction noise level at the nearest noise-sensitive receptor in El Segundo is projected to be 63 dBA.²⁰ When added to the highest estimated noise level for construction of the proposed Project, which is 59 dBA (see Table 4.5-8), the combined noise level would be approximately 64 dBA, which is well below the applicable threshold of significance (i.e., 74.1-74.9 dBA, which represents a 5 dB increase over existing ambient noise levels). The next closest related projects, the Midfield Satellite Concourse: Phase 1 – North Concourse Project and the LAX Bradley West Project Remaining Work, are much farther away (i.e., over 3,000 feet and 5,000 feet from the Project site, respectively), which based on that distance would not generate construction noise levels such that when combined with those of the proposed Project and the RSA Improvements-South Airfield project, would result in significant cumulative noise impacts to the nearest noise-sensitive receptor. As such, cumulative impacts associated with construction noise would be less than significant.

With respect to off-site construction traffic, according to the traffic study report, the proposed Project would not result in a cumulative considerable contribution that would be considered a significant impact.²¹ In order for there to be a 5 dBA increase in the CNEL along Imperial Highway, which is near sensitive receptors and would be affected by cumulative traffic, the average daily traffic volumes along Imperial Highway would need to more than triple. Based on the analysis provided in Section 4.7, *Construction Surface Transportation*, including for peak cumulative traffic in March 2018, there is no evidence to suggest that Imperial Highway would experience anywhere near that level of traffic increase. Moreover, as indicated in Section 4.5.6.1.2 above, the Project-related increase in ambient noise levels along Imperial Highway, which is in general proximity to noise-sensitive receptors, is estimated to be 0.1 dBA CNEL. Notwithstanding that no significant cumulative impact in traffic noise is expected to occur, the Project's contribution to a cumulative traffic noise impact would not be considerable. As such, cumulative traffic noise impacts would be less than significant and no mitigation measures are necessary.

4.5.7.2 Construction Vibration

Similar to construction noise, vibration from construction of the proposed Project and related projects would be localized to within a few hundred feet from the construction site. Vibration levels from a large dozer would attenuate to below the FTA perception level of 65 VdB at approximately 150 feet, which is well below the threshold of significance of 72 VdB to 80 VdB.

²⁰ City of Los Angeles, Los Angeles World Airports, Draft Environmental Impact Report for Los Angeles International Airport (LAX) Runway 7L/25R Runway Safety Area (RSA) and Associated Improvements Project, September 2013.

²¹ Ricondo & Associates, Inc., June 2013.

Given that the nearest related project, the RSA Improvements-South Airfield project, is approximately 1,500 feet from the proposed Project site (other related projects are much farther away, as described above) and both projects are each more than 1,300 feet from the nearest sensitive receptor, it is not anticipated that there would be combined construction vibration impacts; hence, cumulative impacts associated with construction vibrations would be less than significant.

4.5.7.3 Operational Noise

As indicated in the impacts analysis above, operations-related increases in existing CNEL levels, estimated at nearby noise-sensitive receptors, resulting from implementation of the proposed Project would include a maximum of 0.2 dBA increase associated with run-up activity, a 0.07 dBA increase associated with aircraft taxiing, and maximum of 0.2 dBA increase from aircraft maintenance activities. These increases, individually and collectively, would be substantially less than the threshold of significance (i.e., 1.5 dBA CNEL increase). Of the related projects identified in Section 3.6, the one with the most potential to result in operations-related changes to existing CNEL levels at the nearest sensitive noise-receptors also affected by the proposed Project would be the RSA-Improvements South Airfield project. Other related projects that may result in changes in operational noise are located much farther away from the nearest noise-sensitive receptors affected by the proposed Project and are not expected to have a notable contribution to cumulative operational noise impacts. As indicated in Figure 4.6-7 of the RSA-Improvements South Airfield project Draft EIR for that project, it is anticipated that CNEL levels in the northwest portion of El Segundo for 2015 With Project Conditions would increase by approximately 0.3 dBA compare to 2011 Baseline Conditions.²² This increase in combination with the increases described above for the proposed Project would not result in a 1.5 dBA increase in the existing ambient noise level (i.e., CNEL) for the affected area; hence, cumulative impacts associated with operational noise would be less than significant.

4.5.8 Mitigation Measures

As no significant noise or vibration impacts would occur as a result of construction or operation of the proposed Project, no mitigation measures specific to the proposed Project are required. The LAX Master Plan commitments and mitigation measures discussed in Section 4.5.5 above are included as project design features under the proposed Project.

4.5.9 Level of Significance After Mitigation

Not applicable. Impacts are less than significant, as indicated above; therefore, no additional mitigation measures are required.

²² City of Los Angeles, Los Angeles World Airports, Draft Environmental Impact Report for Los Angeles International Airport (LAX) Runway 7L/25R Runway Safety Area (RSA) and Associated Improvements Project, September 2013.

4.5 Noise

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4.6 Land Use and Planning

4.6.1 Introduction

This analysis examines the extent to which the proposed Project could result in inconsistencies with applicable plans, policies, and regulations, and whether any such inconsistencies could result in physical impacts on the environment.

Prior to the preparation of this Environmental Impact Report (EIR), an Initial Study (IS – included in Appendix A of this EIR) was prepared using the California Environmental Quality Act (CEQA) Environmental Checklist Form to assess potential environmental impacts associated with land use and planning. For several of these thresholds of significance, the IS found that the proposed Project would result in “no impact” or a “less than significant impact”, and thus, no further analysis of these topics in an EIR was required. Refinements have been made to the proposed Project to reflect additional information and coordination with the public and the FAA. The refinements do not represent a material change to the proposed Project that was described in the IS/NOP and do not change any of the conclusions in the IS. The thresholds not addressed further include:

- Potential land use and planning impacts resulting from physically dividing an established community were evaluated and determined to have "No Impact" in the IS included in Appendix A of this EIR. As discussed therein, the proposed Project would occur on airport property and no land acquisition or new facilities are proposed that would physically divide an established community.
- Potential impacts related to conflicting with a habitat conservation plan or natural community conservation plan were determined to be “Less Than Significant” as the proposed Project would not include construction or operation activities within the Los Angeles Airport/EI Segundo Dunes Specific Plan area, which includes the EI Segundo Blue Butterfly Habitat Restoration Area (Habitat Restoration Area) and is a designated Los Angeles County Significant Ecological Area.¹ While the proposed Project would include construction and operational activities that could have indirect effects on this area and associated sensitive habitats and species, implementation of Los Angeles International Airport (LAX) Master Plan commitments and mitigation measures and the distance of the Project site, would reduce or avoid potentially significant environmental impacts.

4.6.2 Methodology

Per Appendix G of the *CEQA Guidelines*, the emphasis of the plan consistency evaluation focuses on potential conflicts between the proposed Project and existing land use plans, policies, and regulations adopted to avoid or mitigate environmental effects. Determinations of significance are based not on inconsistency alone, but on instances where inconsistencies with plans, policies, and regulations also result in physical impacts on the environment.

¹ Los Angeles International Airport, LAX Specific Plan Amendment Study Final EIR. January 2013.

4.6 Land Use and Planning

4.6.3 Existing Conditions

4.6.3.1 Regulatory Context

4.6.3.1.1 Regional Plans

Los Angeles County Regional Planning Commission

Los Angeles County Airport Land Use Plan (ALUP)

The Los Angeles County Regional Planning Commission is the designated Airport Land Use Commission (ALUC) for airports within Los Angeles County; State law requires ALUC's to coordinate planning for the areas surrounding public use airports. The purpose of the ALUC is to protect the public health, safety, and welfare by ensuring orderly expansion of airports. This is achieved through review of proposed development surrounding airports and through policy and guidance provided in the Airport Land Use Plan (ALUP) adopted by the ALUC. In formulating the ALUP, the ALUC establishes provisions to reduce excessive noise exposure to sensitive uses through noise insulation or land reuse. The Los Angeles County ALUP is implemented through General Plan, Specific Plan, and zoning amendments.

To supplement the plan consistency and implementation section of the Los Angeles County ALUP, the ALUC prepared a separate Review Procedures document on December 1, 2004. The Review Procedures document provides additional guidance to the ALUC and applicants, and is considered a revision to the 1991 ALUP which it incorporates by reference. The proposed Project relates to the maintenance and operation of aircraft on the ground, which the Review Procedures indicate are not within the jurisdiction of the ALUC. Specifically, the Review Procedures state, "any actions pertaining to how and where aircraft operate on the ground or in the air around an airport are clearly not within the jurisdiction of ALUC's to regulate."² Therefore, the proposed Project is not subject to ALUC review and consistency with the Los Angeles County ALUP does not need to be addressed further in this EIR.

4.6.3.1.2 On-Airport Land Use Plans

LAX Master Plan

In December 2004, the Los Angeles City Council adopted the LAX Master Plan Program and related entitlements for the future development of LAX. In May 2005, the Federal Aviation Administration (FAA) issued a Record of Decision for the Proposed LAX Master Plan Improvements, upon which the operator of LAX, the Los Angeles World Airports (LAWA), initiated implementation of a comprehensive program for development of numerous improvements at LAX. The approved LAX Master Plan includes airfield modifications, development of new terminals, and new landside facilities to accommodate passenger and employee traffic, parking, and circulation. The LAX Master Plan Program serves as the

² Per Los Angeles County Airport Land Use Commission Review Procedures, December 2004. Page 1-2, states that, "any actions pertaining to how and where aircraft operate on the ground or in the air around an airport are clearly not within the jurisdiction of ALUC's to regulate".

strategic framework for long-term airport development to be consulted by LAWA as it formulates and processes site-specific projects under the LAX Master Plan Program. Where the LAX Master Plan Program provides a conceptual framework for future improvements at LAX, the LAX Plan and the LAX Specific Plan are the regulatory documents that establish the general plan land use designations and zoning for LAX. These documents and the land use and zoning designations that apply to the site are described below.

“Alternative D – 2015 Enhanced Safety and Security Plan” (i.e., the approved LAX Master Plan improvements) within the LAX Master Plan identifies the Project site as Proposed Employee Parking, commonly referred to as the West Employee Parking facility, within the southwest portion of the airport. Portions of the Project site are also identified as Airfield/Airport Open Space. Directly east of the Proposed Employee Parking and Taxiway AA, and outside of the Project site, is an area identified as Proposed Maintenance Facility and aircraft apron area.

Specific Plan Amendment Study (SPAS)

In January 2005, a number of lawsuits challenging the approval of the LAX Master Plan Program were filed. In early 2006, the City of Los Angeles and plaintiffs gave final approval to a settlement of the subject lawsuits. As part of the Stipulated Settlement, LAWA recently completed the LAX Specific Plan Amendment Study (SPAS), which addressed potential alternatives to certain LAX Master Plan projects that were previously analyzed as part of the LAX Master Plan Program and required further evaluation prior to implementation. Such projects are referred to as “Yellow Light Projects” and pertain primarily to improvements proposed for the north airfield complex and for the on-airport surface transportation system. Specifically, the improvements addressed within the LAX SPAS are primarily located within the CTA and within the northern and eastern portion of LAX, and therefore are not within close proximity to, and would not be affected by, the proposed Project. As such, consistency of the proposed Project with LAX SPAS does not need to be addressed further in this EIR.

LAX Plan

The LAX Plan is one of 35 Community Plans that are part of the Land Use Element of the City of Los Angeles General Plan. The LAX Plan was adopted as part of the LAX Master Plan Program, approved by the Los Angeles City Council in December 2004.³ The LAX Plan promotes an arrangement of airport uses that encourages and contributes to the modernization of LAX in an orderly and flexible manner within the context of the City and region. It provides goals, objectives, policies, and programs that establish a framework for the development of facilities that promote the movement and processing of passengers and cargo within a safe and secure environment. The LAX Plan allows the airport to respond to emerging new technologies, economic trends, and functional needs.

As described in the LAX Plan, LAX is comprised of four general areas: Airport Airside, Airport Landside, LAX Northside, and Open Space. The Project site is located within the Airport Airside area which includes those aspects of passenger and cargo movement that are associated with aircraft operating under power and related airfield support services (**Figure 4.6-1**). Uses may include runways, taxiways, aircraft gates, maintenance areas, airfield operation areas, air cargo areas, passenger handling facilities, fire protection facilities, and other ancillary airport facilities.

³ City of Los Angeles, LAX Plan, September 29, 2004.

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LAX Specific Plan

The LAX Specific Plan establishes the zoning and development regulations and standards consistent with the LAX Plan for the airport and LAX Northside. It is a principal mechanism by which the goals and objectives of the LAX Plan are achieved and the related policies and principles are implemented.

Sub-Areas

The LAX Specific Plan is divided into three subareas: Airport Airside (LAX-A Zone), Airport Landside (LAX-L Zone), and LAX Northside (LAX-N Zone) (**Figure 4.6-2**). The Project site is located in the LAX-A Zone area. Permitted uses in LAX-A Zone include, but are not limited to: airline clubs, retail use, and restaurants; surface and structured parking lots; aircraft under power; airline maintenance and support; air cargo facilities; commercial passenger vehicle staging and holding area; helicopter operations; navigational aids; runways, taxiways, aircraft parking aprons, and service roads; passenger handling facilities; and other ancillary airport facilities.

Airport Layout Plan

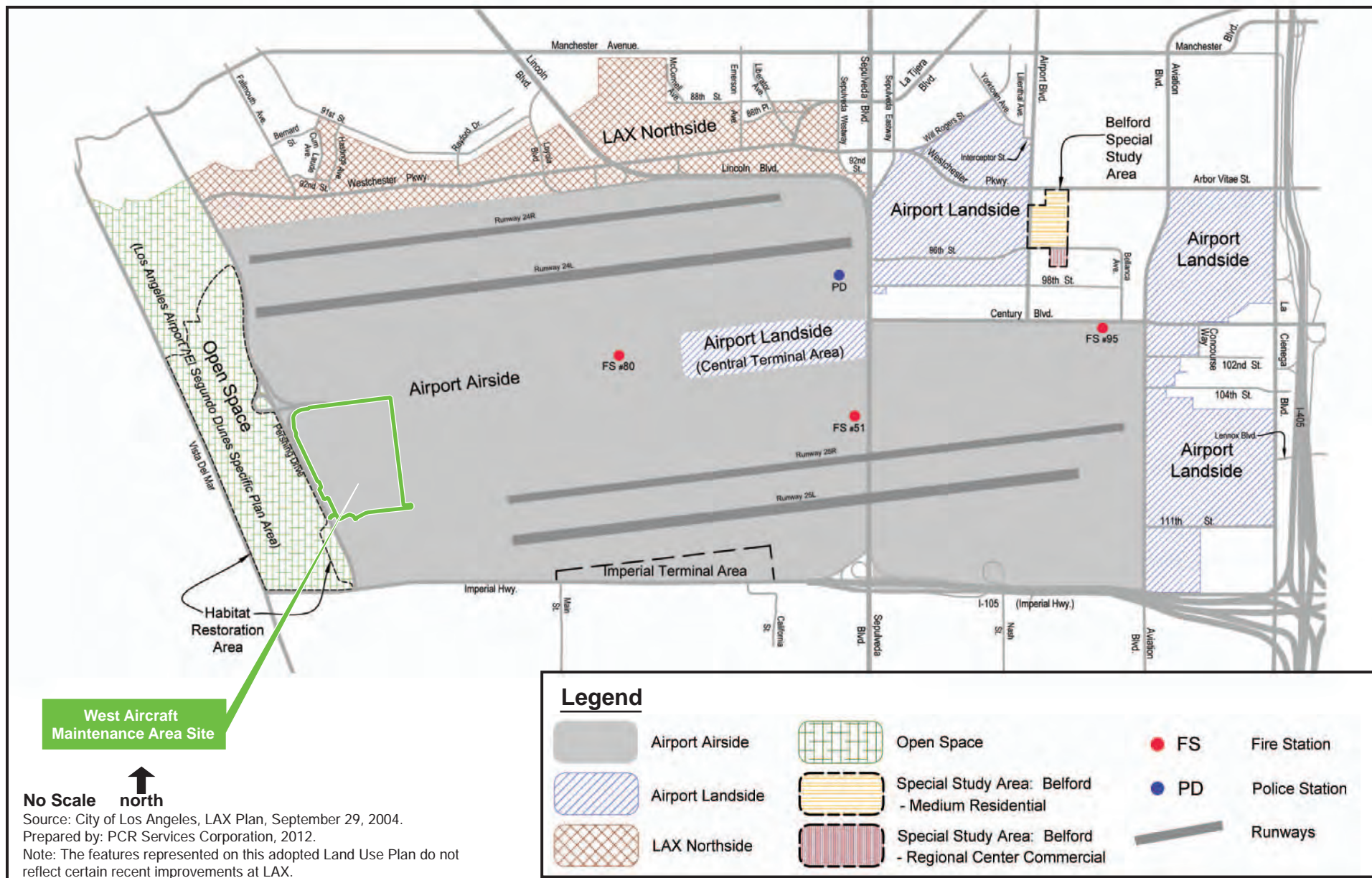
The FAA required Airport Layout Plan (ALP) serves as a record drawing for the airport, as well as a guide for the airport's future development. The ALP includes an airport airspace plan, runway protection zone plan, and a property inventory map. The ALP includes a series of drawings that precisely illustrate the layout of existing facilities at the airport and proposed facilities. As with the LAX Master Plan, the Project site is shown on the current LAX ALP (dated September 5, 2012 and conditionally approved by the FAA on September 24, 2012 as a proposed employee parking area and an area identified for an aircraft maintenance building is shown directly east of the site. However, in July 2013, LAWA submitted an update to the existing LAX ALP to reflect the proposed Project.

4.6.4 Thresholds of Significance

A significant land use impact would occur if the direct and indirect changes in the environment that may be caused by the particular build alternatives would potentially result in the following:

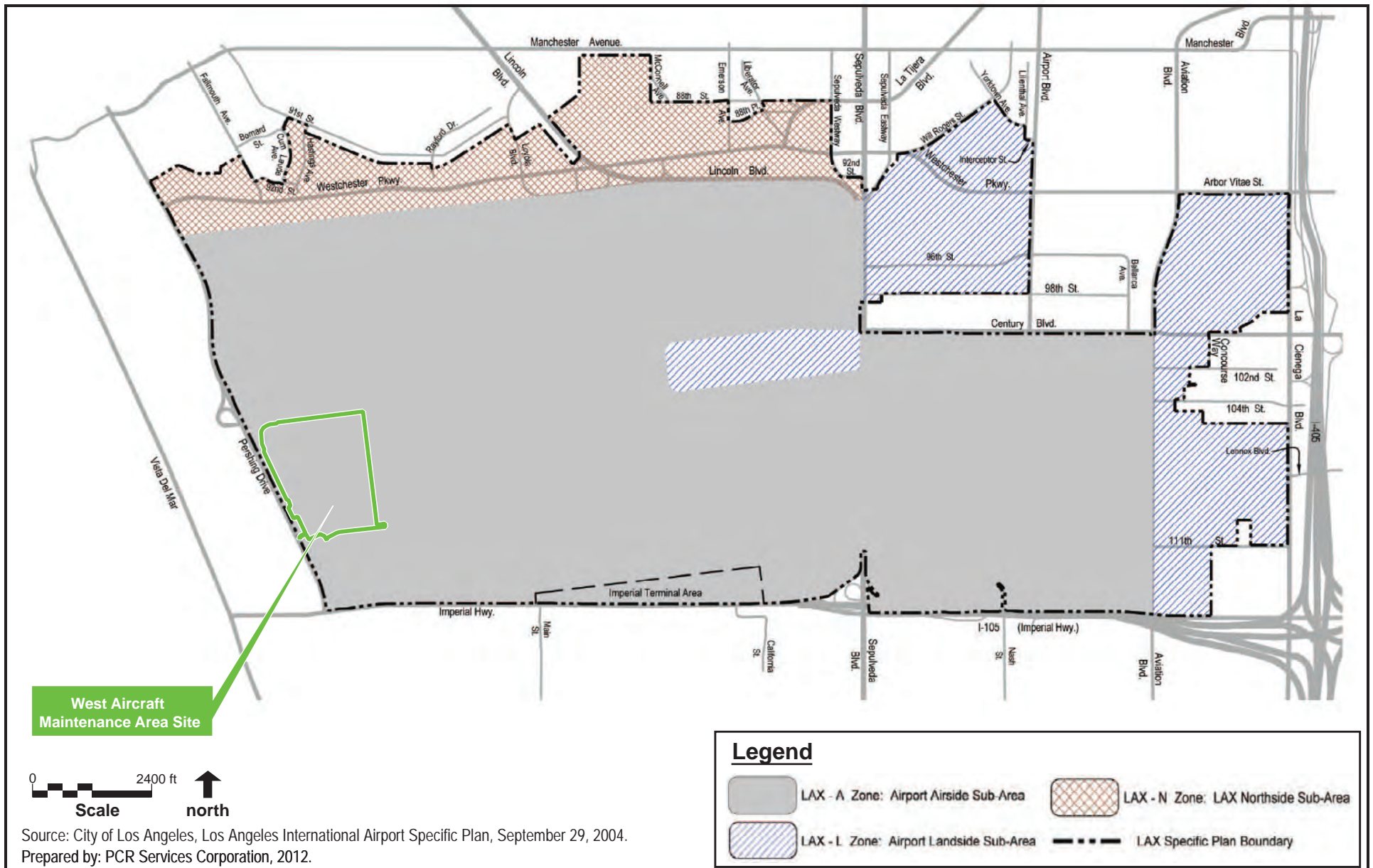
- Conflict with any applicable land use plan, policy, or regulation (including, but not limited to, the general plan, specific plan, local coastal program or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect.

The above threshold is derived from the Appendix G of the *CEQA Guidelines* and the *L.A. CEQA Thresholds Guide* to address conflicts with plans that could result in physical impacts and also addresses *CEQA Guidelines* Section 15125(d).



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**West Aircraft Maintenance Area Project
Draft EIR**

LAX Specific Plan Sub-Areas

Figure
4.6-2

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4.6.5 Applicable LAX Master Plan Commitments and Mitigation Measures

As part of the LAX Master Plan, one commitment pertaining to land use and planning applicable to the proposed Project was adopted by the LAX Master Plan's Mitigation Monitoring and Reporting Program. The commitment is identified below.

LU-4. Neighborhood Compatibility Program.

- Ongoing coordination and planning will be undertaken by LAWA to ensure that the airport is as compatible as possible with surrounding properties and neighborhoods. Measures to enforce this policy will include:
 - Along the northerly and southerly boundary areas of the airport, LAWA will provide and maintain landscaped buffer areas that will include setbacks, landscaping, screening or other appropriate view sensitive uses with the goal of avoiding land use conflicts, shielding lighting, enhancing privacy and better screening views of airport facilities from adjacent residential uses. Use of existing facilities in buffer areas may continue as required until LAWA can develop alternative facilities.
 - Locate airport uses and activities with the potential to adversely affect nearby residential land uses through noise, light spill-over, odor, vibration and other consequences of airport operations and development as far from adjacent residential neighborhoods as feasible.
 - Provide community outreach efforts to property owners and occupants when new development on airport property is in proximity to and could potentially affect nearby residential uses.

4.6.6 Impact Analysis

4.6.6.1 Consistency with Land Use Plans

4.6.6.1.1 On-Airport Land Use Plans and Zoning

LAX Master Plan

The Project site is depicted in the LAX Master Plan as Proposed Employee Parking (West Employee Parking) and Airfield/Airport Open Space with the area directly east of the Project site identified as a Proposed Maintenance Facility and a Taxiways/Aircraft Apron area. Under the proposed Project, certain refinements to the conceptual framework established in the LAX Master Plan Program would occur as summarized below and as shown in **Figure 4.6-3**.

- The areas designated in the LAX Master Plan as Proposed Maintenance Facility and West Employee Parking would be exchanged (Facilities P-1 and P-2 in Figure 4.6-3). The aircraft apron and maintenance area designated as Proposed Maintenance Facility under the LAX Master Plan would be developed as the proposed Project on the west side of Taxiway AA and the West Employee Parking could be accommodated (separately from the proposed Project) on the east side of Taxiway AA. Both facilities would remain in the southwest

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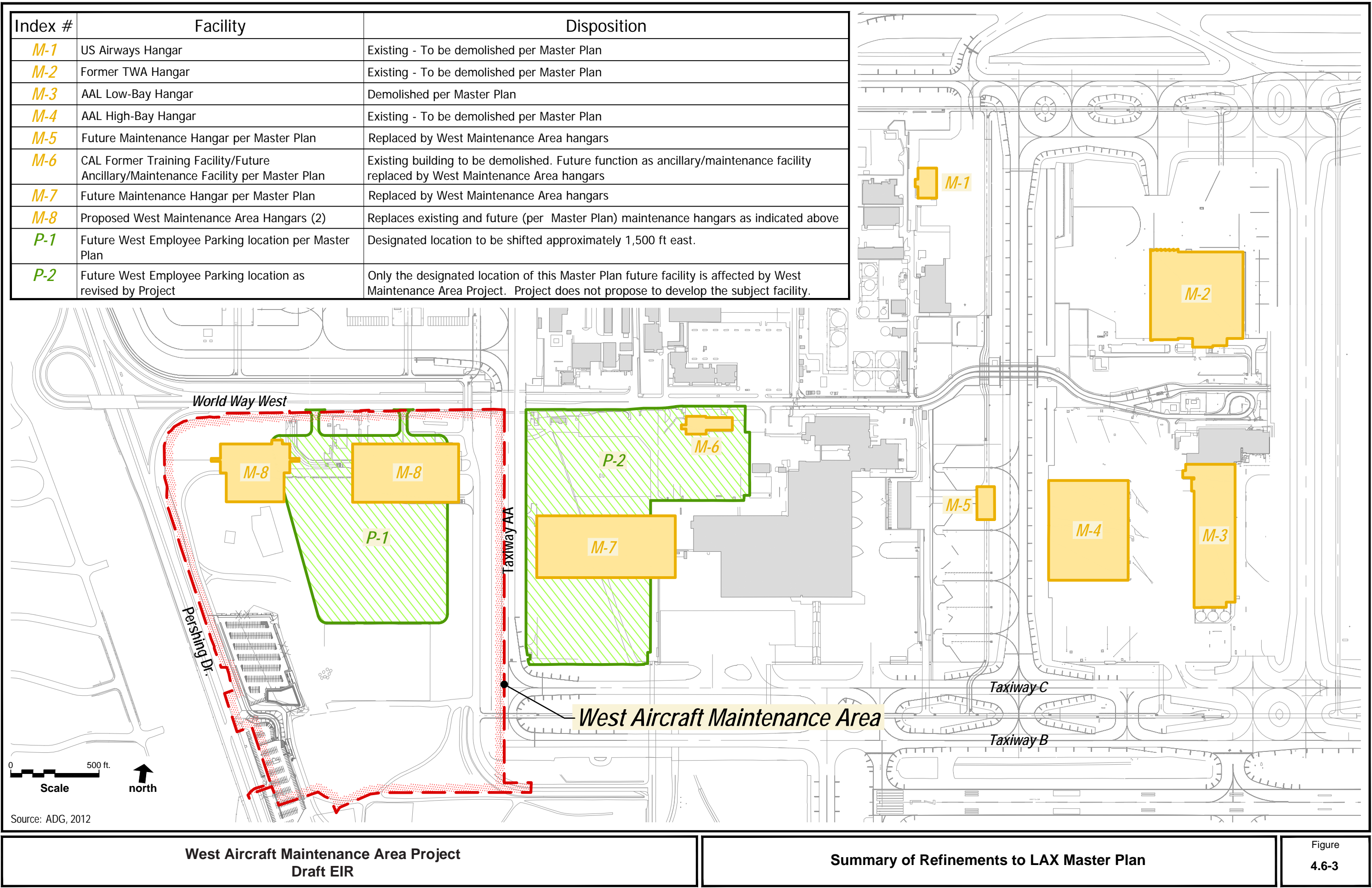
portion of LAX, south of World Way West as proposed in the LAX Master Plan. Access routes to and from each facility would be generally comparable, with aircraft access to the maintenance area being via Taxiways B and C, with nearby intersections at Taxiway AA, and vehicle access to the West Employee Parking being via World Way West.

- The size (approximately 25 acres) and number of parking spaces (12,400 spaces) for the West Employee Parking area would not change. The employee parking area designated as West Employee Parking under the LAX Master Plan could be accommodated approximately 1,500 feet eastward to the areas identified in the LAX Master Plan as Airfield/Airport Open Space and Proposed Maintenance Facility. Although the location would be accommodated in a different location, future plans for a West Employee Parking area in the southwest portion of the airport would not be affected.⁴
- In conjunction with the easterly shift of the West Employee Parking facility, the location for the compressed natural gas (CNG)/liquefied natural gas (LNG) fueling station would move to the east side of the new parking facility site.
- The surface area “footprint” of the Project site (84 acres of graded area and approximately 68 acres of paved/improved area) would be larger than the “footprint” of the West Employee Parking (25 acres).
- The three new aircraft maintenance hangar/ancillary facilities shown in the LAX Master Plan south of World Way West, east of Taxiway AA, including a 275,000-square foot facility, a 25,000-square foot facility, and a 23,000-square foot facility (for a total of 323,000 square feet), would instead be developed as part of the proposed Project (Facilities M-5, M-6, and M-7 in Figure 4.6-3).
- The total amount of new aircraft maintenance hangar building area associated with the proposed Project (approximately 290,000 square feet) would be approximately 33,000 less than the amount specified in the LAX Master Plan (323,000 square feet).

As reflected above, the changes in the locations of the Proposed Maintenance Facility and West Employee Parking area would not materially change the conceptual framework for development in the Project area as set forth in the LAX Master Plan Program. The proposed Project would be consistent with the LAX Master Plan Program by providing an aircraft maintenance area in the southwest portion of the airport. While the proposed Project would result in a slightly different configuration and would exchange the location of the West Employee Parking area, it would not change the size and number of parking spaces proposed or otherwise constrain future development of the facility as envisioned in the LAX Master Plan Program.

The proposed Project would not increase passenger or gate capacity and would not increase flights and/or aircraft operations at LAX compared to existing airfield conditions or to what is assumed under the LAX Master Plan Program. As further described below, the proposed Project would be consistent with the LAX Plan and the LAX Specific Plan, the regulatory with

⁴ As described above in Section 4.6.3.1.2, the SPAS Programmatic EIR, prepared pursuant to the CEQA, has been approved and certified by the LAWA Board of Airport Commissioners and the Los Angeles City Council. It is currently under the subject of ongoing litigation and LAWA does not have a timetable for implementing projects approved studied as part of the CEQA process. LAWA must prepare project specific environmental documentation pursuant to CEQA before being able to move forward with any proposed project in the recently certified SPAS Programmatic EIR. Further, LAWA has not provided FAA with a proposal regarding any proposed project associated with SPAS and these projects would be subject to additional environmental review pursuant to the National Environmental Policy Act.



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documents that implement the LAX Master Plan Program through the establishment of general plan land use and zoning designations for LAX. Similarly, the associated refinements to the LAX Master Plan Program's conceptual framework for the layout of land uses in the southwest area of LAX would not conflict with, or require amendments to, the LAX Plan or Specific Plan. Similar to recent projects in the area, including the South Airfield Improvements Project, the Crossfield Taxiway Project, and relocation of the Aircraft Rescue and Fire Fighting Facility, the proposed Project would adhere to the basic intent of the LAX Master Plan Program, incorporation of refinements typical of, and appropriate for, the preparation of the detailed engineering, design, and construction specifications.

The need to implement the proposed Project in a manner which warrants the refinements to the LAX Master Plan Program summarized above is based in part on LAWA's determination that the original maintenance area configuration identified in the LAX Master Plan would be less effective and efficient than the configuration now proposed. The LAX Master Plan Program recognized the need to replace hangars/maintenance facilities through construction of three smaller hangar/maintenance facilities dispersed in the western portion of the airport. Only one of those facilities, the hangar proposed east of Taxiway AA, would be able to accommodate large aircraft such as Airplane Design Group (ADG) V and ADG VI aircraft; however, the relatively small/shallow apron area proposed in front of that hangar, encompassing only about 10 acres, would substantially limit the ability to park multiple large aircraft. With LAX now having almost five years of experience in accommodating regularly scheduled passenger flights that utilize the Airbus A380, the operational characteristics of the Airbus A380 at LAX are much better understood than when the LAX Master Plan was prepared almost a decade ago. One key consideration is there is sometimes a substantial period between the time when passenger flights arrive at LAX and when that same aircraft departs on the return flight. To avoid tying up a terminal gate during this period, aircraft are typically towed to a remain overnight (i.e., RON) parking position away from the main terminal area given the size of an ADG VI aircraft, such as the Airbus A380, a large apron area is required. Additionally, when such extended ground times occur between flights, it provides a good opportunity to complete routine servicing and maintenance activities on the aircraft without interrupting flight schedules.

The proposed Project includes maintenance hangar space able to fully accommodate/enclose three ADG VI aircraft (i.e., could handle multiple large aircraft in the event one or more such aircraft encounter an unanticipated extended period of maintenance or grounding), plus approximately 29 acres of apron area to park large (ADG VI) aircraft and accommodate a blast fence for low-power ground run-up activities, which would be located in proximity to the hangars where engine maintenance on aircraft would occur and require follow-up engine testing. That ability to provide aircraft maintenance hangars and aircraft parking areas sized for ADG VI aircraft located in proximity to one another is not afforded through the aircraft maintenance facilities layout reflected in the 2004 LAX Master Plan. While the proposed Project would increase the effectiveness and efficiency of aircraft maintenance activities at the southwestern end of the airport compared to the conceptual layout depicted in the LAX Master Plan, the proposed Project would not affect the number of operations of ADG VI aircraft at LAX. The number of ADG VI operations at LAX will be determined by specific airlines operating at the airport, which in turn are driven by market demand and supply considerations.

Another factor that has influenced refinements to the LAX Master Plan described above, is that the proposed Project can be developed in the near term to the west of Taxiway AA without interfering with completion of the current groundwater remediation program underway on the

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east side of Taxiway AA. As detailed in Section 4.3, *Hazards and Hazardous Materials*, in this EIR, there is a large number of groundwater recovery wells and monitoring wells associated with the groundwater remediation system located at the site of the maintenance hangar and apron area identified in the LAX Master Plan. Modifying and covering that system to accommodate the placement of aircraft-rated (i.e., approximately 24-inch thick) concrete over the entire area could limit and compromise the ability to monitor and maintain the groundwater remediation system, which is anticipated to operate at least 10 more years before the contamination is reduced to acceptable levels. Additionally, as a regulatory enforcement action by the State Water Resources Control Board, with Continental Airlines (now United Airlines) being the responsible party, there could be substantial limitations on LAWA's ability to develop a maintenance hangar and apron area at the site that is depicted in the LAX Master Plan.

Regarding the potential for the modifications to the layout of facilities identified in the LAX Master Plan to result in significant environmental impacts, as discussed in the IS for the proposed Project (included as Appendix A of this EIR), no significant impacts would occur for the following resource areas: Aesthetics, Agricultural and Forest Resources, Biological Resources, Cultural Resources, Geology and Soils, Mineral Resources, Population and Housing, Public Services, Recreation, and Utilities and Service Systems. The potential environmental effects associated with these resource areas as analyzed in the IS, would be similar to those identified in the LAX Master Plan EIR, as the type of uses and general locations of facilities would be similar and LAX Master Plan commitments and mitigation measures would remain applicable under the proposed Project.

As it relates to air quality, as discussed in Section 4.1, *Air Quality*, construction-related air quality emissions associated with the proposed Project would not result in material differences in the overall air quality impacts assumed and analyzed for this area of the airport in the LAX Master Plan EIR. Furthermore, the shifts in facility locations would not materially change the impacts associated with operational emissions, as the same facilities would be constructed in the same general area of the airport.

As discussed in Section 4.2, Greenhouse Gas Emissions, this proposed Project would develop the site with taxiways and aircraft parking apron areas, maintenance hangars, and related facilities as well as consolidate existing aircraft maintenance activities. These activities already occur elsewhere at the airport, but under the proposed Project would be housed more efficiently. Activities that would occur in the new maintenance area already generate GHG emissions through their current activities elsewhere, and any net increase in such emissions with their relocation to the site would depend on the nature of their current activities, such as the distance of their commute, the associated energy demand, and other factors.

As discussed in Section 4.3, *Hazards and Hazardous Materials*, the potential impacts of the proposed Project related to hazards and hazardous materials would be less than significant with incorporation of Project-specific Mitigation Measure MM-HAZ (WAMA)-1. Moreover, shifting of facilities in the area, particularly exchanging the areas for the Proposed Maintenance Facility and West Employee Parking, would not change the general nature of operational or construction impacts associated with hazardous materials as evaluated in the LAX Master Plan EIR. Furthermore, development of the proposed Project at the site currently proposed would be beneficial compared to the facility locations in the LAX Master Plan, as it would avoid compromising the ability to monitor and maintain the groundwater remediation system located at the existing American Airlines employee parking area, which still has years to go before contamination is mitigated to acceptable levels.

As discussed in Section 4.4, *Hydrology and Water Quality*, no significant impacts on hydrology or water quality would occur with implementation of the proposed Project. As discussed above, implementation of the proposed Project at the proposed site would also support improvement of existing groundwater quality, more so than the originally proposed LAX Master Plan improvements, by shifting the near-term development of the maintenance hangar and apron area westward; thereby avoiding interference with or delays in completing the groundwater remediation occurring at the existing American Airlines employee parking area. Furthermore, the shifts in facility locations would not materially change the extent of impervious surfaces in this area of the airport and the steps taken by LAWA to address water quality would be generally consistent with what was assumed and evaluated in the LAX Master Plan EIR.

With regard to the resource areas evaluated in this EIR, potential noise impacts related to the proposed Project are analyzed in Section 4.5, *Noise*. As discussed in that section, operational noise impacts related to the proposed Project would be less than significant. Potential construction noise impacts would also be less than significant. The impacts associated with the modifications to the layout of facilities, would not materially change from what was assumed in the LAX Master Plan EIR for this area of the airport. The proposed Project would simply exchange the areas identified for the Proposed Maintenance Facility and West Employee Parking areas which would not place either facility much closer to or farther from existing noise-sensitive uses.

As discussed in Section 4.7, *Construction Surface Transportation*, the future operation of the proposed Project would not result in operational changes to traffic activity and traffic flows within the LAX study area, as the proposed Project and the related changes in facility locations in the area would not increase the number of airline passengers traveling to/through LAX or the number of employees who access the airport via World Way West. Construction-related impacts to surface transportation would be less than significant for the proposed Project and the impacts associated with the shifts in facility locations would be generally consistent with construction impacts assumed in the LAX Master Plan EIR. As previously stated, exchanging the areas for the Proposed Maintenance Facility and West Employee Parking would not change the general nature of construction impacts in this area.

In summary, the proposed Project would not conflict with the general intent of the LAX Master Plan Program and the associated shifts in facility locations at the west end of the airport would not result in significant physical land use impacts on the environment.

LAX Plan

The Project site is located within and designated as an Airport Airside area which includes those aspects of passenger and cargo movement that are associated with aircraft operating under power and related airfield support services. These uses include taxiways, maintenance areas, airfield operation areas, fire protection facilities and other ancillary airport uses. Components of the proposed Project include aircraft parking and maintenance facilities, blast fence, employee parking areas, and ancillary facilities (i.e., related storage, equipment and facilities). These uses are consistent with the corresponding Airport Airside land use designation in the LAX Plan.

