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## 4.20 Construction Impacts

### 4.20.1 Introduction

The construction impacts analysis addresses the potential short-term (temporary) environmental impacts expected to occur during construction of each of the LAX Master Plan build alternatives and the No Action/No Project Alternative. Potential impacts and their significance, as well as preliminary Master Plan commitments and mitigation measures, were assessed in the other sections of this chapter and compiled in this section for comparison and integration into a single analysis. Additional information regarding construction impacts associated with proposed roadway construction/improvements is also found in Appendix K, *Supplemental Environmental Evaluation for LAX Expressway and State Route 1 Improvements*.

### 4.20.2 General Approach and Methodology

The general approach to assessing the impacts of construction began with the development of information about the construction process. This included assessing typical construction activities required for a project of this magnitude, preliminary construction phasing, and estimates of workforce and resource requirements (labor, equipment, fuel, and materials). The construction process information was provided to the specialists responsible for assessing long-term impacts for the array of environmental factors reported in each of the other sections in this chapter, who also assessed the short-term, temporary effects of construction on the resources for which they were responsible. Recommended Master Plan commitments and mitigation measures were then identified and each analysis was reported in its applicable resource section. Finally, the analyses of construction impacts from each resource section were combined into this section, using the integration process to synchronize the various conclusions and to identify cumulative effects that were apparent only after the individual assessments were complete.

Information on construction phasing, construction methods and required resources anticipated to be used in the development of the build alternatives was developed as part of the LAX Master Plan and is summarized in Chapter 3, *Alternatives*.<sup>746</sup> Construction of Alternatives A, B, and C would be completed in two phases. For the purpose of this section of the Final EIS/EIR analysis, the construction phasing for Alternatives A, B, and C remains as assumed in the Draft EIS/EIR. Under those assumptions, Phase I for those three alternatives would have begun by 2002 and conclude in 2005, and Phase II would begin in 2006 and conclude in 2015. Within each construction phase, multiple projects would be constructed and some overlap of individual projects would occur between Phases I and II. Construction of Alternative D is divided into three major phases. For this analysis, Phase I is assumed to start in the 3rd quarter of 2004 and conclude in 2009. Phase II would start in mid-2007 and conclude in 2011, and Phase III would start in 2010 and conclude in 2014.

Preliminary estimates of resources required for construction were developed in the LAX Master Plan in order to provide a basis for the construction impact analysis. Information developed for this purpose included:

- ◆ Construction Schedule: The construction schedule provides the basis for estimating the time frames for the various construction activities and expenditure of resources. The schedule provides an identification of projects anticipated for construction in each phase.
- ◆ Workforce Levels: This is an estimate of workforce (labor), by phase. Workforce levels provide input necessary for the calculation of economic impacts and surface traffic.
- ◆ Brake Horsepower: This is an estimate of total equipment brake horsepower-hour (total brake horsepower multiplied by usage in hours) by phase. Brake horsepower is a data requirement for the calculation of fuel consumption.

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<sup>746</sup> Bechtel Corporation, [Interim-Year Construction Inputs to Environmental Analysis for LAX Master Plan, 3<sup>rd</sup> Iteration Alternatives](#), February 4, 1998; Bechtel Corporation, [LAX Master Plan DEIS Input Data, Construction Impacts](#), April 2, 1999; Bechtel Corporation, [LAX Master Plan Compilation of DEIS Input Data, Alternative C, Construction Impacts](#), April 28, 2000; PCR Services Corporation, 2000; and MARRS Services, Inc., [LAX Master Plan Alternative D Compilation of Draft Environmental Impact Statement \(DEIS\) Construction Impacts Input Data, Excluding Crossfield Taxiway Projects](#), May 21, 2003.

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- ◆ Fuel Consumption: This is based on the types and number of various equipment required during each construction phase. Fuel consumption estimates are in thousands of gallons per phase. Fuel consumption statistics support the analysis of air quality and energy consumption.
- ◆ Truck Trip Generation: This is the number of anticipated truck trips for on-site, off-site, and total trips by construction phase. Truck trips are essential input into analysis of roadway noise, traffic volume, air pollutants, and energy consumption.
- ◆ Haul Routes/Worker Commute Trips: This is a description of the general policies for establishment and use of haul routes, and an estimate of commute trip generation.
- ◆ Earthwork and Aggregate Quantities: This is an extrapolation of data for use in determining area resource needs, by phase.
- ◆ Road Closure Plan: This is a schedule of road-related projects through 2015, with conceptual closure plans.
- ◆ Staging Area Plan: This is an identification of potential staging areas during all construction phases.

The following further describes each of these inputs and the assumptions used in their development. It should be noted at this point that detailed engineering plans have not been developed for the build alternatives at this time. Therefore, potential impacts may be clarified, revised or expanded in subsequent supporting environmental analysis and/or permit documents when construction plans are further developed. Also, additional evaluation of construction impacts would be required should Alternative A, B, or C be selected and approved for the LAX Master Plan, recognizing that the start of construction would occur later than assumed in the Draft EIS/EIR and would progress at a more accelerated, intensive pace than originally assumed in order to complete construction by the 2015 planning horizon year.

### **4.20.3 Construction Plan**

This section is provided in lieu of Affected Environment/Environmental Baseline to provide background on the sequence and methods of construction. Construction impacts are largely dependent on the timing, type of equipment, manpower and other items discussed below.

#### **Construction Schedule**

##### **Alternatives A, B, and C**

The major construction activities associated with Alternatives A, B, and C include demolition, earthwork/foundations, utilities, structures, and pavements. Primary considerations in planning for the construction activities were the safe and uninterrupted operation of the airport, including runway operations and passenger access to terminals and parking areas. Other considerations included minimizing disruption to local surface traffic.

Although each construction phase includes a variety of projects, Phase I of Alternatives A, B, and C focuses on airfield development and constructing the primary components of the West Terminal Area (WTA) so that it can begin servicing flights and passengers and provide relief for the Central Terminal Area (CTA). Phase II of Alternatives A, B, and C focuses on completing the WTA and connecting the WTA and the CTA with the Automated People Mover (APM) system and the commercial tunnel. The road work is scheduled to accommodate the airfield runway projects and maintain or improve access to terminals and other facilities.

##### **Alternative A - Added Runway North**

Phase I construction of Alternative A includes the extension of Runway 6R/24L on the North Airfield, and the reconstruction and improvement of Aviation Boulevard South and Sepulveda Boulevard North. The construction of the WTA would start in Phase I and overlap with, and extend well into the Phase II construction activities. The construction of Phase I West Terminal APM would start shortly after the completion of WTA Phase I and end approximately 3 years later. Other major areas of Phase I construction would involve the Century Boulevard and Sepulveda Boulevard intersection, Westchester Parkway Phase I, the Imperial Highway upgrade, and the Lincoln Boulevard and Westchester Parkway intersection.

The primary focus of Phase II work would be in the CTA, along with the completion of the WTA and APM, which connects the WTA with the CTA, as well as the addition of the third runway on the North Airfield.

### **Alternative B - Added Runway South**

Phase I construction of Alternative B includes the extension of Runway 6R/24L on the North Airfield and the reconstruction and improvement of Aviation Boulevard South and Sepulveda Boulevard North. Phase I also includes modifications to Runway 7L/25R on the South Airfield, and the reconstruction and improvements of Sepulveda Boulevard South and Aviation Boulevard North. The construction of the WTA would start towards the later part of Phase I and overlap with, and extend well into, the Phase II construction activities. The construction of the Phase I West Terminal APM would start shortly after the completion of the WTA Phase I. Other major areas of Phase I construction would involve the Century Boulevard and Sepulveda Boulevard intersection and the Lincoln Boulevard and Westchester Parkway intersection.

The primary focus of Phase II work would be in the CTA, along with the completion of the WTA and APM to connect the WTA with the CTA, as well as the addition of the third runway on the South Airfield.

### **Alternative C - No Additional Runway**

Phase I construction of Alternative C includes the North Airfield runway extension and modifications (Runways 6R/24L and 6L/24R), and the construction of primary components of the WTA. The work would be focused on constructing facilities to begin servicing flights and passengers from the WTA. Other major areas of construction for Phase I would involve the CTA; cargo facilities (south); road work in the Sepulveda Boulevard/Westchester Parkway interchange and tunnel area; Lincoln Boulevard/Westchester Parkway interchange and Westchester Parkway road work; and other ancillary and support facilities. The construction of the APM to connect the WTA with the CTA would also begin in Phase I.

The major focus of Phase II construction would be to complete the WTA, and connect the WTA and CTA with the APM and commercial tunnel. The majority of construction in the South Airfield area would also be scheduled during Phase II. Phase II also includes completion of the LAX Expressway, cargo facilities (including Manchester Square) and Green Line light rail extension.

The above preliminary phasing schedules assume that tenants in existing facilities would be moved to alternate facilities to allow for the demolition of existing structures and the unimpeded construction of new facilities. The schedules also assume that the land acquisition plan for each alternative would support the proposed conceptual schedule for construction.

### **Alternative D - Enhanced Safety and Security Plan**

The construction would start after issuance of the Record of Decision for the environmental documentation. The major construction activities associated with Alternative D include demolition, earthwork/foundations, utilities, structures, and pavements. Primary considerations in planning for the construction activities were the safe and uninterrupted operation of the airport, including runway operations and passenger access to terminals, the GTC, and parking areas. Other considerations included minimizing disruption to local surface traffic.

For this analysis, the construction is assumed to start in the 3<sup>rd</sup> quarter of 2004, with completion by the end of 2014, which represents a duration of approximately 10 years. The construction is divided into three major phases.

Phase I construction would start with the implementation of Runway 25L and the Center Taxiway project in the south airfield, and construction of parking facilities. The construction of the parking facilities would allow demolition of existing parking structures in the CTA and the start of construction of the CTA Landside Terminal in 2006 for completion by 2009.

The construction of the APM system from the CTA to the ITC, the GTC and RAC would occur in parallel with the improvements proposed at the CTA. The construction of the APM would start about one quarter prior to the construction start for the CTA Landside Terminal (i.e., the baggage and passenger processing facilities that would replace the existing CTA parking facilities), followed by the start of construction for the GTC and RAC. The construction of the GTC and RAC would end in 2009. The on-airport roadways and Century Bridge needed to connect the GTC to the ITC is scheduled for substantial completion prior to

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starting the construction for the GTC in order to provide additional access from the I-105 to the GTC project area. The off-site utilities and roadway improvements work is scheduled to begin in 2005, so that the needed utilities and roadways are completed prior to the completion of the CTA Landside Terminal, APM, GTC, and RAC. In general, the construction of utilities would precede the construction of roadways. Four major projects including the CTA Landside Terminals, APM, GTC and RAC, and the related utility and road infrastructure are scheduled over a 36-month period during the first five years of construction.

Construction of the baggage tunnel from the GTC to the CTA is scheduled to start in parallel with the off-site utilities. The installation of the baggage equipment would be completed along with the completion of the GTC and the CTA Landside Terminal.

Phase II involves construction in the West Satellite Concourse area, which would involve demolition of existing hangar facilities in the midfield areas. Phase II would start with the construction of a replacement hangar in 2007. The construction for Phase II would occur through to the end of 2011. In addition to satellite concourse and related passenger and baggage handling facilities, Phase II would involve construction of many support infrastructure projects such as Aircraft Rescue and Firefighting, police facility and ground run-up enclosure.

Phase III includes north airfield ancillary facilities including a police station and medical building and reconfiguring of the fuel farm, which are scheduled to start construction in 2010. The modifications to the existing Tom Bradley International Terminal (TBIT) would start in parallel with the ancillary facilities, with the construction of north and south CTA projects lagging TBIT by about a year. The TBIT and the CTA projects would be completed in 2014 with the completion of the north CTA projects. The construction on Runway 24L and the south parallel taxiway would start in 2012 and their completion would conclude the Phase III construction by the end of 2014, with one year to fine tune and optimize the operation by the end of 2015, which is the scheduled completion date for Alternative D.

### **Resource Requirements**

#### **Alternatives A, B, and C**

For Alternatives A, B and C, resource requirements were developed using the conceptual level schedule for the construction of each subproject. Standardized construction work crews and equipment were assumed for each major work element defined in the conceptual construction schedule. The resource information also included general equipment types, sizes, manufacturer, and quantity of each type of equipment for each standardized work crew. From this resource information, total workforce, brake horsepower,<sup>747</sup> fuel consumption, and truck trips were established for each standardized work crew. These resources were then loaded into each subproject in the construction schedule and distributed according to a standard bell distribution curve over the duration of each subproject. The resources were compiled for the entire program, and estimates of total resource quantities were broken down by quarter for the entire 14-year construction period for Alternatives A, B, and C.

The workforce, brake horsepower, fuel consumption and truck trips data presented in this section were extracted from reports prepared for the LAX Master Plan.<sup>748</sup> Because Alternative A has not been scheduled to a conceptual detail level similar to Alternatives B and C, the estimate of resource quantities for Alternative A were based on scaling of the resource estimates for Alternative C.

#### **Alternative D - Enhanced Safety and Security Plan**

Resource requirements for Alternative D were developed using the methodology described above for Alternatives A, B, and C; however, estimates of total resource quantities were broken down by quarter for the entire 10-year construction period for Alternative D.

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<sup>747</sup> Brake horsepower (bhp) is a measure of the useful power delivered to a motor or engine shaft, 1 bhp = 746 watts. This is an estimate of total equipment brake horsepower-hour (total brake horsepower multiplied by usage in hours) by phase. Brake horsepower is a data requirement for the calculation of fuel consumption.

<sup>748</sup> Bechtel Corporation, LAX Master Plan DEIS Input Data Construction Impacts, April 2, 1999, (for Alternative B); Bechtel Corporation, LAX Master Plan Compilation of DEIS Input Data, Alternative C Construction Impacts, April 28, 2000.

## Workforce Level

For all build alternatives, the majority of the construction activities are assumed to occur during daytime hours, with the second and third shifts used for those work activities that cannot be accomplished on the daytime shift due to coordination or interference issues (i.e., airport operations, safety, delivery of materials, and equipment). A work schedule of six days per week, eight hours per day was assumed for the daytime shift. Allowing four percent for holidays, this work schedule amounts to 50 work hours per week. The total construction workforce was estimated by using an average workweek of 50 hours per person, and accounting for project duration and crew sizes.

## Alternatives A, B, and C

**Table F4.20-1**, Projected Construction Workforce - Alternatives A, B, and C, presents the estimated work force by phase for these three build alternatives. Person-years were calculated assuming 50 weeks of construction per year, and assuming that the construction would shut down for two weeks during the main holiday season of Christmas and the New Year. Based upon these assumptions, the total workforce for the entire project duration is expected to reach 24,055, 29,780, and 24,471 person years for Alternatives A, B, and C, respectively. For this conceptual analysis, the overall workforce for daytime, second, and third shifts is expected to be 73 percent, 18 percent, and 9 percent, respectively, of the total workforce.

	<b>Workforce (person years)</b>		
	<b>Alternative</b>		
<b>Phase I</b>	<b>A</b>	<b>B</b>	<b>C</b>
Quarterly Average	843	739	858
Maximum quarterly <sup>1</sup>	1540	1440	1,567
Minimum quarterly	212	56	216
<b>Phase II</b>			
Quarterly Average	233	856	237
Maximum quarterly <sup>2</sup>	682	1920	694
Minimum quarterly	5	112	5

<sup>1</sup> Based on the assumptions in the Draft EIS/EIR, would occur in 2005 for Alternative B, and 2004 in Alternative C.

<sup>2</sup> Based on the assumptions in the Draft EIS/EIR, would occur in 2006 for Alternative B, and 2012 for Alternative C.

Source: Bechtel Corporation, LAX Master Plan DEIS Input Data Construction Impacts, April 2, 1999 (for Alternative B). Bechtel Corporation, LAX Master Plan Compilation of DEIS Input Data, Alternative C Construction Impacts, April 28, 2000.

## Alternative D - Enhanced Safety and Security Plan

**Table F4.20-2**, Projected Construction Workforce - Alternative D, presents the estimated work force by phase for Alternative D. Person-years were calculated assuming 50 weeks of construction per year, and assuming that the construction would shut down for two weeks during the main holiday season of Christmas and the New Year. Based upon these assumptions, the total workforce for the entire project duration is expected to reach 19,349 person years for Alternative D.

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Table F4.20-2

**Projected Construction Workforce -  
Alternative D**

	<b>Workforce (person years)</b>
	<b>Alternative D</b>
<b>Phase I</b>	
Quarterly Average	2,997
Maximum quarterly <sup>1</sup>	5,992
Minimum quarterly	118
<b>Phase II</b>	
Quarterly Average	1,329
Maximum quarterly <sup>2</sup>	4,837
Minimum quarterly	288
<b>Phase III</b>	
Quarterly Average	784
Maximum quarterly <sup>3</sup>	1,583
Minimum quarterly	177

Note: For the purposes of calculating workforce levels, the three phases were defined as indicated in this table to eliminate overlap between phases.

<sup>1</sup> Anticipated to occur in 2007.

<sup>2</sup> Anticipated to occur in 2008.

<sup>3</sup> Anticipated to occur in 2012.

Source: MARRS Services, Inc., May 2003.

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### **Brake Horsepower/Fuel Consumption Level**

For all build alternatives, a standardized equipment crew database was developed for each of the major work activities including demolition, earthwork/foundations, utilities, structures, and pavement. **Table F4.20-3**, Typical Construction Equipment and Standardized Equipment Crew Matrix, indicates the type of equipment that may be part of a standard equipment crew for each major work activity.

Table F4.20-3

## Typical Construction Equipment and Standardized Equipment Crew Matrix

Equipment	Standard Equipment Crew Type				
	Demolition	Excavation/ Foundations	Structures	Pavements	Construction Support
	11 <sup>1</sup>	10 <sup>1</sup>	5 <sup>1</sup>	4 <sup>1</sup>	4 <sup>1</sup>
Excavator	x	x			
Crane	x	x	x	x	x
Flatbed/Haul Truck	x	x	x	x	x
Front End Loader	x	x	x	x	x
Motor Grader	x	x	x	x	x
Compactor	x	x	x	x	
Crane Track	x		x		
Breaker/Shear	x				
Dozer	x	x			x
Welder	x	x	x	x	x
CMI Grinder	x				
Light Plant		x	x	x	x
Water Wagon		x		x	x
Pile Hammer		x			
Fork Lift		x	x		x
Scraper		x			
Concrete Pump			x		
Generator			x		x
Reclaimer/Stabilizer				x	
CMI Paver				x	
Oil Tank Truck				x	x
Texturing/Curing Mach.				x	
Fuel/Lube Truck					x
Maintenance Truck					x
Pickup Truck					x
Transit Truck					x
Automobile					x
Ambulance					x

<sup>1</sup> Indicates number of standard equipment crews developed for this type of work activity.

Source: Bechtel Corporation, LAX Master Plan Compilation of DEIS Input Data, Alternative C Construction Impacts, April 28, 2000.

A total of 34 different types and sizes of standard construction equipment crews, consisting of 11 crews for demolition, 10 crews for excavation/foundation, 5 crews for structures, 4 crews for pavements and 4 crews for construction support were developed by combining different types and numbers of pieces of equipment.

Published manufacturer data was used to establish a composite figure for brake horsepower and hourly fuel consumption for each identified crew type.

### Alternatives A, B, and C

For Alternative A, the brake horsepower and fuel consumption was determined by applying a scaling factor to the Alternative C estimates. For Alternatives B and C, total brake horsepower and fuel consumption were determined by assigning the standardized equipment crews to various work activities in the conceptual construction schedule for those alternatives, and by multiplying the composite crew brake horsepower and hourly fuel consumption with 50 crew hours per week times the scheduled duration of the work activity in weeks. The conceptual analysis indicates total brake horsepower-hours of 910, 954, and 928 for Alternatives A, B, and C, respectively. The corresponding fuel consumption was estimated at 31, 33, and 32 million gallons for Alternatives A, B, and C, respectively. **Table F4.20-4**, Projected Brake Horsepower and Fuel Consumption - Alternatives A, B, and C, presents brake horsepower and fuel consumption estimates by phase for these three build alternatives.

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Table F4.20-4

**Projected Brake Horsepower and Fuel Consumption -  
Alternatives A, B, and C**

	Brake Horsepower and Fuel Consumption		
	Alternative		
	A	B	C
<b>Phase I</b>			
<b>Brake Horsepower</b> - Hours <sup>1</sup> millions			
Quarterly Average	31	14	32
Maximum quarterly <sup>2</sup>	60	34	61
Minimum quarterly	7	1.2	7
<b>Fuel Consumption</b> - thousands of gallons			
Quarterly Average	1,100	580	1,100
Maximum quarterly	2,100	1,200	2,100
Minimum quarterly	240	40	240
<b>Phase II</b>			
<b>Brake Horsepower</b> - Hours <sup>1</sup> millions			
Quarterly average	11	18	11
Maximum quarterly <sup>3</sup>	22	42	22
Minimum quarterly	3	1	3
<b>Fuel Consumption</b> - thousands of gallons			
Quarterly average	350	620	360
Maximum quarterly <sup>3</sup>	750	1,490	770
Minimum quarterly	90	30	90

<sup>1</sup> Indicates total equipment brake horsepower multiplied by the number of hours the equipment is in operation.

<sup>2</sup> Based on the assumptions in the Draft EIS/EIR, would occur in 2005 for Alternative B and in 2004 for Alternative C.

<sup>3</sup> Based on the assumptions in the Draft EIS/EIR, would occur in 2006 for Alternative B and in 2012 for Alternative C.

Source: Bechtel Corporation, 2000.

### Alternative D - Enhanced Safety and Security Plan

For Alternative D, total brake horsepower and fuel consumption were determined by assigning the standardized equipment crews to various work activities in the conceptual construction schedule, and by multiplying the composite crew brake horsepower and hourly fuel consumption with 50 crew hours per week times the scheduled duration of the work activity in weeks. The conceptual analysis indicates total brake horsepower-hours of 517 for Alternative D.<sup>749</sup> The corresponding fuel consumption was estimated at 17.6 million gallons. **Table F4.20-5**, Projected Brake Horsepower and Fuel Consumption - Alternative D, presents brake horsepower and fuel consumption estimates by phase for Alternative D.

<sup>749</sup> MARRS Services, Inc., LAX Master Plan Alternative D Compilation of Draft Environmental Impact Statement (DEIS) Construction Impacts Input Data, Excluding Crossfield Taxiway Projects, May 21, 2003.

Table F4.20-5

**Projected Brake Horsepower and Fuel Consumption -  
Alternative D**

	<b>Brake Horsepower and Fuel Consumption Alternative D</b>
<b>Phase I</b>	
<b>Brake Horsepower</b> - Hours <sup>1</sup> millions	
Quarterly Average	16
Maximum quarterly <sup>2</sup>	24
Minimum quarterly	3
<b>Fuel Consumption</b> - thousands of gallons	
Quarterly Average	569
Maximum quarterly	836
Minimum quarterly	102
<b>Phase II</b>	
<b>Brake Horsepower</b> - Hours <sup>1</sup> millions	
Quarterly average	9
Maximum quarterly <sup>3</sup>	21
Minimum quarterly	5
<b>Fuel Consumption</b> - thousands of gallons	
Quarterly average	314
Maximum quarterly	713
Minimum quarterly	150
<b>Phase III</b>	
<b>Brake Horsepower</b> - Hours <sup>1</sup> millions	
Quarterly average	10
Maximum quarterly <sup>4</sup>	16
Minimum quarterly	6
<b>Fuel Consumption</b> - thousands of gallons	
Quarterly average	348
Maximum quarterly <sup>3</sup>	548
Minimum quarterly	182

Note: For the purposes of calculating brake horsepower and fuel consumption, the three phases were defined as indicated in this table to eliminate overlap between phases.

<sup>1</sup> Indicates total equipment brake horsepower multiplied by the number of hours the equipment is in operation.

<sup>2</sup> Anticipated to occur in 2006 & 2007.

<sup>3</sup> Anticipated to occur in 2009.

<sup>4</sup> Anticipated to occur in 2013.

Source: URS Corporation, 2003.

### **Truck Trip Generation**

Truck trips for materials transport were estimated from the order-of-magnitude quantities and construction cost estimates, and distributed according to the conceptual construction schedule. The truck-trip data was generated using the following factors: average quantity of materials per truck trip, average cost per truck trip, and average cost of materials transported per truck trip. The truck trips were assumed to be round trips, and were classified as either on-site or off-site trips. On-site trips are those with the trip origin and terminus occurring within the LAX project area, and would primarily be to and from the batch plants or staging areas. Off-site trips are those with either the trip origin or terminus occurring outside of the LAX project area, and would include trips that transport materials into and out of the construction site, to and from other destinations.

The cut-and-fill volumes discussed later in this section aided in the quantification of the on-site haul truck traffic. The borrow fill, aggregate consumption, and unsuitable soil volumes were also considered in the quantification of both on-site and off-site haul truck traffic. Cut-and-fill haul truck trips can be minimized by sequencing the work to allow placement of cut materials in the fill location in a single operation. This

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would also reduce the need for stockpiling the material. However, as it is not practical to achieve this at all times, the staging areas would provide sufficient capacity for storage and processing of cut materials for later use as fill.

Offsite truck trips would be generated by bringing in the borrow fill and aggregates, and hauling away the unsuitable materials. The most efficient hauling situation would occur when the delivery and haul-away trips use the same trucks, thus minimizing the overall number of truck trips. The sequencing of earthwork activities on various projects would consider such options to minimize both traffic impacts and costs.

An analysis of truck traffic scenarios, related traffic impacts, and commitments to address those impacts is included in subsection 4.20.5, *Master Plan Commitments*, and subsection 4.20.6, *Environmental Consequences*. Possible techniques to fulfill the commitment to reduce the truck traffic impacts include establishment of multiple delivery/pickup locations, and extending the work week to seven days per week and to multiple work shifts.

### **Haul Routes**

For all build alternatives, haul routes would be established to accommodate truck traffic related to the transport of materials to and from the construction sites. A major part of this traffic would involve transportation of borrow fill, aggregate, and construction materials from source locations to the staging areas or construction sites, and taking the construction debris from construction areas for off-site disposal. The location of borrow fill, aggregates, and construction materials supply sources, and offsite disposal locations would depend upon the supply and demand situation at the time of construction. Because of the large quantities of materials required, the truck traffic could be anticipated to be from all directions. This traffic would be routed to various destinations based on the general policies pertaining to the haul routes developed as part of Master Plan Commitment ST-16, Designated Haul Routes (Alternatives A, B, C, and D).

The freeway access to LAX is the I-405 from the north and south, and I-105 from the east. The I-405 connects to major freeways (I-5 from the north counties and I-10 from the east counties) north of the airport. Hence building construction material traffic from north counties and most of the traffic from east counties is assumed to be coming on I-405 from the north. Some traffic from east counties is assumed to use the I-10, I-605, and I-105. Building material may also come from out of region sources. Out-of-region material is assumed to come through ports of Los Angeles/Long Beach (located south of the airport) or by rail through railroad yards (located east of the airport) and then by truck to airport project sites and staging areas. This traffic is most likely to use I-405 from the south or I-105 from the east. It is therefore foreseeable that the distribution of off-site trips to the airport projects is 40 percent from the north via I-405, 30 percent from the south via I-405, and 30 percent from the east via I-105.

The incoming traffic from I-105 may be routed to Sepulveda Boulevard, Aviation Boulevard, and Imperial Highway. The traffic from I-405 may be routed to Manchester Avenue, Century Boulevard, and La Cienega Boulevard. Other anticipated haul routes may include Florence Avenue, Westchester Parkway, Arbor Vitae Street, and Pershing Drive. Under Alternative D, it is proposed that the on-airport roadways between the GTC and ITC be constructed in an early construction phase and used as access routes from I-105 to the GTC. The establishment and use of haul routes would be subject to the following restrictions.

- ◆ Haul routes would be located away from noise-sensitive receptors such as residences.
- ◆ To the extent feasible, truck deliveries and pickups would be scheduled during off peak hours.
- ◆ To the extent feasible, truck delivery routes would be separated from pickup routes.
- ◆ To the extent practicable, construction traffic would be separated from regular "airport" traffic by various means including detours and establishment of temporary construction traffic corridors.

In addition to these off-site haul routes, it is recognized that a certain number of on-site trips would be generated by each project from the project site to its assigned staging area and vice versa. These haul routes normally follow the shortest convenient existing route and on airport service roads between the project site and its respective staging area.

In addition to trucks, the use of rail was considered to transport borrow fill and aggregate materials associated with Alternatives A, B, and C. The conceptual evaluation was based on using existing trackage which runs north and south parallel to and west of Aviation Boulevard. This requires that the stock-pile and siding areas would have to be located east or west of Aviation Boulevard. It is

acknowledged that the use of rail would not necessarily reduce the number of truck trips, as the materials brought via rail would still need to be transported by trucks to various plant sites within the construction area.

The use of rail would also limit the aggregate supply sources to quarries that are accessible to rail service, such as supply sources in east Los Angeles County and San Bernardino County. This may require sole-source procurement of aggregates and fill materials. For Alternatives A and B, the reconstruction of south Aviation Boulevard would eliminate rail access from the south. A crossing at Aviation Boulevard would be required to access the Manchester Square staging area (Staging Area 5; see **Figure F4.20-1**, Potential Staging Areas - Alternatives A, B, and C). Such crossing would substantially restrict traffic entering the airport on north Aviation Boulevard.

The concentration of stockpiles, and handling of materials from a single location in the Aviation Boulevard area would create an air quality "hot spot" (area with high concentrations of air pollutants) due to dust and the vehicle and equipment emissions. Other rail supply configurations have not been evaluated at this conceptual stage of the project.

### **Worker Commute Trips**

#### **Alternatives A, B, and C**

The highest levels of construction employee-related traffic are experienced specifically during the 7<sup>th</sup> through the 14<sup>th</sup> quarters for the "1<sup>st</sup> shift." During the 12<sup>th</sup> quarter, the highest level is to be experienced at 2.94 million person-hours (1<sup>st</sup> shift). During this quarter, the highest level for the 2<sup>nd</sup> shift is expected to be at 668,000 person-hours, and the highest level for the 3<sup>rd</sup> shift is at 310,000 person-hours. However, traffic impacts would not be compounded at the change of shifts. For example, employees coming to work for the 2<sup>nd</sup> shift would be arriving prior to the end of the 1<sup>st</sup> shift, and those leaving after the 1<sup>st</sup> shift would leave after the beginning of the 2<sup>nd</sup> shift.