As discussed in more detail in **Table 4.6-1**, the proposed Project would also be consistent with the goals and corresponding policies of the LAX Plan that are relevant to the proposed Project. Specifically, the proposed Project would not increase existing gate capacity, passengers, flights, and/or aircraft operations at LAX. The proposed Project would also upgrade, consolidate, and

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modernize maintenance facilities, allowing for more efficient aircraft maintenance operations at LAX, supporting LAX Plan policies related to the efficient and effective use of airport facilities. The proposed Project would also provide updated maintenance facilities to accommodate modern aircraft types and the next generation of quieter jets; an identified policy and program in the LAX Plan.

Table 4.6-1

Comparison of the Proposed Project to Applicable LAX Plan Goals, Policies, and Programs

Goal/Policy/Program	Comparison
Goal 1: Strengthen LAX's unique role within the regional airport network as the international gateway to the Southern California region.	Consistent: The intent of the proposed Project is to improve and modernize maintenance facilities at LAX to more efficiently and effectively accommodate all existing aircraft including ADG VI aircraft. As such, the proposed Project would enhance and support the efficient operation of aircraft at LAX and ensure that LAX remains competitive as a world class airport, particularly with respect to the accommodation of modern airplane types.
Goal 4: Recognize the responsibility to minimize intrusions on the physical environment.	Consistent: The proposed Project would incorporate LAX Master Plan commitments and mitigation measures that would reduce impacts on the physical environment. The proposed Project also includes design features that would reduce potential intrusions on the physical environment. These features include development of on-site water quality improvements (e.g., oil-water separator, use of porous pavement or media filters, etc.) to reduce urban pollutants in dry weather and stormwater runoff; and water conservation measures such as a wash rack recycling system. In addition, a combination of diesel-fueled and alternative fuels such as CNG or LNG would fuel cars, trucks and related equipment in use on the site. A Project-specific mitigation measure would also be implemented to reduce impacts related to hazards and hazardous materials, as further described in Section 4.3 in this EIR.
Goal 5: Acknowledge neighborhood context and promote compatibility between LAX and the surrounding neighborhoods.	Consistent: The proposed Project would be consistent with the land use designations within applicable on-airport land use plans including the LAX Plan, LAX Specific Plan, and LAX Master Plan and ALP. The proposed Project would also incorporate LAX Master Plan commitments and mitigation measures and a Project-specific mitigation measure to reduce impacts to the surrounding communities and environment.
Land Use - Airport Airside	
Policy and Program P1: Develop a balanced airfield to provide for more efficient and effective use of airport facilities.	Consistent: One of the main objectives of the proposed Project is to improve the operation and efficiency of aircraft maintenance facilities. The proposed Project would combine aircraft maintenance hangars and aircraft parking areas within close proximity on the same site, thereby supporting more efficient and effective use of airport facilities.

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Table 4.6-1

Comparison of the Proposed Project to Applicable LAX Plan Goals, Policies, and Programs

Goal/Policy/Program	Comparison
Policy and Program P2: Limit airport capacity by restricting the number of gates (including remote gates) to no more than 153 at LAX Master Plan build-out.	Consistent: As a facility that would consolidate existing maintenance activities, the proposed Project would not increase gate capacity, passengers, flights, and/or aircraft operations at LAX compared to existing airfield conditions.
Policy and Program P3: Expand and improve employee parking.	Consistent: The proposed Project includes construction of employee parking lots to accommodate aircraft maintenance technicians and management staff. Such parking is planned to occur immediately north of the hangar area and would provide approximately 300 parking spaces. Furthermore, the proposed Project would not constrain plans to develop additional employee parking in the area consistent with the intent of the LAX Master Plan Program.
Policy and Program P4: Locate airport uses and activities with the potential to adversely affect nearby residential land uses through noise, light spillover, odor, vibration, and other consequences of airport operations and development, as far from them as feasible.	Consistent: The Project site is located within the western portion of the LAX property, within an area well removed from existing noise-sensitive uses (e.g., residential, schools, churches, etc.). The site is bounded by airport property to the north, south and east and by undeveloped land to the west. The nearest residential uses are located approximately 0.55 mile to the south in El Segundo. As a result, the proposed Project would not have significant impacts on residential uses due to noise, light spillover, odor, vibration and other consequences of airport operations.
Land Use - Open Space	
Policy and Program P1: Protect existing state-designated sensitive habitat areas.	Consistent: The proposed Project would not include construction activities within the Los Angeles El Segundo Dunes Specific Plan Area, including the Dunes Habitat Preserve area. As further described in the IS, included in Appendix A of this EIR, while the proposed Project would include construction and operational activities that could result in indirect impacts to habitat areas, these effects would be less than significant with incorporation of LAX Master Plan commitments and mitigation measures which would minimize dust, light/glare and other potential effects of the proposed Project.
Safety	
Policy and Program P8: Prohibit uses within a designated Runway Protection Zone (RPZ) that will create safety hazards.	Consistent: No structure or aircraft apron area would be located within the Runway 7L RPZ. A portion of the western extension of Taxiway C and Taxiway B would be within the Runway 7L RPZ. This area would be restricted from incompatible objects and activities pursuant to FAA requirements. The FAA recommends clearing of all above-ground objects and incompatible activities within the restricted development area associated with the RPZ; therefore, the overlap of the RPZ on taxiways, which is only used for circulation of aircraft, is permissible.

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Table 4.6-1

Comparison of the Proposed Project to Applicable LAX Plan Goals, Policies, and Programs

Goal/Policy/Program	Comparison
Economic Benefits	
Policy and Program P2: Modernize, upgrade, and improve LAX in order to sustain the airport's economic benefits.	Consistent: The proposed Project would improve and modernize aircraft maintenance facilities at the airport and assist in accommodating existing ADG VI. The proposed Project would also combine aircraft maintenance hangars and aircraft parking areas within close proximity on the same site, thereby supporting more efficient and effective use of airport facilities. As such, the proposed Project would help sustain the airport's economic benefits.
Noise	
Policy and Program P2: Update facilities, gates, and runways, to accommodate the New Large Aircraft (NLA) and the next generation of quieter jets.	Consistent: The proposed Project would consolidate, modernize, and upgrade aircraft maintenance facilities at LAX, including facilities for the maintenance of newer generation aircraft such as ADG VI aircraft.
Policy and Program P4: Move nighttime noise-creating activities to the interior of the airfield and away from noise-sensitive areas situated north and south of the airport. Policy and Program P9: Locate airport uses and activities with the potential for noise impacts as far from adjacent residential neighborhoods as feasible.	Consistent: As previously stated, the Project site is located within the western portion of the LAX property, within an area well removed from existing noise-sensitive uses with the nearest residential uses located approximately 0.55 miles to the south.
Policy and Program P10: Require new uses to adhere to applicable state airport land use compatibility regulations.	Consistent: The proposed Project would not increase the existing gate capacity, passengers, flights, and/or aircraft operations at LAX. The proposed Project would also avoid safety hazards that could result in incompatible land uses through compliance with FAA regulations. Therefore, the proposed Project would be consistent with the noise and airspace protection objectives of the Caltrans California Airport Land Use Planning Handbook.
Air Quality	
Policy and Program P7: Encourage and facilitate the conversion of ground support equipment to extremely low emission technology, such as electric power or fuel cells.	Consistent: A combination of diesel-fueled and alternative fuels such as CNG or LNG would fuel cars, trucks and related equipment, and the electrical infrastructure for the Project site will be designed to accommodate charging stations for use by electric ground support equipment, which is consistent with sustainability objectives set forth in the LAWA Sustainability Performance Improvement Management System.

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Table 4.6-1

Comparison of the Proposed Project to Applicable LAX Plan Goals, Policies, and Programs

Goal/Policy/Program	Comparison
Hazardous Waste	
Policy and Program P1: Implement a program for handling of contaminated materials encountered during construction.	Consistent: As discussed in Section 4.3, <i>Hazards and Hazardous Materials</i> , the potential impacts of the proposed Project related to hazards and hazardous materials would be less than significant with incorporation of LAX Master Plan mitigation measures and Project-specific Mitigation Measure MM-HAZ (WAMA)-1.

Source: PCR Services, April 2013.

In addition, the proposed Project is consistent with goals and policies that aim to minimize intrusions on the physical environment and seek to promote neighborhood compatibility. The proposed Project would incorporate LAX Master Plan commitments and mitigation measures, Project-specific design features, and Project-specific mitigation measures to reduce impacts to the surrounding environment.

Based on the above discussion and analysis provided in Table 4.6-1, the proposed Project would support and would not conflict with relevant land use designations, and with the relevant goals, policies and programs of the LAX Plan. Therefore, impacts would be less than significant.

LAX Specific Plan

The proposed Project is located within the LAX-A Zone area. Permitted uses in the LAX-A Zone include, but are not limited to: airline clubs, retail use, and restaurants; surface and structured parking lots; aircraft under power; airline maintenance and support; air cargo facilities; commercial passenger vehicle staging and holding area; helicopter operations; navigational aids; runways, taxiways, aircraft parking aprons, and service roads; passenger handling facilities; and other ancillary airport facilities.

The proposed aircraft parking and maintenance facilities, employee parking areas, and related storage, equipment and facilities under the proposed Project are consistent with the corresponding LAX-A Zone: Airport Airside Sub-Area as shown on the LAX Specific Plan. Therefore, impacts would be less than significant.

Airport Layout Plan

The ALP shows facility locations that are consistent with the conceptual framework for the location of facilities reflected in the LAX Master Plan Program. Accordingly, the ALP shows the Project site as a proposed employee parking area, with an area identified for an aircraft maintenance building directly east of the site. As one of the federal actions associated with the proposed Project, the ALP would need to be amended/updated. These changes would reflect the exchange in the locations of facilities described above, including the locations and

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configurations of the Proposed Maintenance Facility and West Employee Parking, the CNG/LNG fueling station, and the consolidation of the three planned aircraft maintenance hangar facilities to the Project site. FAA approval of the amended/updated ALP for LAX is required. As described above, these changes would not result in significant impacts on the environment and would not impede implementation of the uses planned for the west end of the airport that are shown in the ALP. LAWA submitted a proposed ALP with these changes to FAA for its consideration in July 2013.

4.6.7 Cumulative Impacts

A significant land use impact would occur if the proposed Project in combination with the relevant cumulative projects would conflict with any applicable land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect.

Cumulative projects that are located at or adjacent to LAX are shown in **Figure 3-1** in Chapter 3, *Overview of Project Setting*, of this EIR. The cumulative projects that are evaluated in this analysis are those that have the potential for combined effects associated with the proposed Project that have the potential for adverse environmental impacts.

4.6.7.1 Consistency with Land Use Plans

As discussed earlier, the proposed Project would be consistent with the LAX Plan, LAX Specific Plan, and would not conflict with the LAX Master Plan and ALP (as amended). Although several related projects identified on **Figure 3-1**, such as the Midfield Satellite Concourse Project, LAX SPAS Development and the LAX Northside Area Development, are planned in the area, they would be required to comply with land use designations, zoning requirements, and other applicable land use plans or seek modifications to such plans. This would require that potential impacts on land use be evaluated and any associated significant impacts mitigated to the degree feasible. Therefore, cumulative impacts associated with consistency with land use plans would be less than significant.

4.6.8 Mitigation Measures

As no significant land use impacts would occur as a result of construction or operation of the proposed Project, no mitigation measures specific to the proposed Project are required. The LAX Master Plan Commitment LU-4, which is discussed in Section 4.6.5 above is included as a project design feature under the proposed Project.

4.6.9 Level of Significance After Mitigation

Not applicable. Impacts are less than significant, as indicated above; therefore, no additional mitigation measures are required.

4.7 Construction Surface Transportation

4.7.1 Introduction

The traffic analysis presented in this section addresses the construction traffic impacts specific to the proposed Project. The construction traffic impacts were analyzed for both the peak construction period for the proposed Project (August 2014) and the peak cumulative condition (March 2018). The peak construction month for the proposed Project does not correspond to the peak cumulative condition, which includes traffic from the construction of other known projects anticipated to be under construction during the overall 60 month development timeframe.

This proposed Project construction traffic analysis incorporates relevant analysis and assumptions from the Los Angeles International Airport (LAX or the Airport) Master Plan Environmental Impact Report (EIR),¹ the South Airfield Improvement Project (SAIP) EIR,² the Crossfield Taxiway Project (CTFP) EIR,³ Bradley West Project EIR,⁴ and the Central Utility Plant Replacement Project (CUP-RP) EIR.⁵ The traffic conditions resulting from the construction of the CTFP, Bradley West Project, CUP-RP and the proposed Project are similar in terms of regional approach/departure patterns and construction peaking characteristics. Therefore, the analysis procedures and data already known from these other projects were applied and updated as appropriate for the proposed Project.

Construction employee parking and material staging for deliveries associated with the construction of the proposed Project would be located on the west side of the Airport, bounded by World Way West on the north, undeveloped airport land on the south, Taxiway AA on the east, and South Pershing Drive on the west. This analysis assesses anticipated construction-related traffic impacts at off-airport intersections associated with the construction of the proposed Project, including the traffic impacts of construction employee vehicles, construction equipment, material delivery trucks, and truck trips associated with removal of soil stockpiles currently located on the site.

This analysis addresses, in particular, the impacts from construction-related traffic that would occur during the peak construction period for the proposed Project. The construction traffic analysis combines peak Project-related traffic volumes (which do not correspond with commuter peak hours), with roadway traffic volumes occurring adjacent to the AM and PM commuter peak hours. The analysis provides an estimate of the construction-related traffic impacts within the off-airport public roadway system serving construction-related vehicles generated by the proposed Project.

¹ City of Los Angeles, Final Environmental Impact Report for Los Angeles International Airport (LAX) Proposed Master Plan Improvements, April 2004.

² City of Los Angeles, Los Angeles World Airports, Final Environmental Impact Report for South Airfield Improvement Project, Los Angeles International Airport (LAX), October 2005.

³ City of Los Angeles, Los Angeles World Airports, Final Environmental Impact Report for Crossfield Taxiway Project, Los Angeles International Airport (LAX), January 2009.

⁴ City of Los Angeles, Los Angeles World Airports, Final Environmental Impact Report for Bradley West Project, Los Angeles International Airport (LAX), September 2009.

⁵ City of Los Angeles, Los Angeles World Airports, Final Environmental Impact Report for Central Utility Plant Project, Los Angeles International Airport (LAX), October 2009.

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Prior to the preparation of this EIR, an Initial Study (IS – in Appendix A of this EIR) was prepared using the California Environmental Quality Act (CEQA) Environmental Checklist Form to assess potential environmental impacts associated with transportation/circulation. For several issues related to transportation/circulation the IS found that the proposed Project would result in “no impact” and thus, no further analysis of these topics in an EIR was required. Refinements have been made to the proposed Project to reflect additional information and coordination with the public and the FAA. The refinements do not represent a material change to the proposed Project that was described in the IS/NOP and do not change any of the conclusions in the IS. The thresholds not addressed further include:

- Potential impacts from a change in air traffic patterns, including either an increase in traffic levels or a change in location, that would result in substantial safety risks were evaluated and determined to have "No Impact" in the IS as the proposed Project would provide an area for maintenance and parking of aircraft, but would not change air traffic patterns or increase air traffic levels.
- Potential impacts related to substantially increased hazards due to a design feature (e.g., sharp curves) or incompatible uses (e.g., farm equipment); potential impacts that would result in inadequate emergency access; or potential impacts that would result in a conflict with adopted policies, plans, or programs regarding public transit, bicycle, or pedestrian facilities, or otherwise decrease the performance or safety of such facilities, were evaluated and determined to have "No Impact" in the IS. As the proposed Project would not change existing road alignments or geometrics, would not include new public streets, and would not remove existing public streets further analysis of these topics in an EIR was not required. Furthermore, the proposed Project would not change existing bicycle or pedestrian facilities, and would not create new demand for bicycle, pedestrian, or transit facilities and services (given the lack of a net increase in airport employees under the proposed Project).
- Potential operational impacts related to conflicts with an applicable plan, ordinance or policy establishing measures of effectiveness for the performance of the circulation system and potential conflicts with an applicable Congestion Management Project (CMP), including, but not limited to level of service (LOS) standards and travel demand measures were determined to be less than significant. As the future operation of the proposed Project would not result in long-term operational changes to traffic activity and traffic flows within the Airport study area as, in the long-term, the proposed Project would not increase the number of employees or airline passengers traveling to/through LAX. Therefore, an operational analysis of future traffic activity associated with proposed Project operations is not necessary.

4.7.2 Methodology

4.7.2.1 Overview

As noted above, this analysis focuses on construction impacts of the proposed Project. The analysis methodology for this EIR is based largely on the approach and data used for the Bradley West Project EIR and CUP-RP EIR. The analyses procedures and data from these previous projects are applicable to the proposed Project because the construction of the

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projects overlap and share many of the same characteristics related to vehicle peaking patterns and travel paths.

The traffic study area includes intersections and roadways anticipated to be directly or indirectly affected by the construction of the proposed Project. Construction employee parking and material staging for the Project are proposed to be located at the surface lot near the work area, as further described below. The traffic study area for this analysis includes those roads and intersections that would most likely be used by employee and truck traffic associated with construction of the proposed Project. The procedures are also consistent with the information and requirements defined in City of Los Angeles Department of Transportation (LADOT) *Traffic Study Policies and Procedures*, revised by the LADOT in December 2010, notwithstanding that a construction traffic analysis is not typically required by LADOT.

The following steps and assumptions were used to develop the analysis methodology:

- The traffic study area was defined according to the travel paths that would be used by construction traffic to access the Project site, equipment, materials staging, and parking areas. Construction delivery vehicle travel paths would be regulated according to the construction traffic management plan required through the LAX Master Plan Mitigation Monitoring and Reporting Program (MMRP).⁶ The construction of the proposed Project would occur at the location immediately west of Taxiway AA and south of World Way West. The proposed Project involves the development of airline aircraft maintenance facilities in the southwest portion of LAX, with construction employee parking and material staging for deliveries occurring at or near the site, with primary access provided via World Way West.
- Intersection turning movement traffic volume data were collected at the key traffic study area intersections on Tuesday, April 30, 2013, and on Wednesday, May 15, 2013, from 6:00 a.m. to 10:00 a.m. and from 3:00 p.m. to 6:00 p.m. These extended traffic count periods were established to obtain current traffic count data during the (a) AM peak inbound hour for construction employees and deliveries and (b) the PM peak outbound hour for construction employees and deliveries. Pursuant to the mitigation requirements set forth in the LAX Master Plan EIR, construction truck delivery and construction employee traffic activity would not be scheduled during the morning or afternoon commute peak periods which were also counted during the data collection survey. The estimated peak hours for construction-related traffic were determined by reviewing the estimated hourly construction-related trip activity for the proposed Project developed for this study.⁷ The AM peak construction hour was determined to be 6:00 a.m. to 7:00 a.m. and the PM peak construction hour was determined to be 3:30 p.m. to 4:30 p.m., both of which occur outside of the normal peak commuter periods.
- Key off-airport intersections, including intersections with freeway ramps in the proposed traffic study area, were analyzed. Impacts to roadway segments and freeway links were not analyzed because construction-related traffic activity is anticipated to occur outside of peak commute periods.

⁶ LAX Master Plan commitments that are applicable to construction traffic are applied to this project to mitigate potential construction-related impacts.

⁷ CDM Smith, WAMA_Crew Estimates_v02_13 March 2013_8 hr days.xls, March 2013 (employee trip volumes, truck trips); LAWA Airport Development Group (ADG), 6.22.2012 EIR Truck Assumptions.pdf, November 2012 (vehicle schedule times).

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The following describes the methodology and assumptions underlying the various traffic conditions considered in this traffic analysis, and how the proposed Project's direct and indirect (cumulative) impacts were identified relative to those conditions.

4.7.2.2 Determination of Baseline Traffic Conditions

Baseline conditions used in the analysis of Project-related construction traffic impacts are defined as the existing conditions within the traffic study area at the time the Notice of Preparation (NOP) was published (September 2012). Intersection turning movement volumes were collected in April and May 2013, providing current comprehensive traffic counts completed by LAWA. These volumes were considered to reasonably representative of baseline conditions used as a basis for preparing the traffic analysis and assessing potential Project-related traffic impacts. The following steps were taken to develop baseline traffic conditions information.

Prepare Model of Study Area Roadways and Intersections--A model of traffic study area roadways and intersections was developed to assist with intersection capacity analysis (i.e., geometric configuration, quantitative delineation of capacity, and operational characteristics of intersections likely to be affected by the proposed Project's traffic). The model was developed using TRAFFIX,⁸ a commercially available traffic analysis software program designed for developing traffic forecasts and analyzing intersection and roadway capacities. The model uses widely accepted traffic engineering methodologies and procedures, including the Transportation Research Board Critical Movement Analysis (CMA) Circular 212 Planning Method,⁹ which is the required intersection analysis methodology for traffic impact studies conducted within the City of Los Angeles.

Calculate Baseline Levels of Service--Intersection levels of service were calculated using the 2013 intersection traffic volumes coinciding with the AM construction peak hour (6:00 a.m. to 7:00 a.m.) and the PM construction peak hour (3:30 p.m. to 4:30 p.m.). These levels of service defined existing baseline conditions which served as a basis of comparison for assessing potential impacts generated by construction of the proposed Project.

4.7.2.3 Determination of Baseline Plus Peak Proposed Project Traffic Conditions

This traffic analysis was designed to assess the direct impacts associated with the construction of the proposed Project, as well as the effects of future cumulative conditions. For purposes of determining direct Project-related impacts, a traffic scenario was developed consisting of baseline traffic described above plus the additional traffic that would be generated by the proposed Project construction activity during the peak construction period. The following steps were conducted to determine the Baseline Plus Peak proposed Project traffic volumes.

Analyze Peak Proposed Project Construction Activity--Vehicle trips associated with construction of the proposed Project during the peak month of construction activity were estimated and distributed throughout the traffic study area network. The trips were estimated based on a review of the proposed Project construction schedules and associated workforce

⁸ Dowling Associates, TRAFFIX Version 7.7.

⁹ Transportation Research Board, Transportation Research Circular No. 212, Interim Materials on Highway Capacity, January 1980.

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levels and equipment, including trucks and other construction vehicles. Project-related construction trips were summarized to delineate peak month inbound and outbound construction employee trips and truck trips by hour of the day. The estimate of proposed Project construction trips was based on construction employee workload schedules prepared for this proposed Project.¹⁰ The construction employee trip distribution patterns were based on regional patterns developed for the proposed Project and previous LAWA construction traffic studies using the modeling results prepared for the LAX Master Plan EIR, specific haul route information, airline passenger survey information, and regional population distributions.

Estimate Baseline Plus Peak Proposed Project Traffic Volumes--The estimated Baseline Plus Peak proposed Project (referred to hereinafter as Baseline Plus Project) traffic volumes were estimated by adding the Project volumes during the peak proposed Project activity period anticipated to occur in August 2014 to the baseline volumes.

4.7.2.4 Delineation of Future Cumulative Traffic Conditions

In addition to the Baseline Plus Project condition described above, future cumulative traffic conditions were analyzed. In accordance with Section 15355 of the *CEQA Guidelines*, cumulative impacts are defined as "two or more individual effects which, when considered together, are considerable or which compound or increase other environmental impacts." For this traffic analysis, cumulative traffic conditions were assessed for the period during the overall proposed Project construction program when the cumulative traffic associated with other LAX development programs would be greatest. This peak cumulative period was estimated to occur during March 2018.

In accordance with *CEQA Guidelines* Section 15130(b), there are essentially two options for delineating cumulative development for evaluating potential impacts:

- a. List past, present, and reasonably foreseeable future projects producing related or cumulative impacts, including, if necessary, those projects outside the control of the agency, or
- b. Summarize projections contained in an adopted general plan or related planning document, or in a prior adopted or certified environmental document, which described or evaluated regional or area wide conditions contributing to the cumulative impact.

For purposes of the proposed Project, the first of the two options, commonly referred to as "the list approach," was used to delineate cumulative projects - see Section 4.7.5 below for a description of cumulative projects and specific project listings and descriptions regarding how and when the traffic generation related to those projects would overlap with that of the proposed Project. Background traffic was increased to reflect additional growth from non-specific projects, which adds an element of the second option to result in a cumulative impacts analysis that is more conservative.

Cumulative impacts were determined using a process that requires the development of the two sets of future cumulative traffic volume conditions, as described below.

¹⁰ CDM Smith, WAMA_Crew Estimates_v02_13 March 2013_8 hr days.xls, March 2013.

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4.7.2.4.1 Cumulative Traffic (March 2018) Without Project

This scenario combines baseline traffic volumes with growth from all sources other than the Project to determine the overall peak cumulative traffic conditions during the construction period for the proposed Project. The following steps were taken to develop the traffic volumes for this scenario.

Develop March 2018 Focused Traffic Study Area Roadway Network--The TRAFFIX model was updated, as necessary, to reflect any committed and funded traffic study area transportation improvements that would be in place by March 2018.

Estimate March 2018 Cumulative Traffic Volumes--Cumulative (March 2018) traffic volumes were estimated using the following process:

- Baseline 2013 traffic volumes were multiplied by a growth factor of two percent per year to account for local background traffic growth through 2018. This annual growth rate assumption is consistent with previous direction first provided by LADOT for use in the SAIP¹¹ and subsequently used for construction traffic studies prepare for the CFTP EIR, Bradley West Project EIR, and the CUP-RP EIR.
- Construction trips for committed development projects on airport property that are expected to commence during the period of proposed Project construction were directly estimated and included in the analysis. Construction trips associated with the peak period of cumulative construction (March 2018) were estimated based on the estimated labor component of total construction cost and the timeline for each concurrent project. The projects that were considered as part of this analysis and the estimated trips associated with these projects are described in more detail below.

4.7.2.4.2 Cumulative Traffic (March 2018) With Project

The Project-related construction traffic volumes occurring during the peak cumulative period were added to the Cumulative Traffic (March 2018) "Without Project" traffic volumes described in the previous section. This is a realistic traffic scenario that is intended to represent the estimated total peak hour traffic volumes (consisting of background traffic, traffic related to ambient growth, traffic related to other projects, and proposed Project construction traffic) that would use the traffic study area intersections during the overall cumulative peak in March 2018.

4.7.2.5 Delineation of Impacts and Mitigation Measures

The following steps were conducted to calculate intersection levels of service, identify impacts, and identify potential mitigation measures, if necessary.

Analyze Intersection and Roadway Levels of Service--The levels of service on the traffic study area intersections and roadways were analyzed using TRAFFIX. Intersection LOS was estimated using the CMA planning level methodology, as defined in Transportation Research Board Circular 212,¹² in accordance with LADOT *Traffic Studies Policies and Procedures*

¹¹ City of Los Angeles, Los Angeles World Airports, Final Environmental Impact Report for South Airfield Improvement Project, Los Angeles International Airport (LAX), October 2005.

¹² Transportation Research Board, Transportation Research Circular No. 212, Interim Materials on Highway Capacity, January 1980.

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guidelines,¹³ and the *L.A. CEQA Thresholds Guide*.¹⁴ Intersection LOS was analyzed for the following conditions:

- Baseline;
- Baseline Plus Project Traffic;
- Future Cumulative Traffic (March 2018) Without Project;
- Future Cumulative Traffic (March 2018) With Project.

Identify Project Impacts--Project-related impacts associated with construction of the proposed Project were identified. Intersections that were anticipated to be significantly affected by Project-related construction were identified according to the criteria established in the LADOT *Traffic Studies Policies and Procedures* guidelines. Impacts were determined by comparing the LOS results for the following:

- **Baseline Plus Project Compared with Baseline:** This comparison is utilized to isolate the potential impacts of the proposed Project.
- **Cumulative Impacts:** Cumulative impacts were determined using a two-step process. Initially, the "Cumulative Traffic (March 2018) With Project" condition was compared to the baseline condition to determine if a cumulative impact would occur relative to baseline. An impact was deemed significant if it would exceed the allowable threshold of significance defined in the LADOT *Traffic Studies Policies and Procedures* guidelines. If a cumulative impact were determined, then a second comparison of the "With Project" vs. the "Without Project" LOS conditions was made to determine if the project's contribution of the cumulative impact is determined to be "cumulatively considerable" in accordance with the impact thresholds defined in Section 4.7.6 below.

Identify Potential Mitigation Measures: The traffic analysis methodology included provisions to identify mitigation measures, as necessary, for intersections determined to be significantly affected by construction-related traffic. The identification of appropriate mitigation measures includes integration of the applicable LAX Master Plan commitments intended to address construction-related impacts.

4.7.3 Existing Conditions

4.7.3.1 Regulatory Context

The Guide for the Preparation of Traffic Impact Studies (California Department of Transportation [Caltrans] 2002) identifies circumstances under which Caltrans believes that a Traffic Impact Study would be required, information that Caltrans believes should be included in the study, analysis scenarios, and guidance on acceptable analysis methodologies. However, a Traffic Impact Study was not required for the proposed Project given that the proposed Project would not contribute vehicle trips to use the study area roadways and freeways during the commuter peak hour periods.

¹³ Los Angeles Department of Transportation, *Traffic Study Policies and Procedures*, December 2010.

¹⁴ City of Los Angeles, Department of City Planning, *L.A. CEQA Thresholds Guide, Your Resource for Preparing CEQA Analysis in Los Angeles*, 2006.

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The LADOT *Traffic Study Policies and Procedures* manual requires that a Traffic Study be prepared if the following criteria are met:

- A project is likely to add 500 or more daily trips
- A project is likely to add 43 or more AM or PM peak hour trips

Based on LADOT criteria, a Traffic Study would not be required as neither condition mentioned above would be met.

In addition, the LADOT *Traffic Study Policies and Procedures* manual provides Congestion Management Program (CMP) Guidelines to assist local agencies in evaluating impacts of land use projects on the CMP system through the preparation of a regional transportation impact analysis (TIA). A CMP TIA is necessary for all projects that include, at a minimum, the following:

- 50 or more trips added to intersections during either the weekday AM or PM peak hours
- 150 or more trips added to the freeway during either the weekday AM or PM peak hours

Because the proposed Project is not anticipated to generate traffic during the AM or PM peak commute periods, it is not expected that the Project would meet or exceed the criteria set forth by Caltrans or LADOT. Therefore, a Traffic Impact Study is not required for the proposed Project. Additionally, because the proposed Project would not alter roadway circulation patterns or increase traffic volumes subsequent to construction, a CMP analysis is not required for post-construction traffic operations. Furthermore, during the scoping of the SAIP traffic study, LADOT indicated that no Traffic Study was required because there was “no requirement to assess the temporary impacts of a project resulting from construction activities. Thus, the proposal to prepare a Traffic Study is voluntary.”¹⁵ However, LAWA determined at that time and continues to believe that the preparation of a Traffic Study is useful in order to provide a full assessment and documentation of the potential impacts that may be generated by the construction of the proposed Project.

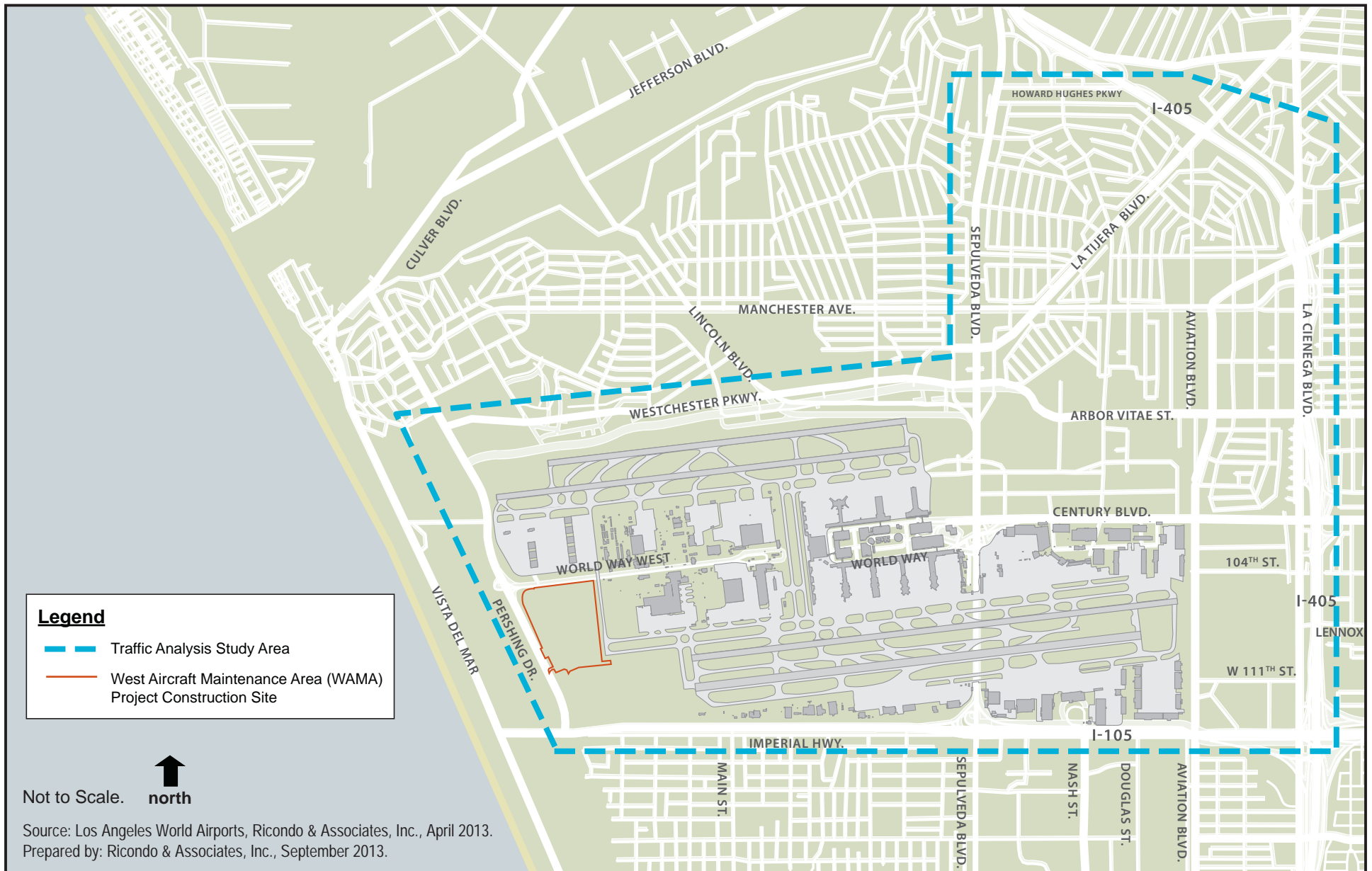
4.7.3.2 Baseline Conditions

As indicated above, baseline conditions relate to the facilities and general conditions that existed during a typical busy weekday in 2013 for the hours that would coincide with peak construction-related traffic activity, i.e., 6:00 a.m. to 7:00 a.m. and 3:30 p.m. to 4:30 p.m.

4.7.3.3 Traffic Study Area

The construction traffic study area is depicted in **Figure 4.7-1**. The scope of the traffic study area was determined by identifying the intersections most likely to be used by construction-related vehicles accessing (1) the proposed Project construction site, construction employees parking area, and delivery staging areas and (2) the construction employee parking and staging areas for other concurrent construction projects in the vicinity of LAX. The traffic study area is generally bounded by Interstate 405 (I-405) to the east, Interstate 105 (I-105) and Imperial Highway to the south, Pershing Drive to the west, and Westchester Parkway, Sepulveda Boulevard, and Howard Hughes Parkway to the north. Figure 4.7-1 depicts the proposed Project construction site, which is located immediately west of Taxiway AA and south of World

¹⁵ Email from LADOT to LAWA on July 29, 2004.



West Aircraft Maintenance Area Project Draft EIR

Construction Traffic Analysis Study Area

Figure
4.7-1

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Way West. The construction employee parking and materials staging area is accessed via a driveway off of World Way West.

4.7.3.4 Traffic Study Area Roadways

The principal freeways and roadways serving as access routes within the construction traffic study area include the following:

- **I-405 (San Diego Freeway)** - This north-south freeway generally forms the eastern boundary of the construction traffic analysis traffic study area and provides regional access to the Airport and the surrounding area. Access to the traffic study area is provided via ramps at Howard Hughes Parkway, Century Boulevard, I-105, Imperial Highway, and three locations along La Cienega Boulevard.
- **I-105 (Glenn M. Anderson or Century Freeway)** - Along with Imperial Highway (described below), this east-west freeway forms the southern boundary of the construction traffic study area, and extends from the San Gabriel Freeway (Interstate 605 or I-605) on the east to Sepulveda Boulevard on the west. Access to the traffic study area is provided via ramps at Sepulveda Boulevard and along Imperial Highway. The westbound off-ramp from the I-105 Freeway to northbound Sepulveda Boulevard was widened to three lanes in March 2010.
- **Aviation Boulevard** - This north-south four-lane roadway bisects the traffic study area.
- **Century Boulevard** - This eight-lane divided roadway serves as the primary entry to the LAX Central Terminal Area (CTA). This roadway also provides access to off-airport businesses and hotels and on-airport aviation-related facilities (e.g., air cargo facilities) located between the CTA and I-405.
- **Imperial Highway** - This east-west roadway is located at-grade and beneath much of the elevated I-105 freeway. The number of lanes on this roadway varies from six-lanes east of the merge with I-105 to four-lanes west of the merge with I-105.
- **La Cienega Boulevard** - This north-south roadway parallels I-405 at the east boundary of the traffic study area. The roadway varies from four to six lanes.
- **Pershing Drive** - This north-south four-lane divided roadway forms the western boundary of the construction traffic study area.
- **Westchester Parkway** - This east-west four-lane divided arterial roadway forms a portion of the northern boundary of the traffic study area.
- **Sepulveda Boulevard (State Route 1 south of Lincoln Boulevard)** - This major north-south six-lane arterial roadway provides direct access to the Airport via I-405 and Westchester Parkway on the north and via I-105 on the south. A portion of Sepulveda Boulevard between I-105 and Century Boulevard is located in a tunnel section beneath the south airfield runways.
- **111th Street** - This east-west roadway has one lane in each direction separated by a continuous two-way left turn lane.

4.7.3.5 Existing Traffic Conditions

Traffic conditions at the traffic study area intersections and existing traffic activity (peak month, hourly, and annual) are discussed below.

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4.7.3.5.1 Traffic Study Area Intersections

Intersection locations and intersection control and geometry are discussed below.

4.7.3.5.2 Intersection Locations

The anticipated routes utilized by construction-related vehicles were reviewed to identify the intersections likely to be used by vehicles accessing the construction employee parking/staging site associated with the proposed Project or the other concurrent construction project sites in the vicinity of LAX. Based on this review, the key intersections to be analyzed are listed below in **Table 4.7-1** and depicted in **Figure 4.7-2**.