During the peak construction period, work on the western portion of the ring road and the West Terminal Area would be underway. In addition, to develop a "worst case" scenario for employee traffic, it was assumed that all employees drive to the airport for work. This is a conservative (i.e., results in more project impacts) assumption.

Under this scenario, the number of employees arriving during this peak quarter (12<sup>th</sup> quarter) would be approximately 4,520 employees for the 1<sup>st</sup> shift. If these employees were to arrive from different directions and the start and end of the "1<sup>st</sup> shift" was offset from the traffic peak-period, then the traffic impact at the airport and on the surrounding areas would be substantially reduced or eliminated. As part of Master Plan Commitment ST-13, Construction Employee Parking Locations (Alternatives A, B, and C), employee parking areas along the east end of the airport and other locations would be established with shuttle buses to the actual construction sites. This procedure would aid in minimizing congestion and maintaining airport safety/security requirements. In addition, remote parking locations, such as LAWA airports at Palmdale, Van Nuys, and Ontario, may be established as part of Master Plan Commitment ST-13, and shuttle bus service will be provided to the LAX construction sites.

#### **Alternative D - Enhanced Safety and Security Plan**

The highest workforce level would be experienced during 2007 and 2008, which would be the peak construction years. The anticipated maximum quarterly work is 3,895,000 work hours, which would occur during 2007. Assuming 13 weeks per quarter, and 50 hours workweek, the workforce would equate to approximately 5,992 personnel. It is further assumed that 77 percent of the workforce would occur during the first shift, 15 percent during the second shift, and 8 percent during the third shift.

It is also assumed that worker commute trips would arrive from the Los Angeles basin via I-405 from the north and south and I-105 and the Green Line from the east. The destination of these commute trips is assumed to be at either the respective staging areas or alternate parking locations, arranged for by individual contractors, in the vicinity of the airport. Workers could then be shuttled to the work site at the beginning of the shift and back to the staging area or alternate parking locations at the end of the shift.

### **Earthwork and Aggregate Quantities**

For all build alternatives, earthwork quantities were estimated to determine on-site cut-and-fill volume, borrow fill volume, and volume of unsuitable soil materials to be hauled away from the construction site.

## 4.20 Construction Impacts

The quantity estimate assumed that the existing concrete and asphalt from airfield and roadways would be recycled, and that 75 percent of the recycled material would be reusable aggregate for airfield Portland cement concrete (PCC) and roadway subbase. The remaining 25 percent would be recycled as general fill material.

### Alternatives A, B, and C

An estimate of the earthwork quantities for Alternatives A, B, and C is presented in **Table F4.20-6**, Earthwork Quantities - Alternatives A, B, and C.

<b>Phase I</b>	<b>Alternative</b>		
	<b>A</b>	<b>B</b>	<b>C</b>
On-Site Cut to Fill	4,626	5,267	4,626
Borrow Fill	3,980	3,800	4,030
Unsuitable Soil	3,240	3,520	3,254
<b>Phase II</b>			
On-Site Cut to Fill	2,236	2,643	2,198
Borrow Fill	5,650	8,388	5,660
Unsuitable Soil	2,245	2,264	2,032

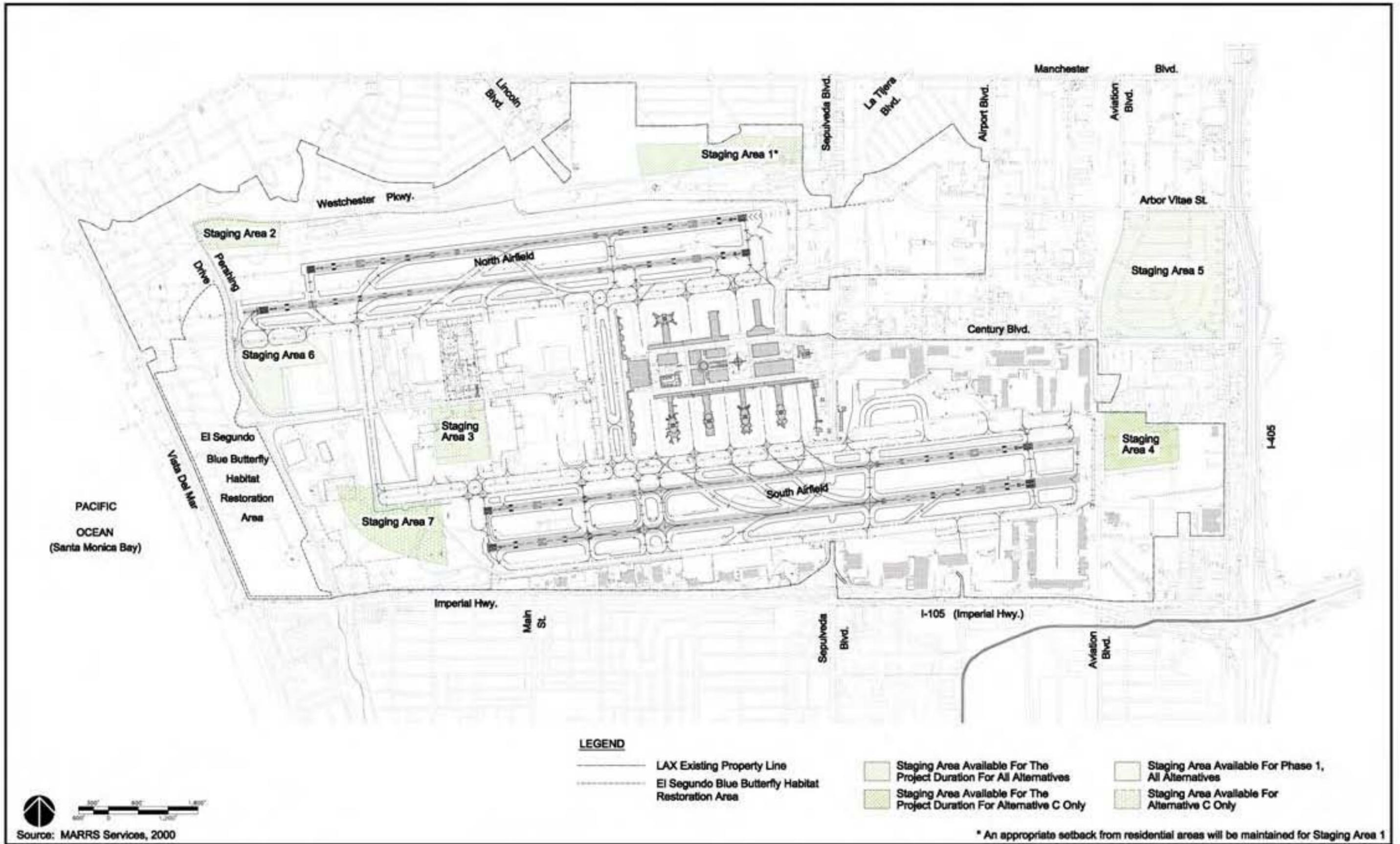
Source: Bechtel Corporation, LAX Master Plan Compilation of DEIS Input Data, Alternative C Construction Impacts, April 28, 2000.

**Table F4.20-7**, Estimated Aggregate Consumption for Build Alternatives, presents an estimate of the aggregate consumption by aggregate use category for all four build alternatives.

<b>Aggregate Use</b>	<b>Alternative</b>			
	<b>A</b>	<b>B</b>	<b>C</b>	<b>D</b>
Pavement - Airfield	6,588,000	8,474,000	7,612,000	6,210,000
Pavement - Roads	2,377,000	2,199,000	1,823,000	486,000
Structure - Buildings	4,000,000	3,400,000	3,723,000	3,826,000
Structure - Roadway	7,512,000	6,781,000	5,214,000	986,000
Total Aggregates	20,477,000	20,854,000	18,372,000	11,418,000

Sources: Bechtel Corporation, 2000; MARRS Services, Inc., 2003.

The conceptual construction plan considers recycling of demolition materials to reduce imported aggregate quantities. The plan provides for the use of concrete and asphalt batch plants in some staging areas. The locations of these batch plants are not known at this time.



Source: MARRS Services, 2000



## Alternative D - Enhanced Safety and Security Plan

An estimate of earthwork quantities for Alternative D is presented in **Table F4.20-8**, Earthwork Quantities - Alternative D.

	<b>Alternative D</b>
On-Site Cut to Fill	2,857
Borrow/Disposal Fill	-1,456 <sup>1</sup>
Unsuitable Soil	1,264

<sup>1</sup> Negative value indicates excess material requiring disposal.

Source: MARRS Services, Inc., 2003.

An estimate of aggregate consumption for Alternative D is shown in **Table F4.20-7** above. Similar to Alternatives A, B, and C, the conceptual construction plan considers recycling of demolition materials to reduce imported aggregate quantities. The plan provides for the use of concrete and asphalt batch plants in some staging areas. The locations of these batch plants are not known at this time.

### **Construction Noise**

Construction activities typically generate noise from the operation of equipment required for demolition and construction of various facilities. **Table F4.20-9**, Typical Construction Equipment Noise Levels, lists the range of typical noise levels associated with basic construction equipment types. The actual noise level would vary, depending upon the equipment model and the type of work activity being performed. All of the build alternatives would require similar types of equipment, involving work activities related to demolition, earthwork, foundations, utilities, structures, and pavement.

## 4.20 Construction Impacts

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Table F4.20-9

Typical Construction Equipment Noise Levels

Equipment	Noise Level (dBA) at 50 feet
Compactor (Rollers)	72 - 74
Front Loaders	72 - 84
Backhoes	72 - 93
Tractors	72 - 95
Scrapers, Graders	80 - 93
Pavers	85 - 87
Trucks	81 - 95
Concrete Mixers	74 - 87
Concrete Pumps	81 - 84
Cranes (Moveable)	74 - 88
Cranes (Derrick)	86 - 88
Pumps	69 - 71
Generators	72 - 82
Compressors	74 - 88
Pneumatic Wrenches	82 - 88
Jack Hammers and Rock Drills	81 - 95
Pile Driver (Peaks)	93 - 108
Vibrator	69 - 81
Saws	72 - 81

Source: U.S. Environmental Protection Agency, Noise from Construction Equipment & Operations, December 31, 1971.

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## Road Closure and Detour Plan

### **Alternatives A, B, and C**

Alternatives A, B, and C would involve reconstruction and improvements of several highways, interchanges, and street projects. Both Alternatives A and B would involve relocation of portions of south Aviation Boulevard toward the east and other modifications, including the Aviation Boulevard/Arbor Vitae Street interchange. Alternatives A, B, and C would also include reconstruction and improvement projects for Sepulveda Boulevard, including the Sepulveda Boulevard tunnel, Sepulveda Boulevard/Westchester Parkway interchange, and Sepulveda Boulevard/Century Boulevard interchange; Westchester Parkway including the Westchester Parkway/Lincoln Boulevard interchange; and WTA access roads from Imperial Highway and Westchester Parkway. Other improvement projects would include Pershing Drive, LAX Expressway, the northeasterly portion of the ring road from I-405 to Sepulveda Boulevard, and Imperial Highway. The critical issues relating to these projects involve maintenance of traffic in the immediate construction zone, and handling of the additional traffic related to transportation of construction materials and crew. Conceptual level road closure and detour plans have been evaluated for major road reconstruction/improvement projects and are discussed below.

### **Aviation Boulevard**

Alternatives A, B, and C would require significant reconstruction and improvement work along Aviation Boulevard. Alternative A would make relatively minor changes in the north section of the boulevard, but would involve major relocation of the south section to accommodate runway extensions. Alternative B would make major changes to both the north and south sections. Alternative C would make major changes to the north section, but minor improvements to the south section. For Alternatives A and B, the south section would require the completion of two bridges and a new roadway on the eastside of the exiting roadway. The existing road may be used as a detour until the new roadway is complete. Alternative C would have minor impacts on the Aviation Boulevard south section. For the north section, Aviation Boulevard would have to be closed at the Arbor Vitae Street crossing. Through traffic may be rerouted to a detour along the east side of Aviation Boulevard between Arbor Vitae and Imperial Highway. Alternative B would require the same detour system, but would also require far more planning and rerouting of traffic to accommodate construction of the road paralleling Aviation Boulevard and intersecting with Arbor Vitae Street west of the existing road. Alternative A would require detouring only

around the Arbor Vitae Street crossing. The duration of road closures and detours for the south section would remain in full effect for the duration of the construction period for Alternatives A and B. The road closures and detours for the north section would remain in effect for the full construction duration under Alternatives A, B, and C. The total construction duration is anticipated to be 2 years for the south section and 1.5 years for the north section.

### **Sepulveda Tunnel North of CTA and Sepulveda/Westchester Interchange**

Alternatives A, B, and C would require the same interchange alterations and construction of a tunnel. However, Alternative A would require a tunnel that is approximately 25 percent longer than the one that would be required for Alternatives B and C. Therefore, this would require proportionately more time to construct than the 2 to 2.5 years for Alternatives B and C. All three of these alternatives would complete this work in Phase I. The duration of road closures and detours is expected to last approximately one half of their estimated 2 to 2.5 year construction period. A detour would be provided along the edge of the airfield on the west side of Sepulveda north of Century Boulevard.

### **Lincoln/Westchester Interchange**

Alternatives A, B, and C would involve the same improvements to this interchange and would complete the work within the Phase I timeframe. A portion of Lincoln Boulevard west of Sepulveda Boulevard would be used to reroute traffic from the existing interchange and the new interchange. Portions of Lincoln Boulevard south of Westchester Parkway would be removed when the interchanges are completed. The duration of road closures and detours would vary, but would total approximately one half of the estimated 2 year construction period.

### **Westchester Parkway Modifications**

Although the magnitude of work for the Westchester Parkway modifications would be similar among Alternatives A, B, and C, it would be completed in Phase I for Alternatives A and C and Phase II for Alternative B. During construction, traffic would be diverted to a temporary detour on the south side of Westchester Parkway. The duration of the road closures and detours is estimated to require one half of the estimated 2-year construction period.

### **Sepulveda Tunnel Extension (South)**

Alternatives A and B would both include extensions of the existing Sepulveda tunnel. However, the proposed tunnel extension length for Alternative B would be two to three times the tunnel extension for Alternative A in order to accommodate an extra runway across Sepulveda Boulevard towards south of the existing runways. Alternative B would complete this work in Phase I, while Alternative A would complete the work in Phase II. The extension of the existing tunnel between Century Boulevard and Imperial Highway would require closing some, if not all, lanes of Sepulveda Boulevard. It may be possible to close only one side of Sepulveda Boulevard and divert traffic to the Aviation Boulevard detour. The duration of the road closures and detours could vary up to the full estimated construction period. The construction period for Alternative B is anticipated to be 16 months, with Alternative A having a somewhat shorter duration of construction.

### **WTA Access Roads (Phases 1 and 2)**

This improvement would involve construction modifications to Pershing Drive and construction of new access roads from Imperial Highway and Westchester Parkway to the WTA. The magnitude of work for Alternatives A and B would be very similar, while the conceptual road configuration and layout for Alternative C would be substantially different than the other two alternatives. For each alternative, the work would begin in Phase I and be finished in Phase II. The work is anticipated to take approximately 2 to 3 years in Phase I, and 3 years in Phase II, with Alternative C having a longer construction period for Phase II than the other two alternatives. It is assumed that Pershing Drive would be closed, with "through" traffic between Westchester Parkway and Imperial Highway being diverted to Vista del Mar. This would divert all through traffic away from the construction site for the duration of the work.