Table 4.7-1
Study Area Intersections

Intersection Number	Intersection Location
1.	Aviation Boulevard and Century Boulevard
2.	Imperial Highway and Aviation Boulevard
3.	Aviation Boulevard and 111 th Street
4.	La Cienega Boulevard and Century Boulevard
5.	Sepulveda Boulevard and Century Boulevard
6.	Century Boulevard and I-405 Northbound Ramps East of La Cienega Boulevard
7.	Imperial Highway and Douglas Street
8.	Sepulveda Boulevard and Howard Hughes Parkway
9.	Imperial Highway and La Cienega Boulevard
10.	Imperial Highway and Main Street
11.	Imperial Highway and Pershing Drive
12.	Imperial Highway and Sepulveda Boulevard
13.	Imperial Highway and Nash Street
14.	Imperial Highway and I-105 Ramp
15.	Imperial Highway and I-405 Northbound Ramp
16.	La Cienega Boulevard and Lennox Boulevard
17.	La Cienega Boulevard and 111th Street
18.	La Cienega Boulevard and I-405 Southbound Ramps North of Century Boulevard
19.	La Cienega Boulevard and I-405 Southbound Ramps South of Century Boulevard
20.	La Cienega Boulevard and I-405 Southbound Ramps North of Imperial Highway
21.	Sepulveda Boulevard and La Tijera Boulevard
22.	Sepulveda Boulevard and Lincoln Boulevard
23.	Sepulveda Boulevard and Manchester Avenue
24.	Westchester Parkway and Pershing Drive
25.	Sepulveda Boulevard and Westchester Parkway
26.	Sepulveda Boulevard and 76th/77th Street
27.	Sepulveda Boulevard and 79th/80th Street
28.	Sepulveda Boulevard and 83rd Street
29.	La Cienega Boulevard and 104th Street

Source: Los Angeles World Airports, Ricondo & Associates, Inc. August 2013.



Figure
4.7-2

Construction Traffic Study Area Intersections

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4.7.3.5.3 Intersection Control and Geometry

All of the traffic study area intersections listed above and depicted in Figure 4.7-2 are signalized. In addition, all of the intersections are included in LADOT's Automated Traffic Surveillance and Control (ATSAC) system, except Imperial Highway and the I-405 northbound ramps east of La Cienega Boulevard (Intersection #15) and Century Boulevard and the I-405 northbound ramps east of La Cienega Boulevard (Intersection #6). The ATSAC system provides for monitoring of intersection traffic conditions and the flexibility to adjust traffic signal timing in response to current conditions.

4.7.3.5.4 Project-Related Peak Hours

Certain project commitments identified in the LAX Master Plan EIR are required to be implemented in conjunction with LAX Master Plan development projects and are also being required for LAX projects independent of the LAX Master Plan. Many of these commitments would have a direct effect on the traffic generated by the construction associated with the proposed Project. Specifically, LAX Master Plan Commitments ST-12 (Designated Truck Delivery Hours) and ST-14 (Construction Employee Shift Hours) are designed to control truck deliveries and construction employee trip activity to avoid the AM (7:00 a.m. to 9:00 a.m.) and PM (4:30 p.m. to 6:30 p.m.) peak commute periods, and would apply to the proposed Project. These commitments, along with other transportation-related commitments relevant to the proposed Project, are listed in Section 4.7.7 below.

The anticipated Project-related traffic peak hours were identified by reviewing estimates of the construction-related traffic associated with the proposed Project. Using these data, the peak hours analyzed for the proposed Project were determined to be the following:

- **Project Construction AM Peak Hour (6:00 a.m. to 7:00 a.m.)** - The proposed Project construction AM peak hour represents the peak period for construction employees arriving at the construction employee parking lot during the morning. Based on a review of the draft construction resource schedule of hourly construction trips, and in order to avoid the peak hours identified in the LAX Master Plan commitments regulating truck delivery and employee shift hours, employees are anticipated to arrive between 6:00 a.m. and 7:00 a.m.¹⁶
- **Project Construction PM Peak Hour (3:30 p.m. to 4:30 p.m.)** - The proposed Project construction PM peak hour represents the peak period for construction employees leaving the construction employee parking lot during the evening. Based on a review of the draft construction resource schedule of hourly construction trips, and in order to avoid the peak hours identified in the LAX Master Plan commitments regulating truck delivery and employee shift hours, employees are anticipated to depart between 3:00 p.m. and 4:00 p.m.¹⁷ Although this construction-related traffic activity is estimated to end 30 minutes before the start of the PM peak commute period (4:30 p.m. to 6:30 p.m.), it was determined that combining these exiting construction volumes with the background traffic volume

¹⁶ LAWA Airport Development Group, 6.22.2012 EIR Truck Assumptions.pdf, November 2012 (vehicle schedule times).

¹⁷ LAWA Airport Development Group, 6.22.2012 EIR Truck Assumptions.pdf, November 2012 (vehicle schedule times).

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anticipated to occur between 3:30 p.m. and 4:30 p.m., the period directly adjacent to the PM commuter peak hour, would produce a more conservative estimate of activity.

4.7.3.6 Baseline Intersection Volumes

Baseline traffic volumes consist of the traffic volumes that represent traffic activity at the time the NOP for the proposed Project EIR was published (September 2012). Baseline volumes were estimated based on actual 2013 data collected during the AM and PM construction-related peak hours. Baseline intersection traffic volumes are provided in Appendix D (Attachment 2) of this EIR.

4.7.3.7 Baseline Intersection Analyses

Intersection LOS was analyzed using the CMA methodology to assess the estimated operating conditions during baseline conditions for the AM and PM construction peak hours. LOS is a qualitative measure that describes traffic operating conditions (e.g., delay, queue lengths, congestion). Intersection LOS ranges from A (i.e., excellent conditions with little or no vehicle delay) to F (i.e., excessive vehicle delays and queue lengths). LOS definitions for the CMA methodology are presented in **Table 4.7-2**.

Table 4.7-2

Level of Service Thresholds and Definitions for Signalized Intersections

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

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

In accordance with LADOT analysis procedures, the volume/capacity (V/C) ratio calculated using the CMA methodology is further reduced by 0.07 for those intersections included within the ATSAC system to account for the improved operation and increased efficiency from the

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ATSAC system that is not captured as part of the CMA methodology. Application of the ATSAC reduction is described in Attachment D of the LADOT *Traffic Study Policies and Procedures*.¹⁸

The estimated intersection LOS for baseline conditions is provided in **Table 4.7-3**. As shown in Table 4.7-3, it was estimated that most of the intersections operated at LOS C or better during the baseline construction AM and PM peak periods analyzed for the proposed Project. The one exception occurred at the intersection of Imperial Highway and Sepulveda Boulevard (Intersection #12), which was estimated to operate at LOS F during the construction PM peak hour.

Table 4.7-3

Baseline Intersection Analysis Results

Intersection	Peak Hour ^a	V/C ^b	LOS ^c
1. Aviation Blvd. & Century Blvd.	Construction AM	0.467	A
	Construction PM	0.594	A
2. Imperial Hwy. & Aviation Blvd.	Construction AM	0.500	A
	Construction PM	0.512	A
3. Aviation Blvd. & 111th St.	Construction AM	0.295	A
	Construction PM	0.404	A
4. La Cienega Blvd. & Century Blvd.	Construction AM	0.626	B
	Construction PM	0.762	C
5. Sepulveda Blvd. and Century Blvd.	Construction AM	0.424	A
	Construction PM	0.590	A
6. Century Blvd. & I-405 N/B Ramp	Construction AM	0.634	B
	Construction PM	0.459	A
7. Imperial Hwy. & Douglas St.	Construction AM	0.199	A
	Construction PM	0.375	A
8. Sepulveda Blvd. & H. Hughes Pkwy.	Construction AM	0.219	A
	Construction PM	0.419	A
9. Imperial Hwy. & La Cienega Blvd.	Construction AM	0.191	A
	Construction PM	0.453	A
10. Imperial Hwy. & Main St.	Construction AM	0.499	A
	Construction PM	0.439	A
11. Imperial Hwy. & Pershing Dr.	Construction AM	0.184	A
	Construction PM	0.316	A
12. Imperial Hwy. & Sepulveda Blvd.	Construction AM	0.496	A
	Construction PM	1.004	F
13. Imperial Hwy. & Nash St.	Construction AM	0.362	A
	Construction PM	0.239	A
14. Imperial Hwy. & I-105 Ramp	Construction AM	0.513	A
	Construction PM	0.471	A
15. Imperial Hwy. & I-405 NB Ramp	Construction AM	0.211	A
	Construction PM	0.480	A
16. La Cienega Blvd. & Lennox Blvd.	Construction AM	0.164	A
	Construction PM	0.306	A

¹⁸ Los Angeles Department of Transportation, *Traffic Study Policies and Procedures*, December 2010.

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Table 4.7-3

Baseline Intersection Analysis Results

Intersection	Peak Hour ^a	V/C ^b	LOS ^c
17. La Cienega Blvd. & 111th St.	Construction AM	0.128	A
	Construction PM	0.311	A
18. La Cienega Blvd. & I-405 Southbound Ramps North of Century	Construction AM	0.387	A
	Construction PM	0.410	A
19. La Cienega Blvd. & I-405 Southbound Ramps South of Century	Construction AM	0.135	A
	Construction PM	0.284	A
20. La Cienega Blvd. & I-405 Southbound Ramps North of Imperial	Construction AM	0.136	A
	Construction PM	0.218	A
21. Sepulveda Blvd. & La Tijera Blvd.	Construction AM	0.337	A
	Construction PM	0.613	B
22. Sepulveda Blvd. & Lincoln Blvd.	Construction AM	0.457	A
	Construction PM	0.750	C
23. Sepulveda Blvd. & Manchester Ave.	Construction AM	0.395	A
	Construction PM	0.711	C
24. Westchester Pkwy. & Pershing Dr.	Construction AM	0.151	A
	Construction PM	0.213	A
25. Sepulveda Blvd. & Westchester Pkwy.	Construction AM	0.309	A
	Construction PM	0.649	B
26. Sepulveda Blvd. & 76th/77th St.	Construction AM	0.337	A
	Construction PM	0.440	A
27. Sepulveda Blvd. & 79th/80th St.	Construction AM	0.253	A
	Construction PM	0.513	A
28. Sepulveda Blvd. & 83rd St.	Construction AM	0.211	A
	Construction PM	0.458	A
29. La Cienega Blvd. & 104th St.	Construction AM	0.111	A
	Construction PM	0.276	A

^a The hours of analysis include the construction AM peak (6:00 a.m. - 7:00 a.m.) and the construction PM peak (3:30 p.m. - 4:30 p.m.).

^b Volume to capacity ratio.

^c LOS range: A (excellent) to F (failure).

Source: Ricondo & Associates, Inc., using TRAFFIX, August 2013.

The LOS results from the TRAFFIX program, including the volume, geometry and other inputs used to produce these results are provided in Appendix D (Attachment 3) of this EIR.

4.7.3.8 LAWA's Coordination and Logistic Management Team

Subsequent to the approval of the LAX Master Plan, LAWA established the Coordination and Logistic Management (CALM) team. Working in cooperation with LAWA staff including Terminal Operations, Airport Police, Capital Programming & Planning Group, and Commercial Development Group, the CALM team monitors construction traffic, coordinates lane and roadway closures and analyzes traffic conditions to determine the need for additional traffic controls, lane restriping, and traffic signal modifications. An approval process for proposed construction work has been established in which contractors submit request forms describing

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the work, when the work is proposed to take place, duration, coordination efforts with other projects, etc. If pedestrian or vehicular traffic will be impacted, the submittal form will include proposed traffic control plans. These requests are reviewed by staff from the CALM team and various LAWA divisions, and any concerns are addressed prior to approval. The CALM team also develops an informational campaign for construction activities, including wayfinding signage for pedestrians to locate ground transportation facilities and parking during construction, information for commercial shuttle drivers regarding lane closures and detours, and traffic alerts on LAWA's website for the public and airport employees. A real-time traffic conditions map for the LAX CTA was recently added to the LAWA website. Regular meetings occur to discuss minimizing the construction impacts of current and future projects. Coordination with outside agencies is conducted as the individual projects necessitate and would be utilized for the management of construction traffic associated with the proposed Project.

4.7.4 Project-Generated Traffic

Traffic that would be generated by the proposed Project is defined below for the anticipated peak period of traffic generation.

4.7.4.1. Project Construction Traffic During Project Peak (August 2014)

The peak construction period for the proposed Project is anticipated to occur around August 2014. Construction employee and truck trips were estimated on an hourly basis over the typical busy day (with the exception of the peak AM and PM commute periods) during the peak construction period. Based on the resource loaded schedule developed for the proposed Project, it is estimated that 185 construction employees would access the construction site on a daily basis during the peak period of construction.¹⁹ The construction schedule is based on a single-shift work schedule with construction employees entering the site between 6:00 a.m. to 7:00 a.m. and exiting the site between 3:00 p.m. to 4:00 p.m. Vehicle occupancy was assumed to be 1.15 employees per vehicle. According to a study published by the Southern California Association of Governments (SCAG), the average vehicle occupancy on several regional roadways in the Los Angeles region ranged from approximately 1.15 to 1.30.²⁰ Provided the temporary nature of construction employment and the lower likelihood of rideshare opportunities, a conservative estimate of vehicle occupancy of 1.15 employees per vehicle was assumed. By applying the assumed vehicle occupancy factor, it was projected that 161 construction employee vehicles per day during the proposed Project construction peak period would access and egress the traffic study area in support of proposed Project construction.

For purposes of the intersection analyses, all vehicle trips were converted to "passenger car equivalents" (PCEs) to account for the additional impact that large vehicles, such as trucks, would have on roadway traffic operations. As such, the number of construction-related vehicle trips was multiplied by the following PCE factors, consistent with the assumptions in the LAX Master Plan EIR:

¹⁹ CDM Smith, WAMA_Crew_Estimates_v02_13 March 2013_8 hr.days.xls, March 2013.

²⁰ Southern California Association of Governments, Regional High-Occupancy Vehicle Lane System Performance Study, November 4, 2004.

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<u>Vehicle Type</u>	<u>PCE Factor</u>
Construction employees ²¹	1.0
Construction delivery trucks	2.5

The employees working on the proposed Project are assumed to park onsite or in the surface lots with direct access to the on-airport service road system; therefore, it is assumed that any required shuttle trips would be accommodated within the airport boundary and, consequently, would not access the public roadway system and intersections analyzed for this traffic study.

Delivery trucks carrying construction equipment and material would enter and exit the materials staging area. Based on information provided in Chapter 2, *Project Description*, in this EIR, it is anticipated that the removal of 295,000 cubic yards of soil will be required during the peak construction period occurring over an 81-day period. Assuming trucks with a carrying capacity of 16 cubic yards are used for the proposed Project, then it is estimated that approximately 228 trucks would enter and exit the site on a daily basis during the peak month of construction. Assuming truck trips are evenly distributed over an eight hour shift (excluding the hours that coincide with the peak commuter periods), approximately 29 construction-related truck delivery round trips would enter and exit the site during the peak construction hour for the proposed Project. Using an assumed PCE factor of 2.5 per vehicle, delivery trucks would comprise a total of approximately 73 PCE's entering and exiting the site during the peak construction hour.

The estimated Project-related construction trips (in PCEs) during the proposed Project construction peak in August 2014 are summarized by hour in **Table 4.7-4**. The table includes construction employee vehicle trips and construction delivery truck trips used to haul soil from the site and to transfer goods to the construction staging area(s). As shown, during the morning, construction employees were assumed to enter the site between 6:00 a.m. and 7:00 a.m. During the afternoon, the employees were assumed to exit between 3:00 p.m. and 4:00 p.m. Using a similar conservative approach, it was assumed these trips would occur during the PM period 3:30 p.m. to 4:30 p.m. directly adjacent to the start of the PM peak commuter period. The proposed Project construction volumes used for the AM and PM construction peak hour analysis are summarized at the bottom of Table 4.7-4.

4.7.4.2 Proposed Project Construction Trip Distribution

The locations of the proposed Project construction site(s), construction employee parking areas, delivery staging areas, and other relevant features are depicted in **Figure 4.7-3**. As shown in Figure 4.7-3, trucks are anticipated to use the regional freeway system (I-405 and I-105), Imperial Highway, and Pershing Drive to access the materials and equipment staging area. The regional and local traffic flow distributions are also provided in Figure 4.7-3.

²¹ It should be noted that a different conversion factor was applied to determine the number of construction employee vehicles that would access the project area. A vehicle occupancy factor of 1.15 employees per vehicle was used to convert from employees to vehicles. This conversion factor is different than the PCE factor discussed here, which is used to adjust for the additional impact that large vehicles have on roadway traffic operations.

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Table 4.7-4

Project Peak (August 2014) – Proposed Project-Related Construction Traffic PCEs

		Employee ^a		Truck ^b		Total Construction PCEs
Hour		Trips In	Trips Out	Trips In	Trips Out	
0:00	1:00					
1:00	2:00					
2:00	3:00					
3:00	4:00					
4:00	5:00					
5:00	6:00					
6:00	7:00	161		73	73	307
7:00	8:00					
8:00	9:00					
9:00	10:00			73	73	146
10:00	11:00			73	73	146
11:00	12:00			73	73	146
12:00	13:00			73	73	146
13:00	14:00			73	73	146
14:00	15:00			73	73	146
15:00	16:00		161	73	73	307
16:00	17:00					
17:00	18:00					
18:00	19:00					
19:00	20:00					
20:00	21:00					
21:00	22:00					
22:00	23:00					
23:00	0:00					
Total		161	161	584	584	1,490

Summary of Modeled Traffic PCEs

Construction AM				
(6:00 a.m. – 7:00 a.m.)	161		73	73
Construction PM				
(3:30 p.m. – 4:30 p.m.)		161	73	73

^a Estimate is based on 185 peak day construction employees. An occupancy factor of 1.15 employees per vehicle is included in the employee trip calculations.

^b Truck trips (i.e., delivery and transfer) were converted at a rate of 2.5 PCEs per vehicle.

Source: CDM Smith, WAMA_Crew_Estimates_v02_13 March 2013_8 hr. days.xls, (employee trip volumes, truck trips) March 2013; CDM Smith email, (truck trips) March 2013; LAWA Airport Development Group (ADG), 6.22.2012 EIR Truck Assumptions.pdf, (vehicle schedule times) November 2012.

For purposes of distributing traffic on the traffic study area roadway network, it was assumed that construction employee and delivery vehicle trips would originate from geographic locations in proportion to the distribution of regional population and specific street routing assumptions obtained from the LAX Master Plan EIR and the LAX 2011 Air Passenger Survey. As shown in **Table 4.7-5** and in Figure 4.7-3, it was estimated that approximately 21 percent of the construction-related traffic would access the Airport from I-405 north, 23 percent from I-405 south, 32 percent from the east (I-105), and 24 percent from local roadways. These route

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characteristics represent the roadways that a construction-related vehicle would use to access the traffic study area.

Table 4.7-5
Regional Population Distribution

Area	Population (2002)	Percent of Population	Route Percentage to Airport				Total ¹
			I-405 North	I-405 South	I-105	Local Roads	
Traffic Study Area	423,185	3	0	0	0	3	3
South LA County	9,052,477	54	15	5	18	16	54
North LA County	706,077	4	2	0	2	0	4
Orange County	2,772,302	17	0	14	0	2	17
Riverside/San Bernardino County	2,961,693	18	0	4	12	2	18
Ventura County	771,734	5	4	0	0	0	5
Total ^a	16,687,468	100	21	23	32	24	100

^a Totals may not add due to rounding.

Sources: LAX Master Plan Supplement to the Draft EIR, Figure 4.3.2-3 (Existing 1996 Airport Traffic versus Non-Airport Traffic Comparison); 2001 LAX Passenger Survey Report (Table 39), Los Angeles International Airport, April 2004, Applied Management & Planning Group; Los Angeles International Airport 2011 Passenger Survey (Table III-13), Los Angeles International Airport, April 2011, Unison Consulting, Inc.

In assigning traffic to the traffic study area roadways, it was assumed that construction vehicles, consisting of trucks and construction employee automobiles, would approach the traffic study area in proportion to the regional population distributions described above. Truck traffic, however, is limited to accessing the Project site during construction via Imperial Highway and Pershing Drive in accordance with LAX Master Plan Commitment ST-22 (Designated Truck Routes) which stipulates that deliveries for dirt, aggregate, and other materials will use designated freeways and non-residential streets. The freeway ramps, roadways, and intersections representing the travel paths for construction-related vehicles within the traffic study area were determined by reviewing the potential paths that would be used by vehicles traveling to the employee parking lots and to the construction staging areas, and assigning those trips to the most logical routes. The analysis is not particularly sensitive to the regional approach assumptions, given that a large proportion of the construction-related trips would access the traffic study area via a limited number of freeway access points that may accommodate traffic originating from several regional directions. The assumed traffic study area circulation routes for construction employees and trucks are described in Appendix D (Attachment 4) of this EIR.

4.7.5 Future Cumulative Traffic

The components of traffic for the future cumulative traffic condition are described in this section. The future cumulative traffic condition takes into consideration past, present, and reasonably foreseeable projects and includes growth in ambient background traffic and both airport and non-airport developments in the vicinity of the Airport. Known development projects in the Airport vicinity that may contribute traffic to the proposed Project traffic study area roadway system during the peak construction period for the proposed Project were also considered. These trips would result from either the construction or the operation of those development projects. The list of related projects is constantly changing as projects rotate off the list and new projects are approved and added to the list. Given that approval, construction, and operation of

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local area development projects is a continuous process, the traffic associated with the construction and operation of many past and current local area developments are represented in the traffic volume data used as a basis for the traffic study. The development schedule and traffic characteristics of larger projects in close proximity to the traffic study area were reviewed and their effects were incorporated into the cumulative analysis.

4.7.5.1 Cumulative Projects

Development projects considered in the cumulative impacts analysis include LAX Master Plan projects as well as other capital improvement projects undertaken by LAWA and other local agencies. Based on information available at the time the construction traffic analysis for the proposed Project was prepared, the development projects anticipated to be under construction concurrent with the proposed Project construction and of a nature that would contribute to cumulative traffic impacts were identified.

Table 4.7-6 summarizes the estimated construction costs, and the assumed start and end dates of construction for the proposed Project and each of the cumulative projects that are anticipated to be under construction concurrent with the proposed Project. The estimated labor component of the total construction cost is a key element associated with estimating construction employee hours and resulting employee vehicle trips.

The activity characteristics of the resource loaded schedule and associated construction-related vehicle trip activity developed for the Bradley West Project was used to estimate the construction activity associated with the other concurrent projects for which detailed construction-related trip data were not available. Specifically, the ratio of total construction employee hours to total labor cost was calculated for the Bradley West Project. This ratio was applied to the estimated labor costs associated with the other cumulative projects to provide an estimate of total employee hours required over the course of each of these other projects. In addition, the general distribution of employee hours over the course of the Bradley West Project construction program was used to allocate total employee hours over the course of the individual projects on a monthly basis. This methodology was considered appropriate for this analysis as the Bradley West Project provided detailed information related to construction activity, costs, and associated vehicle trip activity, and provided detailed information related to the primary variables involved with determining labor schedules (i.e. project costs and timeline). Although it is likely that the other cumulative projects may experience different peaking patterns, the profile of the monthly distribution of employee hours over the course of the Bradley West Project provides a model profile calculated based on a comprehensive resource loaded schedule which is anticipated to provide a realistic surrogate for use in estimating activity from other cumulative projects for which detailed construction data are not available.

This approach was used to estimate construction employee hours and vehicle trips associated with all concurrent projects with the exception of the LAX Northside Area Development project for which construction trip information and monthly construction employee hour data were obtained from the consultants involved in analysis and preparation of the LAX Northside Area Development EIR.

Figure 4.7-4 provides estimated employee hours by month for the proposed Project and the cumulative construction projects that are anticipated to be under construction concurrent with the proposed Project construction period. The figure includes all anticipated construction projects that are expected to occur over the course of the construction period for the proposed

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Table 4.7-6

Construction Projects Concurrent with the Proposed Project Construction Period

Project No.	Concurrent Construction Project	Estimated Total Construction Cost (millions)	Start Date	End Date	Estimated Employee Hours During Projects (Total)
N/A ^a	West Aircraft Maintenance Area Project	\$175	Jan-14	Dec-18	425,000
1	RSA Improvements – South Airfield ^{b, f}	\$106.3	Nov-13	May-15	253,000
2	RSA Improvements – North Airfield ^f	\$139.1	Jun-14	Jun-19	312,000
3	Bradley West Project	\$603.7	Nov-13	Dec-17	1,353,000
4	North Terminals Improvements	\$380	Aug-13	Aug-17	852,000
5	South Terminals Improvements	\$665	Nov-11	Feb-18	1,491,000
6	Midfield Satellite Concourse: Phase 1 ^b	\$666.5	Oct-16	Jul-20	1,494,000
7	Central Utility Plant Replacement Project (CUP – RP) – Remaining Work	\$120.6	Sep-13	Dec-14	216,000
8	Miscellaneous Projects/Improvements	\$945.5	Jan-14	Jul-20	605,000
9	LAX Northside Development ^{c, f}	N/A ¹	N/A ¹	N/A ¹	N/A ¹
10	LAX SPAS Development ^{d, f}	\$16,391	Jun-15	Jun-25	15,907,000
11	Metro Crenshaw / LAX Transit Corridor and Station ^{b, e, f}	\$404	Dec-15	Dec-17	453,000

^a N/A = Not Applicable

^b Subsequent to the completion of this traffic study, construction periods were adjusted for the following projects: RSA Improvements – South Airfield (start date February 2014, end date February 2015); Midfield Satellite Concourse: Phase 1 (start date July 2014, end date July 2019); Metro Crenshaw/LAX Transit Corridor and Station (end date April 2019). Based on these revised project characteristics, it is estimated that the total number of construction vehicles generated by the concurrent construction projects in the peak cumulative month will be lower than what has been analyzed for this traffic analysis; therefore, the traffic analysis documented in this report is considered to be conservative.

^c Construction traffic estimates provided by Gibson Transportation Consulting, Inc., who has prepared detailed traffic analysis for the proposed LAX Northside Plan Update.

^d LAWA evaluated nine development alternatives for the LAX SPAS and in February 2013 the Board of Airport Commissioners (BOAC) selected one alternative; however, all the approvals necessary to implement that alternative have not yet occurred. For the purposes of the cumulative construction impacts analysis associated with the proposed Project, an assumption is made that the LAX Master Plan improvements, as previously approved, and as reflected in the LAX SPAS Alternative 3, are implemented, which provides a more conservative analysis than if one were to assume the BOAC-selected alternative (i.e., more development would occur under the LAX Master Plan scenario than under the BOAC-selected alternative).

^e Estimated budget and schedule based on information obtained from Crenshaw/LAX Transit Corridor Project EIR and project website.

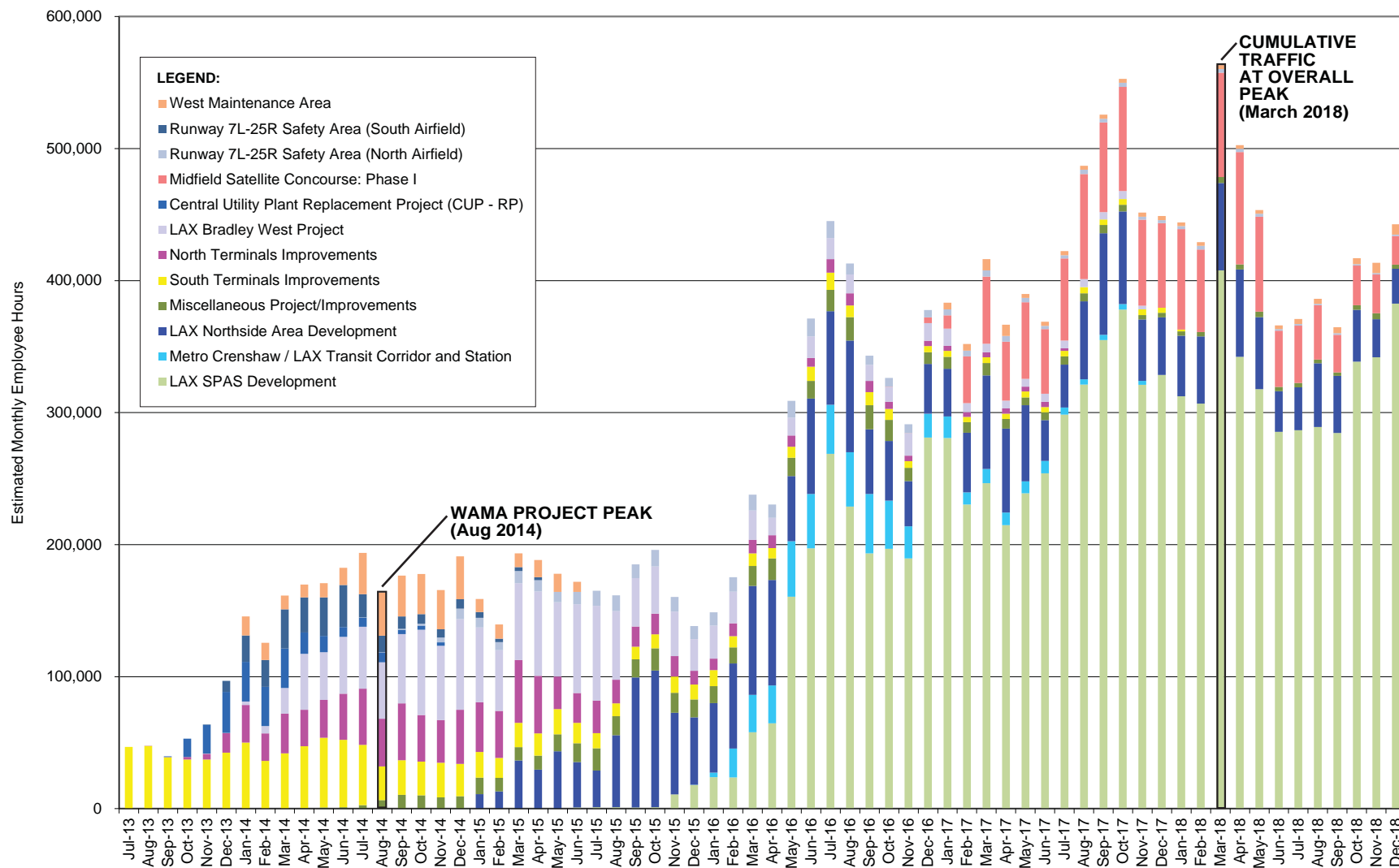
^f This project is subject to additional environmental review pursuant to the National Environmental Policy Act.

Sources: CDM Smith (list and characteristics of proposed Project and concurrent projects); Email from CDM Smith (Anthony Skidmore) on August 19, 2013 (project schedules and cost for projects 1 - 8, & 10); Crenshaw/LAX Transit Corridor Project FEIR (Metro Crenshaw/LAX Transit Corridor cost), August 2011; www.metro.net/projects/crenshaw_corridor.com (Metro Crenshaw/LAX Transit Corridor schedule), accessed November 12, 2012; Ricondo & Associates, Inc. (estimated employee hours for all other projects), August 2013.

Project. As shown in the figure, the peak period for proposed Project construction is estimated to occur in August 2014, while the overall cumulative peak during construction of the proposed Project is estimated to occur in March 2018.

The assumed two percent annual growth in background traffic is anticipated to produce a conservative traffic volume scenario that would account for additional construction-related traffic in the event that additional construction projects are initiated during the timeframe evaluated for this study.

Estimated AM and PM construction peak hour vehicle trips associated with the proposed Project and the five concurrent construction projects during March 2018 (cumulative peak period) are



Sources: CDM Smith (construction cost and schedule), LAWA Capital Programming & Planning Group (construction cost and schedule), Gibson Transportation Consulting, Inc. (LAX Northside Area Development), Ricondo & Associates, Inc., (estimated employee hours for all other projects) August 2013.
 Prepared by: Ricondo & Associates, Inc., September 2013.

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provided in **Table 4.7-7**. Traffic volumes associated with the proposed Project during the peak period for cumulative traffic were calculated to be proportional to the change in monthly employee hours as compared with the overall proposed Project peak month from August 2014

Table 4.7-7

AM and PM Construction Peak Hour Traffic PCEs at Overall Cumulative Peak by Project

Project	Construction Trips in Passenger Car Equivalents (PCEs)							
	Construction AM Peak Hour (6:00 a.m. - 7:00 a.m.)				Construction PM Peak Hour (3:00 p.m. - 4:00 p.m.)			
	Employees ^a		Trucks		Employees ^a		Trucks	
	In	Out	In	Out	In	Out	In	Out
Proposed Project (March 2018) ^a	15	0	7	7	0	15	7	7
<u>Other Concurrent Projects in March 2018^b</u>								
2. RSA Improvements – North Airfield	15	0	3	3	0	15	3	3
6. Midfield Satellite Concourse: Phase 1	392	0	66	66	0	392	66	66
8. Miscellaneous Project/Improvements	22	0	4	4	0	22	4	4
9. LAX Northside Area Development ^c	320	0	0	0	0	320	0	0
10. LAX SPAS Development	2,018	0	337	337	0	2,018	337	337
Total for Other Concurrent Projects in March 2018	2,767	0	410	410	0	2,767	410	410

^a The proposed Project trips shown here are based on 17 peak day construction employees generating 15 daily employee vehicles.

^b The ratio of peak hour trips over total monthly employee construction hours for other concurrent projects was assumed to be equal to that calculated for the proposed Project, unless other project-specific data were available.

^c Peak hour trips provided by Gibson Transportation Consulting

Source: Gibson Transportation Consulting, Inc., Pages from Detailed ResourcesV1.pdf (LAX Northside Area Development trips); Ricondo & Associates, Inc., August 2013.

as depicted on the chart. As shown on the table, it is anticipated that a total of 15 employee vehicles would access the construction employee parking lot during the peak period for cumulative traffic.²² Traffic volumes associated with each concurrent construction project were estimated by calculating the ratio of vehicle trips to employee hours for the Bradley West Project and multiplying this ratio by the estimated total number of employee hours for each project during the cumulative peak month in March 2018, except for those projects where vehicle trip data and/or trip ratios were available specifically from traffic studies prepared for those projects. The percentage of vehicle trips arriving at and departing the traffic study area by hour of the day, for each of the cumulative projects, were assumed to coincide with the peak construction periods for the proposed Project. Furthermore, as a conservative assumption, it is assumed that all construction projects would use a single work shift such that all construction employees arrive at the site in the morning and depart the site in the afternoon.

²² The 15 vehicles is determined by multiplying the peak period traffic (161 vehicles) by the ratio of proposed Project employee hours at the overall cumulative peak month in March 2018 (2,856 employee hours) to proposed Project employee hours at the proposed Project peak month (32,544 employee hours in August 2014). [i.e., $2,856/32,544 \times 161 = \sim 15$ vehicles]

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For purposes of distributing traffic within the traffic study area, it was necessary to identify the employee parking and staging locations for the concurrent projects. The location of the construction employee parking and material staging area as well as general access and circulation patterns of construction-related vehicle activity for the proposed Project are depicted in **Figure 4.7-5**. The anticipated contractor employee parking and staging areas for the five concurrent construction projects are also depicted in Figure 4.7-5, as well as other available staging location in the area. The exhibit depicts parking and staging areas associated with the projects that were anticipated to be under construction concurrent with the peak cumulative period analyzed for this study. Construction staging areas are located within the LAX Northside planning area, which is planned for future development independent from SPAS. Depending on the nature and timing of such future development, use of the construction staging areas for SPAS-related construction, staging may be limited. The regional and local area distribution patterns are anticipated to be generally the same as for the proposed Project, with adjustments as necessary for access to the individual sites.

4.7.5.2 Planned Transportation Network Improvements

The Bradley West Project EIR identifies several intersection improvements throughout the study area to mitigate potential future impacts²³. The following study area intersections that were anticipated to be significantly impacted by the Bradley West Project would be improved when traffic activity levels reach certain activity thresholds at which an impact would be triggered.

- Imperial Highway and Sepulveda Boulevard
- La Cienega Boulevard and I-405 Ramps N/O Century Boulevard
- La Tijera Boulevard and Sepulveda Boulevard
- Sepulveda Boulevard and 76th/77th Street

Though it is possible improvements would be in place prior to the peak cumulative traffic period (March 2018), for purposes of this study it has been conservatively assumed that these improvements would not be in place. Therefore, it is not anticipated that any transportation improvements would be implemented during the timeframe analyzed for this study that would alter traffic patterns or modify the intersection capacity assumptions in such a way that would affect the assessment of potential traffic impacts associated with the proposed Project.

4.7.6 Thresholds of Significance

The traffic study area intersections either fall entirely within the City of Los Angeles or share a boundary with the City of El Segundo and the City of Inglewood. The intersections which fall entirely within the City of Los Angeles were evaluated for potential traffic impacts using the LADOT significant traffic impact criteria. Intersections lying on the boundary of multiple jurisdictions were evaluated using the more conservative threshold of significance criteria; in all of these cases the LADOT criteria was shown to have the most conservative thresholds.


²³ City of Los Angeles, Los Angeles World Airports, *Final Environmental Impact Report for Bradley West Project, Los Angeles International Airport (LAX)*, September 2009, Section 4.2.9

Activity Name ¹	Construction Employee Parking ²	Delivery Staging ²
RSA Improvements – North Airfield	A, F, L	A, F, L
Midfield Satellite Concourse: Phase 1	N	A, N
Miscellaneous Projects/Improvements	A	C
LAX Northside Area Development	A, C, M	A, C, M
LAX SPAS Development	A, C, G, J, K, L, M	A, C, G, J, K, L, M

1/Represents all construction projects anticipated to be underway concurrent with the cumulative peak month of construction during the West Aircraft Maintenance Area Project construction period as depicted in Figure 4.7-5.
2/Locations provided by CDM Smith.

Legend

- Proposed Project Site
- ↔ Local Distribution
- ⋯↔ Regional Roadway Distribution
- WAMA Construction Parking and Staging Area
- Available Construction Parking and/or Staging Area

Not to Scale.  north

Source: Los Angeles World Airports, CDM Smith, Ricondo & Associates, Inc., August 2013.
Prepared by: Ricondo & Associates, Inc., September 2013.



West Aircraft Maintenance Area Project Draft EIR

Employee Parking and Staging Locations for Proposed Project and Other Projects at Construction Peak

Figure
4.7-5

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4.7.6.1 City of El Segundo Impact Criteria

In the City of El Segundo, an impact is considered significant if one of the following thresholds is exceeded:²⁴

- The LOS is E or F, its final V/C ratio is 0.901 or greater, and the project-related increase in V/C is 0.020 or greater.

4.7.6.2 City of Inglewood Impact Criteria

In the City of Inglewood, an impact is considered significant if one of the following thresholds is exceeded:²⁵

- The LOS is F, its final V/C ratio is 1.001 or greater, and the project-related increase in V/C is 0.020 or greater.

4.7.6.3 City of Los Angeles Impact Criteria

In accordance with LADOT criteria defined in its *Traffic Study Policy and Procedures*,²⁶ an impact is considered to be significant if one of the following thresholds is exceeded:

- The LOS is C, its final V/C ratio is 0.701 to 0.80, and the project-related increase in V/C is 0.040 or greater, or
- The LOS is D, its final V/C ratio is 0.801 to 0.90, and the project-related increase in V/C is 0.020 or greater, or
- The LOS is E or F, its final V/C ratio is 0.901 or greater, and the project-related increase in V/C is 0.010 or greater.

The "final V/C ratio" as defined by LADOT consists of the future V/C ratio at an intersection that includes volume from the project, baseline, ambient background growth,²⁷ and other related projects, but without proposed intersection traffic mitigation as potentially required by the project.

The "project-related increase" is defined as the change in the unmitigated LOS condition between the (a) future V/C "with" the project, baseline, ambient background growth (for the cumulative analysis), and other related project growth, and (b) the future V/C "without" the project, but with baseline, ambient background growth, and other related project growth.

For purposes of this analysis and in accordance with CEQA, proposed Project impacts were determined by comparing the LOS results for the following conditions:

- **Project Impacts**--The direct impacts of the proposed Project are determined by calculating the difference in LOS for the Baseline Plus Project LOS and the Baseline LOS. This comparison is required to isolate the direct impacts of the proposed Project. The difference

²⁴ Samaras, Paul, Principal Planner, City of El Segundo, Personal Communication, April 21, 2009.

²⁵ Mai, Alan, Associate Traffic Engineer, City of Inglewood, Personal Communication, January 6, 2009.

²⁶ Los Angeles Department of Transportation, *Traffic Study Policies and Procedures*, Revised December 2010.

²⁷ This definition applies to the cumulative analysis and not the project-specific analysis where ambient background growth and trips from other concurrent construction projects are not included in the calculation of the "final v/c ratio." The "final v/c ratio" for the project-specific analysis is calculated using future project volumes associated with construction of the project added directly to the Baseline volumes.

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in LOS is compared to the thresholds identified earlier in this section to determine if the proposed Project would result in a significant impact.

- **Cumulative Impacts**--The cumulative impacts analysis is intended to provide a comparison of future traffic conditions, consisting of traffic generated by all anticipated sources described previously in this document. Cumulative impacts were analyzed using a two-step process. Initially, the cumulative "With Project" LOS condition was compared with the baseline condition to determine if a cumulative impact would occur relative to the baseline. A cumulative impact was deemed significant if it exceeded the allowable threshold of significance defined earlier in this section. If a cumulative impact was determined, then a second comparison was conducted by calculating the difference in LOS for the "With Project" and "Without Project" levels of service to determine the proposed Project's contribution. If the calculated differences in LOS exceed the threshold guidelines defined in this section, then it was determined that the proposed Project component would represent a cumulatively considerable contribution (significant impact).

4.7.7 Applicable LAX Master Plan Commitments and Mitigation Measures

The following transportation-related commitments identified in the LAX Master Plan MMRP would be applied to the proposed Project and thus are included as part of the proposed Project for purposes of environmental review:

C-1. Establishment of a Ground Transportation/Construction Coordination Office.

- Establish this office for the life of the construction projects to coordinate deliveries, monitor traffic conditions, advise motorists and those making deliveries about detours and congested areas, and monitor and enforce delivery times and routes. LAWA would periodically analyze traffic conditions on designated routes during construction to see whether there is a need to improve conditions through signage and other means.

This office may undertake a variety of duties, including but not limited to:

- Inform motorists about detours and congestion by use of static signs, changeable message signs, media announcements, airport website, etc.;
- Work with airport police and the Los Angeles Police Department to enforce delivery times and routes;
- Establish staging areas;
- Coordinate with police and fire personnel regarding maintenance of emergency access and response times;
- Coordinate roadway projects of Caltrans, City of Los Angeles, and other jurisdictions with those of the Airport construction projects;
- Monitor and coordinate deliveries;
- Establish detour routes;
- Work with residential and commercial neighbors to address their concerns regarding construction activity; and
- Analyze traffic conditions to determine the need for additional traffic controls, lane restriping, signal modifications, etc.

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Note: Subsequent to the approval of the LAX Master Plan, LAWA established a “Ground Transportation/Construction Coordination Office” in the form of the CALM team. The CALM team coordinates and monitors construction traffic, coordinates with agencies as necessary, and reviews traffic control plans to address any concerns prior to approval. The CALM team, discussed in detail in Section 4.7.3.8, above, provides implementation of the LAX Master Plan Commitment C-1.

C-2. Construction Personnel Airport Orientation.

- All construction personnel will be required to attend an airport project-specific orientation (pre-construction meeting) that includes where to park, where staging areas are located, construction policies, etc.

ST-9. Construction Deliveries.

- Construction deliveries requiring lane closures shall receive prior approval from the Construction Coordination Office. Notification of deliveries shall be made with sufficient time to allow for any modifications to approved traffic detour plans.

ST-12. Designated Truck Delivery Hours.

- Truck deliveries shall be encouraged to use night-time hours and shall avoid the peak periods of 7:00 AM to 9:00 AM and 4:30 PM to 6:30 PM.

[Note: This measure provides guidelines for controlling the arrival and departure times of construction-related truck traffic during peak commute periods, and served as input for developing an estimated schedule of the proposed Project construction delivery activity.]

ST-14. Construction Employee Shift Hours.

- Shift hours that do not coincide with the heaviest commuter traffic periods (7:00 AM to 9:00 AM, 4:30 PM to 6:30 PM) would be established. Work periods will be extended to include weekends and multiple work shifts, to the extent possible and necessary.

[Note: This measure provides guidelines for controlling the arrival and departure times of construction employees, and served as direct input for determining the employee traffic activity associated with the proposed Project. Traffic analysis was limited to weekday traffic conditions to provide a conservative estimate of potential impacts given that weekday traffic activity is typically significantly higher than during the weekend traffic.]

ST-16. Designated Haul Routes.

- Every effort will be made to ensure that haul routes are located away from sensitive noise receptors.

ST-17. Maintenance of Haul Routes.

- Haul routes on off-airport roadways will be maintained periodically and will comply with City of Los Angeles or other appropriate jurisdictional requirements for maintenance. Minor striping, lane configurations, and signal phasing modifications would be provided as needed.

ST-18. Construction Traffic Management Plan.

- A complete construction traffic plan will be developed to designate detour and/or haul routes, variable message and other sign locations, communication methods with airport

4.7 Construction Surface Transportation

passengers, construction deliveries, construction employee shift hours, construction employee parking locations and other relevant factors.

ST-22. Designated Truck Routes.

- For dirt and aggregate and all other materials and equipment, truck deliveries will be on designated routes only (freeways and non-residential streets). Every effort will be made for routes to avoid residential frontages. The designated routes on City of Los Angeles streets are subject to approval by LADOT's Bureau of Traffic Management and may include, but will not necessarily be limited to: Pershing Drive (Westchester Parkway to Imperial Highway); Florence Avenue (Aviation Boulevard to I-405); Manchester Boulevard (Aviation Boulevard to I-405); Aviation Boulevard (Manchester Avenue to Imperial Highway); Westchester Parkway/Arbor Vitae Street (Pershing Drive to I-405); Century Boulevard (Sepulveda Boulevard to I-405); Imperial Highway (Pershing Drive to I-405); La Cienega Boulevard (north of Imperial Highway); Airport Boulevard (Arbor Vitae Street to Century Boulevard); Sepulveda Boulevard (Westchester Parkway to Imperial Highway); I-405; and I-105.

4.7.8 Impact Analysis

4.7.8.1 Impact Comparison 1: Baseline Plus Project Traffic Measured Against Baseline

This comparison provides the basis for determining Project-related impacts. The comparison is based on Project-specific traffic generation during the peak construction period (August 2014) added to baseline traffic volumes. The resulting levels of service were compared to the levels of service associated with the baseline condition. A significant impact would be realized if/when the thresholds of significance are met or exceeded. Impact comparisons between the proposed Project's peak traffic added to the baseline compared to the baseline alone is depicted in **Table 4.7-8**. As shown in Table 4.7-8, it is anticipated that no significant impacts would occur during August 2014 under the proposed Project.

4.7.8.2 Impact Comparison 2: Cumulative Traffic (March 2018) Measured against Baseline

This comparison was conducted in two steps, which is consistent with *CEQA Guidelines* Section 15130. An initial comparison was conducted by comparing the LOS associated with peak future cumulative traffic volumes (including the proposed Project, other cumulative projects and ambient growth in background traffic), to the baseline levels of service from 2013. This initial comparison of future cumulative conditions to baseline 2013 conditions was conducted to determine if there would be a significant cumulative impact. If a significant cumulative impact was determined, then an additional comparison was conducted to determine if the proposed Project's share of the significant impact would be considered a cumulatively considerable contribution to the significant cumulative impact. This second comparison was conducted by comparing future cumulative conditions both with and without the proposed Project. Cumulatively considerable contributions are realized when the thresholds of significance defined above are met or exceeded. The impact comparison for this condition is depicted in **Table 4.7-9**.

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Table 4.7-8

Proposed Project - Level of Service Analysis Results - Impact Comparison 1 Baseline Plus Project Compared to Baseline

	Intersection	Peak Hour ^a	Baseline		Baseline Plus Project		Change in V/C	Significant Impact
			V/C ^b	LOS ^c	V/C ^b	LOS ^c		
1.	Aviation Boulevard and Century Boulevard	Construction AM	0.467	A	0.469	A	0.002	--
		Construction PM	0.594	A	0.595	A	0.001	--
2.	Imperial Highway and Aviation Boulevard	Construction AM	0.500	A	0.500	A	0.000	--
		Construction PM	0.512	A	0.515	A	0.003	--
3.	Aviation Boulevard and 111 th Street	Construction AM	0.295	A	0.295	A	0.000	--
		Construction PM	0.404	A	0.404	A	0.000	--
4.	La Cienega Boulevard and Century Boulevard	Construction AM	0.626	B	0.627	B	0.001	--
		Construction PM	0.762	C	0.762	C	0.000	--
5.	Sepulveda Blvd. and Century Blvd.	Construction AM	0.424	A	0.426	A	0.002	--
		Construction PM	0.590	A	0.590	A	0.000	--
6.	Century Boulevard and I-405 Northbound Ramp	Construction AM	0.634	B	0.635	B	0.001	--
		Construction PM	0.459	A	0.460	A	0.001	--
7.	Imperial Highway and Douglas Street	Construction AM	0.199	A	0.199	A	0.000	--
		Construction PM	0.375	A	0.378	A	0.003	--
8.	Sepulveda Boulevard and Howard Hughes Pkwy.	Construction AM	0.219	A	0.227	A	0.008	--
		Construction PM	0.419	A	0.421	A	0.002	--
9.	Imperial Highway and La Cienega Boulevard	Construction AM	0.191	A	0.192	A	0.001	--
		Construction PM	0.453	A	0.455	A	0.002	--
10.	Imperial Highway and Main Street	Construction AM	0.499	A	0.590	A	0.091	--
		Construction PM	0.439	A	0.502	A	0.063	--
11.	Imperial Highway and Pershing Drive	Construction AM	0.184	A	0.336	A	0.152	--
		Construction PM	0.316	A	0.385	A	0.069	--
12.	Imperial Highway and Sepulveda Boulevard	Construction AM	0.496	A	0.496	A	0.000	--
		Construction PM	1.004	F	1.006	F	0.002	--
13.	Imperial Highway and Nash Street	Construction AM	0.362	A	0.362	A	0.000	--
		Construction PM	0.239	A	0.242	A	0.003	--
14.	Imperial Highway and I-105 Ramp	Construction AM	0.513	A	0.516	A	0.003	--
		Construction PM	0.471	A	0.472	A	0.001	--
15.	Imperial Highway and I-405 Northbound Ramp	Construction AM	0.211	A	0.213	A	0.002	--
		Construction PM	0.480	A	0.482	A	0.002	--
16.	La Cienega Boulevard and Lennox Boulevard	Construction AM	0.164	A	0.164	A	0.000	--
		Construction PM	0.306	A	0.306	A	0.000	--
17.	La Cienega Boulevard and 111 th Street	Construction AM	0.128	A	0.128	A	0.000	--
		Construction PM	0.311	A	0.311	A	0.000	--

4.7 Construction Surface Transportation

Table 4.7-8

Proposed Project - Level of Service Analysis Results - Impact Comparison 1 Baseline Plus Project Compared to Baseline

Intersection	Peak Hour ^a	Baseline		Baseline Plus Project		Change in V/C	Significant Impact
		V/C ^b	LOS ^c	V/C ^b	LOS ^c		
18. La Cienega Blvd. & I-405 Southbound Ramps North of Century	Construction AM	0.387	A	0.387	A	0.000	--
	Construction PM	0.410	A	0.410	A	0.000	--
19. La Cienega Blvd. & I-405 Southbound Ramps South of Century	Construction AM	0.135	A	0.135	A	0.000	--
	Construction PM	0.284	A	0.284	A	0.000	--
20. La Cienega Blvd. & I-405 Southbound Ramps North of Imperial	Construction AM	0.136	A	0.136	A	0.000	--
	Construction PM	0.218	A	0.218	A	0.000	--
21. Sepulveda Boulevard and La Tijera Boulevard	Construction AM	0.337	A	0.337	A	0.000	--
	Construction PM	0.613	B	0.614	B	0.001	--
22. Sepulveda Boulevard and Lincoln Boulevard	Construction AM	0.457	A	0.457	A	0.000	--
	Construction PM	0.750	C	0.752	C	0.002	--
23. Sepulveda Boulevard and Manchester Avenue	Construction AM	0.395	A	0.395	A	0.000	--
	Construction PM	0.711	C	0.721	C	0.010	--
24. Westchester Parkway and Pershing Drive	Construction AM	0.151	A	0.167	A	0.016	--
	Construction PM	0.213	A	0.250	A	0.037	--
25. Sepulveda Boulevard and Westchester Parkway	Construction AM	0.309	A	0.309	A	0.000	--
	Construction PM	0.649	B	0.649	B	0.000	--
26. Sepulveda Boulevard and 76th/77th Street	Construction AM	0.337	A	0.337	A	0.000	--
	Construction PM	0.440	A	0.440	A	0.000	--
27. Sepulveda Boulevard and 79th/80th Street	Construction AM	0.253	A	0.253	A	0.000	--
	Construction PM	0.513	A	0.513	A	0.000	--
28. Sepulveda Boulevard and 83rd Street	Construction AM	0.211	A	0.211	A	0.000	--
	Construction PM	0.458	A	0.458	A	0.000	--
29. La Cienega Boulevard and 104th Street	Construction AM	0.111	A	0.112	A	0.001	--
	Construction PM	0.276	A	0.276	A	0.000	--

^a The hours of analysis include the construction AM peak (6:00 a.m. - 7:00 a.m.), and the construction PM peak (3:30 p.m. - 4:30 p.m.).

^b Volume to capacity ratio. Includes an LADOT ATSAC benefit applied at each intersection with the exception of intersections #6 and #15, which are not a part of the LADOT system.

^c Level of Service range: A (excellent) to F (failure).

^d -- Indicates "No Impact"

Source: Ricondo & Associates, Inc., using TRAFFIX, August 2013.

4.7 Construction Surface Transportation

Table 4.7-9

Proposed Project - Level of Service Analysis Results - Impact Comparison 2 Cumulative Traffic (March 2018)

		Cumulative Peak (March 2018)								Cumulative Considerable	
		Baseline		Without Project		With Project ^a		Cumulative Impact		Determination/Significant Project	
		[A]		[B]		[C]		[C]-[A]		[C]-[B]	
Intersection	Peak Hour ^a	V/C ^b	LOS ^c	V/C ^b	LOS ^c	V/C ^b	LOS ^c	Change in V/C	Cumulative Impact?	Change in V/C	Cumulatively Considerable Contribution?
1. Aviation Boulevard and Century Boulevard	Construction AM	0.467	A	0.633	B	0.633	B	0.166	--	0.000	--
	Construction PM	0.594	A	0.817	D	0.817	D	0.223	Yes	0.000	--
2. Imperial Highway and Aviation Boulevard	Construction AM	0.500	A	0.672	B	0.672	B	0.172	--	0.000	--
	Construction PM	0.512	A	0.701	C	0.701	C	0.189	Yes	0.000	--
3. Aviation Boulevard and 111th Street	Construction AM	0.295	A	0.396	A	0.396	A	0.101	--	0.000	--
	Construction PM	0.404	A	0.511	A	0.511	A	0.107	--	0.000	--
4. La Cienega Boulevard and Century Boulevard	Construction AM	0.626	B	0.794	C	0.794	C	0.168	Yes	0.000	--
	Construction PM	0.762	C	1.193	F	1.193	F	0.431	Yes	0.000	--
5. Sepulveda Blvd. and Century Blvd.	Construction AM	0.424	A	0.677	B	0.677	B	0.253	--	0.000	--
	Construction PM	0.590	A	0.785	C	0.785	C	0.195	Yes	0.000	--
6. Century Boulevard and I-405 Northbound Ramp	Construction AM	0.634	B	0.792	C	0.792	C	0.158	Yes	0.000	--
	Construction PM	0.459	A	0.563	A	0.563	A	0.104	--	0.000	--
7. Imperial Highway and Douglas Street	Construction AM	0.199	A	0.234	A	0.234	A	0.035	--	0.000	--
	Construction PM	0.375	A	0.500	A	0.500	A	0.125	--	0.000	--
8. Sepulveda Boulevard and Howard Hughes Parkway	Construction AM	0.219	A	0.371	A	0.372	A	0.153	--	0.001	--
	Construction PM	0.419	A	0.498	A	0.498	A	0.079	--	0.000	--
9. Imperial Highway and La Cienega Boulevard	Construction AM	0.191	A	0.239	A	0.239	A	0.048	--	0.000	--
	Construction PM	0.453	A	0.542	A	0.542	A	0.089	--	0.000	--
10. Imperial Highway and Main Street	Construction AM	0.499	A	0.887	D	0.896	D	0.397	Yes	0.009	--
	Construction PM	0.439	A	0.764	C	0.770	C	0.331	Yes	0.006	--
11. Imperial Highway and Pershing Drive	Construction AM	0.184	A	0.607	B	0.614	B	0.430	--	0.007	--
	Construction PM	0.316	A	0.657	B	0.663	B	0.347	--	0.006	--
12. Imperial Highway and Sepulveda Boulevard	Construction AM	0.496	A	0.693	B	0.693	B	0.197	--	0.000	--
	Construction PM	1.004	F	1.215	F	1.215	F	0.211	Yes	0.000	--
13. Imperial Highway and Nash Street	Construction AM	0.362	A	0.547	A	0.548	A	0.186	--	0.001	--
	Construction PM	0.239	A	0.348	A	0.348	A	0.109	--	0.000	--
14. Imperial Highway and I-105 Ramp	Construction AM	0.513	A	0.708	C	0.708	C	0.195	Yes	0.000	--
	Construction PM	0.471	A	0.600	A	0.600	A	0.129	--	0.000	--

Los Angeles International Airport

West Aircraft Maintenance Area Project
Draft EIR
October 2013

4.7 Construction Surface Transportation

Table 4.7-9

Proposed Project - Level of Service Analysis Results - Impact Comparison 2 Cumulative Traffic (March 2018)

			Cumulative Peak (March 2018)						Cumulative Impact Determination		Cumulative Considerable Determination/Significant Project Impact	
			Baseline [A]		Without Project [B]		With Project ^a [C]		[C]-[A]		[C]-[B]	
Intersection	Peak Hour ^a		V/C ^b	LOS ^c	V/C ^b	LOS ^c	V/C ^b	LOS ^c	Change in V/C	Cumulative Impact?	Change in V/C	Cumulatively Considerable Contribution?
15. Imperial Highway and I-405 Northbound Ramp	Construction AM		0.211	A	0.265	A	0.266	A	0.055	--	0.001	--
	Construction PM		0.480	A	0.562	A	0.562	A	0.082	--	0.000	--
16. La Cienega Boulevard and Lennox Boulevard	Construction AM		0.164	A	0.207	A	0.207	A	0.043	--	0.000	--
	Construction PM		0.306	A	0.347	A	0.347	A	0.041	--	0.000	--
17. La Cienega Boulevard and 111th Street	Construction AM		0.128	A	0.148	A	0.148	A	0.020	--	0.000	--
	Construction PM		0.311	A	0.375	A	0.375	A	0.064	--	0.000	--
18. La Cienega Blvd. & I-405 Southbound Ramps North of Century	Construction AM		0.387	A	0.441	A	0.441	A	0.054	--	0.000	--
	Construction PM		0.410	A	0.467	A	0.467	A	0.057	--	0.000	--
19. La Cienega Blvd. & I-405 Southbound Ramps South of Century	Construction AM		0.135	A	0.195	A	0.195	A	0.060	--	0.000	--
	Construction PM		0.284	A	0.467	A	0.467	A	0.183	--	0.000	--
20. La Cienega Blvd. & I-405 Southbound Ramps North of Imperial	Construction AM		0.136	A	0.175	A	0.175	A	0.039	--	0.000	--
	Construction PM		0.218	A	0.313	A	0.313	A	0.095	--	0.000	--
21. Sepulveda Boulevard and La Tijera Boulevard	Construction AM		0.337	A	0.551	A	0.552	A	0.215	--	0.001	--
	Construction PM		0.613	B	1.271	F	1.272	F	0.659	Yes	0.001	--
22. Sepulveda Boulevard and Lincoln Boulevard	Construction AM		0.457	A	0.668	B	0.668	B	0.211	--	0.000	--
	Construction PM		0.750	C	1.054	F	1.055	F	0.305	Yes	0.001	--
23. Sepulveda Boulevard and Manchester Avenue	Construction AM		0.395	A	0.556	A	0.557	A	0.162	--	0.001	--
	Construction PM		0.711	C	0.983	E	0.984	E	0.273	Yes	0.001	--
24. Westchester Parkway and Pershing Drive	Construction AM		0.151	A	0.593	A	0.595	A	0.444	--	0.002	--
	Construction PM		0.213	A	0.592	A	0.596	A	0.383	--	0.004	--
25. Sepulveda Boulevard and Westchester Parkway	Construction AM		0.309	A	1.446	F	1.449	F	1.140	Yes	0.003	--
	Construction PM		0.649	B	1.264	F	1.267	F	0.618	Yes	0.003	--
26. Sepulveda Boulevard and 76th/77th Street	Construction AM		0.337	A	0.423	A	0.423	A	0.086	--	0.000	--
	Construction PM		0.440	A	0.649	B	0.650	B	0.210	--	0.001	--
27. Sepulveda Boulevard and 79th/80th Street	Construction AM		0.253	A	0.362	A	0.362	A	0.109	--	0.000	--
	Construction PM		0.513	A	0.590	A	0.591	A	0.078	--	0.001	--

4.7 Construction Surface Transportation

Table 4.7-9

Proposed Project - Level of Service Analysis Results - Impact Comparison 2 Cumulative Traffic (March 2018)

		Cumulative Peak (March 2018)						Cumulative Impact Determination		Cumulative Considerable Determination/Significant Project Impact	
		Baseline [A]		Without Project [B]		With Project ^a [C]		[C]-[A]		[C]-[B]	
Intersection	Peak Hour ^a	V/C ^b	LOS ^c	V/C ^b	LOS ^c	V/C ^b	LOS ^c	Change in V/C	Cumulative Impact?	Change in V/C	Cumulatively Considerable Contribution?
28. Sepulveda Boulevard and 83rd Street	Construction AM	0.211	A	0.322	A	0.323	A	0.112	--	0.001	--
	Construction PM	0.458	A	0.567	A	0.568	A	0.110	--	0.001	--
29. La Cienega Boulevard and 104th Street	Construction AM	0.111	A	0.131	A	0.131	A	0.020	--	0.000	--
	Construction PM	0.276	A	0.337	A	0.337	A	0.061	--	0.000	--

^a The hours of analysis include the construction AM peak (6:00 AM - 7:00 AM) and the construction PM peak (3:30 PM - 4:30 PM).

^b Volume to capacity ratio. Includes an LADOT ATSAC benefit applied at each intersection with the exception of intersections #39 and #75, which are not a part of the LADOT system

^c Level of Service range: A (excellent) to F (failure).

^d -- Indicates "No Impact"

Source: Ricondo & Associates, Inc., using TRAFFIX, August 2013.

4.7 Construction Surface Transportation

As shown in the table, there would be several cumulative impacts when comparing the peak cumulative traffic volumes with the proposed Project to the baseline; however, the proposed Project would not result in a cumulatively considerable contribution to the significant cumulative impact.

4.7.9 Mitigation Measures

Section 4.7.7 above, includes LAX Master Plan commitments as a project design feature under the proposed Project. As described above in the impact discussions in Section 4.7.8, no significant construction-related traffic impacts would occur under the Baseline Plus Project condition, or Cumulative Plus Project condition for the proposed Project. Therefore, no Project-specific mitigation measures are required.

4.7.10 Level of Significance After Mitigation

Not applicable. Impacts are less than significant, as indicated above; therefore, no additional mitigation measures are required.

5.0 ALTERNATIVES

5.1 Purpose and Scope

The *California Environmental Quality Act (CEQA) Guidelines* require that an Environmental Impact Report (EIR) include a discussion of a reasonable range of project alternatives that would “feasibly attain most of the basic objectives of the project but would avoid or substantially lessen any of the significant effects of the proposed Project, and evaluate the comparative merits of the alternatives” (*CEQA Guidelines* Section 15126.6). Within that context, this chapter discusses alternatives to the proposed Project.

Key provisions of the *CEQA Guidelines* on alternatives (Section 15126.6(b) through (f)) are excerpted below to explain the foundation and legal requirements for the alternatives analysis in the EIR.

- “...the discussion of alternatives shall focus on alternatives to the project or its location which are capable of avoiding or substantially lessening any significant effects of the project, even if these alternatives would impede to some degree the attainment of the proposed objectives, or would be more costly (15126.6(b)).
- "The specific alternative of 'no project' shall also be evaluated along with its impact" (15126.6(e)(1)). "The 'no project' analysis shall discuss the existing conditions at the time the notice of preparation is published, or if no notice of preparation is published, at the time environmental analysis is commenced, as well as what would be reasonably expected to occur in the foreseeable future if the project were not approved, based on current plans and consistent with available infrastructure and community services. If the environmentally superior alternative is the 'no project' alternative, the EIR shall also identify an environmentally superior alternative among the other alternatives" (15126.6(e) (2)).
- "The range of alternatives required in an EIR is governed by a 'rule of reason' that requires the EIR to set forth only those alternatives necessary to permit a reasoned choice. The alternatives shall be limited to ones that would avoid or substantially lessen any of the significant effects of the project. Of those alternatives, the EIR need examine in detail only the ones that the lead agency determines could feasibly attain most of the basic objectives of the project. The range of feasible alternatives shall be selected and discussed in a manner to foster meaningful public participation and informed decision making" (15126.6(f)).
- "Among the factors that may be taken into account when addressing the feasibility of alternatives are site suitability, economic viability, availability of infrastructure, general plan consistency, other plans or regulatory limitations, jurisdictional boundaries, and whether the proponent can reasonably acquire, control or otherwise have access to the alternative site (or the site is already owned by the proponent)" (15126.6(f)(1)).
- For alternative locations, "only locations that would avoid or substantially lessen any of the significant effects of the project need be considered for inclusion in the EIR" (15126.6(f)(2)(A)).
- "If the lead agency concludes that no feasible alternative locations exist, it must disclose the reasons for this conclusion, and should include the reasons in the EIR. For example,

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in some cases there may be no feasible alternative locations for a geothermal plant or mining project which must be in close proximity to natural resources at a given location" (15126.6(f)(2)(B)).

- "An EIR need not consider an alternative whose effect cannot be reasonably ascertained and whose implementation is remote and speculative" (15126.6(f)(3)).

5.2 Significant Impacts of the Project

The alternatives in this Chapter have been selected to evaluate means for avoiding or substantially reducing the significant impacts of the proposed Project identified in Chapter 4 of this EIR. As summarized in **Table 1-1** in Chapter 1, *Introduction and Executive Summary*, in this EIR, impacts related to air quality (operational impacts), human health risk, greenhouse gas emissions, hydrology and water quality, noise, land use and planning, and construction surface transportation were determined to be less than significant with incorporation of Los Angeles International Airport (LAX) Master Plan commitments and mitigation measures.¹ Impacts to hazards and hazardous materials were found to be less than significant with incorporation of LAX Master Plan commitments and mitigation measures and a Project-specific mitigation measure. As described in Section 4.1, *Air Quality*, the proposed Project would result in a net increase in temporary emissions of criteria air pollutants associated with construction-related activities that represents a significant and unavoidable impact after implementation of LAX Master Plan commitments and mitigation measures with respect to regional emissions of nitrogen oxides (NO_x) and no other feasible mitigation measures were identified.

5.3 Project Objectives

The objectives of the proposed Project which have been considered in the formulation and evaluation of alternatives, include the following:

- Consolidate, relocate, and modernize some of the existing aircraft maintenance facilities at Los Angeles International Airport (LAX) consistent with the LAX Master Plan.
- Provide for more efficient and effective maintenance of existing aircraft at the airport, including Airplane Design Group (ADG) VI aircraft (i.e., Airbus A380 and Boeing 747-8).
- Provide aircraft maintenance hangars and aircraft parking areas that are all sized to accommodate ADG VI aircraft and other aircraft in one location.
- Provide an area for remain overnight/remain all day (RON/RAD) aircraft parking that can also support routine servicing and maintenance of aircraft.
- Support consistency with the LAX Master Plan by providing an aircraft maintenance area in the southwest portion of the airport.

¹ In the case of air quality, LAX Master Plan commitments and mitigation measures are included within the LAX Air Quality Control Measures applicable to the proposed Project.

5.4. Alternatives Considered and Rejected

5.4.1. West Remote Pads/Gates Site

One alternative considered, focuses on development of the proposed Project on the West Remote Pads/Gates site. This site is located just north of the proposed Project Site and is bounded to the south by World Way West, to the north by Taxiway D, to the west by Pershing Drive, and to the east by Taxiway AA. The approximately 71-acre West Remote Pads/Gates site is currently utilized as an apron/gate area for on-loading and off-loading of international and domestic flights that cannot be handled in the Central Terminal Area (CTA). Passengers are ferried to and from the site by buses. The apron area is also utilized for RON and RAD parking of aircraft when the gates are not in use.

The West Remote Pads/Gates site can accommodate 11 aircraft at apron gates having jet loading bridges and another 7 hardstand (pads) without loading bridges, for a total of 18 positions. Additional aircraft are double- and sometimes triple-parked at some of these positions during overnight and early morning hours. In April, May and June of 2013 the West Remote Pads/Gates were utilized to park 1,592 aircraft, with 634 using contact gates and an additional 958 operations parked on “hardstand” or RON positions. An August 2012 peak month survey of West Remote Pads/Gates usage found that peak use of the area was in the early morning, and included 16 aircraft parked simultaneously. On that same day, a total of 34 aircraft were positioned on the West Remote Pads/Gates site during various parts of the day.

A large maneuvering area is located in the southwest quadrant of this Alternative site. This maneuvering area also serves as an operational readiness area for “super-jumbo” aircraft such as the Antonov AN-124 cargo carrier, which has called on LAX in the past. Additionally, this space is utilized for RON/RAD for highly secure visits by public and government officials that at times require staging of military cargo and other large aircraft. Although the West Remote Pads/Gates site was investigated in whole and in part as an alternative location for the proposed Project, it was not carried forward for further analysis because the site is highly utilized for passenger gate facilities and for aircraft parking (i.e., RON/RAD), including special-purpose use (i.e., super-jumbo aircraft parking and high-security areas) and would not be available for use during the time frame required for development of the proposed Project.

The timing for the proposed Project, with the first hangar constructed in 2015 and the second hangar constructed by 2019 is necessary to help consolidate and replace maintenance facilities and hangars that have been removed, or are planned for removal within the next several years consistent with the LAX Master Plan.

5.4.2. Other LAX Sites

In addition to the West Remote Pads/Gates site that was considered but not carried forward for further analysis, and the Alternate Site Alternative in the eastern portion of LAX that is evaluated below, other areas on the airport property were also considered for analysis. However, other sites at LAX were not carried forward for analysis as they were either not available for development, or were located in areas without feasible access and proximity to runways and taxiways.

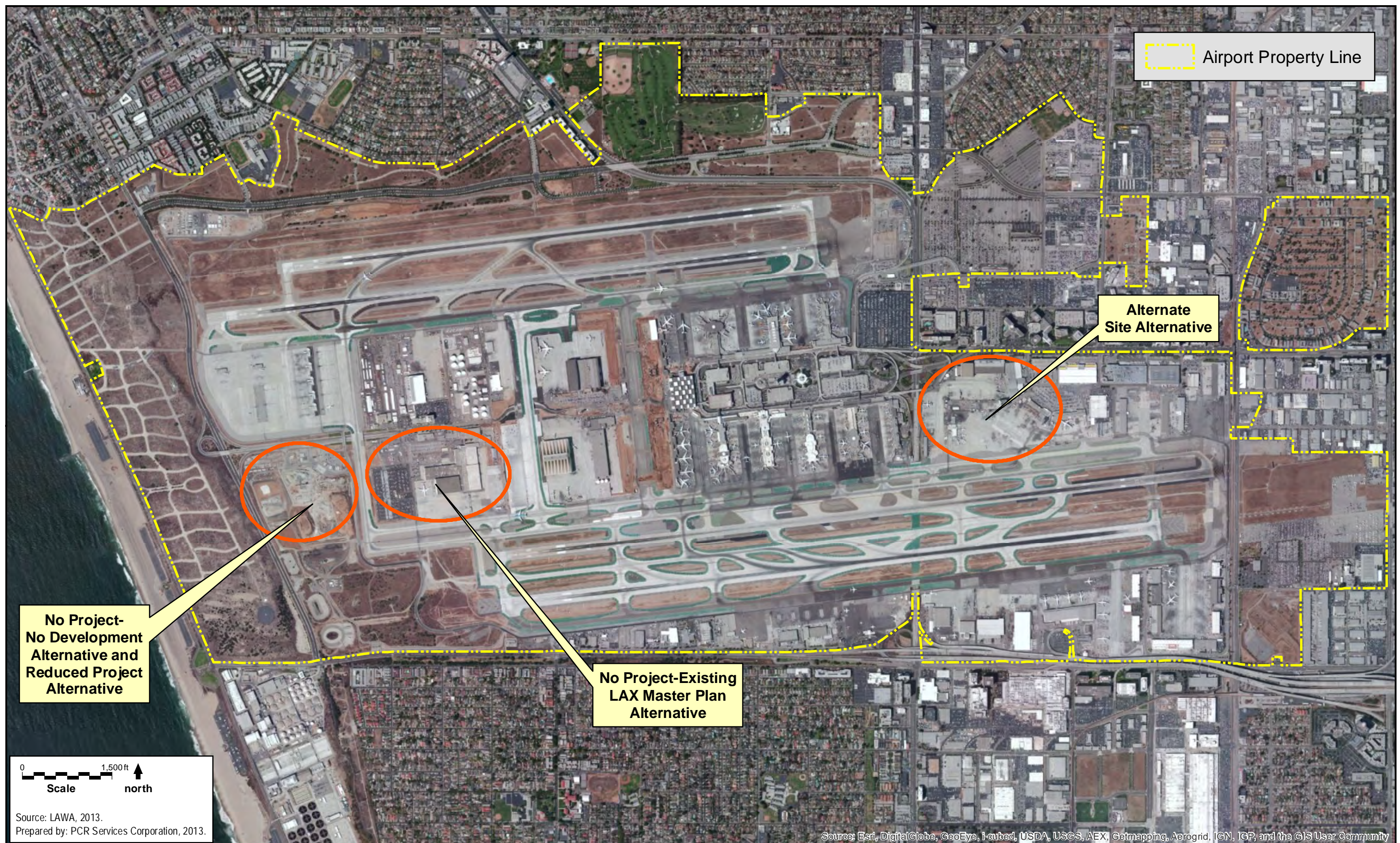
5.5 Alternatives

The alternatives to the proposed Project were formulated to avoid or substantially lessen the significant impacts of the Project, with emphasis on the one significant and unavoidable impact that would occur during construction with respect to regional emissions of NO_x. As required by CEQA, a "no project" alternative is addressed in this section. The no-project alternative was evaluated under two scenarios: 1) a No Project-No Development Alternative, that represents conditions that would occur if existing land uses and facilities were to continue operating on the Project site, and; 2) a No Project-Existing LAX Master Plan Alternative, which evaluates the Project site and potential facilities being developed in a manner that replicates the exact program locations presented in the 2004 LAX Master Plan (**Figure 5-1**) without the currently proposed refinements to the originally proposed Master Plan concept, which now constitute the currently proposed Project.

Additional alternatives presented in this section include: 3) a Reduced Project Alternative and; 4) an Alternate Site Alternative. The Reduced Project Alternative was selected to evaluate means for reducing the magnitude of most if not all of the adverse impacts that would occur under the proposed Project. In regards to the significant unavoidable impact associated with construction air emissions, the Reduced Project Alternative would reduce the amount and duration of construction (reduced by 16 to 24 months), thus reducing the extent of, but not eliminating the significant unavoidable construction-related air quality impact. The Alternate Site Alternative was selected to evaluate the extent to which the impacts of the proposed Project could be avoided or reduced by putting the Project in another location, pursuant to *CEQA Guidelines* Section 15126.6(f). The alternatives evaluated in this chapter are described below and evaluated in subsection 5.6, Evaluation of Project Alternatives.

5.5.1 No Project-No Development Alternative

Under the No Project-No Development Alternative, development of a consolidated aircraft maintenance facility with aircraft parking apron areas, maintenance hangars, employee parking areas, and related storage, equipment and facilities would not occur at all. The proposed Project site would continue to be used as a staging area for airport construction projects, with modular construction trailers/offices, a surface parking area, an airfield access security post (Guard Post 21), a small Los Angeles World Airports (LAWA) Police Department/Transportation Security Administration (LAWAPD/TSA) canine "walk" area, paved roads, and outdoor loading and storage areas. In addition, material would continue to be stockpiled on the site in association with projects under construction at LAX. Thus, the physical conditions associated with the site and its activities would remain essentially the same as under current conditions. Without the proposed Project, there would be less ability to efficiently and effectively maintain ADG VI aircraft and other aircraft at LAX. The need for maintenance facilities removed by past and pending projects as contemplated under the LAX Master Plan (such as Taxiway T) would be accommodated to the extent feasible at various maintenance facilities already in use on the airport, with potential for some maintenance having to be accommodated at other airports (**Figure 5-2**). Other existing aircraft maintenance facilities at LAX are currently used on a regular basis by the tenant airlines/companies, and it is unlikely existing facilities could accommodate the aircraft maintenance needs. It is possible that the remaining facilities would not be able to accommodate the increased demands completely and/or efficiently. This is especially true relative to the ability to accommodate the existing RON/RAD areas associated



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**West Aircraft Maintenance Area Project
Draft EIR**

**No Project-No Development
Alternative**

Figure
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with the removal of aircraft maintenance hangars that would be removed. As indicated above in Section 5.4.1, there are already substantial demands on existing RON/RAD areas at LAX and the loss of RON/RAD spaces would exacerbate that problem. Given that the RON/RAD areas at the subject maintenance areas are used for aircraft cabin cleaning and light servicing/maintenance (i.e., “Level A checks”), the loss of those areas would mean that such aircraft servicing and light maintenance would need to be done while aircraft are at the gate, which would extend gate occupancy time and possibly delay other aircraft waiting to use the gate, or require additional stacking of aircraft at the remaining RON/RAD areas, which hinders the efficient management and movement of aircraft in those areas.

5.5.2 No Project-Existing LAX Master Plan Alternative

Under the No Project-Existing LAX Master Plan Alternative, development of aircraft maintenance facilities in the southwestern portion of the airport with aircraft parking apron areas, maintenance hangars, employee parking areas, and related storage, equipment and facilities would occur in a manner that replicates the exact program locations presented in the 2004 LAX Master Plan without the currently proposed Project refinements. Under this Alternative, a new 270,000-square foot aircraft maintenance hangar would be constructed just east of Taxiway AA to the west of the existing United-Continental Hangar, with a new aircraft apron area placed between the new hangar and Taxiway C. The former Continental Airlines training building, which is now vacant, would be demolished and rebuilt as a 23,000 square foot ancillary building (i.e., potential maintenance-related offices, machine shops, etc.). Employee parking and maintenance-related storage/staging would be provided between the new hangar and the new ancillary building. Additionally, this Alternative would include another new maintenance hangar, approximately 25,000 square feet in size, located between the United-Continental Hangar and the American Airlines High-Bay Hangar. Based on existing conditions, the new hangar and associated apron area would likely be developed immediately southwest of the new Aircraft Rescue and Firefighting Facility (ARFF) replacing two to three of the existing aircraft RON parking positions on the west side of Taxiway R (**Figure 5-3**). For purposes of this alternatives analysis, it is assumed that construction would commence in early to mid-2014 with completion by mid- to late-2018.