To minimize traffic impacts, a series of Master Plan commitments have been developed to address road closures. These commitments are listed in Section 4.3, *Surface Transportation*. As indicated in that section, road closures would be subject to the following major considerations:

- ◆ Other than short time periods during nighttime construction, existing roadways would remain open until viable temporary detour routes become available.

## 4.20 Construction Impacts

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- ◆ A construction traffic plan will be developed to designate detour and/or haul routes, variable message and other sign locations, communication methods with airport passengers, construction deliveries, construction employee shift hours, construction employee parking locations and other relevant factors.

### Alternative D - Enhanced Safety and Security Plan

Alternative D includes the construction of new on-airport access roads connecting the GTC and the ITC to I-105 and arterial roadways including Aviation Boulevard, La Cienega Boulevard, Century Boulevard and Imperial Highway. Vehicle circulation at the GTC would be provided via two, one-way loop roads. Access to the ITC would be provided from both at-grade roads and, if recommended Mitigation Measure MM-ST-12, Provide New Ramps Connecting I-105 to LAX Between Aviation Boulevard and La Cienega Boulevard (Alternative D), is implemented, from I-105 via an elevated roadway. The continuation of this roadway to the north would also connect the ITC with the GTC. Improvements to the existing arterial roadways include the construction of an additional northbound lane on La Cienega Boulevard from 111<sup>th</sup> Street to Arbor Vitae Street, an additional southbound lane on La Cienega Boulevard from Century Boulevard to 104<sup>th</sup> Street, an additional lane eastbound and westbound on Arbor Vitae Street from Aviation Boulevard to La Cienega Boulevard, an additional lane northbound and southbound on Aviation Boulevard from Arbor Vitae Street to Imperial Highway, an additional lane in each direction on 111<sup>th</sup> Street between Aviation Boulevard and La Cienega Boulevard, and improvements on Century Boulevard east of Aviation Boulevard.

In addition, Alternative D includes the construction of an APM system connecting the ITC, GTC, and RAC to the CTA. The construction of the APM system would require partial lane closures at locations where the system crosses over or runs parallel to the existing arterial roadways. These locations are identified along 98<sup>th</sup> Street, Century Boulevard and Aviation Boulevard, and crossings over Sepulveda Boulevard, Airport Boulevard, Aviation Boulevard and Century Boulevard. Alternative D also includes construction of an underground baggage tunnel system along 98<sup>th</sup> Street - connecting the GTC to the CTA. The construction of the baggage tunnel system would require the temporary closure of 98<sup>th</sup> Street from Airport Boulevard to Aviation Boulevard.

The critical issues relating to these projects involve maintaining the traffic in the immediate construction zone, and handling of the additional traffic related to transportation of construction materials and crew. A summary of the road closure plan is shown in **Table F4.20-10**, Alternative D Road and Lane Closure Plan. A complete detour and closure plan would be developed by the contractor for each construction site to address scheduled closures and designated detour routes in accordance with the construction program policies and the construction contracts requirements. Conceptual level road closure and detour plans have been evaluated and are discussed below.

Table F4.20-10

## Alternative D Road and Lane Closure Plan

Affected Road	Closure <sup>1</sup>	Closure Location	Closure Period (months)	Project
98th Street	LC	Airport Blvd. to Sepulveda Blvd.	6	Baggage Tunnels
98th Street	RC	Airport Blvd. to Aviation Blvd.	9	Baggage Tunnels/APM - CTA/TAC/ITC
98th Street	LC	Airport Blvd. to Sepulveda Blvd.	12	APM - CTA/RAC/ITC Loop
Century Blvd.	LC	East of Aviation Blvd.	15	GTC-ITC Bridge over Century; lane addition
Century Blvd.	LC	Sepulveda Blvd. to Aviation Blvd.	9	APM - CTA/GTC Loop
Avion Drive	RC	Airport Blvd. to Aviation Blvd.	9	APM - CTA/GTC Loop
Aviation Blvd.	LC	Arbor Vitae Street to Imperial Hwy	12	Lane addition & connector to GTC
Imperial Hwy	LC	East of Aviation Blvd.	3	Pedestrian Bridge to ITC
Imperial Hwy	LC	Aviation Blvd. to La Cienega Blvd.	3	ITC to I-105 Aerial Ramp
Arbor Vitae Street	LC	Aviation Blvd. to La Cienega Blvd.	9	Lane addition and Access to the Commercial Vehicle Holding Area in the GTC
La Cienega Blvd.	LC	Arbor Vitae Street to Imperial Hwy	12	Lane addition & connector to GTC
Existing Airport	LC	Existing airport arrival and departure loops	9	Demo CTA Parking Structures
Departure & Arrival Loops	LC		30	CTA Terminals & APM Circulator
	LC		12	Tunnels CTA to Satellite Concourse
	LC		24	TBIT Rework
	LC		24	North & South CTA Concourses
Center Airport Exit and Return Road	RC	Center Airport Exit and Return Road	9	Demo of CTA Parking Structures.
	RC		30	Construct CTA Terminals, APM, and APM Stations

<sup>1</sup> RC = Road Closure; LC = Lane Closure.

Source: MARRS Services, Inc., 2003.

### **98<sup>th</sup> Street**

On 98<sup>th</sup> Street between Airport Boulevard and Aviation Boulevard, the construction of the baggage tunnel and construction of the foundations and structure of the APM system would require street closures for 9 months. A detour to 96<sup>th</sup> Street would be provided during this time. Partial westbound lane closures between Airport Boulevard and Sepulveda Boulevard would be required for 6 months for construction of the baggage tunnel and 12 months for the APM. During these lane closures, traffic may be routed to 96<sup>th</sup> Street.

### **Century Boulevard**

Partial eastbound lane closures are anticipated on Century Boulevard for the construction of the APM System (CTA - GTC Loop) for a period of about 9 months during construction. In addition, Century Boulevard eastbound and westbound lanes east of Aviation Boulevard would be impacted by the construction of the GTC aerial roadway bridge over Century Boulevard and by the construction of connector lanes from eastbound Century Boulevard to the aerial roadways. This would require partial lane closures for approximately 15 months. Also, the Century Cargo Access improvements are scheduled for construction during this period and would require partial eastbound lane closures. Traffic exiting the airport CTA may be encouraged to use southbound Sepulveda Boulevard for I-105 Freeway and Imperial Highway access, and to use northbound Sepulveda Boulevard to La Tijera Boulevard for access to the I-405 Freeway. These alternative routes may stay in effect for over two years.

### **Avion Drive**

Depending on the final alignment of the APM loop, it is possible that portions of Avion Drive would be closed for 9 months. Businesses using Avion Drive may be provided alternate access from 104<sup>th</sup> Street and from Aviation Boulevard. Since this street is within airport property, this closure will not greatly affect non-airport traffic.

## **4.20 Construction Impacts**

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### **Aviation Boulevard**

Alternative D includes the addition of one northbound lane and one southbound lane to Aviation Boulevard from Imperial Highway to Arbor Vitae Street. This would require the closure of one lane during the construction periods of the respective sections. Through traffic may be encouraged to use La Cienega Boulevard as an alternative route. The duration of this lane closure would remain in effect for the 12-month duration of construction. During this period, the connector from Aviation Boulevard to the GTC/ITC aerial roadways would also be constructed.

### **Imperial Highway**

The construction of the pedestrian bridge over Imperial Highway to the ITC would require partial lane closures on Imperial Highway for a 3-month period. Also, construction of the aerial connector from I-105 to the ITC roadways would require partial westbound lane closures for 3 months.

### **Arbor Vitae Street**

The project includes the addition of one eastbound lane and one westbound lane on Arbor Vitae Street from Aviation Boulevard to La Cienega Boulevard. This would require the closure of one eastbound lane during the construction period. Alternative D also includes the improvements for access from Arbor Vitae Street to the Commercial Vehicle Holding Area at the GTC. This project may require partial lane closure for a 9-month period. During this period, through traffic may be encouraged to use Century Boulevard or Manchester Avenue as alternative routes.

### **La Cienega Boulevard**

Alternative D includes the addition of one northbound lane from 111<sup>th</sup> Street to Arbor Vitae Street and one southbound lane from Arbor Vitae Street to 104<sup>th</sup> Street. This would require the closure of one lane during the construction periods of the respective sections. The lane closures would remain in effect for the 12-month duration of construction. During this period, through traffic may be encouraged to use Aviation Boulevard as an alternative route.

### **Airport Departure & Arrival Loops**

Alternative D requires substantial demolition and construction activities for the various airport projects in the immediate vicinity of the airport departure and arrival loops. It is possible that lane closures would be in effect in different locations along these loops during the construction period. Such lane closure could be in effect for a period of about 51 months during the Phase I construction and for a period of about 38 months during Phase III construction.

### **Center Airport Exit and Return Road**

The center airport exit and return road between the existing parking structures may be impacted during the demolition and construction activities of the CTA new terminals and during the construction of the APM loops and stations serving the new terminals. The easterly and westerly sections of this road may be closed with controlled intersections at the locations where the center road intersects with the ground level airport return loops. This closure may be in effect for 39 months for the demolition of the CTA parking structure and construction of the CTA Landside Terminal, and the airport exit and return public traffic may be restricted to the airport departure and arrival loops.

### **Staging Area Plan**

#### **Alternatives A, B, and C**

**Figure F4.20-1**, Potential Staging Areas - Alternatives A, B, and C, depicts the location of potential construction staging areas for Alternatives A, B, and C. Other spaces may be available for construction staging areas, but they have not been identified at this point in the planning process. Four preliminary staging areas that have been identified include the following:

- ◆ Staging Area 1: West of Sepulveda Boulevard and north of Westchester Parkway.
- ◆ Staging Area 2: South of Westchester Parkway and east of Pershing Drive.
- ◆ Staging Area 3: Between the airfields, halfway between the CTA and the proposed WTA.
- ◆ Staging Area 4: At the east end of the south airfield, east of Aviation Boulevard.

Staging Areas 1 through 3 appear to be feasible for Alternatives A, B, and C. Staging Area 4 would not be available for Alternatives A and B due to reconstruction of the Aviation Boulevard south section. Three additional staging areas have been identified for the Alternative C, Phase I construction period. These include:

- ◆ Staging Area 5: At the southeast corner of Aviation Boulevard and Arbor Vitae Street.
- ◆ Staging Area 6: The southwest corner of north airfield runways.
- ◆ Staging Area 7: At the west end of the south airfield, north of Imperial Highway.

The staging areas were located in the vicinity of project sites to reduce travel distances, and to allow for construction related activities to stay clear of residential areas and airfield safety zones. When practical, the project construction was staged to use a portion of the construction site as a staging area in order to optimize space use. An example of such use is Staging Area 5, at the southeast corner of Aviation Boulevard and Arbor Vitae Street. No staging would occur within the Los Angeles/El Segundo Dunes.

As indicated in the earlier discussion of earthwork and aggregate quantities, concrete and asphalt batch plants would be provided on-site. The asphalt and concrete batch plants would likely be set up in one or more of the staging areas available. Major considerations for where to locate the batch plants would include access to incoming trucks from offsite locations, access to construction sites, interference with the airport access routes, and environmental factors relating to air quality, noise, and water quality. The batch plants would receive concrete and asphalt deliveries from off-site and recycled aggregate and fill materials from on-site for storage and processing.

### Alternative D - Enhanced Safety and Security Plan

**Figure F4.20-2**, Staging Areas Alternative D, depicts the location of potential construction staging areas for Alternative D. The potential staging areas have been identified in the vicinity of project sites to reduce travel distances; and away from the residential areas and airfield safety zones. Whenever practical, the project construction would be staged to use a portion of the construction site as a staging area.

Six preliminary staging areas that have been identified include the following:

- ◆ Staging Area 1: West of Sepulveda Westway and north of Westchester Parkway
- ◆ Staging Area 2: South of Westchester Parkway and east of Pershing Drive
- ◆ Staging Area 3: In the Midfield area, east of the proposed west employee parking garage and north of the replacement hangars
- ◆ Staging Area 4: West end of the south runways, north of Imperial Highway and east of Pershing
- ◆ Staging Area 5: West end of the south runways, east of staging area 4
- ◆ Staging Area 6: East of the Consolidated Rental Car Facility

Additional staging areas can be created by phasing the construction of major projects such as open space between the Southeast Surface Parking and Airside Roads (Staging Area 8). Also, the GTC project site can be used as a staging area until the GTC project construction is scheduled to start (Staging Area 7). Other pockets of spaces may be available on project sites such as the GTC, RAC, and CTA Landside Terminal that cannot be identified at this stage of facility development.

There are numerous existing surface parking lots in the vicinity of Arbor Vitae, Airport and Aviation Boulevards that are considered as potential short-term and temporary staging areas.

The asphalt and concrete batch plants would likely be set up in one of the first five of the six staging areas. Major considerations for where to locate the batch plants would include access to incoming trucks from offsite locations, access to construction sites, interference with the airport access routes, and environmental factors relating to air quality, noise, and water quality.

### 4.20.4 Thresholds of Significance

A significant impact resulting from construction activities would occur if any of the build alternatives were to exceed the significance thresholds utilized for each environmental discipline. These thresholds are provided in Sections 4.1, *Noise*, through 4.27, *Schools* (excluding this section). Federal standards pertaining to construction impacts are also provided in these sections, where applicable, and the analysis

## **4.20 Construction Impacts**

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presented in this section fulfills the requirements of Section 47(e)(20) of FAA Order 5050.4A, *Airport Environmental Handbook*, relative to the need to address construction impacts.

### **4.20.5 Master Plan Commitments**

As addressed in subsection 4.20.6, *Environmental Consequences*, implementation of any of the Master Plan alternatives would result in potential impacts from construction activities. In recognition of these potential impacts, LAWA has included the construction commitments listed below in the Master Plan, coded "C" for "Construction." In addition, the provisions and specifications of FAA Advisory Circular 150/5370-10, "Standards for Specifying Construction of Airports," would be incorporated into project construction.

#### **◆ C-1. Establishment of a Ground Transportation/Construction Coordination Office (Alternatives A, B, C, and D).**

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 will periodically analyze traffic conditions on designated routes during construction to see whether there is a need to improve conditions through signage and other means.

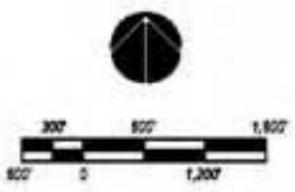
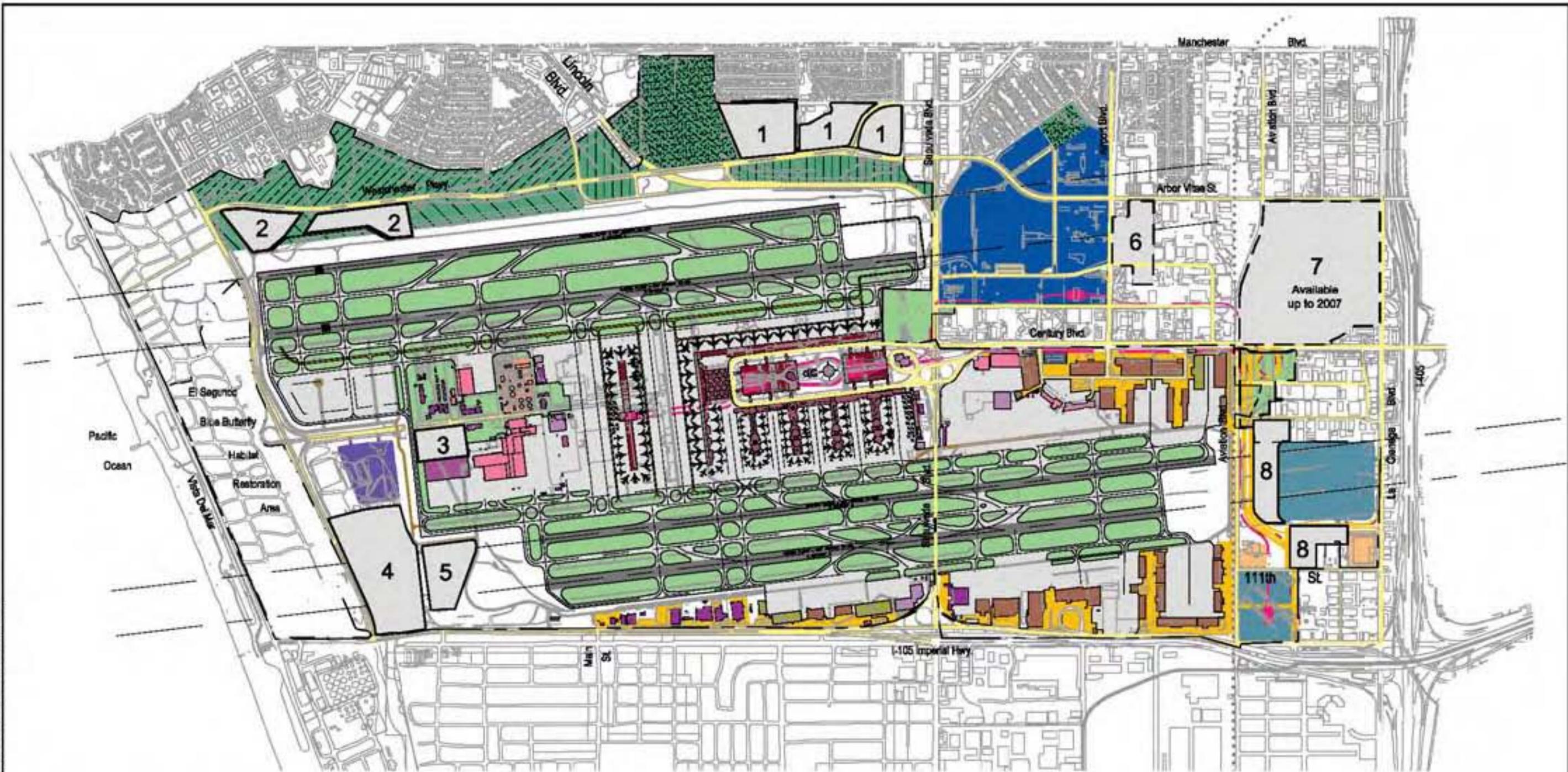
This office may undertake a variety of duties, including but not limited to:

- ◆ 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.

#### **◆ C-2. Construction Personnel Airport Orientation (Alternatives A, B, C, and D).**

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.

In addition, LAWA has included the following construction-related commitments in the Master Plan pertaining to the disciplines listed below. These commitments are discussed in further detail in their respective sections. The environmental disciplines not listed below have no construction-related Master Plan commitments.



**LEGEND**

- STAGING AREAS
- LAX EXISTING PROPERTY LINE
- EL SEGUNDO BLUE BUTTERFLY PRESERVE
- LAX FUTURE PROPERTY LINE



## **Surface Transportation**

### **On-Airport**

- ◆ ST-2. Non-Peak CTA Deliveries (Alternatives A, B, C, and D).
- ◆ ST-3. Construction Traffic Uses Upper Level (Alternatives A, B, and C).
- ◆ ST-4. Limited Short-Term Lane Closures (Alternatives A, B, and C).
- ◆ ST-5. Additional Lot C Shuttles (Alternatives A, B, and C).
- ◆ ST-6. Removal of Spoil Material (Alternatives A, B, and C).
- ◆ ST-7. Adequate GTC, ITC, and APM Design (Alternative D).
- ◆ ST-8. Limited Short-Term Lane Closures (Alternative D).

### **Off-Airport**

- ◆ ST-9. Construction Deliveries (Alternatives A, B, C, and D).
- ◆ ST-10. Designated Truck Routes (Alternatives A, B, and C).
- ◆ ST-11. Stockpile Locations (Alternatives A, B, and C).
- ◆ ST-12. Designated Truck Delivery Hours (Alternatives A, B, C, and D).
- ◆ ST-13. Construction Employee Parking Locations (Alternatives A, B, and C).
- ◆ ST-14. Construction Employee Shift Hours (Alternatives A, B, C, and D).
- ◆ ST-15. Separation of Construction Traffic (Alternatives A, B, and C).
- ◆ ST-16. Designated Haul Routes (Alternatives A, B, C, and D).
- ◆ ST-17. Maintenance of Haul Routes (Alternatives A, B, C, and D).
- ◆ ST-18. Construction Traffic Management Plan (Alternatives A, B, C, and D).
- ◆ ST-19. Closure Restrictions of Existing Roadways (Alternatives A, B, C, and D).
- ◆ ST-20. Stockpile Locations (Alternative D).
- ◆ ST-21. Construction Employee Parking Locations (Alternative D).
- ◆ ST-22. Designated Truck Routes (Alternative D).

## **Energy Supply and Natural Resources**

### **Energy Supply**

- ◆ E-2. Coordination with Utility Providers (Alternatives A, B, C, and D).

### **Solid Waste**

- ◆ SW-2. Requirements for the Use of Recycled Materials During Construction (Alternatives A, B, C, and D).
- ◆ SW-3. Requirements for the Recycling of Construction and Demolition Waste (Alternatives A, B, C, and D).

### **Hazardous Materials**

- ◆ HM-1. Ensure Continued Implementation of Existing Remediation Efforts (Alternatives A, B, C, and D).
- ◆ HM-2. Handling of Contaminated Materials Encountered During Construction (Alternatives A, B, C, and D).

## 4.20 Construction Impacts

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### Public Utilities

- ◆ PU-1. Develop a Utility Relocation Program (Alternatives A, B, C, and D).

### Public Services

- ◆ PS-1. Fire and Police Facility Relocation Plan (Alternatives A, B, C, and D).

The above commitments are provided in their entirety in Chapter 5, *Environmental Action Plan*.

### 4.20.6 Environmental Consequences

This subsection describes the potential environmental impacts due to construction activities for the No Action/No Project Alternative and the four build alternatives. The following environmental disciplines are not discussed in this subsection, either because there are no construction-related impacts or because construction impacts are not distinguished from operational impacts in the relevant sections.

- ◆ Relocation of Residences or Businesses
- ◆ Induced Socio-Economic Impacts (Growth Inducement)
- ◆ Floodplains
- ◆ Wild and Scenic Rivers
- ◆ Farmland
- ◆ Human Health and Safety<sup>750</sup>

As described in the Analytical Framework discussion in the introduction to Chapter 4, the basis for determining impacts under CEQA is different from that of NEPA. Under CEQA, the impacts of a proposed project and alternatives are measured against the "environmental baseline," which is normally the physical conditions that existed at the time the Notice of Preparation was published (i.e., June 1997, or 1996 when a full year of data is appropriate, for the LAX Master Plan Draft EIS/EIR). As such, the CEQA analysis in this Final EIS/EIR uses the environmental baseline, or in some cases an "adjusted environmental baseline," as the basis by which to measure and evaluate the impacts of each alternative. Under NEPA, the impacts of each action alternative (i.e., build alternative) are measured against the conditions that would otherwise occur in the future if no action were to occur (i.e., the "No Action" alternative). As such, the NEPA analysis in this Final EIS/EIR uses the No Action/No Project Alternative as the basis by which to measure and evaluate the impacts of each build alternative (i.e., Alternatives A, B, C, and D) in the future (i.e., at buildout in 2015 or, for construction-related impacts, selected future interim year). Based on this fundamental difference in the approach to evaluating impacts, the nature and significance of impacts determined under CEQA are not necessarily representative of, or applicable to, impacts determined under NEPA. The following presentation of environmental consequences should, therefore, be reviewed and considered accordingly.

#### 4.20.6.1 No Action/No Project Alternative

##### Noise

Under the No Action/No Project Alternative, construction activities near noise-sensitive uses would include those for LAX Northside, Continental City, and the demolition of residential uses in Belford and Manchester Square. Each of these construction efforts is discussed separately below.

The closest distance between demolition activities and noise-sensitive uses, such as residences, would be approximately 450 feet. As discussed in subsection 4.1.3.3, *Construction Traffic and Equipment Noise*, typical maximum sustained construction noise levels at 50 feet are 86 decibels (dBA). Outdoor construction activities that generate 86 dBA measured at 50 feet from the activity would typically generate noise levels of 72 dBA at 450 feet. As ambient noise levels are approximately 68 dB, this would be only a 4 dBA increase in noise level due to construction noise. No nighttime construction or demolition would occur in areas close to residential uses. Arbor Vitae Street and large warehouse uses would separate the demolition noise and residential areas, and would buffer the noise in the residential areas. In addition,

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<sup>750</sup> Due to the nature of human health risk impacts, construction impacts are considered together with operational impacts in Section 4.24.1, *Human Health Risk Assessment*.

demolition within the Belford area, which is the area closest to off-airport residential uses, would occur for only a few days.

Noise-sensitive uses closest to Continental City are single-family dwellings located 1,000 feet or more to the south across Imperial Highway in the community of Del Aire. This area experiences considerable ambient noise from the I-405 freeway, the Burlington Northern and Santa Fe railroad, the MTA Green Line, aircraft, and Imperial Highway. Projected ambient noise levels during construction are estimated to be 65 dBA Leq. Construction noise of 86 dBA Leq would dissipate to approximately 67 dBA Leq at the closest noise-sensitive land uses, and the roadway and other noise would mask the construction noise.

Noise-sensitive uses about LAX Northside along its northern border in areas where ambient noise levels are estimated to be at 62 to 66 dBA Leq, primarily due to aircraft. Under the No Action/No Project Alternative, on-airport construction would occur initially, with construction of LAX Northside and Continental City continuing until 2015. No nighttime activities are anticipated for that construction. Outdoor construction noise at 86 dBA Leq would dissipate to 67 dBA Leq (5 dB above ambient) within 800 feet if there were no obstructions. However, considering the presence of existing houses and landscaping that would buffer the noise, it is estimated that construction noise would dissipate to no more than 67 dBA within 600 feet of the noise source. Nevertheless, construction activities would result in noise levels of 5 dBA Leq over ambient levels near some sensitive residential and school uses.

### **Land Use**

There would be periodic construction activity through 2015 associated with new cargo facilities, taxiway improvements, a parking structure, the demolition of Manchester Square and Belford, and the development of the LAX Northside and Continental City sites. Construction noise level effects on noise-sensitive uses near Manchester Square and Belford, and on Continental City were determined not to be perceptible above background noise levels due to either distance of construction activities or intervening structures.

Noise and air emissions of construction would affect sensitive land uses along the northern boundary of the LAX Northside project. The most notable adverse effect on adjacent land uses would be construction noise. As further described in Section 4.1, *Noise*, there would be impacts in noise-sensitive areas located within 600 feet of the LAX Northside project. These include approximately 970 dwelling units, five schools, and two churches, all within the City of Los Angeles. Affected schools would include Paseo del Rey Magnet School, Visitation Elementary School, Westchester-Emerson Community Adult School, Westchester High School, and Saint Bernard High School.

### **Surface Transportation**

Under the No Action/No Project Alternative, no major airport-related transportation changes or improvements would occur. Surface traffic impacts from LAX Northside and Continental City projects are included in the traffic counts for the No Action/No Project Alternative and would contribute to the overall traffic impacts. In addition, construction traffic for these projects would likely create substantial adverse impacts. There are no adopted policies for those projects that would preclude traffic generation during peak periods, and it is very likely that construction worker trips would occur during AM and PM peak hours.

### **Social Impacts**

#### **Employment/Socio-Economics**

Under the No Action/No Project Alternative, limited construction would occur. Construction-related employment and expenditures would not result in any notable adverse socio-economic or employment impacts.

#### **Environmental Justice**

Construction of the LAX Northside project under the No Action/No Project Alternative would occur adjacent to non-minority/non low-income areas of Westchester. Based on the 2000 U.S. Census, minority communities are located in proximity to Continental City and would be subject to construction impacts under the No Action/No Project Alternative. Impacts on minority populations would occur within the Manchester Square neighborhood due to demolition activities associated with LAWA's voluntary acquisition and relocation program.

### **Community Disruption and Alteration of Surface Transportation Patterns**

Under the No Action/No Project Alternative, no major airport-related transportation changes or improvements would occur. There would be a temporary division and disruption of neighborhoods with phased acquisition and clearing of properties under the ANMP, until Belford and Manchester Square are vacant. These areas are largely surrounded by commercial and industrial uses and are isolated from other residential neighborhoods. As a result, the change in land use from residential to airport use and the closure of local streets would not divide or disrupt existing land uses or planned development or compromise access to community services, facilities, recreational areas, residences, or businesses. During construction of LAX Northside, construction traffic would have the potential to temporarily compromise access to portions of the Westchester community.

### **Air Quality**

Construction activities under the No Action/No Project Alternative would result in emissions from construction equipment, haul vehicles, earth-moving activities, and employee vehicles. The peak year emission inventories for the No Action/No Project Alternative indicate that incremental construction emissions would exceed the South Coast Air Quality Management District's (SCAQMD's) construction emissions thresholds for carbon monoxide (CO), volatile organic compounds (VOC), nitrogen oxides (NO<sub>x</sub>), sulfur dioxide (SO<sub>2</sub>), and particulate matter (PM<sub>10</sub>). Unpaved construction haul roads would be periodically watered-down to reduce fugitive dust. Construction equipment would be properly maintained to reduce vehicle emissions. For purposes of the CEQA significance determination, a combined peak concentration for construction and on-airport operational sources was developed. An individual concentration for construction-related sources was not developed, so the significance of the combined concentration was conservatively assumed for construction-related sources. The maximum combined concentrations for construction and on-airport operational sources for the No Action/No Project Alternative would exceed the 24-hour and annual California Ambient Air Quality Standard (CAAQS). PM<sub>10</sub> concentration impacts from the No Action/No Project Alternative would exceed standards after the attainment date for PM<sub>10</sub> (December 31, 2006).

### **Hydrology and Water Quality**

Under the No Action/No Project Alternative, construction of LAX Northside and Continental City, as well as other improvements at LAX, could create sources of pollution that could potentially affect water quality. As these construction activities would affect an area of greater than one acre, LAWA's existing construction policy would require the development of a construction Storm Water Pollution Prevention Plan (SWPPP) in compliance with the state's NPDES storm water Construction Permit. Section 4.7, *Hydrology and Water Quality*, provides further information on the SWPPP. As described in Technical Report 6, *Hydrology and Water Quality Technical Report*, temporary construction Best Management Practices (BMPs) specified in LAWA's existing Construction SWPPP for LAX include: soil stabilization (erosion control) techniques such as seeding and planting, mulching, and check dams; sediment control methods such as detention basins, silt fences, and dust control; contractor training programs; materials transfer practices; waste management practices such as providing designated storage areas and containers for specific waste for regular collection; roadway cleaning/tracking control practices; vehicle and equipment cleaning and maintenance practices; and, fueling practices.