5.5.3 Reduced Project Alternative

The Reduced Project Alternative would eliminate one of the two aircraft maintenance hangars proposed for the Project along with 150 associated employee parking spaces, and would reduce the proposed aircraft apron area by approximately half. The developed area of the site would be reduced by approximately 22 acres (10 acres of hangar area/parking and 12 acres of apron area) resulting in a total development area of approximately 45 acres, compared to the proposed Project with approximately 68 acres of development area. The site would be able to accommodate up to eight ADG VI aircraft, or a mix of smaller aircraft, compared to the 10 ADG VI aircraft that could be accommodated under the proposed Project. All of the existing stockpiles would still be removed; however, existing uses within the northeast portion of the proposed Project site would remain, including the existing construction trailers/offices area, which would continue to be used for coordination of terminal improvements, unrelated to activities occurring on the Project Site, Guard Post 21, and the LAWAPD/TSA canine “walk” area (see **Figure 5-4**). The total floor area of the hangar to be constructed under this Alternative would be approximately 125,000 square feet and it would be designed to

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accommodate up to an ADG VI aircraft. The hangar would consist of a single hangar building with adjacent hardstands to the west and east where aircraft can be parked and undergo various maintenance activities that do not require being within a hangar (i.e., such as maintenance to the interior/cabin areas). In addition, as only one aircraft hangar would be developed under the Reduced Project Alternative, it would be less able to accommodate the need for maintenance facilities removed by pending or planned LAX Master Plan projects and therefore would result in the need for use of various other maintenance facilities currently in use at LAX with the potential need for some maintenance to be accommodated at other airports. For purposes of this alternatives analysis, it is assumed that construction of the Reduced Project Alternative would commence in the first quarter of 2014 with completion by mid-2015, reducing the duration of construction compared to the proposed Project by 16 to 24 months.

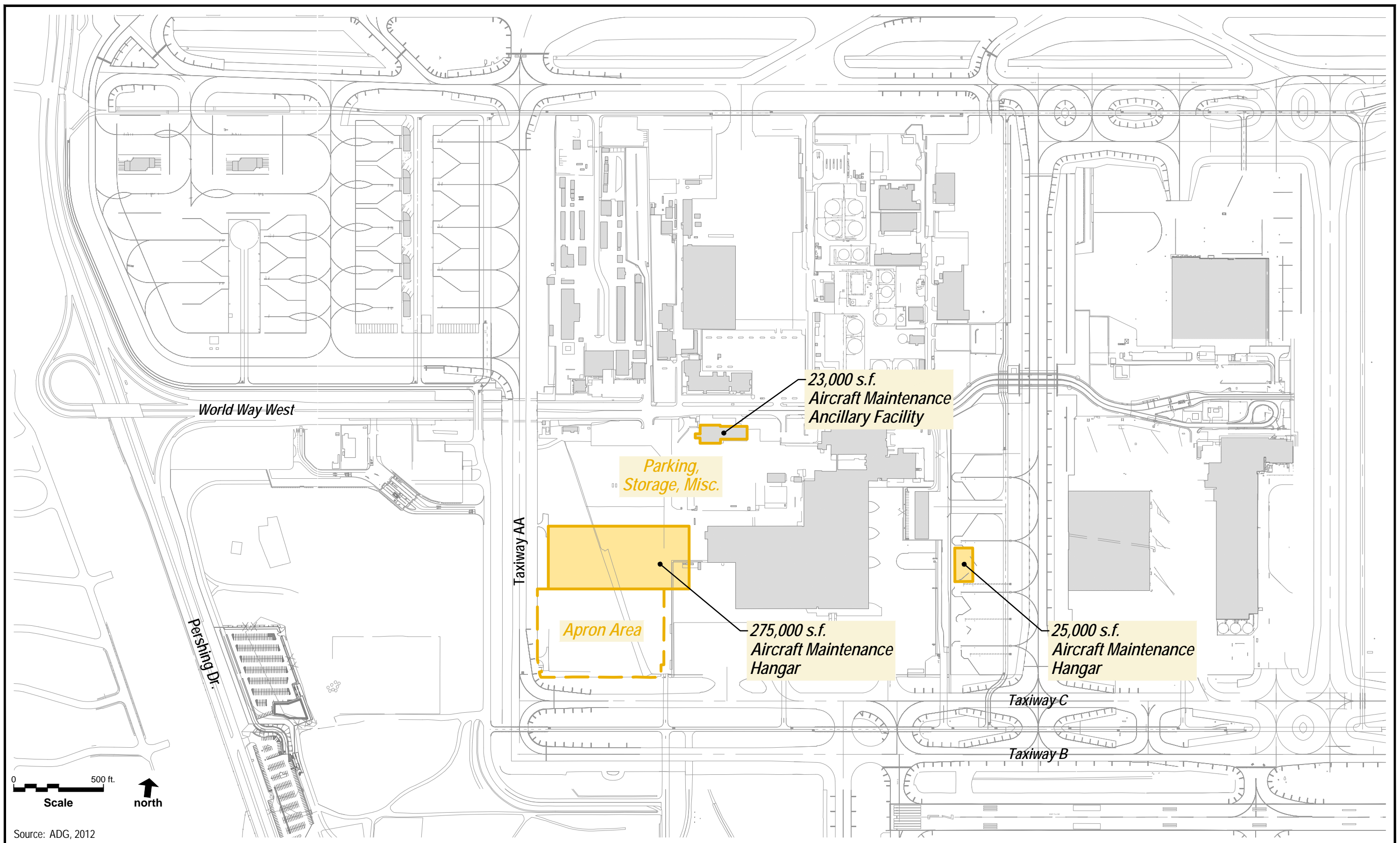
5.5.4 Alternate Site Alternative

Under this Alternative, the Project site would continue to be used as a staging area for airport construction projects as described under the No Project-No Development Alternative. Proposed maintenance facilities would instead be developed at a location in the eastern portion of the airport, south of Century Boulevard and east of Sepulveda Boulevard within the Delta and United Airlines Complex area (see **Figure 5-5**). Existing facilities on the approximately 59-acre alternate site include the Delta Airlines Ground Support Equipment (GSE) facility, the American Eagle Commuter Terminal, the Delta Airlines maintenance area, the Mercury Air Group Cargo building, the LAX Records Retention Building, and the United Maintenance Hangar.

In order to accommodate two modern maintenance hangars with a design similar to that described for the proposed Project, and due to the size and age of the existing hangars and maintenance facilities on the site, the existing facilities would need to be demolished to accommodate new hangars to be built on the north and east of the alternate site under this Alternative. This Alternative would require removal of the Delta Airlines GSE facility, American Eagle Commuter Terminal, Delta Airlines maintenance area, Mercury Air Group Cargo, LAX Records Retention Building, and the United Maintenance Hangar. Some of the existing hangars and office/administration buildings that would be removed to support development of the Alternative, including the former Western Airlines double-arched hangar, are part of the Intermediate Terminal Complex, which is considered a historical resource pursuant to CEQA.

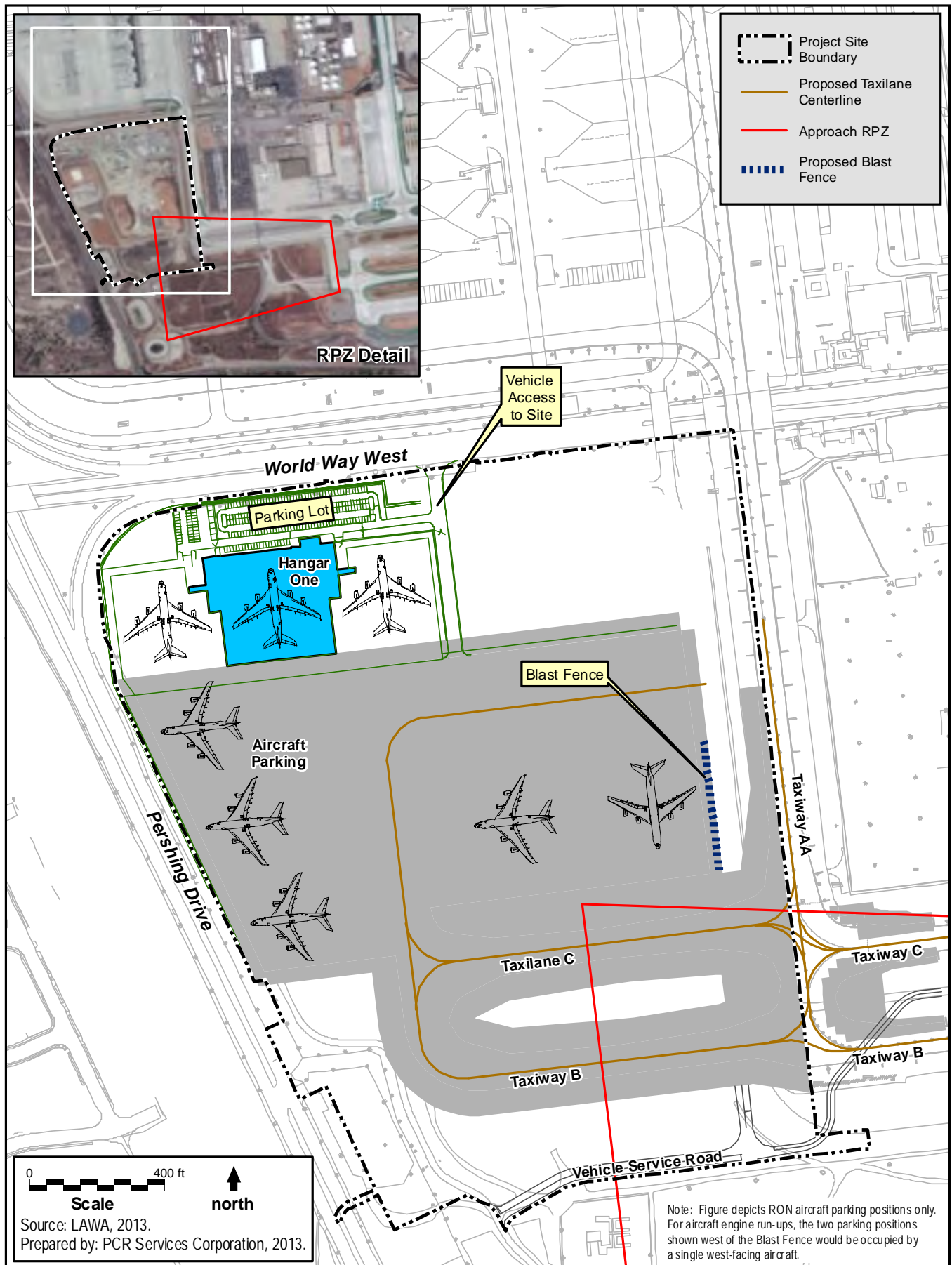
Existing aircraft maintenance operations would be integrated into the new hangars to the extent possible and some maintenance operations might need to be relocated to other existing maintenance areas such as the United-Continental Hangar (western maintenance area). However, similar to the No Project-No Development Alternative, such consolidation and relocation of maintenance and cargo facilities may overburden the existing facilities and some amount of maintenance and cargo operations may need to be completed at other airports. It is anticipated that the LAX Records Retention Building would be relocated to another existing LAWA building.

Up to 300 parking spaces for employees, and related storage, equipment and facilities would also be located on the site, with access from Century Boulevard and Avion Drive. Similar to the proposed Project, the site would be able to accommodate up to 10 ADG VI aircraft, or a mix of smaller aircraft. For purposes of this alternatives analysis, it is assumed that construction of the Alternate Site Alternative would commence in early to mid-2014 with completion prior to 2019.



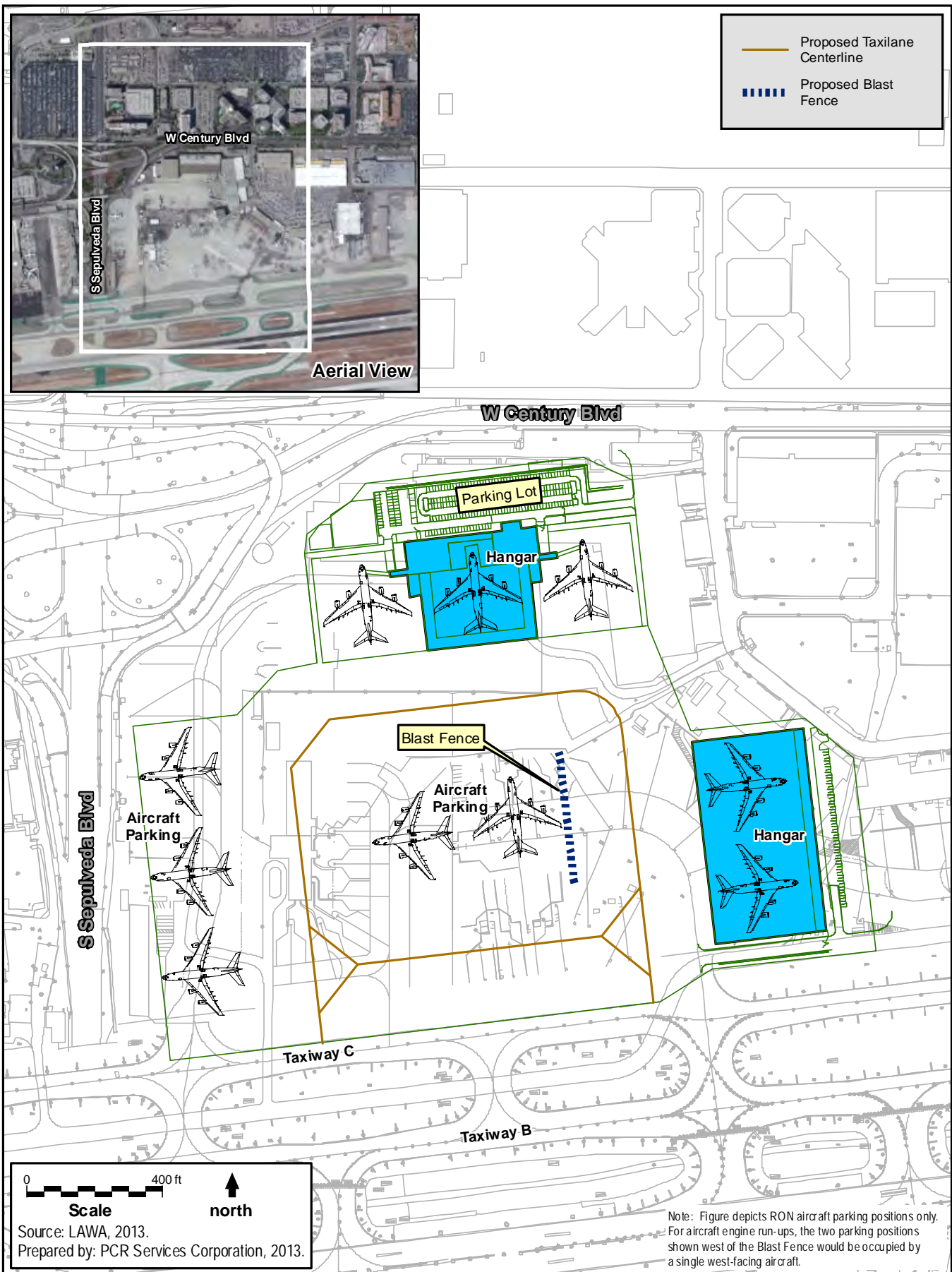
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5.6 Evaluation of Project Alternatives

5.6.1 No Project-No Development Alternative

Air Quality

Under the No Project-No Development Alternative, the Project site would continue to be used as a staging area for airport construction projects and would continue to accommodate stockpiled soil and construction rubble. The Project site is permitted by the South Coast Air Quality Management District (SCAQMD) to accommodate and has at various times supported a concrete batch (production) plant and a rock/concrete crusher. Although such facilities are not currently located on the Project site, it may continue to be used for such activities in accordance with its permit. Under the No Project-No Development Alternative, the consolidation, relocation, and modernization of existing aircraft maintenance facilities at LAX that would be supported under the proposed Project would not occur.

The No Project-No Development Alternative would result in emissions consistent with current levels, which would be less than the proposed Project on a short-term and temporary basis. As discussed in Section 4.1, *Air Quality*, the proposed Project would result in a net increase in short-term and temporary emissions of criteria air pollutants associated with construction-related activities with a significant and unavoidable impact with respect to regional emissions of NO_x, which is a precursor to regional ozone. The No Project-No Development Alternative would not involve construction, therefore it would have no net increase in short-term and temporary emissions of criteria air pollutants.

On a long-term basis, the existing aircraft maintenance facilities at LAX would continue to be used and would not be consolidated, relocated, or modernized. The No Project-No Development Alternative would result in emissions consistent with current levels, which would be about the same as the emissions under the proposed Project on a long-term basis. As discussed in Section 4.1, *Air Quality*, operation of the proposed Project is not expected to generate new emissions associated with aircraft maintenance because the proposed Project redirects and consolidates existing aircraft maintenance operations. In addition, the number of run-ups from aircraft engine testing is not expected to increase compared to the current condition, nor is additional on-road vehicle traffic expected. Other maintenance facilities removed by past and pending projects would result in the redirection of maintenance operations that would generate minimal amounts of taxiing/towing emissions similar to the proposed Project. Under the No Project-No Development Alternative, maintenance activities would continue to occur at existing facilities at LAX, which were built prior to LAX's adoption of the Los Angeles Green Building Code (LAGBC) Tier 1 standards and thus were not designed to meet the current energy efficiency standards. In addition, queuing of aircraft at the existing maintenance hangars may increase as maintenance facilities at LAX are removed by past and pending projects. Thus, the operational emissions under the No Project-No Development Alternative would have similar emissions related to taxiing/towing but slightly greater emissions from maintenance buildings and potentially from increased aircraft queuing. Regional operational emissions under the No Project-No Development Alternative would be less than significant; however, they would be slightly greater than the proposed Project.

Nonetheless, as the No Project-No Development Alternative would not involve any construction, it would not have the significant unavoidable impact that would occur under the proposed

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Project with respect to construction-related regional NO_x emissions. With respect to regional operational emissions, while the No Project-No Development Alternative would be slightly greater than the proposed Project, impacts would be less than significant.

Regarding the Health Risk Assessment, the No Project-No Development Alternative would have no health risk impact associated with construction since no construction would occur. Maintenance activities associated with this Alternative would either occur in decentralized locations at LAX or would occur at other airports. Regarding operational health impacts of this Alternative, impacts would be less than significant as there would be no change in operation at the Project site compared to existing conditions. Therefore, there would be no change in localized emissions at the Project site and no impact would occur and impacts would be less than the proposed Project.

Greenhouse Gas Emissions

Under the No Project-No Development Alternative, the existing site would continue to be used as a staging area for airport construction projects. The Project site may continue to be used as a concrete batch (production) plant and a rock/concrete crusher in accordance with its SCAQMD permit. Under the No Project-No Development Alternative, the consolidation, relocation, and modernization of aircraft maintenance facilities at LAX under the proposed Project would not occur.

This Alternative would result in greenhouse gas (GHG) emissions consistent with current levels, which would be less than the proposed Project on a short-term and temporary basis. As discussed in Section 4.2, *Greenhouse Gas Emissions*, the proposed Project would result in a net increase in short-term and temporary GHG emissions associated with construction-related activities. This Alternative would result in no net increase in short-term and temporary emissions of GHGs since construction would not occur. On a long-term basis, the existing aircraft maintenance facilities at LAX would continue to be used and would not be consolidated, relocated, or modernized. Other maintenance facilities removed by past and pending projects would result in the redirection of maintenance operations that would generate minimal amounts of taxiing/towing emissions similar to the proposed Project. Under the No Project-No Development Alternative, no action would be taken to modernize maintenance facilities, such as hangars, to comply with the California Green Buildings Standards Code (CALGreen) or the LAGBC Tier 1 standards for nonresidential buildings. The proposed Project would be required to comply with the CALGreen and LAGBC Tier 1 standards for nonresidential buildings, which would reduce energy consumption, waste generation, and GHG emissions compared to similar buildings that do not meet the standards. Maintenance activities would continue to occur at existing facilities at LAX, which were built prior to LAX's adoption of the LAGBC Tier 1 standards and thus were not designed to meet the current energy efficiency standards. In addition, queuing of aircraft at the existing maintenance hangars may increase as maintenance facilities at LAX are removed by past and pending projects. Thus, the operational emissions under the No Project-No Development Alternative would have slightly greater emissions from maintenance buildings and potentially from increased aircraft queuing. Operational GHG emissions under the No Project-No Development Alternative would be less than significant; however, they would be slightly greater than the proposed Project.

Therefore, the No Project-No Development Alternative would avoid the short-term GHG emissions that would occur under the proposed Project with respect to construction-related

GHG emissions; however, this Alternative would have slightly greater operational GHG emissions, although less than significant, as compared to the proposed Project.

Hazards and Hazardous Materials

Release of Hazardous Materials

The No Project-No Development Alternative would not increase the overall transport, use, or disposal of hazardous materials on the Project site or at LAX. Maintenance activities would continue to occur throughout LAX rather than in a consolidated location and all hazardous materials (e.g., fuels, solvents, lubricants, cleaners, paints, compressed gasses, peroxides, caustics, alcohols, foams) would be used in accordance with applicable regulations and manufacturers' recommendations. The Project site would continue to be used as construction staging area and materials would continue to be stockpiled in association with projects under construction at LAX. Similar to the proposed Project, the No Project-No Development Alternative Project Site is located in the Former Hyperion Oilfield and there may be two abandoned/plugged oil wells on the Project site and four more in the general vicinity of the Project site. The Project site is also located within a City-designated methane zone. Construction staging and stockpiling would continue to occur in accordance with all applicable regulations, including LAX Master Plan Commitment HM-2, which provides guidance for LAX projects involving excavation and grading of soils, and LAWA's best management practices (BMPs). Because the No Project-No Development Alternative would not involve grading or soil excavation for the development of aircraft maintenance or parking aprons, the potential to encounter existing subsurface soil contamination and/or abandoned oil wells is low and similar to existing conditions. As a result, the No Project-No Development Alternative would result in a less than significant impact with respect to the potential release of hazardous materials. Compared to the proposed Project, the No Project-No Development Alternative would not require grading and/or the excavation of potentially abandoned oil wells. As a result, no construction impacts related to this issue would occur under the No Project-No Development Alternative and there would be no need for the Project-specific mitigation required for the proposed Project.

Construction staging would continue to occur at the Project site under the No Project-No Development Alternative. Furthermore, although the stockpiled materials currently on the Project site do not contain concentrations of contaminants that qualify them as Class I hazardous materials, they are not homogeneous in composition and may contain undiscovered hazardous materials. Although stockpiled materials on the Project site under the No Project-No Development Alternative would not be removed completely in the near-term, in the long term, the potential for encountering previously unidentified hazardous materials associated with the stockpiled materials under both the proposed Project and No Project-No Development Alternative would be similar with full removal of the materials ultimately occurring. If previously undiscovered hazardous materials are encountered during long-term stockpile removal, they would be conducted in accordance with applicable federal, state, and local regulations, including LAWA's BMPs, the LAX Master Plan Mitigation Monitoring & Reporting Program (MMRP), *Procedure for the Management of Contaminated Materials Encountered During Construction* (the "Procedure") prepared in accordance with LAX Master Plan Commitment HM-2. Therefore, this Alternative would have a similar impact than the proposed Project with regard to the potential release of hazardous materials from stockpiled materials and impacts would be less than significant.

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Because aircraft maintenance would continue to occur throughout LAX under the No Project-No Development Alternative, this Alternative would have a similar impact as the proposed Project with regard to the potential release of hazardous materials during aircraft maintenance.

Exposure of Workers to Hazardous Materials

The Project site would continue to be used as a construction staging area under the No Project-No Development Alternative and materials would continue to be stockpiled on-site. Routine maintenance would continue to occur throughout LAX in accordance with applicable regulations and manufacturers' recommendations. Worker exposure to hazardous materials associated with the stockpiling of materials on the Project site would be similar to existing conditions. Adherence to applicable plans and regulations, such as LAX Master Plan Commitment HM-2, LAWA's BMPs, federal Occupational Safety and Health Act (OSHA) and California Occupational Safety and Health Act (CalOSHA) regulations, and SCAQMD Rule 1166 (Volatile Organic Compound Emissions from Decontamination of Soil), would ensure that any potential contamination in stockpiled soils does not result in a significant impact to workers. As a result, the No Project-No Development Alternative would result in a less than significant impact with respect to worker exposure to hazardous materials.

The No Project-No Development Alternative would not have a construction phase, and therefore, would not require grading and/or the excavation of potentially contaminated subsurface soils and/or abandoned oil wells, and no enclosed spaces, such as trenches, would be created on the Project site. Therefore, this Alternative would have no impact with regard to exposing workers to hazardous materials during construction. Therefore, impacts would be less compared to the proposed Project and no Project-specific mitigation would be required. Aircraft maintenance would continue to occur throughout LAX under the No Project-No Development Alternative, and as such, this Alternative would have a similar potential to expose workers to hazardous materials during maintenance. The potential to expose workers to hazardous materials due to construction staging activities would not change from existing conditions and are not expected to be substantially greater than risks identified with operation of the proposed Project. Therefore, this Alternative would have a similar impact as the proposed Project with regard to exposing workers to hazardous materials during operation, and impacts would be less than significant.

Contamination of Soil and Groundwater/Prevention of Cleanup

Because no development would occur, the No Project-No Development Alternative would have no impact on the ongoing vacuum-enhanced free product remediation (VEFPR) system. No other ongoing remediation is occurring on the Project site. In comparison, the proposed Project would protect existing monitoring wells CMW-31, CMW-32, and CMW-33 in place through the use of concrete vaults that maintain access to the monitoring wells at all times.

Therefore, the No Project-No Development Alternative would have less impact than the proposed Project on the existing remediation systems because monitoring would not be restricted in any way under this Alternative.

Impacts Related to Landfill Capacity

Under the No Project-No Development Alternative, material would continue to be stockpiled on the Project site in the near-term in association with projects under construction at LAX. Over the long-term, it is likely that stockpiled materials would be removed from the Project site, either

being used as backfill for construction projects at LAX or disposed of at appropriate landfill facilities. With respect to stockpiled materials that do not contain hazardous materials, as with the proposed Project, these stockpiled materials could be disposed of at Class III Municipal Solid Waste (MSW) landfills within Los Angeles County. As discussed in Section 4.3, *Hazards & Hazardous Materials*, of this EIR, as of December 31, 2011, the most recent information available, the remaining MSW capacity of landfills in Los Angeles County is estimated at 127 million tons. As a result, adequate landfill capacity would be available to accommodate non-hazardous materials stockpiled on the Project site. If stockpiled materials are found to contain hazardous materials, they would be handled and disposed of in accordance with LAWA's Procedure prepared in accordance with LAX Master Plan Commitment HM-2, and properly disposed of at a Class I Hazardous Waste Landfill. At this time, there are no known capacity restraints at facilities accepting Class I hazardous waste.

During operation, the No Project-No Development Alternative would not increase the use of hazardous materials at LAX for aircraft maintenance. Hazardous waste generated at LAX is removed by private contractors and delivered to treatment, recycling, and disposal facilities both within and outside the Los Angeles region. Existing disposal capacity adequately meets the needs of routine maintenance activities currently occurring at LAX. As a result, the No Project-No Development Alternative would result in a less than significant impact with respect to landfill capacity.

Therefore, the No Project-No Development Alternative would have a similar impact as the proposed Project on solid waste facilities because the existing stockpiled materials would likely be removed from the Project site in the long-term.

Hydrology and Water Quality

Drainage

Under the No Project-No Development Alternative, the Project site would continue to consist of 12 acres of impervious surface area and 72 acres of pervious surface area. As discussed in Section 4.4, Hydrology and Water Quality, surface water runoff would continue to flow to the north, south, east and west. The majority of the surface water runoff would continue to be from northeast and drain towards the southwest, consistent with the prevailing topography of the Project site, resulting in the majority of Project site runoff flowing directly to the Pershing reinforced concrete box (RCB). The northern portion of the Project site would continue to flow northward to the World Way West RCB, and a small eastern portion of the Project site would flow eastward to a small drainage channel running along the west side of Taxiway AA, which in turn drains to the World Way West RCB. Under the No Project Alternative, the existing stormwater peak flow deficiencies would continue to occur in the four conveyance structures serving the Project site during a Capital Flood event.

In comparison, the proposed Project would increase the amount of impervious surface area on the Project site, but it would also include a structural BMP (i.e., a proposed detention/infiltration basin) to shave stormwater peak flows to the Pershing Drive RCB. This structural BMP would serve to reduce existing deficiencies in the conveyance infrastructure serving the Project Site. Under the No Project-No Development Alternative, no BMPs would be implemented to shave stormwater peak flows and the existing deficiencies would remain. Therefore, the No Project-No Development Alternative would result in a greater impact than the proposed Project with regard to drainage.

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Groundwater

Under the No Project-No Development Alternative, the 84-acre Project site would continue to consist of 12 acres of impervious surface area and 72 acres of pervious surface area. Based on these figures, existing recharge associated with the Project site would continue to be approximately 17.76 acre-feet per year (AFY), or approximately 0.2 percent of total annual inflows to the West Coast Groundwater Basin. The No Project-No Development Alternative would not include the development of groundwater supply wells. Further, no groundwater production wells occur in the vicinity of LAX, and thus, groundwater within the vicinity of LAX is not utilized for the identified beneficial uses of the West Coast Groundwater Basin (i.e., municipal, agricultural, industrial). As a result, the No Project-No Development Alternative would result in no impact to groundwater withdrawal or recharge.

In comparison, the proposed Project would increase the amount of impervious surface area on the Project site by 56 acres, to a total of 68 acres, which would reduce groundwater infiltration occurring to the West Coast Groundwater Basin by approximately 0.21 percent. Although the Project site's current contribution to groundwater inflows constitute a negligible contribution (0.2 percent) to the West Coast Groundwater Basin, the proposed Project would reduce current inflows on the Project site by 78.4 percent when compared to existing conditions. Therefore, the No Project-No Development Alternative would have less impact than the proposed Project with regard to groundwater infiltration.

Water Quality

The No Project-No Development Alternative would not change water quality conditions at the Project Site. Most surface water runoff would continue to flow across unpaved soils and stockpiled materials and into the local storm drain system, thus, surface water quality would remain the same as under existing conditions and the No Project-No Development Alternative would result in no impact.

In comparison, the proposed Project would likely increase the concentration of pollutants of concern (e.g., metals, oils, grease) in surface water flows across the Project site. However, the proposed Project would also include on-site BMPs to ensure that there is no increase in pollutant concentrations to receiving water bodies (i.e., the Santa Monica Bay). The replacement of previous surfaces with paved surfaces would also serve to decrease sediment loads in surface water runoff. Therefore, the No Project-No Development Alternative would have a slightly greater impact than the proposed Project with regard to water quality because no treatment measures would be constructed under this Alternative and suspended solids (i.e., fine soils) would still continue to enter surface water flows.

Noise

As discussed in Section 4.5, *Noise*, under the proposed Project, construction noise and vibration would be generated from heavy-duty construction equipment and haul trucks; however, impacts would be less than significant. In comparison, the No Project-No Development Alternative would not result in construction activities and local noise and vibration levels associated with short-term construction would not occur. As such, no significant impacts from construction-related noise would occur under either scenario.

Under the proposed Project, operational noise sources would include aircraft maintenance activities occurring on the site and taxiing/towing of aircraft to the site, all of which would have

less than significant noise impacts. The No Project/No Build Alternative would not introduce any new sources of noise on the Project site or within the surrounding vicinity; ambient noise levels at the site would remain as they are under existing conditions, consistent with typical noise levels from the existing construction staging and soil stockpiling activities. As such, no significant impacts from operations-related impacts would occur under either scenario.

Land Use and Planning

Under the No Project-No Development Alternative, the Project site would continue to be used primarily as a staging area for airport construction projects, and would include modular construction trailers/offices, surface parking, paved roads, stockpile materials, and several outdoor loading and storage areas. Other airport-supporting uses would continue on the Project site, such as Guard Post 21 and the LAWAPD/TSA canine “walk” area.

As discussed in Section 4.6, *Land Use and Planning*, the Project site is located entirely within the LAX Plan area, as well as the LAX Specific Plan area. The LAX Plan designated that Project site as “Airport Airside” that permits the various uses that currently occur on the Project site including related airfield support services such as runways, taxiways, maintenance areas, fire protection facilities, and other ancillary airport facilities.

The existing uses on the Project site would also be consistent with permitted activities within LAX-A Zone area of the LAX Specific Plan that include surface and structured parking lots; airline maintenance and support; runways, taxiways, and service roads; aggregate/asphalt grinding and recycling facility, and other ancillary airport facilities.

However, the No Project-No Development Alternative would not address LAWA’s need to efficiently and effectively maintain ADG VI aircraft and other aircraft at LAX. Therefore, while the No Project-No Development Alternative would be consistent with the land uses permitted under the LAX Specific Plan, it would not be consistent with LAX Plan policies and programs that aim to provide for more efficient and effective use of airport facilities, update airport facilities to accommodate New Large Aircraft, and modernize, upgrade, and improve LAX. The LAX Master Plan identifies the proposed Project site as Proposed Employee Parking and Airfield/Airport Open Space. Portions of the Project site are also identified as Airfield/Airport Open Space. As existing construction staging areas and other construction related uses would continue on the Project site under the No Project-No Development Alternative, these land uses would be inconsistent with the LAX Master Plan. In contrast, the proposed Project would be consistent with LAX Plan policies and programs and the LAX Master Plan Program by providing aircraft maintenance area and parking facilities in the southwest portion of the airport. As such land use impacts would be greater under the No Project-No Development Alternative than the proposed Project.

Construction Surface Transportation

The No Project-No Development Alternative would not involve any of the construction activities associated with the development of the proposed Project. Construction traffic associated with demolition, construction of new facilities, delivery of materials and hauling, and employee trips that would be required for the construction of the proposed Project would not occur. As discussed in Section 4.7, *Construction Surface Transportation*, the proposed Project would have a less than significant impact during the Project’s construction phase. However, as the No Project-No Development Alternative entirely avoids the proposed Project’s construction traffic

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impacts, it would have less impact than the proposed Project on existing traffic conditions in the area.

5.6.1.1 Relationship of the No Project-No Development Alternative to Proposed Project Objectives

The No Project-No Development Alternative would not provide for development of a consolidated aircraft maintenance facility at LAX, having aircraft parking apron areas, maintenance hangars, employee parking areas, and related storage, equipment and facilities. As no development would occur and the physical conditions associated with the site and its activities would remain essentially the same as under current conditions, the No Project-No Development Alternative would not meet any of the proposed Project's objectives listed above under Section 5.3. Specifically, the No Project-No Development Alternative would not meet the proposed Project's objective to support the improvement and modernization of aircraft maintenance facilities at LAX and to accommodate larger, newer generation aircraft. The No Project-No Development Alternative Project would also not develop aircraft maintenance hangars and aircraft parking areas within close proximity on the same site, which is counter to the objective of providing efficient and effective use of airport facilities. The No Project-No Development Alternative would also not support consistency with the LAX Master Plan, which provides for an aircraft maintenance area to be developed in the southwest portion of the airport to help replace maintenance facilities that were removed in conjunction with LAX Master Plan improvements.

5.6.2 No Project-Existing LAX Master Plan Alternative

Air Quality

Under the No Project-Existing LAX Master Plan Alternative, development of aircraft maintenance facilities in the southwestern portion of the airport with aircraft parking apron areas, maintenance hangars, employee parking areas, and related storage, equipment and facilities would occur in a manner that replicates the exact program locations presented in the 2004 LAX Master Plan without the currently proposed Project refinements. The LAX Master Plan envisioned approximately 323,000 square feet of aircraft maintenance hangar area and 17 acres for the aircraft apron area and extensions of Taxiways B and C into the site. In comparison, the proposed Project would develop less hangar space (approximately 290,000 square feet) but would develop more apron area (approximately 29 acres).

Implementation of the No Project-Existing LAX Master Plan Alternative would result in construction-related air pollutant emissions anticipated to be generally comparable to those of the proposed Project. Construction activities for the facilities developed under the No Project-Existing LAX Master Plan Alternative would be dispersed over three non-contiguous areas, which could require more construction equipment and/or further equipment/truck travel distances for Alternative-related improvements occurring deeper into the main airport area than would otherwise occur with construction of the proposed Project at a single consolidated location in close proximity to the main access route (Pershing Drive) for the western portion of the airport. Construction emissions associated with the smaller total apron area of the No Project-Existing LAX Master Plan Alternative (approximately 12-15 acres, including the 10 acres near the main hangar area and another two to five acres near the smaller hangar) compared to the amount of apron area associated with the proposed Project (approximately 29 acres) would be partially

offset by the comparatively greater amount of hangar area (323,000 square feet under the LAX Master Plan compared to 290,000 square feet under the proposed Project). Additionally, development of the improvements associated with the No Project-Existing LAX Master Plan Alternative would occur on areas that are currently occupied by aircraft apron areas or are otherwise paved/improved, which would require construction activities under this Alternative to include the removal, processing, and repaving of large areas of thick concrete (i.e., existing apron areas were designed for smaller, lighter aircraft and cannot support ADG VI aircraft), compared to the proposed Project site, which is largely unpaved. The No Project-Existing LAX Master Plan Alternative could potentially result in fewer export haul truck trips than the proposed Project during the anticipated development period of 2014 through 2018, given the fact that, as stated in Section 4.1, *Air Quality*, the proposed Project would include hauling activities including the export of approximately 295,000 cubic yards of soil stockpiled on the proposed Project site. While the export of this stockpiled soil would not be required as part of the No Project-Existing LAX Master Plan Alternative, it is likely that the export of the soils would still occur in the future, as their placement was intended to be temporary to begin with. Additionally, the No Project-Existing LAX Master Plan Alternative would involve certain hauling activities that would not occur under the proposed Project, such as for the removal of demolition materials associated with the removal/replacement of the existing Continental Airlines buildings formerly used for training and administration, and the hauling of materials associated with the removal/replacement of existing apron areas and other paved surfaces. The construction emissions from this Alternative would still exceed the daily regional significance threshold for NO_x following implementation of the same mitigation measures implemented under the proposed Project (see Section 4.1, *Air Quality*); hence, implementation of the No Project-Existing LAX Master Plan Alternative would not avoid or substantially reduce the construction-related air quality impacts of the proposed Project.

With regard to operational emissions, implementation of the No Project-Existing LAX Master Plan Alternative would not result in a material change in the estimated emissions compared to the proposed Project. As would be the case under the proposed Project, this Alternative would not result in a change in the number or types of aircraft operations, because aircraft operational decisions are currently, and are expected to continue to be, driven by air service demand and supply factors, not maintenance facilities.