### **Department of Transportation Act, Section 4(f)**

Although the No Action/No Project Alternative would not introduce new activities constituting either a direct or constructive use of Section 4(f) resources, implementation of this alternative would involve the continuation of an existing direct use within the Habitat Restoration Area due to the continued operation of existing navigational aids.

### **Historic/Architectural and Archaeological/Cultural Resources and Paleontological Resources**

Under the No Action/No Project Alternative, the double arched hangar, a non-contributor to the locally significant Intermediate Terminal Complex, would be demolished to allow for construction of a new cargo facility as part of the Century Cargo Complex. The remaining two buildings, contributors to the Intermediate Terminal Complex, would retain sufficient integrity for local eligibility. In addition, potential

impacts to archaeological/cultural and paleontological resources could occur. These impacts are discussed below.

Excavation and grading activities associated with this alternative could disturb one known archaeological resource (CA-LAN-1118). However, because this resource has been determined ineligible for the National Register, California Register, and local designation, disturbance of CA-LAN-1118 would not result in an adverse impact.

Previous grading and excavation activities in the vicinity of LAX Northside and Continental City have extensively disturbed these areas. Previous records searches suggest that the presence of archaeological resources within these two areas is unlikely. Nonetheless, there may be potential to encounter previously unrecorded archaeological resources during grading and excavation activities. Therefore, project conditions for LAX Northside require archaeological monitoring, which would reduce the potential for impacts.

Taxiway EE in the North Airfield would affect one archaeological site (CA-LAN-\*1H) and one isolate (Isolate 1); however, both resources have been determined to be ineligible for federal, state, or local designation.

Records searches and other literature received and reviewed as part of this study indicate that the likelihood of finding fossils within the study area is relatively high, particularly given the record of fossils found within the Palos Verdes Sand Formation, which underlies a large portion of the project area. This suggests that construction-related activities (such as grading and excavation) involving depths generally greater than six feet are likely to expose potentially important fossils.

### **Biotic Communities**

Under the No Action/No Project Alternative, it is assumed that routine maintenance of the open space areas within the Master Plan boundaries would continue, and that no change would occur to existing biotic communities. The sensitive species currently found on the airfield would remain extant. Continuation of existing operations and maintenance activities, required within the Airport Operations Area (AOA) to comply with FAA Guidelines for Wildlife Hazards Management, would maintain biotic communities in their existing condition of low habitat values.

Current levels of maintenance and preservation of the Habitat Restoration Area would continue under this alternative, preserving all existing plant communities including state-designated sensitive plant communities and sensitive species of flora and fauna which inhabit them. However, implementation of LAX Northside would result in the removal of approximately 300 mature trees, which would be an adverse impact.

### **Endangered and Threatened Species of Flora and Fauna**

Under the No Action/No Project Alternative, no relocation of navigational aids would occur in the Los Angeles/El Segundo Dunes. The El Segundo blue butterfly would not be affected by construction-related activities. Embedded cysts of the Riverside fairy shrimp known to be present within the airfield operations area would be expected to remain within the soil with their ultimate chance of achieving the adult phase of their life cycle continuing to decline over time due to lack of suitable environmental conditions. The No Action/No Project Alternative would not result in the "take" of embedded fairy shrimp cysts, nor would it provide improved habitat that would allow the fairy shrimp to complete their life cycles.

Current levels of maintenance and preservation of the Habitat Restoration Area would continue under this alternative, preserving all existing plant communities that include occupied habitat of the El Segundo blue butterfly and its host plant, coast buckwheat.

### **Wetlands**

Under the No Action/No Project Alternative, the existing 1.3 acres of degraded wetland habitat that may be subject to the jurisdiction of the USACOE within the Master Plan boundaries would be retained. However, routine operations and maintenance activity in compliance with Title 14, CFR Part 139, to minimize or eliminate hazards to public safety resulting from wildlife utilization of the AOA, which includes the 1.3 acres that may be jurisdictional areas, would result in the loss of habitat values and functions normally associated with wetlands.

## **4.20 Construction Impacts**

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### **Coastal Zone Management and Coastal Barriers**

Under the No Action/No Project Alternative, construction activities would not occur within the coastal zone. Vehicle, bicycle, and pedestrian access to the coast is not expected to be affected by construction activities associated with LAX Northside. Any impacts to coastal access along Westchester Parkway are expected to be minimal. In addition, alternative coastal access would be available. As a result, construction activities would not affect coastal zone management. As discussed in Section 4.10, *Biotic Communities*, and Section 4.11, *Endangered and Threatened Species of Flora and Fauna*, dust from construction activities would not substantially affect the El Segundo blue butterfly or other sensitive flora and fauna species in the Los Angeles/El Segundo Dunes, which are located within the coastal zone.

### **Energy Supply and Natural Resources**

#### **Energy Supply**

Limited construction activities would occur under the No Action/No Project Alternative. These activities would require fuel for the operation of construction equipment and for construction-related vehicle trips, as well as electricity for lighting. However, it is anticipated that adequate electricity, gasoline, and diesel supplies would be available through 2015.

#### **Natural Resources**

Under the No Action/No Project Alternative, construction of new facilities would require relatively minor quantities of aggregate. Construction materials from demolition work would be recycled; therefore, not all of this demand for aggregate would require raw materials. The presently permitted aggregate reserves within Los Angeles County would be depleted by 2016. However, the California Department of Conservation, Division of Mines and Geology (CDMG) anticipates that currently permitted aggregate reserves in the Los Angeles region would be available through 2046, although use of materials from more distant production areas may be more costly.

#### **Light Emissions**

Construction activities on the airport may involve nighttime activities that would require lighting of work areas. More concentrated and substantial construction would occur at LAX Northside and Continental City project sites. Other construction activities would not be as extensive and widespread or in view along primary roadway or airport approaches. The lighting associated with these construction activities would be necessarily focused downward, oriented toward airport property, and away from adjacent sensitive residential uses. Furthermore, construction hours within the project areas would be restricted in accordance with municipal code requirements. No nighttime construction or construction lighting would occur in areas close enough to disturb residential uses.

#### **Solid Waste**

Construction and demolition activities associated with the previously-approved projects under the No Action/No Project Alternative would generate limited quantities of inert solid waste requiring disposal. To the extent possible, suitable materials would be recycled or reused at LAX. As indicated in Section 4.19, *Solid Waste*, inert disposal capacity is anticipated to be available well beyond the 2015 planning horizon.

### **Design, Art and Architecture Application/Aesthetics**

With completion of the landscaped buffer along Century Boulevard, construction within the Century Cargo Complex would not degrade views along this airport approach roadway. Construction of LAX Northside would result in an incomplete, disrupted, and unattractive visual scene in comparison with the current open-field appearance of the site. These temporary visual impacts would affect apartment units located west of Lincoln Boulevard and north of Westchester Parkway, single-family residences along 91<sup>st</sup> Street and in the immediate vicinity of Saint Bernard High School, and multi-family residential uses west of Falmouth Avenue. Existing landscaped berms would screen much of the construction activity from travelers along Westchester Parkway. The visual contrast of construction activities would be temporary and would not result in a permanent impact. Visual impacts from other construction activities would not be expected because the activities would not be as extensive and widespread or in view along primary roadways or airport approaches.

### **Earth/Geology (CEQA)**

Under the No Action/No Project Alternative, earth-related construction considerations would include grading and earthwork activities, changes to topography (landforms), erosion, stability of temporary construction slopes and excavations, and settlement of existing structures.

Limited grading would be required for the construction of the planned taxiways and commuter terminal. More extensive grading may be required for LAX Northside, Continental City, and the Century Cargo roadway system. Grading for LAX Northside would result in 600,000 to 2.5 million cubic yards of exported earth.<sup>751, 752</sup> Much of the excavated material would be replaced as fill; however, import fill may be necessary. Grading-related changes to landforms associated with the No Action/No Project Alternative would include leveling the existing rolling topography at the LAX Northside site. Grading would result in temporary slopes and vertical excavations, which would have the potential to fail, would generate fugitive dust, and would expose earth materials to erosion.

Grading would be performed in accordance with grading plans based on site-specific geotechnical investigations. These investigations would provide recommendations for reducing the impacts of grading, including recommendations for temporary slopes and excavations, fill placement, erosion control, and dust control. Potential construction recommendations and procedures are listed in Section 4.22, *Earth/Geology*, and include the following:

- ◆ Temporary erosion control plan features (as outlined by the Best Management Practice Handbook, California Stormwater Quality Task Force) such as silt fences, including geotextiles and mats; temporary drains and swales; earth dikes; straw bale barriers; sand bag barriers; rock filters; and sediment traps and basins.
- ◆ Use of temporary road surfaces (such as gravel) and wetting for dust control.
- ◆ Construction of temporary slopes and excavations in accordance with CalOSHA Construction Safety Order 1542, including such features as shoring, shields, sloping and benching.

Existing structures subject to settlement induced by construction of adjacent fills or structures, or construction de-watering, would be monitored. Existing structures would be protected from excessive construction-related settlement through various methods, as discussed in Section 4.22, *Earth/Geology*.

### **Hazardous Materials**

Planned projects under the No Action/No Project Alternative, mainly taxiway improvements, may involve grading in areas with soil contamination. During construction of these projects, contaminated soils could be unearthed, potentially exposing construction workers to hazardous materials. Contamination would be remediated, if necessary, with oversight by appropriate agencies. During excavation and remediation, strict compliance with existing federal and state regulations that address worker training and protective equipment and establish exposure limits would protect the health and safety of construction workers by minimizing the risk of exposure to contamination. Due to the many safety measures in place that control the discovery, handling, remediation, and ultimate disposal of contaminated materials encountered during construction, worker health and safety and the environment would be protected to the maximum extent possible.

Construction activities would include the use and transport of hazardous substances, including fuels for construction equipment. As such, there is the potential for an accidental discharge of hazardous substances during construction activities. Compliance with safety precautions and regulatory requirements identified in Section 4.23, *Hazardous Materials*, would be required and would reduce the risk of an accidental release of hazardous materials.

Under the No Action/No Project Alternative, existing structures within the ANMP properties would be acquired and demolished. Hazardous building materials, such as asbestos, polychlorinated biphenyls (PCBs), and lead-based paints are known to be, or suspected of being, present in the structures within the ANMP acquisition areas. Construction workers could potentially encounter and be exposed to these

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<sup>751</sup> Earth that cannot be used on-site and must be disposed of elsewhere is considered "exported." Imported fill is earth that is hauled to the site from another source.

<sup>752</sup> City of Los Angeles, Department of Airports, Final Environmental Impact Report, LAX North Side Development Project, April 1983.

## **4.20 Construction Impacts**

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hazardous building materials during building demolition. However, exposure can be controlled by a variety of measures outlined in federal, state, and local regulations. The measures required by law include pre-demolition assessments of potential exposure to hazardous building materials, engineering and work practice controls, personal protective equipment for workers, and medical monitoring of workers. The procedures required would vary with the type of building material encountered. For all hazardous building materials, workers must have the appropriate training, personal protective equipment, and medical monitoring. Waste generated from hazardous building-materials removal would be characterized in order to meet requirements governing proper disposal.

Regulations regarding required exposure control measures and waste disposal are contained in a variety of local, state, and federal laws and regulations. By complying with these regulations, the demolition and renovation of existing structures would not result in the exposure of construction workers or the general public to hazardous building materials in excess of regulatory levels.

### **Public Utilities (CEQA)**

Water would be required for dust suppression during construction of LAX Northside and Continental City and demolition of the ANMP acquisition areas, and for the mixing of concrete. Water usage for construction purposes would be temporary and would be considerably smaller than that required once facilities are operational. It is possible that reclaimed water could be used for dust suppression, reducing the quantity of potable water required.

### **Public Services (CEQA)**

The traffic congestion associated with the demolition and construction of projects under the No Action/No Project Alternative, although limited in scope and duration, would have the potential to hamper or delay emergency response. However, standard procedures for plan review would address coordination with local fire protection and law enforcement agencies to ensure that measures such as detour plans, scheduling, and traffic control are implemented where needed to avoid congestion that would hamper emergency response.

Construction of projects within and adjacent to the LAX property, such as the LAX Northside project, cargo facilities, and parking facilities, may temporarily impair access to Westchester Park Recreation Center (currently accessed via Lincoln Boulevard and Manchester Avenue). Although no access constraints are expected, due to the relative location of construction, alternate routes or detours would be provided as part of the standard planning and environmental review processes.

Construction of projects within and adjacent to the LAX property, such as the LAX Northside project, cargo facilities, and parking facilities, would not be located adjacent to local libraries. Due to the distance between construction activities and libraries, it is not anticipated that construction activities would cause substantial increases in noise levels or impair access to local libraries.

### **Schools (CEQA)**

Analyses of impacts on schools relative to noise, air quality, and health risk are addressed in their corresponding sections (i.e., Section 4.1, *Noise*, Section 4.2, *Land Use*, Section 4.6, *Air Quality*, and Section 4.24.1, *Human Health Risk Assessment*) and technical reports and appendices (i.e., Appendix G, *Air Quality Impact Analysis*, Technical Report 1, *Land Use Technical Report*, Technical Report 4, *Air Quality Technical Report*, Technical Report 14, *Human Health and Safety Technical Report*, Appendix S-E, *Supplemental Air Quality Impact Analysis*, Technical Report S-1, *Supplemental Land Use Technical Report*, Technical Report S-4, *Supplemental Air Quality Technical Report*, and Technical Report S-9a, *Supplemental Human Health and Safety Technical Report*). Section 4.2, *Land Use*, summarizes noise impacts to schools resulting from construction activities associated with the proposed project. Five schools (three public and two private) within the City of Los Angeles would be potentially impacted by noise associated with construction activities.

## **4.20.6.2 Alternatives A, B, and C**

### **Noise**

As a result of construction activities under Alternatives A, B, and C, noise levels within the vicinity of LAX would potentially exceed ambient levels in noise-sensitive residential areas.

Construction of airport facilities along I-105 near Aviation Boulevard would create impacts that would be similar to those associated with the construction of Continental City under the No Action/No Project Alternative. As indicated in that discussion, this area experiences considerable ambient noise from the I-405 freeway, the Burlington Northern and Santa Fe railroad, the MTA Green Line, aircraft, and Imperial Highway. Projected ambient noise levels during construction are estimated to be 65 dBA Leq. As with the No Action/No Project Alternative, construction noise would be masked by ambient noise. Therefore, construction-related noise impacts in this area would be less than significant.

Impacts associated with construction of Westchester Southside would be similar to impacts associated with LAX Northside under the No Action/No Project Alternative. These impacts would be somewhat reduced due to the lower intensity of the construction. Due to the fact that construction activities would result in noise levels 5 dBA Leq over ambient levels near sensitive residential and school uses, this would result in a significant impact. Mitigation Measures MM-N-7 through MM-N-10 are proposed to reduce construction-related noise impacts on nearby sensitive uses.

Independent of the Master Plan, demolition activities would occur in the Belford and Manchester Square areas. Additional demolition and construction would occur with Alternatives A, B, and C along the southern stretch of the ring road near noise-sensitive residential areas in the City of El Segundo, along the northern stretch of the ring road in the community of Westchester, and along the LAX Expressway alignment in the City of Inglewood. The affected areas would be nearly identical for these three alternatives, except for minor differences along the ring road between La Cienega and Sepulveda Boulevards. Some nighttime construction activity can be expected for these roadway projects. Daytime ambient noise levels in all these areas are estimated at 65 dBA Leq or higher; nighttime ambient levels are estimated to be 5 dB lower. Construction noise of 70 dBA Leq or higher would potentially extend 600 feet from all construction sites and construction noise of 65 dBA Leq would potentially extend 1,200 feet from all construction sites (the actual distance would most likely be much shorter, but a conservative noise dissipation factor was used). However, due to the presence of homes and landscaping that buffer the noise, it is estimated that construction noise of 65 dBA would extend no farther than 600 feet from all construction sites. This would result in significant impacts to residences and other noise-sensitive uses located within 600 feet of nighttime construction activities. Figure F4.1-9, Potential Construction Noise Impacts - No Action/No Project Alternative and Alternatives A, B, and C, depicts all noise-sensitive areas within 600 feet of construction sites where potentially significant construction-related noise impacts would occur.

Construction-related noise impacts associated with Alternatives A, B, and C would be greater than those identified for the No Action/No Project Alternative as no construction impacts associated with development of the ring road or LAX Expressway would occur under the No Action/No Project Alternative.

### **Land Use**

Construction would begin upon Master Plan approval and continue through 2015, with multiple projects at multiple locations occurring throughout the study area. Major components of the project under construction would include runway and airfield modifications, the new WTA, cargo facilities, the Westchester Southside project and a large number of roadway improvements including, but not limited to, the ring road, the Green Line extension and the LAX Expressway. A variety of activities would occur within these areas, including demolition, excavation and grading, utility installation, and construction of foundations, buildings and other facilities. Construction would generally occur during daytime hours; however, some nighttime construction is expected to occur on the airfield or for roadway projects.

Construction haul routes would be located away from residential streets and noise-sensitive receptors as provided under Master Plan Commitment ST-16, Designated Haul Routes (Alternatives A, B, C, and D). Construction staging areas would be located away from residential areas as stated in Mitigation Measure MM-N-8, Construction Staging (Alternatives A, B, C, and D). Construction delivery hours would be limited to the times stated in Master Plan Commitment ST-12, Designated Truck Delivery Hours (Alternatives A, B, C, and D)

Combined construction effects associated with noise, air emissions, surface transportation disruption and other issues would impact land uses surrounding the Master Plan boundaries. The most notable impact affecting adjacent land uses would be construction noise. As further described in Section 4.1, *Noise*, even with implementation of Mitigation Measures MM-N-7, Construction Noise Control Plan (Alternatives A, B, C, and D), MM-N-8, Construction Staging (Alternatives A, B, C, and D), MM-N-9, Equipment

## **4.20 Construction Impacts**

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Replacement (Alternatives A, B, C, and D), and MM-N-10, Construction Scheduling (Alternatives A, B, C, and D), there would be significant unavoidable impacts in noise-sensitive areas located within 600 feet of construction sites under Alternatives A, B, and C. Land uses potentially affected by significant construction noise levels of 5 dBA above the lowest ambient noise levels would be those primarily located to the south of the airport in El Segundo, to the north of the airport in Westchester, and along the LAX Expressway in the City of Inglewood. These areas are shown in Figure F4.1-9. Within the City of El Segundo, these areas include approximately 510 dwelling units, one public school (the Imperial Avenue School Special Educational Facility), and one park. To the north of the airport in the City of Los Angeles, 1,600 dwelling units would have similar potential to be periodically exposed to significant construction noise levels. Within this area, two churches and the following schools would also be affected: Saint Bernard High School, Visitation Elementary School, Westchester High School, Westchester-Emerson Community Adult School, Paseo del Rey Magnet School, and Escuela de Montessori. In addition, approximately 470 residential uses located to the east of the LAX Expressway right-of-way, as shown in Figure 4.1-9, would also be affected. Under Alternative B, additional residential uses would be exposed to significant noise levels during construction of the off-site fuel farm at the Scattergood Facility.

Although most construction impacts would be intermittent and temporary, and would be reduced to less than significant levels through mitigation measures presented below in subsection 4.20.8, *Mitigation Measures*, significant unavoidable impacts from construction noise and air quality would occur to land use.

In addition to mitigation measures provided below in subsection 4.20.8, *Mitigation Measures*, Master Plan Commitment C-1, Establishment of a Ground Transportation/Construction Coordination Office (Alternatives A, B, C, and D), and Master Plan Commitments ST-9 through ST-19 would serve to address noise and other construction-related impacts on sensitive land uses through establishing a ground transportation/construction coordination office, managing construction traffic, developing a detour plan and designating truck routes, limiting short-term lane closures, and imposing closure restrictions on existing roadways.

Construction-related land use impacts associated with Alternatives A, B, and C would be greater than those identified for the No Action/No Project Alternative as no construction impacts associated with development of the ring road or LAX Expressway would occur under the No Action/No Project Alternative.

### **Surface Transportation**

#### **On-Airport**

During Phase I peak construction activity, airport peak hour road capacity deficiencies would exist, with both the upper and lower levels of World Way anticipated to operate at Level of Service (LOS) F during the airport peak hour. The temporary rerouting of northbound Sepulveda Boulevard traffic to eastbound Century Boulevard, required for the construction of the Sepulveda Boulevard Tunnel project, would add a significant amount of traffic to the upper and lower airport entrance ramps from Century Boulevard. Other facilities that would operate at LOS F include the northbound Sepulveda Boulevard on-ramp, the upper to lower recirculation ramp, and the signalized intersection at Center Way and Sky Way. Construction activities would exacerbate already poor traffic conditions in the CTA and near the airport, due to lane closures, detours, and the addition of construction traffic. These conditions would degrade both traffic flow and curb operations. Implementation of Master Plan Commitments ST-2, Non-Peak CTA Deliveries (Alternatives A, B, C, and D), ST-3, Construction Traffic Uses Upper Level (Alternatives A, B, and C), ST-4, Limited Short-Term Land Closures (Alternatives A, B, and C), and ST-5, Additional Lot C Shuttles (Alternatives A, B, and C), would reduce on-airport traffic impacts; however, even with these commitments, traffic impacts would be significant and temporarily unavoidable.

In the Phase II, peak construction period, the only on-airport transportation segment that would be operating at LOS F would be the northbound Sepulveda Boulevard off-ramp. The capacity problems of this segment would not be caused by the addition of construction traffic, but by regular airport traffic. Construction activities would affect traffic conditions in the CTA and near the airport, due to lane closures, detours, and the addition of construction traffic. These conditions would degrade both traffic flow and curb operations. Implementation of Master Plan Commitments ST-2, Non Peak CTA Deliveries (Alternatives A, B, C, and D), ST-3, Construction Traffic Uses Upper Level (Alternatives A, B, and C), and ST-6, Removal of Spoil Material (Alternatives A, B, and C), would reduce on-airport traffic impacts; however, even with these commitments, traffic impacts would be significant and temporarily unavoidable.

### **Off-Airport**

Three of the most critical issues associated with potential off-airport traffic impacts include:

- ◆ Maintenance of traffic in the immediate construction zones
- ◆ Deliveries and movement within the site of various construction materials
- ◆ Provision of labor to the construction sites

The goal of the construction schedule is to have the majority of transportation improvements completed within five years after starting construction. Such street and highway improvements would occur on Sepulveda Boulevard, Westchester Parkway, Pershing Drive, Aviation Boulevard, LAX Expressway, and the Aviation Boulevard/Arbor Vitae Street interchange. Other improvement projects are planned for streets and highways in the surrounding area, which range from restriping and traffic signal coordination to adding traffic lanes and transit services. Section 4.3, *Surface Transportation*, provides more detail regarding the timeframe for improvements to major roadways and highways.

### **Truck Traffic**

The highest levels of truck traffic would occur during the 9<sup>th</sup> through the 12<sup>th</sup> quarters of construction, with approximately 199,000 trucks per quarter. During this time period, construction would occur on the western portion of Westchester Parkway and the WTA. To reduce off-airport traffic, Master Plan Commitments ST-11, Stockpile Locations (Alternatives A, B, and C), and ST-14, Construction Employee Shift Hours (Alternatives A, B, C, and D), would establish multiple staging/stockpile locations, extend work periods to include weekends, and use multiple work shifts. With implementation of such commitments, truck traffic would occur at much lower levels. This would reduce off-airport truck traffic impacts; however, truck traffic impacts would still be significant and temporarily unavoidable.

### **Construction Employee Traffic**

The highest levels of traffic due to employee-related traffic would occur during the 7<sup>th</sup> through the 14<sup>th</sup> quarters of construction for the "first shift;" the absolute highest level of traffic would occur during the 12<sup>th</sup> quarter of construction. Work on the western portion of the ring road and the WTA would occur during this period.

LAWA would implement Master Plan commitments to reduce employee-related traffic. Such commitments would require that the start and end of the "first shift" be offset from the traffic peak-period. Several employee parking areas along the east end of the airport and other similar locations would be established with shuttle buses to the actual construction sites. This would minimize congestion and maintain airport safety/security requirements. LAWA would also establish remote employee parking locations with shuttle bus service to the LAX construction sites. However, even with implementation of the above commitments, construction employee traffic impacts would still be significant and temporarily unavoidable.

### **Maintenance of Traffic During Construction**

Although there would be numerous construction projects underway concurrently during construction at LAX that would generate traffic, there are few roadway alternatives to existing facilities. Some of these facilities would be modified or replaced as part of the off-airport improvements. Closures of key roadways and intersections would result in significant impacts to off-airport traffic, unless closures occurred for short time periods during periods of low traffic volumes.

In some construction areas, three activities would be accommodated concurrently: airport traffic, construction haul routes, and construction of new facilities. To the extent possible, each activity would be separated by appropriate barriers to lessen traffic impacts. Existing roadways would be retained, where feasible and appropriate, during construction of new roadways to accommodate traffic during the construction period, and after completion of the new roadways for transporting construction materials while buffered from the general public.

By maintaining traffic on existing facilities, strictly minimizing road closures, creating buffers between construction traffic and the general public, and implementing Master Plan commitments, off-airport traffic impacts would be minimized; however, the traffic impacts would still be significant and temporarily unavoidable.

## **4.20 Construction Impacts**

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### **Social Impacts**

#### **Employment/Socio-Economics**

Construction-related expenditures for Alternatives A, B, and C would range from \$11.4 to \$14.8 billion dollars, with Alternative B having the most expenditures and Alternative C the least; there would be 81,279 to 102,614 jobs directly involved in construction. When a multiplier effect<sup>753</sup> is taken into account, construction of Alternatives A, B, and C would generate from 170,380 to 215,103 construction-related jobs. Based on estimated direct construction expenditures, Alternatives A, B, and C would yield an estimated \$18.9 to \$23.8 billion dollars in total economic output in Los Angeles County, constituting a beneficial effect. Therefore, construction employment/socio-economic impacts would be beneficial.

#### **Environmental Justice**

Overall, construction noise impacts would fall predominantly on non-minority/non low-income communities, with approximately 90 percent of the area exposed to high levels of noise falling within these communities. Due to the magnitude of construction activities, all criteria air pollutant emissions from construction would remain significant after mitigation, as would predicted ambient concentrations of PM<sub>10</sub> (Alternatives A, B, and C), CO (Alternatives A and C), and NO<sub>2</sub> (Alternatives A, B, and C). Based on the characteristics of pollutant dispersion from construction activities, the populations adversely affected would be those in close proximity to the airport boundaries, generally, the same non-minority/non low-income communities exposed to adverse levels of construction noise. Other construction impacts, such as those associated with traffic and visual impacts would also fall predominantly on non-minority/non low-income communities.

#### **Community Disruption and Alteration of Surface Transportation Patterns**

During the construction for Alternatives A, B, and C, several improvements would take place along the primary arterials and roadways surrounding the airport. During this period, there would be the potential for temporary detours and congestion to compromise access to community facilities, services, residences, and businesses. Implementation of Master Plan Commitments C-1, Establishment of a Ground Transportation/Construction Coordination Office (Alternatives A, B, C, and D), and ST-18, Construction Traffic Management Plan (Alternatives A, B, C, and D), would minimize the potential for impacts associated with community disruption from changes in transportation circulation patterns during construction. However, temporary construction-related traffic impacts would be significant and unavoidable even with implementation of Master Plan Commitments C-1 and ST-9 through ST-19. Therefore, the potential for temporary impacts associated with community disruption of adjacent communities during construction would be significant. The impacts of community disruption under Alternatives A, B, and C would be greater compared to the No Action/No Project Alternative.

#### **Air Quality**

Construction activities under Alternatives A, B, and C would result in emissions from construction equipment, haul vehicles, earth-moving activities, and employee vehicles. Unpaved construction haul roads would be periodically watered-down to reduce fugitive dust, and construction equipment would be properly maintained to reduce vehicle emissions. The peak year for emissions under Alternatives A, B, and C would, based on the assumptions used in this Final EIS/EIR, be 2004. The incremental daily and quarterly emissions of CO, VOC, NO<sub>x</sub>, SO<sub>2</sub>, and PM<sub>10</sub> would exceed the SCAQMD's thresholds of significance for construction emissions. Therefore, construction emissions under Alternatives A, B, and C would be significant for these pollutants. Mitigation measure MM-AQ-2, Construction-Related Measure (Alternatives A, B, C, and D) is proposed to reduce construction-related air quality impacts.

For purposes of the CEQA significance determination, a combined peak concentration for construction and on-airport operational sources was developed. An individual concentration for construction-related sources was not developed, so the significance of the combined concentration was conservatively assumed for construction-related sources. The maximum combined concentrations for construction and

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<sup>753</sup> The multiplier effect includes indirect jobs (i.e., those related to purchases of goods and services by companies directly involved in the design and construction of the project and induced jobs (i.e., those related to the re-spending of earnings by direct and indirect job holders). For example, it would account for the on-site worker and the restaurant where he/she eats lunch.

on-airport operational sources for Alternatives A, B, and C would exceed the annual NO<sub>2</sub> NAAQS, the 24-hour and annual PM<sub>10</sub> NAAQS, and the 24-hour and annual PM<sub>10</sub> CAAQS. In addition, combined peak concentrations for Alternative A would exceed the 8-hour CO NAAQS and CAAQS, and for Alternative C would exceed the 1-hour CO CAAQS. Therefore, NO<sub>2</sub> and PM<sub>10</sub> concentration impacts from combined operational and construction activities under Alternatives A, B, and C would be significant, and CO concentration impacts under Alternatives A and C would be significant. In general, impacts to air quality during construction under Alternatives A, B, and C would be greater than the No Action/No Project Alternative, which would involve fewer construction activities.

### **Hydrology and Water Quality**

Under Alternatives A, B, and C, construction could create sources of pollution that could potentially affect water quality. As these construction activities would affect an area greater than one acre, LAWA's existing construction policy would require the development of a construction SWPPP in compliance with the state's Construction Permit. Section 4.7, *Hydrology and Water Quality*, provides further information on the SWPPP. As described in Technical Report 6, *Hydrology and Water Quality Technical Report*, temporary construction BMPs specified in LAWA's existing Construction SWPPP for LAX include: soil stabilization (erosion control) techniques such as seeding and planting, mulching, and check dams; sediment control methods such as detention basins, silt fences, and dust control; contractor training programs; material transfer practices; waste management practices such as providing designated storage areas and containers for specific waste for regular collection; roadway cleaning/tracking control practices; vehicle and equipment cleaning and maintenance practices; and, fueling practices. By following the procedures outlined in the construction SWPPP, including compliance with BMPs, impacts to water quality associated with construction activities under Alternatives A, B, and C would be less than significant.