The reduced maintenance hangar area associated with the proposed Project, compared to the amount under the No Project-Existing LAX Master Plan Alternative (approximately 290,000 square feet compared to 323,000 square feet), would not be materially different and is not expected to result in a material change in operational aircraft maintenance emissions. Maintenance emissions are driven by the number and type of aircraft, as well as the types of maintenance performed, which are not expected to change. Similar to the proposed Project, the redirection and consolidation of maintenance operations to the area envisioned under the No Project-Existing LAX Master Plan Alternative would result in longer distances between gates and maintenance with some minimal amount of taxiing/towing emissions compared to existing conditions.

Therefore, under the No Project-Existing LAX Master Plan Alternative, short-term construction-related air quality impacts would be similar to the proposed Project and long-term operational-related air quality impacts would be similar to the proposed Project. Overall, this Alternative would have similar impacts as compared to the proposed Project on existing air quality and

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would have a significant impact as it would exceed the regional significance threshold for NO_x during construction even with implementation of control measures.

Regarding the Health Risk Assessment, the location of construction activities and subsequent aircraft maintenance activities under the No Project-Existing LAX Master Plan Alternative would be further from the western fence line, but approximately the same distance to the nearest residential receptors as the proposed Project. The level of construction would be similar as compared to the proposed Project; therefore, the health risks due to exposure to construction emissions under this Alternative would be similar to the Project and less than significant. Aircraft would be towed approximately a similar distance under this Alternative as under the proposed Project, therefore, operational emissions would also be similar and impacts would be less than significant.

Greenhouse Gas Emissions

Implementation of the No Project-Existing LAX Master Plan Alternative would result in similar construction-related GHG emissions as analyzed for the proposed Project. While the size of the apron area under the proposed Project site is greater than the size of the apron area under the this Alternative, the aircraft maintenance hangar area under the proposed Project would be less than this Alternative. In addition, this Alternative would potentially result in similar export haul truck trips as the proposed Project. While the No Project-Existing LAX Master Plan Alternative site does not have stockpiled soil, the Alternative would involve demolition and associated haul trips from the removal of debris.

With regard to operational emissions, implementation of the No Project-Existing LAX Master Plan Alternative would not result in a material change in the estimated GHG emissions compared to the proposed Project. As would be the case under the proposed Project, the No Project-Existing LAX Master Plan Alternative would not result in a change in the number or types of aircraft operations, because aircraft operational decisions are driven by air service demand and supply factors, not maintenance facilities.

The reduced maintenance hangar area associated with the proposed Project, compared to the No Project-Existing LAX Master Plan Alternative (approximately 290,000 square feet compared to 323,000 square feet), is not materially different and therefore is not expected to result in any material change in operational aircraft maintenance emissions. Similar to the proposed Project, the redirection and consolidation of maintenance operations to the area envisioned under the No Project-Existing LAX Master Plan Alternative would result in longer distances between gates and maintenance with some minimal amount of taxiing/towing GHG emissions compared to existing conditions.

Therefore, under the No Project-Existing LAX Master Plan Alternative, short-term construction-related GHG emissions would be similar to the proposed Project and long-term operational-related GHG emissions would be similar to the proposed Project. Overall, this Alternative would have a less than significant impact and similar impacts as compared to the proposed Project on existing GHG emissions.

Hazards and Hazardous Materials

Release of Hazardous Materials

Under the No Project-Existing LAX Master Plan Alternative, aircraft parking aprons and maintenance facilities would be constructed in the southwest portion of LAX, east of Taxiway

AA. The proposed location of improvements under this Alternative are known to contain subsurface groundwater contamination associated with a free product jet fuel plume which originated in the past at the former Continental Aircraft Maintenance Facility. This groundwater plume is currently being remediated through a VEFPR groundwater remediation system. In addition, a separate groundwater contamination plume consisting of Halogenated Volatile Organic Compounds (HVOCs) is also suspected to exist in the southwest portion of LAX, where improvements to accommodate aircraft maintenance and parking would occur under this Alternative. If contaminated soils and/or groundwater is encountered during grading, excavation, or other construction activities carried out under this Alternative, they would be handled in accordance with applicable federal, state, and local regulations, including LAWA's Procedure, prepared in accordance with LAX Master Plan Commitment HM-2, and LAWA's BMPs. Any hazardous materials found at the Project site that would be transported off-site would be done by licensed operators in accordance with all applicable federal, state, and local regulations.

In addition to subsurface contamination, this Alternative would require the removal of the former Continental Airlines training building, which is now vacant. Given the age of this facility, it is possible that the former Continental Airlines training building could contain hazardous materials, such as asbestos-containing materials (ACMs) and lead-based paints (LBPs). As noted in the LAX Master Plan Final Environmental Impact Statement (EIS)/EIR, the handling and disposal of hazardous building materials, including asbestos and ACMs, and LBPs, is strictly regulated by federal, state, and local laws. Among these laws and standards are the Toxic Substances Control Act (TSCA), Resources Conservation and Recovery Act (RCRA), the National Emission Standards for Hazardous Air Pollutants (NESHAP), and the California Hazardous Waste Control Law (HWCL). In addition, SCAQMD Rule 1403, Asbestos Emissions from Renovation/Demolition Activities, requires the surveying of structures for ACMs; agency notification of intention to remove asbestos; ACM removal procedures and time schedules; ACM handling and clean up procedures; and disposal and landfill requirements. Prior to the demolition of the former training facility, a site-specific Asbestos Abatement Specification would be completed to determine the presence of hazardous materials in the structures. If found to be present, these materials would be removed in accordance with the above regulations. As a result, the removal of ACMs or previously undiscovered hazardous materials would result in a less than significant impact.

In comparison to the proposed Project, both the Project site and the proposed location of maintenance areas assumed under this Alternative are suspected to contain subsurface soil and/or groundwater contamination that could be encountered during construction activities, although no abandoned oil wells are suspected at maintenance areas under the No Project-LAX Master Plan Alternative. Further, the proposed location of maintenance and parking areas under the No Project-LAX Master Plan Alternative would not be located within a City of Los Angeles-designated methane zone. However, both the proposed Project and No Project-Existing LAX Master Plan Alternative would be carried out in accordance with LAX Master Plan Commitment HM-2, which provides guidance for LAX projects involving excavation and grading of soils, and LAWA's BMPs. Therefore, the No Project-Existing LAX Master Plan Alternative would have a similar impact as the proposed Project during construction.

With regard to operational impacts, the relocation of aircraft maintenance and parking areas to the area east of Taxiway AA under the No Project-Existing LAX Master Plan Alternative would also consolidate maintenance operations as under the proposed Project, and thus, would not

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materially change the amount of hazardous materials utilized at LAX. Under both the proposed Project and the No Project-Existing LAX Master Plan Alternative, maintenance operations and any potential spills would be required to follow applicable federal, state, and Los Angeles Fire Department (LAFD) regulations. These regulations and provisions are in place so potential spills and releases would not create a hazard to the public or the environment, and would not result in contamination of soil or groundwater. Thus, impacts with respect to the handling of hazardous materials would not create a hazard to the public or the environment and impacts would be less than significant. Therefore, this Alternative would have a similar impact as the proposed Project with regard to a potential release of hazardous materials during operation.

Exposure of Workers to Hazardous Materials

As with the proposed Project, previously unidentified soil and/or perched groundwater contamination could be encountered during construction activities for this Alternative. Further, the former Continental Airlines training building, which is now vacant, could possibly contain hazardous materials, such as ACMs and LBPs. Exposure of construction workers to contaminated materials would be minimized by implementing the measures required by federal, state, and local laws and regulations. In addition, LAWA would implement LAX Master Plan Commitment HM-2, Handling of Contaminated Materials Encountered During Construction, to further reduce the potential adverse effects of excavating contaminated materials. Implementation of this Commitment would ensure that contaminated materials encountered during construction are properly identified and remediated and disposed of in accordance with all applicable regulations, including those governing worker health and safety. As such, potential construction impacts associated with the excavation of contaminated materials would be less than significant.

With regard to operations, the No Project-Existing LAX Master Plan Alternative would have a less than significant impact regarding exposure of workers to hazardous materials because exposure of maintenance workers to contaminated materials would be minimized by handling all materials in accordance with applicable regulations and implementing the measures required by federal, state, and local laws and regulations.

When compared to the proposed Project, an eastward shift in the location of maintenance facilities would not materially change the potential for exposure of workers to hazardous materials. During construction, there is the potential at both locations for unknown subsurface contamination to occur, although the areas east of Taxiway AA are not within a City of Los Angeles-designated methane zone. Any encountered subsurface hazardous materials would be addressed in accordance with LAX Master Plan Commitment HM-2, and workers would not be exposed to vapors in excess of OSHA and CalOSHA standards. Further, any hazardous materials encountered during the removal of the former Continental Airlines training building would be handled in accordance with federal, state, and SCAQMD regulations. As a result, the No Project-LAX Master Plan Alternative would result in a less than significant impact with regard to worker exposure to hazardous materials during construction.

During operation, maintenance personnel would utilize similar materials and quantities of these materials at either location. Further, the location of proposed aircraft parking and maintenance activities under this Alternative is not located within a City of Los Angeles-designated methane zone. As a result, the design recommendations of Los Angeles Methane Seepage Regulations (e.g., methane barriers, venting) would not apply to final building design. In comparison, the Project site is located within a designated Methane Zone; however, adherence to the design

recommendations of the Los Angeles Methane Seepage Regulations would prevent methane intrusion into interior spaces under the proposed Project. Therefore, impacts related to the exposure of workers to hazardous materials would be less than significant during operation of the No Project-Existing LAX Master Plan Alternative and similar to impacts under the proposed Project.

Contamination of Soil and Groundwater/Prevention of Cleanup

The site for this Alternative is east of Taxiway AA, and above the groundwater contamination plume originating from the former Continental Airlines Aircraft Maintenance Facility. The VEFPR groundwater remediation system for this groundwater contamination plume currently includes 120 recovery wells and 36 groundwater monitoring wells, the majority of which occur in the proposed location of aircraft maintenance facilities under the No Project-Existing LAX Master Plan Alternative. Those wells and conveyance infrastructure are integral to the VEFPR groundwater remediation system, which will likely be in operation for 10 or more years.

In comparison to the proposed Project, the No Project-Existing LAX Master Plan Alternative would result in greater impacts to the VEFPR groundwater remediation system. For instance, with the proposed Project site shifted to the west of the specific location presented in the LAX Master Plan, the potential for new maintenance facilities to adversely affect an extensive number of groundwater extraction wells and associated conveyance piping located directly above the contamination plume would be avoided. Additionally, under the No Project-Existing LAX Master Plan Alternative, the placement of a concrete slab above the free product jet fuel plume could substantially limit the ability to monitor, maintain, and service much of the VEFPR groundwater remediation system, which could hinder and delay groundwater clean-up efforts. Furthermore, as the VEFPR is a regulatory enforcement action by the State Water Resources Control Board, with Continental Airlines being the responsible party, there could be substantial limitations on LAX's ability to develop a maintenance hangar and apron area at the location identified under the No Project-Existing LAX Master Plan Alternative. This is especially true if the Los Angeles Regional Water Quality Control Board (LARWQCB) determines in the future that the current remediation strategy for the site needs to be modified or supplemented. Therefore, the No Project-Existing LAX Master Plan Alternative would have a greater impact than the proposed Project on existing groundwater cleanup. Whereas the proposed Project impacts on this system are less than significant, under the No Project-Existing LAX Master Plan Alternative impacts would be significant and would likely involve project-specific mitigation beyond implementation of LAX Master Plan Commitments HM-1 and HM-2 to reduce impacts to a less than significant level.

Impacts Related to Landfill Capacity

Under the No Project-Existing LAX Master Plan Alternative, material would continue to be stockpiled on the Project site in the near-term in association with projects under construction at LAX. Over the long-term, it is likely that stockpiled materials would be removed from the Project site, either being used as backfill for construction projects at LAX or disposed of at appropriate landfill facilities. Based on the findings of the recent Geosyntec Report, stockpiled materials currently on the Project site do not contain concentrations of contaminants that qualify them as Class I hazardous materials. Nonetheless, the stockpiled materials are not homogeneous in composition and may contain previously undiscovered hazardous materials. Further, the No Project-Existing LAX Master Plan Alternative would require the demolition of an existing training facility that would require the disposal of construction and demolition debris at an inert materials

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landfill; the proposed Project does not require the demolition of an existing building. As discussed above, in-county landfills have adequate capacity to accommodate inert waste materials. If hazardous materials are found during construction of the No Project-Existing LAX Master Plan Alternative, they would be handled and disposed of in accordance with LAWA's Procedure, prepared in accordance with LAX Master Plan Commitment HM-2, and properly disposed of at a Class I Hazardous Waste Landfill.

During operation, the No Project-Existing LAX Master Plan Alternative would accommodate the same types of the routine maintenance activities that are currently occurring elsewhere at the airport; hence, the types of hazardous wastes generated under the No Project-Existing LAX Master Plan Alternative are expected to be similar to those now generated. Hazardous waste generated at LAX is removed by private contractors and delivered to treatment, recycling, and disposal facilities both within and outside the Los Angeles region. Existing disposal capacity adequately meets the needs of routine maintenance activities currently occurring at LAX. As a result, the No Project-Existing LAX Master Plan Alternative would result in a less than significant impact with respect to landfill capacity.

Therefore, the No Project-Existing LAX Master Plan Alternative would have a somewhat greater impact than the proposed Project on solid waste facilities because the existing stockpiled materials would likely be removed from the Project site in the long-term, and the Alternative would also require the demolition of an existing former training building that would require disposal of inert construction and debris materials at area landfills.

Hydrology and Water Quality

Drainage

Under the No Project-Existing LAX Master Plan Alternative, the 84-acre Project site would continue to consist of 12 acres of impervious surface area and 72 acres of pervious surface area. Surface water runoff would continue to flow to the north, south, east and west. The majority of the surface water runoff would continue to be from northeast and drain towards the southwest, consistent with the prevailing topography of the Project site, resulting in the majority of Project site runoff flowing directly to the Pershing RCB. The northern portion of the Project site would continue to flow northward to the RCB along World Way West, and a small eastern portion of the Project site would flow eastward to a small drainage channel running along the west side of Taxiway AA, which in turn drains to the World Way West RCB. Under the No Project-Existing LAX Master Plan Alternative, the existing peak flow deficiencies would continue to occur in the four conveyance structures serving the Project site during a Capital Flood event.

The area proposed for aircraft parking aprons and maintenance facilities under the No Project-Existing Master Plan Alternative (i.e., the southwest portion of LAX adjacent to the east side of Taxiway AA) flows to the Imperial Drain, which as with the Project site, ultimately drains to the Santa Monica Bay. The No Project-Existing LAX Master Plan Alternative would increase the amount of impervious surface area flowing into the Santa Monica Bay by approximately 6 percent.² Given the paved/developed nature of the southwest portion of LAX where aircraft parking and maintenance facilities would occur under the No Project-Existing LAX Master Use

² City of Los Angeles. Final Environmental Impact Statement/Environmental Impact Report for Master Plan Improvements at Los Angeles International Airport (LAX), Table F4.7-5, *Total Impervious Area Within the Hydrology and Water Quality Study Area*, and pg. 4-780. April 2004.

Plan Alternative, this Alternative would not materially increase the amount of impervious surface area at the southwest portion of LAX and any change would represent a marginal increase in regional impervious surface area. As concluded in a hydrologic analysis completed for the LAX Master Plan Final EIS/EIR, the additional impervious surface area and surface water runoff associated with the development of the LAX Master Plan improvement, including aircraft parking and maintenance areas at the southwest portion of LAX, would not exceed the capacity of the Imperial Drain System and no flooding would occur. As a result, implementation of the No Project-Existing LAX Master Plan Alternative would not substantially alter the drainage or increase runoff such that it would exacerbate flooding or result in substantial erosion, and a less than significant impact would result.

Although the No Project-Existing LAX Master Plan Alternative would not exceed the conveyance capacity of existing infrastructure, it would result in greater impacts to drainage than the proposed Project. For instance, while the proposed Project would increase the amount of impervious surface area on the Project site, it would also include a proposed detention/infiltration basin to shave peak stormwater flows to area infrastructure. This detention/infiltration would serve to reduce existing deficiencies in stormwater infrastructure. Under the No Project-Existing LAX Master Plan Alternative, this detention/infiltration basin would not be realized and existing deficiencies would remain. The deficiencies are associated with sections of the conveyance infrastructure that do not serve the No Project-Existing LAX Master Plan Alternative site and as a result, this Alternative would have no impact on those deficiencies. Therefore, the No Project-LAX Master Plan Alternative would have a greater impact than the proposed Project on drainage because this Alternative would not address existing infrastructure deficiencies through structural BMPs to reduce peak stormwater flows.

Groundwater

Under the No Project-Existing LAX Master Plan Alternative, the Project site would continue to contain 12 acres of impervious surface area and 72 acres of pervious surface area. Based on these figures, existing recharge associated with the Project site would continue to be approximately 17.76 AFY, or approximately 0.27 percent, of total annual inflows to the West Coast Groundwater Basin. The LAX Master Plan Final EIS/EIR concluded that the associated increase in impervious surface area associated with development of the LAX Master Plan would reduce groundwater recharge at LAX from 171 AFY to 131 AFY; however, the reduction in groundwater recharge would not substantially change groundwater storage or groundwater elevations beneath LAX and groundwater production in the region would not be affected. In addition, the southwest portion of LAX where aircraft parking aprons and maintenance facilities would occur under the No Project-Existing LAX Master Use Plan Alternative is developed and covered with impervious surface area. Therefore, the replacement of existing impervious surface areas with aircraft parking aprons and maintenance facilities under this Alternative would not increase the amount of impervious surface area at the southwest portion of LAX. The No Project-Existing LAX Master Plan Alternative would not include the development of groundwater supply wells. Further, the negligible reduction in groundwater recharge under the No Project-Existing LAX Master Plan Alternative would not interfere with the productivity of pre-existing water wells because no groundwater production wells occur in the vicinity of LAX, and thus, groundwater within the vicinity of LAX is not utilized for the identified beneficial uses of the West Coast Groundwater Basin (i.e., municipal, agricultural, industrial). As a result, the No Project-Existing LAX Master Plan Alternative would result in a less than significant impact to groundwater withdrawal or recharge.

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Impacts to groundwater infiltration would be less under the No Project-Existing LAX Master Plan Alternative than the proposed Project. Specifically, the proposed Project would increase the amount of impervious surface area on the Project site by 56 acres to a total of 68 acres of impervious surface area. This increase in impervious surface area would reduce groundwater infiltration occurring at the Project site from an estimated 17.76 AFY under existing conditions to 3.84 AFY under the proposed Project, which was found to be a less than significant impact. Although the Project site's current contribution to groundwater inflows constitute a negligible contribution (0.27 percent) to the West Coast Groundwater Basin, the proposed Project would nonetheless reduce current groundwater inflows occurring at the Project site by 78.4 percent when compared to existing conditions. In comparison, because the No Project-Existing LAX Master Plan Alternative site is currently covered with impervious surface areas, this Alternative would not reduce the amount of groundwater infiltration occurring at LAX. Under both the proposed Project and No Project-Existing LAX Master Plan Alternative, the negligible reduction in groundwater recharge would not interfere with the productivity of pre-existing water wells because no water production wells occur in the vicinity and groundwater in the vicinity of LAX is not used for the identified beneficial uses of the West Coast Groundwater Basin (i.e., municipal, agricultural, industrial). Therefore, although the reduction in groundwater inflows under the proposed Project is not materially considerable in the context of the West Coast Groundwater Basin, the No Project-Existing LAX Master Plan Alternative would result in less impact than the proposed Project with regard to groundwater recharge because this Alternative would not materially change the impervious surface area at LAX, and thus, would not reduce groundwater infiltration.

Water Quality

The area proposed for aircraft parking aprons and maintenance facilities under the No Project-Existing Master Plan Alternative (i.e., the southwest portion of LAX adjacent to the east side of Taxiway AA) flows to the Imperial Drain, which as with the Project site, ultimately drains to the Santa Monica Bay. The LAX Master Plan Final EIS/EIR recognized that the increased development and activity area in the portions of LAX that drain into the Imperial Drain and Santa Monica Bay would increase the amount of certain pollutants in surface water runoff, such as metals and petroleum hydrocarbons, and decrease the amount of other pollutants in surface water flows, such as sediments and bacteria. Any potential increase in pollutants of concern in surface water runoff from the portion of LAX that flows into the Imperial Drain would be reduced through the implementation of BMPs, as guided by the Conceptual Drainage Plan (LAX Master Plan Commitment HWQ-1). As with the proposed Project, these BMPs would be incorporated into the project-specific Standard Urban Stormwater Management Plan (SUSMP). The SUSMP would require approval by the City of Los Angeles Bureau of Sanitation – Watershed Protection Division prior to the start of construction. All BMPs would be required to be designed in accordance with the LAWA Design and Construction Handbook, which requires projects to be in compliance with the City's Low Impact Development (LID) Ordinance and includes technical approaches and BMPs to reduce stormwater pollutants in first-flush flows. Since the No Project-Existing LAX Master Use Plan Alternative would be required to comply with the municipal storm sewer system (MS4) Permit (through identification of project-specific BMPs in a SUSMP that serve to avoid a net increase in pollutant loading), it is not anticipated that the No Project-Existing LAX Master Plan Alternative would result in additional wet-weather pollutant loading of 303(d)-listed water bodies and associated impacts would be less than significant.

Therefore, the No Project-Existing LAX Master Plan Alternative would result in a less than significant impact with regard to water quality.

With regard to surface water quality, the No Project-Existing LAX Master Plan Alternative would result in a smaller net increase in the amount of impervious surface area and associated pollutants (e.g., metals, petroleum hydrocarbons) than the proposed Project. The increase in impervious surface area on the Project site was found to result in a less than significant impact on water quality through the implementation of on-site BMPs included as part of a project-specific SUSMP. These BMPs included structural BMPs such as a detention/infiltration basin, as well as media filters, hydrodynamic separators, and/or StormTraps. However, both the Project and the Alternative would include BMPs to reduce pollutant loads so that no increase in the amount of pollutants flowing into the Santa Monica Bay would occur in accordance with the SUSMP. Although the No Project-Existing LAX Master Plan Alternative would increase the amount of impervious surface area in the portion of LAX that drains to Santa Monica Bay by approximately 6 percent, development of aircraft parking aprons and maintenance facilities in the southwest portion of LAX would not contribute to the increase in impervious surface area because the area is already composed of impervious surface areas. In comparison, the increase on 56 acres of impervious surface area on the Project site under the proposed Project would increase this impervious area flowing to the Santa Monica watershed by approximately 1 percent, for a total increase of 7 percent when combined with other improvements under the LAX Master Plan. Compared to baseline conditions, neither is considered a significant increase when considering proposed drainage facilities and BMPs to reduce the potential for water quality impacts. Therefore, the No Project-Existing LAX Master Plan Alternative would result in similar impacts as the proposed Project, which was concluded to result in a less than significant impact, with regard to surface water quality.

Noise

The No Project-Existing LAX Master Plan Alternative would result in construction activities comparable in intensity to the proposed Project on a daily basis. The construction noise analysis conducted in support of the LAX Master Plan indicates that noise sensitive uses within 600 feet of construction activities may be significantly impacted. Under the No Project-Existing LAX Master Plan Alternative, the nearest noise-sensitive land use to the site is residential development to the south in El Segundo at approximately the same or similar distance as from the proposed Project site. The proposed Project would switch the east-west relationship of the future parking facility and the aircraft maintenance facility, which would not place either facility substantially closer to or farther from the nearest noise-sensitive uses. Therefore, noise impacts from construction activities under the No Project-Existing LAX Master Plan Alternative would be less than significant and similar to the proposed Project.

With regard to operational impacts, implementation of the No Project-Existing LAX Master Plan Alternative would not result in a change in the estimated noise levels compared to the proposed Project. As would be the case under the proposed Project, this Alternative would not result in a change in the number or types of aircraft operations, because aircraft operational decisions are driven by air service demand and supply factors, not maintenance facilities.

The reduced maintenance hangar area associated with the proposed Project, compared to the amount under the No Project-Existing LAX Master Plan Alternative (approximately 290,000 square feet compared to 323,000 square feet), would not result in a material difference or change in operational aircraft maintenance-related noise levels. Similar to the proposed

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Project, the redirection and consolidation of maintenance operations to the area envisioned under the No Project-Existing Master Plan Alternative would result in longer distances between gates and maintenance with some minimal amount of taxiing/towing activities compared to existing conditions in this area of LAX. However, the noise associated with taxiing/towing would not affect the airport-related noise contours off the airport property.

Therefore, under the No Project-Existing Master Plan Alternative, short-term construction-related noise impacts would be similar to the proposed Project and long-term operational-related noise impacts would be similar to the proposed Project. Overall, this Alternative would have a less than significant impact and similar construction-related and operational-related noise impacts as compared to the proposed Project.

Land Use and Planning

Under the No Project-Existing LAX Master Plan Alternative, development of aircraft maintenance facilities in the southwestern portion of the airport with aircraft parking apron areas, maintenance hangars, employee parking areas, and related storage, equipment and facilities would occur as envisioned in the LAX Master Plan. As proposed under the LAX Master Plan, a new 275,000 square foot aircraft maintenance hangar would be constructed west of the existing United-Continental Hangar, with a new aircraft apron area placed between the new hangar and Taxiway C. The former Continental Airlines training building would be demolished and rebuilt as a 23,000 square foot ancillary building. Additionally, per the LAX Master Plan, another new maintenance hangar, approximately 25,000 square feet in size, would be located between the United-Continental Hangar and the American Airlines High-Bay Hangar.

As discussed in Section 4.6, *Land Use and Planning*, both the LAX Plan and the LAX Specific Plan, designate the entire western portion of the airport as “Airport Airside” which allows aircraft maintenance areas/facilities and parking areas/facilities and related airfield support services irrespective of location. Similar to the proposed Project, airport maintenance and parking uses developed under the No Project-Existing LAX Master Plan Alternative would be consistent and would not conflict with these plans.

As the No Project-Existing LAX Master Plan Alternative would construct aircraft maintenance and parking facilities as envisioned under the LAX Master Plan, the No Project-Existing LAX Master Plan Alternative would be consistent with the LAX Master Plan.

As discussed in Section 4.6, *Land Use and Planning*, changes in the locations of aircraft maintenance and parking facilities under the proposed Project would not materially change the conceptual framework for development in the Project area as set forth in the LAX Master Plan Program. The proposed Project would therefore remain consistent with the LAX Master Plan Program by providing an aircraft maintenance area in the southwest portion of the airport.

As such, land use impacts under the No Project-Existing LAX Master Plan Alternative would be similar to the proposed Project and would be less than significant.

Construction Surface Transportation

Under the No Project-Existing LAX Master Plan Alternative, development of aircraft maintenance facilities in the southwestern portion of the airport with aircraft parking apron areas, maintenance hangars, employee parking areas, and related storage, equipment and facilities would occur as envisioned in the LAX Master Plan.

Construction traffic impacts that would occur under the No Project-Existing LAX Master Plan Alternative would include potential temporary impacts expected to occur during construction/improvements. Similar to the proposed Project, construction traffic under the No Project-Existing LAX Master Plan Alternative would also access the Project site via World Way West and Pershing Drive. The volume of daily construction traffic associated with the No Project-Existing LAX Master Plan would be similar to the volume that might occur under the proposed Project. Similar to the proposed Project, no significant construction-related traffic impacts are anticipated to occur under the No Project-Existing LAX Master Plan Alternative.

Furthermore, both the No Project-Existing LAX Master Plan Alternative and the proposed Project would incorporate applicable transportation-related LAX Master Plan commitments to further reduce temporary construction impacts. Therefore, construction surface transportation impacts under the No Project-Existing LAX Master Plan Alternative would be similar to the proposed Project and would be less than significant.

5.6.2.1 Relationship of the No Project-Existing Master Plan Alternative to Proposed Project Objectives

As the No Project-Existing LAX Master Plan Alternative would construct aircraft maintenance and parking facilities as envisioned under the LAX Master Plan, the No Project-Existing LAX Master Plan Alternative would meet the proposed Project's objective that supports the provision of maintenance facilities in the southwest portion of the airport as envisioned in the LAX Master Plan.

However, compared to the proposed Project, the No Project-Existing LAX Master Plan Alternative would only partially meet the objective that encourages the provision of modern, efficient, and effective aircraft maintenance and parking areas that need to be replaced in conjunction with the LAX Master Plan as discussed further below. In addition, this Alternative also would only partially support the proposed Project's objective to provide maintenance and aircraft parking areas that meet the needs of existing aircraft at the airport, including modern ADG VI aircraft. Furthermore, the No Project-Existing LAX Master Plan Alternative would involve development above a groundwater contamination plume. This would have the potential to substantially limit the ability to continue to monitor, maintain, and service much of the existing VEFPR groundwater remediation system in the area, which could delay groundwater clean-up efforts and pose a significant constraint to development of maintenance facilities at that location such that the proposed Project's objectives might not be attained.

As the operational characteristics of larger aircraft at LAX are better understood today than when the LAX Master Plan was prepared, the ability to provide aircraft maintenance hangars and aircraft parking areas sized for ADG VI aircraft located in proximity to one another is not afforded through the exact aircraft maintenance facilities layout reflected in the 2004 LAX Master Plan. Specifically, the 2004 LAX Master Plan proposed to help offset the loss of existing aircraft maintenance facilities through the construction of three smaller hangar/maintenance facilities dispersed in the western portion of the airport as proposed in the No Project-Existing LAX Master Plan Alternative. Only one of those facilities, the hangar proposed on the east side of Taxiway AA, would be able to accommodate large aircraft such as ADG V and ADG VI aircraft. However, due to the relatively small/shallow apron area proposed in front of that hangar, encompassing only about 10 acres, this site would substantially limit the ability to park multiple large aircraft (i.e., possibly allowing only two ADG VI aircraft within the hangar and two

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ADG VI aircraft parked on the apron outside the hangar). In contrast, the proposed Project would be able to accommodate up to 10 ADG VI aircraft, or a mix of smaller aircraft on the site.

Therefore, while the No Project-Existing LAX Master Plan Alternative would be consistent with the LAX Master Plan by providing an aircraft maintenance area in the southwest portion of the airport, this Alternative would not as effectively consolidate and modernize existing aircraft maintenance facilities that would serve existing aircraft needs at LAX, including new facilities that have been or will be replaced in conjunction with the LAX Master Plan.

5.6.3 Reduced Project Alternative

Air Quality

Under the Reduced Project Alternative, total construction emissions and the duration of impacts associated with these emissions would be less than the proposed Project given the reduced development footprint. However, although implementation of the Reduced Project Alternative would result in less development, this Alternative would still result in similar maximum daily emissions given that the intensity of construction activity would likely remain the same. As stated in Section 4.1, *Air Quality*, the thresholds of significance are based on maximum daily emissions and the proposed Project would have significant construction-related impacts with respect to maximum daily regional NO_x emissions. As the Reduced Project Alternative would have a similar intensity of construction activity, this Alternative would result in similar significant impacts with respect to maximum daily NO_x emissions as compared to the proposed Project. Construction emissions from this Alternative would still exceed the regional significance threshold for NO_x following implementation of the same control measures implemented under the proposed Project (see Section 4.1, *Air Quality*).

With regard to operational emissions, implementation of the Reduced Project Alternative would result in similar emissions compared to the proposed Project. As would be the case under the proposed Project, this Alternative would not result in a change in the number or types of aircraft operations, because aircraft operational decisions are driven by air service demand and supply factors, not maintenance facilities. The Reduced Project Alternative would eliminate one of the two aircraft maintenance hangars proposed; however, maintenance activities that would have been conducted at the second hangar would occur elsewhere at LAX. Therefore, emissions associated with maintenance activities at the hangars would not be materially different and therefore is not expected to result in any change in aircraft maintenance emissions. Similar to the proposed Project, the redirection and consolidation of maintenance operations to the site would result in longer distances between gates and maintenance with some minimal amount of taxiing/towing emissions compared to existing conditions. Therefore, this Alternative would result in similar operational emissions as compared to the proposed Project.

Therefore, under the Reduced Project Alternative, total construction-related emissions and the duration of emissions would be reduced, although daily construction emissions would be similar. Also, long-term operational-related air quality impacts would be similar compared to the proposed Project. Overall, this Alternative would have similar impacts as compared to the proposed Project on existing air quality. Peak construction emissions from this Alternative would still result in a significant and unavoidable impact as it would still exceed the daily regional significance threshold for NO_x to the same extent as the proposed Project following implementation of control measures.

Regarding the Health Risk Assessment, the Reduced Project Alternative would be located on the same general site as the proposed Project but would have fewer days of construction activity. Therefore, the health risk impacts due to construction would be slightly less than those for the proposed Project, which were less than significant. The number of aircraft maintained at the Site under the Reduced Project Alternative would also be slightly less than that under the proposed Project and therefore the health risk impacts due to operations would also be slightly less than those for the proposed Project, which were less than significant.

Greenhouse Gas Emissions

Implementation of the Reduced Project Alternative would result in less development and fewer total construction GHG emissions. Although the Reduced Project Alternative would result in the same intensity of construction activity, the total duration of construction would be reduced. Therefore, under this Alternative, impacts related to construction GHG emissions would be less than the proposed Project.

With regard to operational GHG emissions, implementation of the Reduced Project Alternative would result in slightly fewer estimated emissions compared to the proposed Project. As would be the case under the proposed Project, this Alternative would not result in a change in the number or types of aircraft operations, because aircraft operational decisions are driven by air service demand and supply factors, not maintenance facilities. The Reduced Project Alternative would eliminate one of the two aircraft maintenance hangars proposed; however, maintenance activities that would have been conducted at the second hangar would occur elsewhere at LAX. Therefore, emissions associated with maintenance activities at the hangars would not be materially different and therefore is not expected to result in any change in aircraft maintenance emissions. Similar to the proposed Project, the redirection and consolidation of maintenance operations to the site would result in longer distances between gates and maintenance with some minimal amount of taxiing/towing emissions compared to existing conditions. However, there would be fewer taxiing/towing trips to the site under this Alternative, given the reduction in hangar and apron area. Therefore, this Alternative would result in slightly fewer GHG emissions from taxiing/towing trips than the proposed Project.

Therefore, under the Reduced Project Alternative, construction-related GHG impacts would be less than the proposed Project and long-term operational-related GHG impacts would be slightly less than the proposed Project. Overall, this Alternative would have a less than significant impact and less impacts than the proposed Project on existing GHG emissions.

Hazards and Hazardous Materials

Release of Hazardous Materials

The Reduced Project Alternative would require the removal of an estimated 295,000 cubic yards of stockpiled materials. The stockpiled materials do not contain concentrations of contaminants that qualify them as Class I hazardous materials. If previously undiscovered hazardous materials are encountered during stockpile removal or other portions of construction, they would be conducted in accordance with applicable federal, state, and local regulations, including LAWA's Procedure, which was prepared in accordance with LAX Master Plan Commitment HM-2, and LAWA's BMPs. Any hazardous materials found at the Project site that would be transported off-site would be done by licensed operators in accordance with all applicable federal, state, and local regulations. As a result, the removal of stockpiled soils or previously undiscovered hazardous materials would result in a less than significant impact.

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Construction activities could encounter previously abandoned oil wells, resulting in a potentially significant release of hazardous materials. Mitigation Measure MM-HAZ (WAMA)-1 that applies to the proposed Project would also apply to the Reduced Project Alternative. This mitigation measure ensures proper confirmation and proper abandonment of any oil wells discovered. As with the proposed Project, with implementation of Mitigation Measure MM-HAZ (WAMA)-1, impacts with regard to abandoned oil wells under the Reduced Project Alternative would be reduced to a less than significant level.

Although the Project site is located in a City of Los Angeles-designated methane zone, a significant hazard associated with construction activities is generally not expected to occur because the methane hazard (combustion) occurs at concentrations above 50,000 parts per million (ppm). If subsurface methane were to be released into the atmosphere during construction, it would quickly disperse (reduce) to concentrations much lower than hazard levels once released to the surface.

With regard to operations, under the Reduced Project Alternative hazardous materials would be handled in accordance with applicable federal, state, and LAWA regulations. LAWA has procedures in place to reduce hazardous materials-related incidents and spills. If a spill were to occur, emergency response procedures would be implemented to contain and clean up the spill. With regard to methane, all building design would adhere to existing City regulations and requirements. Thus, operation of the Reduced Project Alternative would have a less than significant impact with regard to the potential release of hazardous materials.

When compared to the proposed Project, the reduced size of the proposed facilities would not alter hazardous materials impacts during construction because all stockpiled materials would still require removal, the location of oil wells is unknown and surveys would continue to be required, and construction would still be located in a City of Los Angeles-designated methane zone. With regard to operations, the Reduced Project Alternative would not reduce the overall amount of hazardous materials used at LAX as maintenance operations proposed for the Project site would occur at other airport locations. Therefore, the Reduced Project Alternative would have a similar impact as the Proposed Project with regard to the potential release of hazardous materials into the environment.

Exposure of Workers to Hazardous Materials

As discussed above, contaminated soils could be unexpectedly encountered during the removal of stockpiled material and during grading and excavation activities; however, compliance with the Procedure currently in place by LAWA sets forth appropriate procedures and requirements for the identification and handling of excavated contaminated materials, including those governing worker health and safety. In the event that Project-related excavation unexpectedly encounters VOC-contaminated soil, the continuation of such excavation would be carried out in accordance with SCAQMD Rule 1166. As discussed above, the off-gassing of methane is not anticipated to result in a significant impact during construction because the methane hazard (combustion) occurs at concentrations above 50,000 ppm. If subsurface methane were to be released into the atmosphere during construction, it would quickly disperse (reduce) to concentrations much lower than hazard levels once released to the surface. In addition, the exposure of workers to methane is regulated by OSHA and CalOSHA, as well as through the Procedure. These regulations would prevent worker exposure to a "hazardous atmosphere". As a result, construction of the Reduced Project Alternative would result in a less than significant impact with regard to exposing workers to hazardous materials.

During operation, the Reduced Project Alternative would accommodate the same types of routine maintenance activities that are currently occurring at various places throughout LAX. As with current operations, maintenance workers would continue to comply with all applicable regulations. For instance, exposure of maintenance workers to contaminated materials would be minimized by implementing the measures required by federal, state, and local laws and regulations. Interior methane levels would be regulated in accordance with Los Angeles Methane Seepage Regulations, which could require design features such as methane barriers, methane detection systems, and venting systems should hazardous levels of methane be detected during pre-construction investigations.

When compared to the proposed Project, all stockpiled materials would still require removal and construction workers could still encounter previously undiscovered subsurface soil contamination, abandoned oil wells, or methane, all conditions which would be reduced to a less than significant level through adherence with federal, state, and LAWA regulations, procedures, LAX Master Plan mitigation measures, and the Project specific mitigation measure. With regard to operations, the Reduced Project Alternative would not reduce the overall amount of hazardous materials used at LAX as maintenance operations proposed for the Project site would occur at other airport locations, all of which would be handled in accordance with applicable federal and state regulations, as well as manufacturers' recommendations. All buildings would be designed in accordance with Los Angeles Methane Seepage Regulations regardless of the size of the proposed aircraft maintenance facilities. Therefore, the Reduced Project Alternative would have a similar impact as the Proposed Project with regard to potentially exposing workers to hazardous materials.

Contamination of Soil & Groundwater/Prevention of Cleanup

Only one ongoing remediation effort is occurring in the vicinity of the Project site; the VEFPR for a groundwater contamination plume originating at the former Continental Airlines Maintenance Facility; the VEFPR includes three on-site groundwater monitoring wells (i.e., CMW-31, CMW-32, CMW-33). As part of the construction of the Reduced Project Alternative, these monitoring wells would be protected in place, enclosed in concrete vaults with load bearing grates at the surface to provide for continued access. LAWA would coordinate with the operator of the remediation system and with the RWQCB, as appropriate, for approval of the protect-in-place details. Impacts, if any, to the remediation system would be less than significant.

When compared to the proposed Project, both the proposed Project and the Reduced Project Alternative would require the installation of pavement over the three on-site monitoring wells, which would be protected in place to maintain access under both the proposed Project and the Reduced Project Alternative. Therefore, the Reduced Project Alternative would result in similar impacts as the proposed Project with regard to ongoing remediation efforts.

Impacts Related to Landfill Capacity

The Reduced Project Alternative would require the removal of an estimated 295,000 cubic yards of stockpiled soils. Based on the findings of the recent Geosyntec Report, the stockpiled soils do not contain concentrations of contaminants that qualify them as Class I hazardous materials. As a result, the stockpiled soils could be disposed of at a Class III Municipal Solid Waste (MSW) landfill. As discussed in Section 4.3, *Hazards and Hazardous Materials*, of this EIR, as of December 31, 2011, the most recent information available, the MSW capacity of landfills in Los Angeles County is estimated at 127 million tons. As a result, MSW landfills in Los Angeles

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County have ample capacity to accommodate the 295,000 cubic yards of soil required to be hauled from the Project site. Should hazardous materials be unexpectedly encountered during construction activities, they would be disposed of in accordance with the Procedure, which would identify disposal options for previously unidentified hazardous materials. Therefore, construction of the proposed Project would not generate hazardous materials which would exceed the available disposal capacity and a less than significant impact would result.

During operation, the Reduced Project Alternative would accommodate the same types of the routine maintenance activities that are currently occurring elsewhere at the airport; hence, the types of hazardous wastes generated under the proposed Project are expected to be similar to those now generated. Because the Reduced Project Alternative would relocate existing maintenance operations, there would not be an increase in the amount of hazardous materials generated at LAX as a whole. Hazardous waste generated at LAX is removed by private contractors and delivered to treatment, recycling, and disposal facilities both within and outside the Los Angeles region. As existing disposal capacity adequately meets the needs of routine maintenance activities currently occurring at LAX, the proposed Project would not exceed the hazardous waste disposal capacity and a less than significant impact would result.

During construction of both the Reduced Project Alternative and the proposed Project, approximately 295,000 cubic yards of stockpiled material would be removed from the Project site. As discussed above, adequate landfill capacity is available to accommodate stockpiled materials. During operation, the generation of hazardous waste would be similar under both Alternatives, and both Alternatives would be similar to existing conditions because the Alternatives would consolidate existing maintenance operations at LAX. As discussed above, adequate hazardous waste disposal capacity is available to accommodate these wastes. Therefore, the Reduced Project Alternative would have a similar impact as the proposed Project with regard to landfill capacity.

Hydrology and Water Quality

Drainage

Under the Reduced Project Alternative, the aircraft apron area would be reduced by half and employee parking would be reduced by 150 spaces. The developed area of the site would be reduced by approximately 22 acres (10 acre reduction in hangar area/parking and 12 acres of apron area) resulting in a total development area of approximately 45 acres. The increase in impervious surfaces on the Project site under the Reduced Project Alternative would increase surface water flows from the Project site. As discussed above, peak flow deficiencies occur in the four conveyance structures serving the Project site during a Capital Flood event. Thus, the increase in stormwater flows during a Capital Flood event would further exacerbate these deficiencies. As with the proposed Project, the Reduced Project Alternative would be developed in accordance with LAX Master Plan Commitment HWQ-1 and would include structural BMPs such as the detention/infiltration basin to shave peak stormwater flows, provide some groundwater recharge, and remove contaminants from surface water flows before discharging into the Pershing Drive RCB. In accordance with LAX Master Plan Commitment HWQ-1, the structural BMPs would be adequately sized to reduce peak flow rates or increase the structure's capacity, so that drainage facilities adequately convey storm water runoff and prevent flooding by adhering to the procedures set forth by the Peak Rate Method/Los Angeles County Modified Rational Method. With provision of structural BMPs similar to those planned for the proposed Project, the Reduced Project Alternative would not result in an increase in

runoff or substantially alter the existing drainage pattern so that flooding or substantial erosion would occur. Therefore, the Reduced Project Alternative would result in a less than significant impact.

The Reduced Project Alternative would result in similar drainage impacts as the proposed Project. Although the Reduced Project Alternative would not increase the amount of on-site impervious surface area to the extent that the proposed Project would, both Alternatives would include adequately sized structural BMPs to shave peak flows into the Pershing Drive RCB to ensure that this drainage infrastructure adequately conveys stormwater flows and does not result in flooding in accordance with LAX Master Plan Commitment HWQ-1. Therefore, the Reduced Project Alternative would have a similar impact as the proposed Project with regard to drainage.

Groundwater

Under the Reduced Project Alternative, approximately 45 acres of the Project site would be developed with impervious surface area, resulting in a net increase of 33 acres over existing conditions. The West Coast Groundwater Basin has a groundwater recharge rate of approximately 0.24 AFY per pervious acre. Based on this rate, the Reduced Project Alternative would result in a decrease in the on-site volume of groundwater infiltration, from an estimated 17.76 AFY under existing conditions to 7.20 AFY under the Reduced Project Alternative. This reduction in groundwater infiltration would not substantially deplete groundwater supplies or interfere substantially with groundwater recharge as the Project site only represents a negligible contribution (0.2 percent) to groundwater infiltration under existing conditions and the reduction would represent a 0.16 percent reduction in the total average annual inflows (6,700 AFY) to the West Coast Groundwater Basin. This negligible reduction in groundwater infiltration would not interfere with the productivity of pre-existing water wells as no water production wells occur in the vicinity and groundwater under LAX is not utilized for the identified beneficial uses of the West Coast Groundwater Basin (i.e., municipal, agricultural, industrial). As a result, the Reduced Project Alternative would result in no impact to groundwater withdrawal or recharge.

In comparison, the proposed Project would increase the amount of impervious surface area on the Project site by 56 acres to a total of 68 acres of impervious surface area. This increase in impervious surface area would reduce groundwater infiltration occurring at the Project site from an estimated 17.76 AFY under existing conditions to 3.84 AFY. Therefore, the Reduced Project Alternative would have less impact than the proposed Project with regard to groundwater infiltration.

Water Quality

The Reduced Project Alternative would develop approximately 45 acres of the Project site with impervious surfaces such as aircraft maintenance and parking areas, resulting in an increase in stormwater runoff from the Project site. The proposed uses under the Reduced Project Alternative have the potential to increase pollutant concentrations in on-site stormwater flows. However, as discussed above, drainage conveyance associated with the Reduced Project Alternative would be developed in accordance with LAX Master Plan Commitment HWQ 1, Conceptual Drainage Plan, which requires that a range of site-specific BMPs should be incorporated into development projects at LAX to reduce pollutant concentrations in on-site stormwater flows. It is anticipated that site-specific BMPs used for the Reduced Project Alternative would be similar to those utilized under the proposed Project and would be

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incorporated into the Project-specific SUSMP. The SUSMP would require approval by the City of Los Angeles Bureau of Sanitation – Watershed Protection Division prior to the start of construction. These BMPs are anticipated to include, but not be limited to, a detention/infiltration basin, oil-water separators, media filters, a water recycling system, porous pavement, and hangar roof drains. Additional measures may also include but are not necessarily limited to drain inserts/water quality inlets in combination with the media filters, or other equivalent measures, as determined adequate by the Los Angeles Bureau of Sanitation in the final SUSMP. All BMPs would be required to be designed in accordance with the LAWA Design and Construction Handbook, which requires projects to be in compliance with the City's LID Ordinance and includes technical approaches and BMPs to reduce stormwater pollutants in first-flush flows. Since the Reduced Project Alternative would be required to comply with the MS4 permit (through identification of project-specific BMPs in a SUSMP that serve to avoid a net increase in pollutant loading), it is not anticipated that the Alternative would result in additional wet-weather pollutant loading of 303(d)-listed water bodies and associated impacts would be less than significant. Regarding dry weather pollutant loads, the same site-specific BMPs utilized to treat stormwater flows would also reduce pollutant loading in dry weather flows, and as a result the Reduced Project Alternative would result in a less than significant impact with regard to dry weather flows.

In comparison to the proposed Project, although both the proposed Project and the Alternative would include site-specific BMPs to reduce pollutants in both wet and dry weather flows, the Reduced Project would not include the provision of a wash rack, and thus, would not discharge dry weather flows into the sanitary sewer system (under an industrial waste permit from the City's Industrial Waste Division) for treatment and disposal at the Hyperion Wastewater Treatment Plant. Therefore, the Reduced Project Alternative would have less impact than the proposed Project with regard to water quality.

Noise

Overall, the Reduced Project Alternative would include less development (in terms of square footage) compared to the Project. As such, the total amount of construction activities would be less than the Project. However, this Alternative would still result in similar daily noise impacts given that the intensity of construction activity would likely remain the same, though occurring over a shorter number of months. As the Reduced Project Alternative would result in the same intensity of construction activity, this Alternative would result in similar impacts with respect to maximum daily noise levels as compared to the proposed Project.

With regard to operational noise impacts, implementation of the Reduced Project Alternative would result in slightly lower estimated noise levels compared to the proposed Project. As would be the case under the proposed Project, this Alternative would not result in a change in the number or types of aircraft operations, because aircraft operational decisions are driven by air service demand and supply factors, not maintenance facilities. The Reduced Project Alternative would eliminate one of the two aircraft maintenance hangars proposed; however, maintenance activities that would have been conducted at the second hangar would occur elsewhere at LAX. Therefore, noise associated with maintenance activities at the hangars would not be different and therefore is not expected to result in any change in aircraft maintenance related noise levels. Similar to the proposed Project, the redirection and consolidation of maintenance operations to the site would result in longer distances between gates and maintenance areas with some minimal amount of taxiing/towing emissions compared

to existing conditions. However, there would be fewer taxiing/towing trips to the site under this Alternative, given the reduction in hangar and apron area. Therefore, this Alternative could result in slightly lower noise levels from taxiing/towing trips than the proposed Project, although noise from taxiing/towing trips would not affect the aircraft-related noise contours off the airport.

Therefore, under the Reduced Project Alternative, construction-related noise impacts would be similar to the proposed Project and long-term operational-related noise impacts would be slightly less than the proposed Project. Overall, this Alternative would have a less than significant impact and slightly less noise impacts than the proposed Project.

Land Use and Planning

While the Reduced Project Alternative would eliminate one of the two aircraft maintenance hangars and reduce the number of parking spaces and apron area, it would include the same type and mixture of land uses (hangar, maintenance area, employee parking, and ancillary facilities) as the proposed Project. Similar to the proposed Project, the Reduced Project Alternative would not increase passenger or gate capacity and would not increase flights and/or aircraft operations at LAX.

Similar to the proposed Project, the Reduced Project Alternative would be consistent with the land uses permitted under the LAX Plan and LAX Specific Plan. However, as only one aircraft hangar would be developed under the Reduced Project Alternative, this Alternative would not maintain ADG VI aircraft and other aircraft at LAX as efficiently and effectively as the proposed Project. Therefore, while this Alternative would be consistent with the permitted land uses under the LAX Plan, it would not fulfill to the same degree as the proposed Project LAX Plan policies and programs that aim to provide for more efficient and effective use of airport facilities, update airport facilities to accommodate New Large Aircraft, and modernize, upgrade, and improve LAX.

Similar to the proposed Project, the Reduced Project Alternative would not materially change the conceptual framework for development in the Project area as set forth in the LAX Master Plan. The Reduced Project Alternative would provide an aircraft maintenance area in the southwest portion of the airport, consistent with the LAX Master Plan. However, as only one hangar would be developed, the Reduced Project Alternative would provide less in the way of replacement maintenance facilities required in conjunction with LAX Master Plan improvements, than the proposed Project, and less maintenance facilities than identified in the LAX Master Plan. Therefore, the Reduced Project Alternative would be less consistent with the LAX Master Plan and the LAX Plan than the proposed Project. Therefore, land use impacts under the Reduced Project Alternative would be greater than under the proposed Project, however, as with the proposed Project, the impacts would be less than significant.

Construction Surface Transportation

Similar to the proposed Project, construction employee parking and material staging for deliveries associated with the construction of the Reduced Project Alternative would be located on the west side of the Airport and construction employees would access the site from Pershing Drive. The Reduced Project Alternative would also incorporate applicable transportation-related LAX Master Plan commitments to further reduce temporary construction impacts.

Therefore, construction surface transportation impacts under the Reduced Project Alternative would be similar to the proposed Project and would be less than significant. However, as the

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Reduced Project Alternative would have a shorter construction period, would involve fewer construction materials, construction employee vehicles, material delivery trucks, and construction equipment, it would have less impact than the proposed Project on existing traffic conditions in the area.

5.6.3.1 Relationship of the Reduced Project Alternative to Proposed Project Objectives

The Reduced Project Alternative would meet the proposed Project's objective that supports consistency with the LAX Master Plan by providing an aircraft maintenance area in the southwest portion of the airport. The Reduced Project Alternative would also meet the objective to provide maintenance facilities and RON/RAD parking areas that are sized to accommodate ADG VI aircraft and other aircraft in one location. However, as only one aircraft hangar would be developed under the Reduced Project Alternative, it would be less able to accommodate the need for maintenance facilities removed by pending projects and therefore would result in the need for use of various other maintenance facilities currently in use at LAX with the potential need for some maintenance to be accommodated at other airports. As such, the Reduced Project Alternative only partially meets the objectives that support the consolidation, relocation, and modernization of the existing aircraft maintenance facilities at LAX. In addition, as only one hangar would be developed under the Reduced Project Alternative, it would only partially support the objective that seeks to provide aircraft maintenance hangars and aircraft parking areas sized to accommodate ADG VI aircraft and other aircraft in one location.

5.6.4 Alternate Site Alternative

Air Quality

Implementation of this Alternative would result in similar development as the proposed Project. However, demolition activities would be required in order to accommodate the two new maintenance hangars. Demolition activities require the use of heavy-duty diesel equipment and haul trucks to remove debris and would result in worker vehicle trips. Therefore, this Alternative would result in somewhat greater maximum daily emissions given that the intensity of construction activity could increase due to the need for demolition activities and associated equipment usage and vehicle trips. As stated in Section 4.1, *Air Quality*, the thresholds of significance are based on maximum daily emissions. The proposed Project would result in construction-related significant impacts with respect to maximum daily regional NO_x emissions. As this Alternative would result in greater construction emissions, this Alternative would exceed the regional significance threshold for NO_x following implementation of the same control measures implemented under the proposed Project (see Section 4.1, *Air Quality*) and would result in significant impacts that would be somewhat greater than the proposed Project.

Additionally, development under the Alternate Site Alternative would occur closer to downwind off-site sensitive receptors. The prevailing winds in the area are from the southwest. Therefore, sensitive uses to the northeast, which include multi-family residential uses along Belford Avenue (approximately 2,300 feet to the northeast of the Alternate Site) and on Airport Boulevard south of Arbor Vitae Street (approximately 2,900 feet to the northeast of the Alternate Site), could potentially experience greater localized construction-related impacts and construction-related health impacts compared to the proposed Project due to the proximity of construction-related emissions occurring upwind from these sensitive receptor locations.

With regard to operational emissions, implementation of this Alternative would result in similar estimated emissions compared to the proposed Project. As would be the case under the proposed Project, this Alternative would not result in a change in the number or types of aircraft operations, because aircraft operational decisions are driven by air service demand and supply factors, not maintenance facilities. This Alternative would result in similar development of aircraft maintenance hangars associated with the proposed Project. Therefore, emissions associated with maintenance activities at the hangars would not be materially different and therefore is not expected to result in any change in aircraft maintenance emissions. Similar to the proposed Project, the redirection and consolidation of maintenance operations to the site would result in slightly longer distances between gates and maintenance with some minimal amount of taxiing/towing emissions compared to existing conditions. Therefore, this Alternative would result in similar operational emissions as compared to the proposed Project.

Therefore, under this Alternative, construction-related air quality impacts would be greater than the proposed Project and long-term operational-related air quality impacts would be similar to the proposed Project. Overall, this Alternative would have greater impacts than the proposed Project on existing air quality. Construction emissions from this Alternative would have a significant impact as it would exceed the regional significance threshold for NO_x to a greater degree than the Project.

Regarding the Health Risk Assessment analysis, under this Alternative, several existing facilities would need to be demolished before construction of the proposed maintenance facilities could begin, resulting in more construction emissions than under the proposed Project. Therefore, the health risks associated with exposure to construction emissions under the Alternate Site Alternative would be slightly higher than under the proposed Project. In addition, the Alternate Site Alternative is closer to the airport fence line in the downwind direction, also indicating that construction-related health risk impacts associated with the Alternate Site Alternative could be greater than under the proposed Project. With this Alternative, it is anticipated that the acute impacts from construction would likely be greater than the significance threshold of 1.0. For this qualitative evaluation, it is assumed that the acute impacts would be significant for off-site workers during construction of this Alternative even after implementation of the same control measures as the proposed Project (see Section 4.1, *Air Quality*).

With respect to operational health impacts, since the Alternate Site Alternative is closer to the fence line than the proposed Project site, fence line impacts for off-site workers would be higher than under the proposed Project. However, it is unlikely that the impacts would be two orders of magnitude higher than the proposed Project. Therefore, while operational health risk impacts would be greater than the proposed Project, they are expected to be less than significant.

Greenhouse Gas Emissions

Under this Alternative, development would occur at a different location in the eastern portion of the airport, south of Century Boulevard and east of Sepulveda Boulevard within the Delta and United Airlines Complex. The existing hangars on the Alternate Site Alternative would need to be demolished in order to include two maintenance hangars, with a design similar to that described for the proposed Project.

Implementation of this Alternative would result in similar development as the proposed Project. However, as stated above, demolition activities would occur in order to include two maintenance hangars. Demolition activities require the use of heavy-duty diesel equipment and haul trucks to

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remove debris and would result in worker vehicle trips. Therefore, this Alternative would result in greater GHG emissions given that the intensity of construction activity could increase due to the need for demolition activities and associated equipment usage and vehicle trips. As this Alternative would result in greater construction GHG emissions, this Alternative would result in impacts that would be greater than the proposed Project.

With regard to operational emissions, implementation of this Alternative would result in similar estimated GHG emissions compared to the proposed Project. As would be the case under the proposed Project, this Alternative would not result in a change in the number or types of aircraft operations, because aircraft operational decisions driven by air service demand and supply factors, not maintenance facilities. This Alternative would result in the development of the same aircraft maintenance hangars proposed. Therefore, emissions associated with maintenance activities at the hangars would not be materially different and therefore is not expected to result in any change in aircraft maintenance GHG emissions. Similar to the proposed Project, the redirection and consolidation of maintenance operations to the site would result in longer distances between gates and maintenance with some minimal amount of taxiing/towing GHG emissions compared to existing conditions. Therefore, this Alternative would result in similar operational GHG emissions as compared to the proposed Project.

Therefore, under this Alternative, construction-related GHG impacts would be greater than the proposed Project and long-term operational-related GHG impacts would be similar to the proposed Project. Overall, this Alternative would have greater impacts than the proposed Project on existing GHG impacts, although impacts would still be less than significant.

Hazards and Hazardous Materials

Release of Hazardous Materials

Under the Alternate Site Alternative, the Project site would continue to be used as a staging and stockpiling area for airport construction projects. Although the stockpiled materials currently on the Project site do not contain concentrations of contaminants that qualify them as Class I hazardous materials, they are not homogeneous in composition and may contain undiscovered hazardous materials. Although stockpiled materials on the Project site under the Alternate Site Alternative would not be removed completely in the near-term, in the long term, the potential for encountering previously unidentified hazardous materials associated with the stockpiled materials under both the proposed Project and Alternate Site Alternative would be similar with full removal of the materials ultimately occurring. If previously undiscovered hazardous materials are encountered during long-term stockpile removal, they would be conducted in accordance with applicable federal, state, and local regulations, including LAWA's Procedure, which was prepared in accordance with LAX Master Plan Commitment HM-2, and LAWA's BMPs. Therefore, this Alternative would have a similar impact than the proposed Project with regard to the potential release of hazardous materials from stockpiled materials and impacts would be less than significant.

Construction of the Alternate Site Alternative would require the demolition of two existing maintenance hangars on the Alternate Site. No airport-wide surveys for hazardous building materials have been completed. The LAX Master Plan Final EIS/EIR recognized that most of the facilities within the LAX Master Plan boundaries were constructed before there were regulations governing the use of these materials. Consequently, many of the buildings may contain hazardous building materials, and it is possible that the two hangars on the Alternate

Site contain such materials (namely ACMs and LBPs). As noted in the LAX Master Plan Final EIS/EIR, the handling and disposal of hazardous building materials, including asbestos and ACMs, and LBPs, is strictly regulated by federal, state, and local laws. Among these laws and standards are the TSCA, RCRA, NESHAP, and the California HWCL. In addition, SCAQMD Rule 1403, Asbestos Emissions from Renovation/Demolition Activities, requires the surveying of structures for ACMs; agency notification of intention to remove asbestos; ACM removal procedures and time schedules; ACM handling and clean up procedures; and disposal and landfill requirements. Prior to the demolition of the two hangars, a site-specific Asbestos Abatement Specification would be completed to determine the presence of hazardous materials in the structures. If found present, these materials would be removed in accordance with the above regulations. Adherence to applicable regulations would ensure that impacts would remain less than significant during removal of the two existing hangars.

The LAX Master Plan Final EIS/EIR identified one groundwater remediation effort at the location of the Alternate Site Alternative. Specifically, a groundwater remediation was completed for subsurface groundwater contamination from a Delta Airlines Facility for volatile organic compounds (VOCs) (i.e., BTEX, TPH, VOCs). The remediation efforts included vapor extraction, which was completed and post-remedial action monitoring is occurring on the Alternate Site Alternative. Nonetheless, contaminated soils may be encountered during excavation and grading for the Alternate Site Alternative. However, if contaminated soils are encountered, they would be treated in accordance with applicable federal, state, and LAWA regulations. These regulations include LAX Master Plan Commitment HM-2, which provides guidance for LAX projects involving excavation and grading of soils, and LAWA's BMPs. Adherence to these regulations would ensure that if contaminated soils are encountered, they would not pose a significant hazard through the release of hazardous materials to the environment, and a less than significant impact would result.

With regard to operations, as with the proposed Project, the Alternate Site Alternative would consolidate hazardous materials currently used throughout LAX. All hazardous materials would be handled in accordance with applicable federal, state, and LAWA regulations. LAWA has procedures already in place to reduce hazardous materials-related incidents and spills. If a spill were to occur, emergency response procedures would be implemented to contain and clean up the spill. Thus, operation of the Alternate Site Alternative would result in a less than significant impact with regard to the potential release of hazardous materials.

Compared to the proposed Project, the Alternate Site Alternative is not suspected to contain abandoned oil wells. As a result, no construction impacts related to this issue would occur under the Alternate Site Alternative and there would be no need for the Project-specific mitigation that is required for the proposed Project. As the Alternate Site Alternative is not located within a City of Los Angeles-designated methane zone, the Alternate Site Alternative would result in less impact associated with potential methane hazards associated with construction activities.

When compared to the proposed Project, the Alternate Site Alternative may require alterations to the post-remedial monitoring system, however there is no active remediation occurring at the Alternate Site Alternative as there is at the Project site. Therefore, the Alternate Site Alternative would have less impact than the proposed Project with regard to existing remediation efforts. When compared to the proposed Project, construction of the Alternate Site Alternative would result in less potential impacts associated with the release of hazardous materials.

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The Alternate Site Alternative has the potential to result in the release of hazardous building materials through the demolition of the existing buildings. The potential impacts would be reduced to a less than significant level through adherence with applicable regulations. During operation, the potential impacts would be nearly identical between the proposed Project and the Alternate Site Alternative, as both Alternatives would consolidate existing maintenance activities occurring throughout LAX and would not result in overall increase in the amount of hazardous materials at LAX. All materials would be handled in accordance with applicable regulations. Therefore, the Alternate Site Alternative would have somewhat less impact than the proposed Project with regard to the release of hazardous materials into the environment.

Exposure of Workers to Hazardous Materials

As discussed above, hazardous building materials may be present in the two hangars on the Alternate Site Alternative. If these materials are found present during the site-specific Asbestos Abatement Specification, the removal of these materials would occur in accordance with applicable regulations, such as the TSCA, RCRA, NESHAP, the California HWCL, and SCAQMD Rule 1403. With adherence to these regulations, worker exposure to potential hazardous building materials would be less than significant.

The Project site would continue to be used as a construction staging area under the Alternate Site Alternative and materials would continue to be stockpiled on-site. Routine maintenance would continue to occur throughout LAX in accordance with applicable regulations and manufacturers' recommendations. Worker exposure to hazardous materials associated with the stockpiling of materials on the Project site would be similar to existing conditions. Adherence to applicable plans and regulations would ensure that any potential contamination in stockpiled soils does not result in a significant impact to workers.

In addition, contaminated soils associated with previous subsurface contamination could be unexpectedly encountered during grading and excavation activities; however, compliance with the Procedure currently in place by LAWA sets forth appropriate procedures and requirements for the identification and handling of excavated contaminated materials, including those governing worker health and safety. In the event that Alternative project-related excavation unexpectedly encounters VOC-contaminated soil, the continuation of such excavation would be carried out in accordance with SCAQMD Rule 1166. As a result, construction of the Alternate Site Alternative would result in a less than significant impact with regard to worker exposure to hazardous materials.

During operation, the Alternate Site Alternative would accommodate the same types of routine maintenance activities that are currently occurring at various places throughout LAX. As with current operations, maintenance workers would continue to comply with all applicable regulations. For instance, exposure of maintenance workers to contaminated materials would be minimized by implementing the measures required by federal, state, and local laws and regulations. As a result, operation of the Alternate Site Alternative would result in a less than significant impact with regard to worker exposure to hazardous materials.

The Alternate Site Alternative also has the potential to encounter subsurface soil contamination during construction, although there would be no potential to encounter methane or abandoned oil wells. All potential hazardous materials impacts during construction would be reduced to a less than significant level through adherence with federal, state, and LAWA regulations and procedures. With regard to operations, the Alternate Site Alternative would not reduce the

overall amount of hazardous materials used at LAX as the overall level of maintenance operations at LAX would remain similar under both Alternatives. All hazardous materials utilized during maintenance activities would be handled in accordance with applicable federal and state regulations, as well as manufacturers' recommendations. Therefore, the Alternate Site Alternative would have a similar impact as the proposed Project with regard to potential worker exposure to hazardous materials.

Contamination of Soil and Groundwater/Prevention of Cleanup

As discussed above, a groundwater remediation effort was completed for subsurface groundwater contamination from a Delta Airlines Facility for VOCs (i.e., BTEX, TPH, VOCs). This groundwater remediation effort included vapor extraction, which was completed and post-remedial action monitoring is occurring on the Alternate Site Alternative. Although remediation efforts have been completed, the development of the Alternate Site Alternative could interrupt post-remedial action monitoring. To reduce this impact, development of the Alternate Site Alternative would occur in accordance with LAX Master Plan Commitment HM-1, which would ensure that remediation is complete to the extent feasible prior to the start of construction. Further, coordination with the LARWQCB would occur prior to the start of construction under LAX Master Plan Commitment HM-1, and if required, post-remedial monitoring would be reinstated as soon as possible following construction, per LARWQCB recommendations. With implementation of LAX Master Plan Commitment HM-1, impacts to the post-remedial monitoring efforts would be less than significant.

When compared to the proposed Project, although development of the Alternate Site Alternative may require alterations to the post-remedial monitoring system, there is no active remediation occurring at the Alternate Site Alternative as there is at the Project site. Therefore, the Alternate Site Alternative would have less impact than the proposed Project with regard to existing remediation efforts.

Impacts Related to Landfill Capacity

Construction of the Alternate Site Alternative would require the removal of two existing maintenance hangars. Given the relatively limited amount of material associated with these structures in relation to landfill capacity, it is anticipated that adequate capacity would be available to accommodate removal of the buildings. With regard to operation, the Alternate Site Alternative would accommodate the same types of the routine maintenance activities that are currently occurring elsewhere at the airport; hence, the types of hazardous wastes generated under the proposed Project are expected to be similar to those now generated. Because the Alternate Site Alternative would relocate existing maintenance operations, there would not be an increase in the amount of hazardous materials generated at LAX as a whole. Hazardous waste generated at LAX is removed by private contractors and delivered to treatment, recycling, and disposal facilities both within and outside the Los Angeles region. As existing disposal capacity adequately meets the needs of routine maintenance activities currently occurring at LAX, the Alternate Site Alternative would not exceed the hazardous waste disposal capacity and a less than significant impact would result.

When compared to the proposed Project, approximately 295,000 cubic yard of stockpiled material would not need to be removed under the Alternate Site Alternative. During operation, the generation of hazardous waste would be similar under both Alternatives, and both Alternatives would be similar to existing conditions because the Alternatives would consolidate

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existing maintenance operations at LAX. As discussed above, adequate hazardous waste disposal capacity is available to accommodate these wastes. Therefore, the Alternate Site Alternative would have less impacts than the proposed Project with regard to landfill capacity.

Hydrology and Water Quality

Drainage

The Alternate Site Alternative would flow to the Dominguez Channel, which ultimately discharges to the San Pedro Bay. As discussed in the LAX Specific Plan Amendment Study Draft EIR, the capacity of the of the Dominguez Channel Watershed was studied and it was found that stormwater peak flow rates associated with the Capital Flood event would result in flooding in some areas. This was found to especially be the case where the Dominguez Channel sub-basin drains into a Los Angeles County conveyance that was designed for a 10-year design storm. In general, peak stormwater flow rates correlate with the amount of impervious surface area within a watershed. Thus, a change in land use that would produce a change in the amount of impervious surface area would be expected to produce a corresponding change in stormwater peak flow rates. The Alternate Site Alternative is developed with impervious surface areas. As such, the Alternate Site Alternative, which would replace one impervious surface area with another and would not increase the overall impervious surface area of the Alternate Site Alternative, would not materially increase stormwater flows from the Site. In addition, drainage improvements at the Alternate Site Alternative would be designed in accordance with LAX Master Plan Commitment HWQ-1, which requires adequately sized on-site BMPs to reduce peak flow rates or increase the conveyance structure's capacity, so that drainage facilities adequately convey storm water runoff and prevent flooding by adhering to the procedures set forth by the Peak Rate Method/Los Angeles County Modified Rational Method. With provision of the structural BMPs in accordance with LAX Master Plan Commitment HWQ-1, the Alternate Site Alternative would not result in an increase in stormwater runoff or substantially alter the existing drainage pattern so that flooding or substantial erosion would occur. Therefore, the Alternate Site Alternative would result in a less than significant impact.

When compared to the proposed Project, although both the proposed Project and Alternate Site Alternative would convey stormwater flows into conveyance infrastructure with identified deficiencies, the Alternate Site Alternative would not result in a material increase in the amount of on-site impervious surface area, and would thus not result in a corresponding increase in stormwater peak flow rates from the Alternate Site Alternative. In addition, while the proposed Project would increase the amount of impervious surface area on the Project site, it would also include a proposed detention/infiltration basin to reduce peak flows to area infrastructure. This detention/infiltration would serve to reduce existing deficiencies. Under the Alternate Site Alternative, a detention/infiltration basin would not be realized at the Project Site and existing deficiencies would remain. Therefore, the Alternate Site Alternative would result in a similar impact as the proposed Project with regard to drainage.

Groundwater

The Alternate Site Alternative would replace one impervious surface area with another and would not increase the overall impervious surface area of the Alternate Site Alternative. As a result, the Alternate Site Alternative would not result in a change in the groundwater infiltration rate at LAX and no impact would result.

Impacts to groundwater infiltration would be less than under the Alternate Site Alternative. Specifically, the Alternate Site Alternative would not result in an increase in impervious surface area or infiltration rates. In comparison, the proposed Project would increase the amount of impervious surface area on the Project site by 56 acres and would reduce groundwater infiltration occurring at the Project site from an estimated 17.76 AFY under existing conditions to 3.84 AFY.

Water Quality

The Alternate Site Alternative would replace one impervious surface area with another and would not increase the overall impervious surface area of the Alternate Site Alternative. In addition, activities occurring at the Alternate Site Alternative under this Alternative would be similar to those already occurring at the Alternate Site Alternative. As a result, the Alternate Site Alternative is not anticipated to materially increase pollutant concentrations in surface water flows from the Alternate Site Alternative. In addition, drainage conveyance associated with the Alternate Site Alternative would be developed in accordance with LAX Master Plan Commitment HWQ 1, Conceptual Drainage Plan, which requires that a range of site-specific BMPs should be incorporated into development projects at LAX to reduce pollutant concentrations in on-site stormwater flows. These BMPs would be incorporated into the project-specific SUSMP. The SUSMP would require approval by the City of Los Angeles Bureau of Sanitation – Watershed Protection Division prior to the start of construction. These BMPs are anticipated to include, but not be limited to, a detention/infiltration basin, oil-water separators, media filters, a water recycling system, porous pavement, and hangar roof drains. Additional measures may also include but are not necessarily limited to drain inserts/water quality inlets in combination with the media filters, or other equivalent measures, as determined adequate by the Los Angeles Bureau of Sanitation in the final SUSMP. All BMPs would be required to be designed in accordance with the LAWA Design and Construction Handbook, which requires project's to be in compliance with the City's LID Ordinance and includes technical approaches and BMPs to reduce stormwater pollutants in first-flush flows. Since the Alternate Site Alternative would be required to comply with the MS4 permit (through identification of project-specific BMPs in a SUSMP that serve to avoid a net increase in pollutant loading), it is not anticipated that the Alternative would result in additional wet-weather pollutant loading of 303(d)-listed water bodies and associated impacts would be less than significant. Regarding dry weather pollutant loads, the same site-specific BMPs utilized to treat stormwater flows would also reduce pollutant loading in dry weather flows, and as a result the Alternate Site Alternative would result in a less than significant impact with regard to dry weather flows.

When compared to the proposed Project, both the proposed Project and the Alternate Site Alternative would include site-specific BMPs to reduce pollutants in both wet and dry weather flows, although the Alternate Site Alternative would be developed on a portion of LAX already comprised of impervious surface area, and thus, would not increase the total amount of impervious surface area at LAX. Therefore, the Alternate Site Alternative would have less impact than the proposed Project with regard to water quality.

Noise

Implementation of this Alternative would result in similar development as the proposed Project. However, demolition activities would be required in order to accommodate the two new maintenance hangars. Demolition activities require the use of heavy-duty construction equipment and haul trucks to remove debris and would result in worker vehicle trips. Therefore,

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this Alternative would result in potentially greater maximum daily noise levels given that the intensity of construction activity could increase due to the need for demolition activities and associated equipment usage and vehicle trips. This Alternate Site Alternative is located on the south side of Century Boulevard and would be located approximately 250 feet from the hotel uses on the north side of Century Boulevard. The construction noise analysis conducted in support of the Master Plan indicates that noise sensitive uses within 600 feet of construction activities may be significantly impacted. Thus, this Alternative would result in potentially significant noise impacts given the distance to the nearest sensitive receptors. In comparison, the proposed Project would be located approximately 1,550 feet from the residential uses to the south of the West Aircraft Maintenance Area site boundary. Thus, this Alternative would result in greater construction-related noise impacts than the Project.

With regard to operational noise impacts, implementation of this Alternative would result in similar estimated noise levels compared to the proposed Project. As would be the case under the proposed Project, this Alternative would not result in a change in the number or types of aircraft operations, because aircraft operational decisions are driven by air service demand and supply factors, not maintenance facilities. This Alternative would result in the development of the same aircraft maintenance hangars proposed. Therefore, noise associated with maintenance activities at the hangars would not be different and is not expected to result in any change in overall aircraft maintenance noise levels. The hangars that would be constructed on the site would have openings directed towards the interior of the airport; therefore, noise from maintenance occurring within the hangars would be directed away from the nearest sensitive receptors. Similar to the proposed Project, the redirection and consolidation of maintenance operations to the site would result in longer distances between gates and maintenance areas with some minimal amount of taxiing/towing emissions compared to existing conditions. However, noise from taxiing/towing would not be substantially different from nearby existing taxing/towing operations between the south runway and the terminals adjacent to the west and would be masked by traffic-related noise on Century Boulevard. As a result, this Alternative would not substantially change the airport-related noise contours in the area. Therefore, this Alternative would result in similar operational noise levels as compared to the proposed Project.

Therefore, under this Alternative, construction-related noise impacts would be greater to the proposed Project and long-term operational-related noise impacts would be similar to the proposed Project. Overall, this Alternative would have greater impacts than the proposed Project, although impacts would be less than significant.

Land Use and Planning

The Alternate Site Alternative is located entirely within the LAX Plan area, as well as the LAX Specific Plan area, and is designated in the LAX Plan as "Airport Airside" which permits aspects of passenger and cargo movement associated with aircraft operating under power and related airfield support services such as runways, taxiways, maintenance areas, airfield operation areas, air cargo areas, passenger handling facilities, fire protection facilities, and other ancillary airport facilities. The Alternate Site Alternative is also located within the LAX-A Zone which permits surface and structured parking lots; aircraft under power; airline maintenance and support; air cargo facilities; commercial passenger vehicle staging and holding area; runways, taxiways, aircraft parking aprons, and service roads; passenger handling facilities; aggregate/asphalt grinding and recycling facilities, and other ancillary airport facilities. The Alternate Site Alternative would be consistent with the LAX Plan and LAX Specific Plan.

Under the LAX Master Plan, the Alternate Site Alternative is designated for “Existing Maintenance Facility”, “Proposed Ancillary Facility”, “Proposed Cargo Building” as well as “Taxiways/Aircraft Aprons,” and “Airport Landside/Parking”. The Proposed Ancillary Facility is identified as a potential area for a GRE. Under the LAX Master Plan, approximately 176,000 square feet of existing cargo space and 172,000 acres of aircraft maintenance hangars would be retained and 90,000 square feet future GRE would be developed. Implementation of this Alternative could limit or preclude the ability to retain the 176,000 square feet of cargo space contemplated in the LAX Master Plan, would replace existing aircraft maintenance hangars in this area with new maintenance hangars, and would still allow future development of a GRE onsite. The Alternative would not preclude locating a GRE on this site, however, the actual location of the GRE identified for the site with or without this Alternative, will be dependent on the outcome of an airport-wide GRE siting study being undertaken independent of the proposed Project.

Construction Surface Transportation

Under the Alternate Site Alternative, construction related traffic is anticipated to access the site from Century Boulevard. As discussed within Section 4.7, *Construction Surface Transportation*, traffic volumes are substantially higher on the eastern area of LAX than the western area due to the presence of the CTA, main entrances to LAX, close proximity to the I-405, nearby hotel and commercial uses, and more intense urban development. While the Alternate Site Alternative is comparable in design as the proposed Project, due to the location of the Alternate Site on the eastern area of the airport, this Alternative would likely create transportation related impacts along Century Boulevard that would be greater than impacts that would occur under the proposed Project.

Other Environmental Considerations (Historic Resources)

Under this Alternative, demolition of the Mercury Air Group Cargo buildings, United Maintenance Hangar, including the former Western Airlines double-arched hangar, would need to occur in order to support construction of two modern maintenance hangars that could accommodate ADG VI and other aircraft, with a design similar to that described for the proposed Project. Some of the existing hangars and office space are part of the Intermediate Terminal Complex, located east of the concourse and terminal facilities and south of Century Boulevard. The Intermediate Terminal Complex was previously evaluated and determined ineligible for listing in the National Register by the FAA due to alterations and loss of some structures. However, as a representative milepost in the evolution of LAX, the complex may be historically significant under Los Angeles Historic Cultural Monuments criteria and, thus, appeared eligible for local designation. It also appeared to meet Criterion 1 under the California Register for the same reasons as previously noted.³ As such, the Intermediate Terminal Complex is considered a historical resource pursuant to *CEQA Guidelines* Section 15064.5, and demolition of a part of the Intermediate Terminal Complex would be considered a significant impact due to building demolition and proximate indirect impacts, which would materially impair the eligibility of the Intermediate Terminal Complex for inclusion in the California Register and for listing as a Los Angeles Historic Cultural Monument. Therefore, impacts to Historical

³ City of Los Angeles, *Final EIR for the LAX Proposed Master Plan Improvements, Appendix S-G, Supplemental Section 106 Report*, prepared by PCR Services Corporation, June 2003.

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Resources under the Alternate Site Alternative, would be greater than the proposed Project, as the proposed Project would have no impact on historical resources.

5.6.4.1 Relationship of the Alternate Site Alternative to Proposed Project Objectives

As the Alternate Site Alternative would be able to accommodate up to 10 ADG VI aircraft, or a mix of smaller aircraft it would meet the proposed Project's objectives to provide maintenance facilities and RON/RAD parking areas that are sized to accommodate ADG VI aircraft and other aircraft in one location. However, as the Alternate Site Alternative would be located on the eastern portion of LAX, it would not meet the proposed Project's objective to support consistency with the LAX Master Plan by providing an aircraft maintenance area in the southwest portion of the airport. Furthermore, as some of the existing aircraft maintenance and cargo facilities that would need to be demolished under this Alternative could not be accommodated with redevelopment of the site, and would need to be relocated to other areas of LAX or to other airports, this Alternative would only partially meet the Project objectives that support the consolidation, relocation, and modernization of existing aircraft maintenance facilities LAX.

5.7 Environmentally Superior Alternative

Section 15126.6(e)(2) of the *CEQA Guidelines* indicates that an analysis of alternatives to a proposed project shall identify an environmentally superior alternative among the alternatives evaluated in an EIR. The *CEQA Guidelines* also state that should it be determined that the No Project Alternative is the environmentally superior alternative, the EIR shall identify another environmentally superior alternative among the remaining alternatives. With respect to identifying an environmentally superior alternative among those analyzed in this EIR, the range of feasible alternatives includes the No Project-No Development Alternative; the No Project-Existing LAX Master Plan Alternative; the Reduced Project Alternative; and the Alternate Site Alternative.

A comparative summary of the environmental impacts anticipated under each Alternative with the environmental impacts associated with the proposed project is provided in **Table 5-1**. A more detailed description of the potential impacts associated with each alternative is provided above. Pursuant to Section 15126.6(c) of the *CEQA Guidelines*, the analysis below addresses the ability of the Alternatives to “avoid or substantially lessen one or more of the significant effects” of the project.

As discussed above, and as depicted in Table 5-1, the No Project-No Development Alternative is considered to be the overall environmentally superior alternative as it would avoid all construction and operational impacts of the proposed Project and is the only Alternative that would not have a significant unavoidable impact with respect to construction-related regional NO_x emissions. However, as indicated above, this Alternative would not meet any of the objectives established for the proposed Project.

In accordance with the *CEQA Guidelines* requirement to identify an environmentally superior alternative other than the No Project-No Development Alternative, a comparative evaluation of the remaining alternatives indicates that the Reduced Project Alternative would be the environmentally superior alternative relative to the other Alternatives. Due to the reduced

project size and shorter construction period, compared to the proposed Project, the Reduced Project Alternative would result in less construction related impacts to air quality, health risks, greenhouse gases, and construction surface transportation. In addition, due to the reduced project size, impacts to groundwater withdrawal or recharge and water quality would be less compared to the proposed Project. Given the reduction in hangar and apron area, the Reduced Project Alternative would also result in slightly reduced noise levels from taxiing/towing trips.

It is important to note, while the Reduced Project Alternative is considered the environmentally superior alternative, it would not avoid or reduce the significant unavoidable impact that would occur under the proposed Project with respect to construction-related regional NO_x emissions. In addition, as all of the proposed Project's impacts are either less than significant, or would be reduced to less than significant levels following implementation of the mitigation measures provided in this EIR; environmental impacts would not be materially different between the proposed Project and the Reduced Project Alternative. Accordingly, the environmentally superior Reduced Project Alternative would not eliminate any significant and unavoidable impacts, but would serve to incrementally reduce some of the less than significant impacts of the proposed Project related to groundwater, water quality, and operational noise and would have a similar significant impact related to the release of hazardous materials prior to mitigation.

The No Project-Existing LAX Master Plan Alternative and the Alternate Site Alternative would result in greater environmental impacts compared to the Reduced Project Alternative. Most notably, in comparison to the other Alternatives and the proposed Project, the No Project-Existing LAX Master Plan Alternative would result in significant impacts to the VEFPR groundwater remediation system that would likely require additional project-specific mitigation beyond implementation of LAX Master Plan Commitments HM-1 and HM-2 to reduce impacts to a less than significant level. The No Project-Existing Master Plan Alternative would incrementally reduce some of the less than significant impacts of the proposed Project related to groundwater. Air quality impacts would be similar as the proposed Project and it would not reduce the significant unavoidable impact that would occur under the proposed Project with respect to construction-related regional NO_x emissions.

Regarding the Alternate Site Alternative, as several existing facilities would need to be demolished before construction of the proposed maintenance facilities could begin, construction impacts related to air quality, noise, and greenhouse gases would be greater. In addition, as the Alternate Site Alternative is closer to the airport fence line in the downwind direction, construction-related health risk impacts associated with the Alternate Site Alternative would be greater, resulting in potentially significant and unavoidable impacts. Traffic impacts would also be greater as the Alternate Site Alternative is located on the eastern area of LAX where existing traffic volumes are higher. As the Alternate Site Alternative contains the Intermediate Terminal Complex, a historically significant resource pursuant to CEQA, impacts to cultural and historical resources would be significant and could be significant and unavoidable. Regarding hazards and hazardous materials, compared to the proposed Project and other Alternatives, there is no active groundwater remediation occurring at the Alternate Site Alternative, therefore the Alternate Site Alternative would have less impact with regard to existing groundwater remediation efforts. Impacts to groundwater infiltration and the release of hazardous materials would also be less under the Alternate Site Alternative. Impacts to landfill capacity would be similar as the proposed Project.

5.0 Alternatives

While the Reduced Project Alternative is considered the environmentally superior alternative, it would not fully support three of the proposed Project's five objectives. As only one aircraft hangar would be developed under the Reduced Project Alternative, it could not fully accommodate the need for maintenance facilities removed by pending projects and therefore would result in the continued need for use of various other maintenance facilities currently in use at LAX as well as the potential for some maintenance to be accommodated at other airports. As such, the Reduced Project Alternative only partially meets the objectives to consolidate, relocate, and modernize some of the existing aircraft maintenance facilities consistent with the LAX Master Plan; to provide for more efficient and effective maintenance of existing aircraft at the airport; and to provide aircraft maintenance hangars and aircraft parking areas sized to accommodate ADG VI aircraft and other aircraft in one location.

Therefore, although the Reduced Project Alternative is the environmentally superior alternative, it would have a similar significant unavoidable impact related to air quality and a similar significant impact (prior to mitigation) related to the release of hazardous materials. Furthermore, the Reduced Project Alternative would not fully support three of the five objectives of the proposed Project.

5.0 Alternatives

Table 5-1

Comparison of Impacts Associated with the Alternatives
and Impacts of the Proposed Project

	Project Impact	Alternative 1 No Project-No Development Alternative	Alternative 2 No Project-Existing LAX Master Plan Alternative	Alternative 3 Reduced Project Alternative	Alternative 4 Alternate Site Alternative
Air Quality					
Construction	Significant and Unavoidable (NO _x)	Less (No Impact)	Similar (Significant and Unavoidable)	Similar (Significant and Unavoidable)	Greater (Significant and Unavoidable)
Operation	Less Than Significant	Greater (Less Than Significant)	Similar (Less Than Significant)	Similar (Less Than Significant)	Similar (Less Than Significant)
Health Risk Assessment					
Construction	Less Than Significant	Less (No Impact)	Similar (Less Than Significant)	Less (Less Than Significant)	Greater (Significant and Unavoidable)
Operation	Less Than Significant	Less (Less Than Significant)	Similar (Less Than Significant)	Less (Less Than Significant)	Greater (Less Than Significant)
Greenhouse Gas Emissions					
Greenhouse Gas Emissions	Less Than Significant	Greater (Less Than Significant)	Similar (Less Than Significant)	Less (Less Than Significant)	Greater (Less Than Significant)
Hazards and Hazardous Materials					
Release of Hazardous Materials	Less Than Significant with Project-specific Mitigation	Less (Less Than Significant)	Similar (Less Than Significant)	Similar (Less Than Significant with Project-specific Mitigation)	(Less) (Less Than Significant)
Exposure of Workers to Hazardous Materials	Less Than Significant	Less (Less Than Significant)	Similar (Less Than Significant)	Similar (Less Than Significant)	Similar (Less Than Significant)

5.0 Alternatives

Table 5-1

Comparison of Impacts Associated with the Alternatives
and Impacts of the Proposed Project

	Project Impact	Alternative 1 No Project-No Development Alternative	Alternative 2 No Project-Existing LAX Master Plan Alternative	Alternative 3 Reduced Project Alternative	Alternative 4 Alternate Site Alternative
Contamination of Soil & Groundwater/Prevention of Cleanup	Less Than Significant	Less (No Impact)	Greater (Less Than Significant with Project-specific Mitigation)	Similar (Less Than Significant)	Less (Less Than Significant)
Impacts Related to Landfill Capacity	Less Than Significant	Similar (Less Than Significant)	Greater (Less Than Significant)	Similar (Less Than Significant)	Similar (Less Than Significant)
Hydrology and Water Quality					
Drainage	Less Than Significant	Greater (Less Than Significant)	Greater (Less Than Significant)	Similar (Less Than Significant)	Similar (Less Than Significant)
Groundwater	Less Than Significant	Less (No Impact)	Less (Less Than Significant)	Less (No Impact)	Less (No Impact)
Water Quality	Less Than Significant	Greater (Less Than Significant)	Similar (Less Than Significant)	Less (Less Than Significant)	Less (Less Than Significant)
Noise					
Construction	Less Than Significant	Less (No Impact)	Similar (Less Than Significant)	Similar (Less Than Significant)	Greater (Less Than Significant)
Operations	Less Than Significant	Less (Less Than Significant)	Similar (Less Than Significant)	Less (Less Than Significant)	Similar (Less Than Significant)

Table 5-1

**Comparison of Impacts Associated with the Alternatives
and Impacts of the Proposed Project**

	Project Impact	Alternative 1 No Project-No Development Alternative	Alternative 2 No Project-Existing LAX Master Plan Alternative	Alternative 3 Reduced Project Alternative	Alternative 4 Alternate Site Alternative
Land Use and Planning					
Consistency with Plans	Less Than Significant	Greater (Less Than Significant)	Similar (Less Than Significant)	Greater (Less Than Significant)	Greater (Less Than Significant)
Construction Surface Transportation					
Construction Surface Transportation	Less Than Significant	Less (No Impact)	Similar (Less Than Significant)	Less (Less Than Significant)	Greater (Less Than Significant)
Other Environmental Considerations					
Historical Resources	Not applicable No impact	Not applicable No impact	Not applicable No impact	Not applicable No impact	Greater (Potentially Significant)

Source: PCR Services Corporation, 2013.

5.0 Alternatives

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6.0 OTHER ENVIRONMENTAL CONSIDERATIONS

6.1 Significant Unavoidable Impacts

Section 15126.2(b) of the *California Environmental Quality Act (CEQA) Guidelines* requires that an Environmental Impact Report (EIR) describe significant environmental impacts that cannot be avoided, including impacts that can be mitigated but not reduced to a less than significant level. Chapter 4 of this EIR provides detailed analyses of the environmental topics identified in the Initial Study, prepared in September 2012, as having the potential to result in significant impacts with implementation of the proposed Project. Of the seven environmental topics evaluated in this EIR, and as described below, only the topic of air quality involved an impact that could not be reduced to a less than significant level.

Air Quality: As analyzed in Section 4.1, *Air Quality*, even with the incorporation of feasible air quality commitments and mitigation measures, the maximum peak daily construction-related regional emissions resulting from the proposed Project would be significant for NO_x during the initial and middle stages of proposed Project construction. This significant unavoidable impact would be short-term and temporary, and no additional feasible mitigation measures that would further address the impact have been identified. In addition to this Project-level impact, construction-related regional emissions of NO_x would also contribute to a significant and unavoidable cumulative impact.

In addition to identifying the significant unavoidable impacts of the proposed Project, Section 15126.2(b) of the *CEQA Guidelines* also requires a description of the reasons why the Project is being proposed, notwithstanding the significant unavoidable impacts associated with the Project. As discussed in Chapter 2, *Project Description*, the proposed Project would consolidate, relocate, and modernize some of the existing aircraft maintenance facilities at the Los Angeles International Airport (LAX). The consolidation, relocation, and modernization of these facilities would allow for more efficient and effective maintenance of existing aircraft at the airport, including Airplane Design Group (ADG) VI aircraft (Airbus A380s and Boeing 747-8s). The proposed Project would also include the provision of aircraft parking positions adjacent to the new aircraft maintenance facilities and apron space for remain overnight/remain all day (RON/RAD) aircraft parking, which provides extended layover space for aircraft that cannot be accommodated at terminal area contact gates.

Without the proposed Project, there would be a serious constraint on the ability to provide adequate maintenance facilities at LAX to replace those that have been or would be removed in the future. Existing aircraft maintenance facilities at LAX are currently used on a regular basis by the tenant airlines/companies, and it is unlikely existing facilities could accommodate the aircraft maintenance needs. It is possible that remaining facilities would not be able to accommodate the increased demands completely and/or efficiently. This is especially true relative to the ability to accommodate the existing RON/RAD areas that, along with the removal of aircraft maintenance hangars, would be removed. There are already substantial demands on existing RON/RAD areas at LAX and the loss of RON/RAD spaces associated with removal of maintenance areas would exacerbate that problem. Given that the RON/RAD areas at the subject maintenance areas are used for aircraft cabin cleaning and light servicing/maintenance (i.e., "Level A checks"), the loss of those areas would mean that such aircraft servicing and light maintenance would need to be done while aircraft are at the gate, which would extend gate occupancy time and possibly delay other aircraft waiting to use the gate, or require additional stacking of aircraft at the remaining RON/RAD areas, which hinders the efficient management and movement of aircraft in those areas.

6.0 Other Environmental Considerations

Although the proposed Project would result in a significant short-term air quality associated with construction-related NO_x, not implementing the proposed Project would result in inefficient management and movement of aircraft that would lead to greater operational air quality emissions in the long-term. Therefore, the Project is being proposed, notwithstanding the significant, unavoidable construction impact associated with construction-related regional emissions of NO_x.

6.2 Irreversible Environmental Changes

According to the *CEQA Guidelines*, an EIR is required to evaluate significant irreversible environmental changes that would be caused by implementation of the proposed Project. Specifically, as stated in *CEQA Guidelines* Section 15126.2(c):

“Uses of nonrenewable resources during the initial and continued phases of the project may be irreversible since a large commitment of such resources makes removal or nonuse thereafter unlikely. Primary impacts and, particularly, secondary impacts (such as highway improvement which provides access to a previously inaccessible area) generally commit future generations to similar uses. Also irreversible damage can result from environmental accidents associated with the project. Irrecoverable commitments of resources should be evaluated to assure that such current consumption is justified.”

The proposed Project would necessarily consume slowly renewable and non-renewable resources. Construction of the proposed Project would require a commitment of resources that would include: (1) building materials, (2) fuel for construction equipment and machinery, (3) fuel for the transportation of construction workers and vendors to and from the Project site; and (4) fuel for the transportation of stockpiled materials from the Project site. Construction would require the consumption of resources that are non-replenishable or may renew so slowly that they are considered non-renewable. These resources would include: raw materials in steel; metals such as copper and lead; aggregate materials such as sand and stone used in concrete and asphalt; petrochemical construction materials such as plastics; and water.

Operation of the proposed Project is not expected to result in additional consumption of non-renewable resources associated with aircraft maintenance because the proposed Project simply redirects and consolidates existing aircraft maintenance operations.

The proposed Project would comply with the City of Los Angeles Green Building Code (LAGBC) Tier 1 requirements. Certain measures of note that would reduce the use of non-renewable resources include: compliance with enhanced construction waste reduction goals; exceeding the California Energy Code requirements by 15 percent; use of plumbing fixtures and fixture fittings to reduce the overall use of potable water within the building by 20 percent; and providing readily accessible areas for the depositing, storage, and collection of non-hazardous materials for recycling. The proposed Project would also comply with the Los Angeles World Airports (LAWA) policies and programs related to sustainability, which would reduce the use of non-renewable resources and are implemented on a project-specific and on an airport-wide basis.

Operational activities associated with the proposed Project are not expected to increase the number of run-ups from aircraft engine testing; generate additional vehicle traffic; increase passenger, gate capacity, flights and/or aircraft operations at LAX; or increase existing maintenance activities at LAX. Furthermore, the proposed Project would also implement energy

and water conservation measures, recycling of non-hazardous materials, and other sustainable strategies to the extent feasible. Therefore, the use of non-renewable resources would not result in significant irreversible changes to the environment.

6.3 Growth Inducing Impacts

Section 15126.2(d) of the *CEQA Guidelines* requires an EIR to discuss the ways the proposed Project could foster economic or population growth, directly or indirectly, in the surrounding environment. Growth-inducing impacts include the removal of obstacles to population growth and the development and construction of new service facilities that could significantly affect the environment individually or cumulatively. In addition, growth must not be assumed as beneficial, detrimental, or of little significance to the environment.

6.3.1 Project Characteristics

The proposed Project would consolidate, relocate, and modernize some of the existing aircraft maintenance facilities at LAX. The consolidation, relocation, and modernization of these facilities would allow for more efficient and effective maintenance of existing aircraft at the airport, including ADG VI aircraft. The proposed Project would not increase passenger or gate capacity and would not increase flights and/or aircraft operations at LAX. Similarly, the proposed Project would provide functions and services that already occur elsewhere at the airport at existing facilities that are anticipated to be removed in the future. The consolidation and relocation of existing RON/RAD and aircraft maintenance activities is not anticipated to result in an increase in such activities at LAX nor is it expected to result in an increase in the number of employees associated with such activities, with the exception of temporary construction jobs.

6.3.2 Economic Growth

An important function of LAX is to sustain and support economic growth in the region. Although the proposed Project would not directly generate economic growth, would not increase passenger or gate capacity, would not increase flights and/or aircraft operations, or increase the number of permanent employees, it would generate short-term construction jobs and improve and modernize aircraft maintenance facilities at the airport to better accommodate newer generation aircraft, including ADG VI aircraft. The proposed Project would also combine aircraft maintenance hangars and aircraft parking areas within close proximity on the same site, thereby supporting more efficient and effective use of airport facilities. As such, the proposed Project would indirectly foster economic growth in the region, through short-term construction jobs and more efficient maintenance and airfield activities.

6.3.3 Removal of an Impediment to Growth

The proposed Project would not increase passenger or gate capacity, flights and/or aircraft operations, maintenance activities, or the number of permanent employees and would not cause LAX to grow beyond what has been evaluated and anticipated under the LAX Master Plan. In addition, the proposed Project would not provide new access to an area that is undeveloped since the site is located within an area of the airport that is in active use, including use as a staging area for airport construction projects. Furthermore, the Project is located within an area of the airport contemplated for maintenance uses pursuant to the LAX Master Plan.

6.3.4 Development or Encroachment into an Isolated Open Space

Development can be considered growth inducing when it is not contiguous to existing urban development and introduces development into open space areas. The proposed project site is situated within the southwest portion of LAX immediately south of World Way West between Taxiway AA and Pershing Drive. The Project site is currently used primarily as a staging area for airport construction projects, and includes: modular construction trailers/offices and an associated surface parking area, several paved roads, and several paved and unpaved outdoor loading and storage areas. In addition, stockpiled material consisting of soil and construction rubble is located within and immediately adjacent to the Project site. Adjacent uses include the West Remote Pads/Gates and aircraft aprons to the north; an airport employee parking lot and vacant airport property to the south; Taxiway AA, an American Airlines employee parking lot and the United-Continental maintenance hangars to the east; and Pershing Drive followed by the Los Angeles/El Segundo Dunes to the west. Therefore, development of the proposed Project would occur in an existing developed area and would not introduce new development into an undeveloped or open space area.

6.3.5 Precedent Setting Action

The proposed Project would consolidate, relocate, and modernize some of the existing aircraft maintenance facilities at LAX. The proposed Project would not encourage or facilitate new activities that do not already occur at the airport, or that have not been anticipated and accounted for under the LAX Master Plan. Therefore, it would not establish a precedent for unanticipated growth.

6.4 Potential Secondary Effects

Section 15126.4(a)(1)(D) of the *CEQA Guidelines* requires mitigation measures to be discussed if the mitigation measure(s) would cause one or more significant effects in addition to those that would be caused by the project as proposed. One Project-specific mitigation measure to address impacts associated with Hazards and Hazardous Materials was identified. Potential secondary effects would not occur as a result of the implementation of this mitigation measure as discussed below.

Hazards and Hazardous Materials: Mitigation Measure MM-HAZ (WAMA)-1 requires research to determine the exact location of abandoned/plugged oil wells and if these wells were abandoned in conformance with current regulations. Implementation of this mitigation measure would require conformance with the Division of Oil, Gas, and Geothermal Resources (DOGGR) and City of Los Angeles Fire Department regulations prior to construction.

Specific DOGGR regulations and requirements for the inspection, testing, plugging, and abandonment of oil wells are contained within Chapter 4, Development, Regulation, and Conservation of Oil and Gas Resources, Article 3 of the *State of California Code of Regulations*. These regulations require a specific set of actions be taken, dependent on the found state of the abandoned oil wells (e.g. for open holes, a cement plug must extend from the total depth of the well or from at least 100 feet below the bottom of each oil or gas zone to at least 100 feet above the top of each oil or gas zone, for cased holes, all perforations are to be plugged with cement, with the plug extending at least 100 feet above the top of a landed liner, the uppermost perforations, the casing cementing point, the water shut-off holes, or the oil or gas zone,

whichever is highest). Chapter V, Article 7, (Fire Code) (57.90.01-45) of the Los Angeles City Municipal Code further regulates the location, drilling safeguards, and abandonment of oil wells in the City. In the event oil wells are found that have not been properly abandoned, the procedures and agency oversight prescribed in these regulations would serve as performance standards to ensure that significant impacts associated with the potential migration of fluids and groundwater contamination would be avoided during construction of the proposed Project. Construction will comply with all applicable requirements of DOGGR and the City of Los Angeles Fire Department for the investigation and/or re-abandonment of the well(s).

Should contaminated soils be encountered, they would be handled in accordance with LAX Master Plan Commitment HM-2, Handling of Contaminated Materials Encountered During Construction. Therefore, no potential secondary effects would result.

6.5 Less Than Significant Effects

This EIR concludes that construction-related air quality impacts associated with localized emissions, toxic air contaminants, and odors and operational air quality impacts would be less than significant. In addition, construction and operational impacts on greenhouse gas emissions, hazards and hazardous materials (after mitigation), hydrology and water quality, noise, land use and planning, and construction surface transportation would be less than significant, as documented in Chapter 4, *Environmental Impact Analysis*.

In addition, an Initial Study (IS) was prepared for the proposed Project. Based on the analysis contained in the IS, LAWA determined that the proposed Project would result in “not significant” or “less than significant” environmental impacts in the following subject areas:

- Aesthetics;
- Agricultural Resources;
- Biological Resources;
- Cultural Resources;
- Geology and Soils;
- Mineral Resources;
- Population and Housing;
- Public Services;
- Recreation;
- Public Services;
- Traffic and Circulation (during operation); and
- Utilities.

Since the impacts of the proposed Project with respect to these subject areas were determined to be either “not significant” or “less than significant,” these environmental topics were not evaluated further in this EIR. This methodology is consistent with *CEQA Guidelines* Section 15063(c)(3). Pursuant to *CEQA Guidelines* Section 15128, the various possible Project effects found not to be significant are discussed in the Initial Study, attached to this EIR as Appendix A. No additional potentially significant impacts were identified during the circulation of the Notice of Preparation (NOP) for public and agency comments.

6.0 Other Environmental Considerations

Refinements have been made to the proposed Project to reflect additional information and coordination with the public and the FAA. The refinements do not represent a material change to the proposed Project that was described in the IS/NOP and do not change any of the conclusions in the IS.

Subsequent to the preparation of the IS and NOP, the following additional information related to biological resources was identified, including information associated with a biological survey conducted in April and May of 2013.

In March 2013, four California gnatcatchers (*Poliophtila californica californica*) were observed within the El Segundo Blue Butterfly Preserve located at the El Segundo dunes west of the LAX airfield operations area. To further ascertain the full extent of California gnatcatcher activity at the site, LAWA retained Glenn Lukos Associates, Inc., a biological resources consulting firm with biologists permitted by the U.S. Fish and Wildlife Service (USFWS) to conduct specific (i.e., "protocol-level") surveys for the species at the site.

The Survey Area included the coastal sand dune habitat that is located west of Pershing Drive, north of Imperial Highway, south of Waterview Street, and east of Vista del Mar. Focused surveys for the coastal California gnatcatcher were conducted from April 16 through May 22, 2013 in areas of potentially suitable habitat in accordance with USFWS guidelines. No gnatcatchers were observed in the north one-third of the Survey Area, which encompasses the dunes area directly west of the north airfield runways. Based on gnatcatcher behaviors observed during survey visits to this location, habitat in the immediate vicinity of the navigational aids in the portions of the dunes does not support breeding activity by gnatcatchers due to a lack of suitable vegetation and/or the vegetative structure typically utilized by breeding gnatcatchers. Within the central portion of the Survey Area, generally to the northwest, west, and southwest of the World Way West/Pershing Drive interchange, one coastal California gnatcatcher family group (two adults and three fledglings) and two individual males were detected within the Survey Area. Activity associated with the family group was generally centered around a nest located in vegetation on an east-facing slope, south of the aforementioned interchange. Activity associated with the two individual males generally occurred to the northwest of the nest area for one male and to the southwest of the nest area for the other male.

The Project site located east of Pershing Drive, south of World Way West and west of Taxiways AA, B, and C is largely unvegetated and does not contain vegetation suitable for the California gnatcatcher. The area is currently utilized as a construction staging area that includes a large materials stockpile. As discussed earlier, the area is subject to frequent and significant disturbance as a result of its current land use. Due to the lack of native scrub vegetation and the high level of disturbance and activity at the Project site, it does not support habitat suitable for the California gnatcatcher. Therefore, no direct impacts to California gnatcatcher would occur from implementation of the proposed Project.

Although California gnatcatcher occur within the dunes area west of the Project site, across Pershing Drive, no indirect impacts are anticipated to occur from implementation of the proposed Project. Given that California gnatcatcher have come to, and currently occupy, the El Segundo dunes area, which is subject to high noise levels from departing aircraft, it is not anticipated that construction and operational noise associated with development and use of the Project site would adversely affect the species. No indirect impacts from dust generated during construction activities are anticipated to occur given that dust control measures are included in the air quality control measures for the proposed Project adopted in the Alternative D MMRP

(i.e., MM-AQ-2. LAX Master Plan - Mitigation Plan for Air Quality; Construction-Related Measures). No indirect impacts from nighttime lighting at the Project site are anticipated to occur given that high-intensity lighting already occurs in the areas to the north of the Project site (i.e., at the West Remote Pads apron area) and to the east and southeast of the site (i.e., American Airlines employee parking lot along the east side of Taxiway AA and the United-Continental Airlines aircraft maintenance complex east of Taxiway AA and north of Taxiway C).

Therefore, while this new information has been considered, there are no changes to the conclusions in the IS which state that the proposed Project would not have a significant impact on biological resources.

6.0 Other Environmental Considerations

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7.0 LIST OF PREPARERS, REFERENCES, NOP AND SCOPING MEETING COMMENTS, AND LIST OF ACRONYMS

To aid the reader, Chapter 7 contains the following sections:

- List of Preparers;
- List of References;
- NOP and Scoping Meeting Comments; and
- List of Acronyms.

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7.0 List of Preparers, References, NOP and Scoping Meeting Comments, and List of Acronyms

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7.3 NOP and Scoping Meeting Comments

A Notice of Preparation (NOP) and an Initial Study for the West Aircraft Maintenance Area Project Draft EIR was published on September 14, 2012. The NOP set a public review period that was to end on October 15, 2012. LAWA further extended the public review period for the NOP by 15 days until October 30, 2012. During the public review period, LAWA held a public Scoping Meeting on October 4, 2012 at the Flight Path Learning Center at LAX. Comment letters received from public review of the NOP and Initial Study and comments received at the public Scoping Meeting are listed below. Copies of the September 14, 2012 NOP and Initial Study, the comment letters, and public Scoping Meeting comments are included in Appendix A.

Agency/Association/Individuals	Date of Correspondence
Comments on NOP and Initial Study	
State of California, Native American Heritage Commission/ Dave Singleton, Program Analyst	September 20, 2012
South Coast Air Quality Management District/ Ian MacMillan, Program Supervisor	October 11, 2012
County of Los Angeles Department of Public Works/Ruben Cruz, P.E.	October 11, 2012
Los Angeles County Department of Regional Planning/Carmen Sainz, Supervising Regional Planner	October 30, 2012
City of Inglewood, City of Culver City, and City of Ontario, prepared by Barbara Lichman, Buchalter Nemer	October 30, 2012
City of El Segundo, prepared by Osa L. Wolff, Shute, Mihaly & Weinberger LLP	October 30, 2012
Denny Schneider, Alliance for a Regional Solution to Airport Congestion	October 30, 2012
Joyce Dillard	October 30, 2012
Cheryl Frick	October 22, 2012
Edward G. Keating	September 22, 2012
Mr. and Mrs. Vittorio Mendola	October 30, 2012
Scoping Meeting Comments	
Ryan Knapp	October 4, 2012
Steve Munson	October 4, 2012
Rosy Stefanatos	October 4, 2012

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7.4 List of Acronyms

AB	assembly bill
ACMX	Continental Airlines Aircraft Maintenance
ADG	Airplane Design Group
AEP	Association of Environmental Professionals
AERMOD	AMS/USEPA Regulatory Model
AFY	acre feet per year
ALP	Airport Layout Plan
ALUC	Airport Land Use Commission
ALUP	Airport Land Use Plan
AMS	American Meteorological Society
ANMP	Aircraft Noise Mitigation Program
AQ	Air Quality
AQMP	Air Quality Management Plan
ARFF	Aircraft Rescue and Firefighting Facility
ATCM	Air Toxic Control Measure
ATSAC	Automated Traffic Surveillance and Control
ATSDR	Agency for Toxic Substance and Disease Registry
AvGas	aviation gasoline
Basin	South Coast Air Basin
Basin Plan	Water Quality Control Plan, Los Angeles Region – Basin Plan
bgs	below ground surface
BMP	Best Management Practices
BOAC	Board of Airport Commissioners
C	Celsius
CAA	Federal Clean Air Act
CAAQS	California Ambient Air Quality Standards
CalEEMod	California Emissions Estimator Model
CalEPA	California Environmental Protection Agency
CALM	Coordination and Logistics Management
CalOSHA	California Occupational Safety and Health Administration
Caltrans	California Department of Transportation
CARB	California Air Resources Board
CCAA	California Clean Air Act
CCAR	California Climate Action Registry
CCR	California Code of Regulations
CDHS	California Department of Health Services
CDP	Conceptual Drainage Plan
CEC	California Energy Commission
CEQA	California Environmental Quality Act
CFC	chlorofluorocarbons
cfs	cubic feet per second
CFTP	Crossfield Taxiway Project
CH ₄	methane
CHHSL	California Human Health Screening Level

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CHPS	Collaborative for High Performance Schools
CIP	Capital Improvement Projects
CMA	Critical Movement Analysis
CMP	Congestion Management Program
CNEL	Community Noise Equivalent Level
CNG	compressed natural gas
CNRA	California Natural Resources Agency
CO	carbon monoxide
CO ₂	carbon dioxide
CO ₂ e	carbon dioxide equivalent
COC	Constituents of Concern
CTA	Central Terminal Area
CUP	Central Utilities Plant
CUP-RP	Central Utilities Plant Replacement Project
CWA	Clean Water Act
dB	decibel
dBA	A-weighted decibel
DNL	day-night average sound level
DOGGR	California State Division of Oil, Gas, and Geothermal Resources
DPF	diesel particulate filter
DPM	Diesel Particulate Matter
DPF	diesel particulate filter
DTSC	Department of Toxic Substances Control
EDMS	Emissions and Dispersion Modeling System
EDSG	Environmental Data Solutions Group
EIR	Environmental Impact Report
EIS	Environmental Impact Statement
F	Fahrenheit
FAA	United States Department of Transportation Federal Aviation Administration
FAR	Federal Aviation Regulations
FHWA	Federal Highway Administration
FICAN	Federal Interagency Committee on Aviation Noise
FTA	Federal Transit Administration
g/mi	grams per mile
GCC	global climate change
GHG	greenhouse gas
gpd	gallons per day
GRE	ground run-up enclosure
GRI	Global Reporting Initiative
GRP	General Reporting Protocol
GSE	ground support equipment
GTC	Ground Transportation Center
GWP	global warming potential
HAZWOPER	hazardous waste operations and emergency response
HFC	hydrofluorocarbons

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HHRA	Human Health Risk Assessment
HI	hazard index
HMMH	Harris Miller Miller & Hanson Inc.
hp	horsepower
HQ	hazard quotient
HVOC	halogenated volatile organic compounds
HWCL	Hazardous Waste Control Law
Hz	hertz
I-105	Interstate 105
I-405	Interstate 405
ICLEI	International Council for Local Environmental Initiatives
in/sec	inches per second
INM	Integrated Noise Model
IPCC	Intergovernmental Panel on Climate Change
IS	Initial Study
LACDPW	Los Angeles County Department of Public Works
LACFCD	Los Angeles County Flood Control District
LADBS	Los Angeles Department of Building & Safety
LADOT	Los Angeles Department of Transportation
LADPW	Los Angeles Department of Public Works
LADWP	Los Angeles Department of Water and Power
LAFD	Los Angeles Fire Department
LAGBC	City of Los Angeles Green Building Code
LAMC	Los Angeles Municipal Code
LARWQCB	Los Angeles Regional Water Quality Control Board
LAWA	Los Angeles World Airports
LAWAPD	Los Angeles World Airports Police Department
LAX	Los Angeles International Airport
LCFS	Low Carbon Fuel Standard
L_{eq}	equivalent continuous noise level
LGOP	Local Government Operations Protocol
LID	Low Impact Development
L_{max}	maximum noise level
LNG	liquefied natural gas
LOS	level of service
LST	localized significance threshold
LTO	landing and takeoff operations
MATES	Multiple Air Toxics Exposure Study
MEI	maximally exposed individuals
Metro	Los Angeles County Metropolitan Transportation Authority
mg/kg	milligrams per kilogram
mg/m ³	milligrams per cubic meter
MMRP	Mitigation Monitoring and Reporting Program
MMTCo ₂ e	million metric tons of carbon dioxide equivalent
MODRAT	Modified Rational Method
mpg	miles per gallon

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mph	miles per hour
MPO	metropolitan planning organization
m/s	meters per second
MS4	municipal separate storm sewer systems
MSC	Midfield Satellite Concourse
msl	mean sea level
MSW	municipal solid waste
MTCO ₂ e	metric tons of carbon dioxide equivalent
N ₂ O	nitrous oxide
NAAQS	National Ambient Air Quality Standards
NHTSA	National Highway Traffic Safety Administration
NRCS	Natural Resources Conservation Service
NLA	new large aircraft
NO ₂	nitrogen dioxide
NO _x	nitrogen oxides
NOI	Notice of Intent
NOP	Notice of Preparation
NPDES	National Pollutant Discharge Elimination System
O ₃	ozone
OEHHA	Office of Environmental Health Hazard Assessment
OES	Office of Emergency Services
OLM	Ozone Limiting Method
OPR	California Office of Planning and Research
OSHA	Occupational Safety and Health Act
Pb	Lead
PCB	polychlorinated biphenyls
PCE	passenger car equivalent
PEL-TWAs	Permissible Exposure Limit Time Weighted-Average
PFCs	perfluorocarbons
PM ₁₀	Particulate Matter
PM _{2.5}	Fine Particulate Matter
ppb	parts per billion
ppm	parts per million
PPV	peak particle velocity
PVC	polyvinyl chloride
PVMRM	Plume Volume Molar Ratio Method
RAD	remain all day
RAGS	Risk Assessment Guidance for Superfund
RAP	Remedial Action Plan
RCB	reinforced concrete box
RCP	reinforced concrete pipe
RCRA	Resource Conservation and Recovery Act
REL	reference exposure level
RON	remain overnight
RPS	Renewable Portfolio Standards
RPZ	Runway Protection Zone

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RSA	Runway Safety Area
RSL	Regional Screening Levels
RTAC	Regional Targets Advisory Committee
RTP/SCS	Regional Transportation Plan/Sustainable Communities Strategy
RWQCB	Regional Water Quality Control Board
SAIP	South Airfield Improvement Project
SB	senate bill
SCAG	Southern California Association of Governments
SCAQMD	South Coast Air Quality Management District
SEL	Sound Exposure Level
SF ₆	sulfur hexafluoride
SIP	State Implementation Plan
SMBRC	Santa Monica Bay Restoration Commission
SPAS	LAX Specific Plan Amendment Study
SO ₂	sulfur dioxide
SO ₃	sulfur trioxide
SO _x	sulfur oxides
SRA	source receptor area
STLC	Soluble Threshold Limit Concentration
SUSMP	Standard Urban Stormwater Mitigation Plan
SWPPP	Storm Water Pollution Prevention Plan
SWRCB	State Water Resources Control Board
TAC	toxic air contaminants
TBIT	Tom Bradley International Terminal
TIA	transportation impact analysis
TMDL	Total Maximum Daily Load
TPH	total petroleum hydrocarbons
TRPH	total recoverable petroleum hydrocarbons
TSA	Transportation Security Administration
TTLC	Total Threshold Limit Concentration
TWA	Trans World Airlines
UNFCCC	United Nations Framework Convention on Climate Change
U.S.	United States
USEPA	U.S. Environmental Protection Agency
UST	underground storage tanks
USFWS	U.S. Fish and Wildlife Service
UTAH	Underground Tanks and Hazardous Substances
V/C	volume to capacity
VdB	vibration decibel
VEFPR	vacuum- enhanced free product recovery
VOC	volatile organic compounds
WAMA	West Aircraft Maintenance Area
WHO	World Health Organization
µg/kg	microgram per kilogram
µg/m ³	microgram per cubic meter