Potential water quality impacts during construction under Alternatives A, B, and C would be greater than the No Action/No Project Alternative, which would involve fewer construction activities.

### **Department of Transportation Act, Section 4(f)**

Under Alternatives A, B, and C, the disturbance or destruction of potentially significant undiscovered archaeological/cultural sites during construction would be considered a use under Section 4(f), if these sites are considered to have greater value if preserved in place. Mitigation Measures MM-HA-4 through MM-HA-10, identified in Section 4.9.1, *Historic/Architectural and Archaeological/Cultural Resources*, would address impacts to archaeological/cultural resources.

### **Historic/Architectural and Archaeological/Cultural and Paleontological Resources**

Construction activities associated with Alternatives A, B, and C would affect significant historic resources at both the federal and state level. Under Alternative A, if the preferred alternative for the LAX Expressway is not selected, construction of the Split Viaduct alternative would result in direct (property encroachment) and indirect (visual and vibration) impacts on the Centinela Adobe, which is a National Register listed property, and indirect impacts on Randy's Donuts, a National Register eligible property. As a result of cargo facilities proposed in the Century Boulevard and La Cienega Boulevard cargo areas, Alternative A would also result in demolition of the Intermediate Terminal Complex and the International Airport Industrial District, both eligible for state and local designation. Under Alternative B, redevelopment of the Imperial Cargo Complex would result in the relocation of Hangar One, which is listed in the National Register. Relocation would be overseen by the State Office of Historic Preservation (SHPO) in compliance with applicable federal procedures and guidelines. With these efforts it is assumed that the property would retain its National Register listing and eligibility. However, relocation of Hangar One under Alternative B would result in a significant adverse impact at the state and local level. Construction of the airport ring-road under Alternative B would result in demolition of the Merle Norman Headquarters Complex, a National Register eligible property also eligible at the state and local levels. Alternative B would also result in impacts on the Intermediate Terminal Complex and the International Airport Industrial District, similar to Alternative A. Under Alternative C, construction-related activities would result in impacts to the Intermediate Terminal Complex and the International Airport Industrial District, both state and locally eligible resources. As with Alternative A, additional construction impacts on historic resources under Alternative C would be due to LAX Expressway construction; however, this would only occur in the event that the preferred expressway alternative is not selected. Mitigation Measures MM-HA-1, Historic American Buildings Survey (HABS) Document (Alternatives A, B, C, and D), MM-HA-2, Historic

## **4.20 Construction Impacts**

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Educational Materials (Alternatives A, B, C, and D), and MM-HA-3, Hangar One Relocation (Alternative B), are proposed to address impacts to historic resources associated with implementation of Alternatives A, B, and C. Please see Section 4.9.1, *Historic/Architectural and Archaeological/Cultural Resources*, for further discussion.

With the implementation of Alternatives A, B, and C, three previously documented archaeological sites (CA-LAN-1118, CA-LAN-691, and CA-LAN-\*1H) and one isolate (Isolate 1) would be directly affected by the development of transportation facilities and associated construction-related excavation and grading activities. However, all of these archaeological sites have been determined to be ineligible for federal, state, and local designations.

Given the number of archaeological sites previously recorded within the study area, there is a relatively high likelihood of discovering archaeological/cultural resources within or near the Area of Potential Effects (APE). This suggests that discoveries may occur from construction-related activities such as grading and excavation. The disturbance or destruction of potentially significant undiscovered archaeological/cultural resources by these activities would be considered to be a significant impact. With implementation of Mitigation Measures MM-HA-4 through MM-HA-10, project impacts on archaeological/cultural resources would be reduced to a less than significant level at the state level, and at the federal level, sufficiently mitigated in accordance with federal standards as described in Section 4.9.1, *Historic/Architectural and Archaeological/Cultural Resources*.

Alternatives A, B, and C would include substantial construction-related ground-disturbing activities that would entail excavation at depths that could affect paleontological resources (greater than six feet). Components of the alternatives with the greatest potential to affect important paleontological resources are: the excavation and tunneling of Aviation Boulevard and Sepulveda Boulevard; development of Westchester Southside; excavation and grading for construction of the West Terminal and parking facilities, and excavation for underground utility infrastructure.

The abundance of fossils within the study area at depths generally greater than six feet strongly suggests that grading and excavations for a variety of construction activities are likely to expose and damage potentially important fossils. This potential destruction of fossils during development of Alternatives A, B, and C would be a significant impact on the region's paleontological resources. Furthermore, the exposure of fossil sites, and the accompanying potential for making the site accessible for unauthorized fossil collection, could result in the loss of additional fossil remains, associated scientific data, and fossil sites. Implementation of Mitigation Measures MM-PA-1 through MM-PA-7 would reduce potential adverse impacts to paleontological resources to a less than significant level.

Potential impacts to archaeological and paleontological resources during construction associated with potential disturbance of previously undiscovered resources under Alternatives A, B, and C would be greater than those of the No Action/No Project Alternative, which would involve fewer construction activities and disturb less area.

### **Biotic Communities**

Under Alternatives A, B, and C, construction activities, including staging, near the Los Angeles/EI Segundo Dunes, including the EI Segundo Blue Butterfly Habitat Restoration Area (Habitat Restoration Area), would result in potentially significant impacts to state-designated sensitive habitats. Under Alternative A, installation of navigational aids and associated service roads would result in impacts to 58,476 square feet (1.34 acres) of state-designated sensitive habitats within the Los Angeles/EI Segundo Dunes, including 30,261 square feet (0.70 acre) within the Habitat Restoration Area. Under Alternative B, installation of navigational aids and associated service roads would result in impacts to 50,492 square feet (1.16 acres) of state-designated sensitive habitats within the Los Angeles/EI Segundo Dunes, including 16,811 square feet (0.39 acre) within the Habitat Restoration Area. Under Alternative C, installation of navigational aids and associated service roads would result in impacts to 30,210 square feet (0.69 acre) of state-designated sensitive habitats within the Los Angeles/EI Segundo Dunes; however, there would be no impact within the Habitat Restoration Area. Under Alternatives A, B, and C, construction activities, including staging and stockpiling of materials proximal to the Los Angeles/EI Segundo Dunes, including the Habitat Restoration Area, would have the potential to result in deposition of fugitive dust within state-designated sensitive habitats.

Implementation of Mitigation Measures MM-BC-1, Conservation of State-Designated Sensitive Habitat Within and Adjacent to the El Segundo Blue Butterfly Habitat Restoration Area (Alternatives A, B, C, and D), MM-BC-10, Replacement of State-Designated Sensitive Habitat (Alternative A), MM-BC-11, Replacement of State-Designated Sensitive Habitat (Alternative B), MM-BC-12, Replacement of State-Designated Sensitive Habitat (Alternative C), and MM-ET-3, El Segundo Blue Butterfly Conservation: Dust Control (Alternatives A, B, C, and D), would reduce impacts to a level less than significant.

Implementation of Westchester Southside would result in the removal of approximately 300 mature trees. Implementation of Mitigation Measure MM-BC-3, Conservation of Floral Resources: Mature Tree Replacement (Alternatives A, B, C, and D), would reduce impacts to mature trees to a level less than significant. The construction impacts under Alternatives A, B, and C would be greater than those under the No Action/No Project Alternative.

### **Endangered and Threatened Species of Flora and Fauna**

Under Alternatives A, B, and C, the 1.3 acres of degraded wetland habitat containing embedded cysts of the Riverside fairy shrimp would be affected by construction activities and staging occurring nearby. This would result in a significant impact. Implementation of Mitigation Measure MM-ET-1, Riverside Fairy Shrimp Habitat Restoration (Alternatives A, B, C, and D), would reduce impacts to embedded cysts of the Riverside fairy shrimp to a level less than significant.

Under Alternatives A and B, the installation of navigational aids and associated service roads would occur within habitat occupied by the El Segundo blue butterfly in the Habitat Restoration Area. These construction activities would cause a significant impact. Under Alternative C, construction of navigational aids within the Los Angeles/El Segundo Dunes would not occur within the Habitat Restoration Area, and would avoid occupied habitat for the El Segundo blue butterfly.

Implementation of Mitigation Measures MM-ET-2, El Segundo Blue Butterfly Conservation: Habitat Restoration (Alternatives A and B), and MM-ET-3, El Segundo Blue Butterfly Conservation: Dust Control (Alternatives A, B, C, and D), would reduce impacts to the El Segundo blue butterfly to a level less than significant.

The construction impacts to endangered and threatened species under Alternatives A, B, and C, described above, would be greater than those under the No Action/No Project Alternative.

### **Wetlands**

Construction and staging activities would result in the permanent conversion of 1.3 acres of degraded wetland habitat that may be subject to the jurisdiction of the USACOE. Implementation of Mitigation Measure MM-ET-1, Riverside Fairy Shrimp Habitat Restoration (Alternatives A, B, C, and D), would reduce impacts to wetlands to a level less than significant. The construction impacts to wetlands under Alternatives A, B, and C, would be greater than those under the No Action/No Project Alternative.

### **Coastal Zone Management and Coastal Barriers**

Vehicle, bicycle, and pedestrian access to the coast would be affected by construction activities. During construction, access along Westchester Parkway and Imperial Highway may be limited by lane closures and detours. Efforts would be made to minimize the restrictions; however, temporary detours and lane closures would be unavoidable. During these times, coastal access would be available to the north of LAX along Manchester Avenue and to the south of LAX on Grand Avenue. Although coastal access would be limited during construction, these impacts would be short-term and alternative routes would be available; therefore, the impact would not be significant.

Under Alternative B, additional improvements would occur within the coastal zone due to construction of an off-site fuel farm at either the Scattergood Electric Generating Station or the oil refinery located south of the airport. With development of either of these sites, existing fuel transmission lines would need to be extended from the current terminus at LAX to the fuel farm and fuel transmission lines would need to be provided between the oil refinery site or the Scattergood site and LAX. During pipeline construction, there may be short-term disruptions to Vista del Mar (e.g., lane closures) affecting coastal access along the segment between Grand Avenue and Imperial Highway. Coastal access would continue to be available to the north and south and Vista del Mar would not be closed entirely during construction. Therefore,

## **4.20 Construction Impacts**

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although this impact would be adverse due to the temporary disruption in access, it would not be significant.

Construction-related impacts to coastal access under Alternatives A, B, and C, described above, would be greater than those under the No Action/No Project Alternative. Under Alternatives A, B, and C, construction activities have the potential to result in deposition of fugitive dust within state-designated sensitive habitat within the Los Angeles/El Segundo Dunes. The potential indirect impacts to state-designated sensitive habitat due to construction activities would be reduced to a level that is less than significant with implementation of the mitigation measures described in Section 4.10, *Biotic Communities*, and Section 4.11, *Endangered and Threatened Species of Flora and Fauna*.

The indirect construction-related impacts to state-designated sensitive habitat associated with Alternatives A, B, and C would be greater than those under the No Action/No Project Alternative, based on the comparative difference in the level of construction activity.

Under Alternatives A, B, and C, installation of navigational aids and associated service roads would directly impact state-designated sensitive habitat within the Los Angeles/El Segundo Dunes. The impact to sensitive habitat would be less than significant with implementation of the mitigation measures described in Section 4.10, *Biotic Communities*, and Section 4.11, *Endangered and Threatened Species of Flora and Fauna*.

In comparison, the No Action/No Project Alternative would not result in any direct impacts to state-designated sensitive habitat within the Los Angeles/El Segundo Dunes as the No Action/No Project Alternative would not require changes to navigational aids.

## **Energy Supply and Natural Resources**

### **Energy Supply**

Construction activities under Alternatives A, B, and C would require fuel for the operation of construction equipment and for construction-related vehicle trips, as well as electricity for lighting. Because adequate electricity, gasoline, and diesel supplies are anticipated to be available through 2015, the impact associated with the consumption of these energy resources for construction-related activities would be less than significant.

Construction associated with Alternatives A, B, and C would include activity near existing natural gas and electrical power lines. Excavating near natural gas or electrical power lines could cause an interruption in service to LAX or the surrounding area if improper construction methods are used or poor planning occurs. Construction near submerged high voltage electrical power lines could later affect the transmission capacity of the lines surrounding insulation material is improperly changed. The ability of utility providers to access underground pipes or lines could also be affected by construction. Under Master Plan Commitments E-2, Coordination with Utility Providers (Alternatives A, B, C, and D), and PU-1, Develop a Utility Relocation Program (Alternatives A, B, C, and D), LAWA would work with the utility providers to assure that changes to the electrical distribution system performed under Alternatives A, B, and C would not adversely affect electricity or natural gas service to the surrounding area. Development and implementation of these commitments would reduce potential impacts to the existing electricity supply and distribution system from construction activities to a level that is less than significant.

The above potential impacts to the energy distribution system would not occur under the No Action/No Project Alternative. Impacts to energy supply during construction under Alternatives A, B, and C would be greater than those associated with the No Action/No Project Alternative, which would involve fewer construction activities.

### **Natural Resources**

Under Alternatives A, B, and C, aggregate materials would be used for construction of new and replacement runways; terminal, cargo, maintenance, and ancillary buildings; and other improvements. The estimated aggregate consumption for construction under Alternatives A, B, and C is estimated to be between 18 million tons to 21 million tons, or approximately 1 percent of the estimated 1.7 billion tons of currently permitted reserves in the Los Angeles region. Construction materials from demolition work would be recycled; therefore, not all of this demand for aggregate would require raw materials.

The presently permitted aggregate reserves within Los Angeles County would be depleted by 2016. However, the CDMG anticipates that currently permitted aggregate reserves in the greater Los Angeles region would be available through 2046. Although use of materials from more distant production areas may be more costly, the need for aggregate materials for Alternatives A, B, or C would not result in a significant impact on available reserves.

Impacts to natural resources as a result of construction under Alternatives A, B, and C would be substantially greater than the No Action/No Project Alternative, which would involve fewer construction activities.

### **Light Emissions**

Construction activities on the airport may involve nighttime activities that would require lighting of work areas. This lighting would be necessarily focused downward, oriented toward airport property, and away from adjacent sensitive residential uses. Furthermore, construction hours within the project areas adjacent to sensitive uses would be restricted in accordance with municipal code requirements. Because no nighttime construction or construction lighting would occur in areas close enough to disturb residential uses, no significant impacts from construction lighting are expected with development of Alternative A, B, or C.

Although the increase in ambient lighting conditions associated with construction activities under Alternatives A, B, and C would not result in significant impacts, there would be greater levels of ambient lighting during construction when compared to the No Action/No Project Alternative.

### **Solid Waste**

Construction and demolition activities for Alternatives A, B, and C would generate a substantial amount of inert solid waste requiring disposal. The estimated quantities of solid waste are provided in Section 4.19, *Solid Waste*. To the extent possible, suitable materials would be recycled or reused at LAX. Additionally, Master Plan Commitments SW-2, Requirements for the Use of Recycled Materials During Construction (Alternatives A, B, C, and D), and SW-3, Requirements for the Recycling of Construction and Demolition Waste (Alternatives A, B, C, and D), would further reduce the amount of demolition and construction waste requiring disposal by requiring contractors to use recycled construction materials and to recycle demolition and construction-related waste. Recycling of construction materials would be consistent with FAA policies pertaining to waste minimization and resource conservation. As indicated in Section 4.19, *Solid Waste*, inert disposal capacity is anticipated to be available well beyond the 2015 planning horizon. Therefore, impacts with respect to construction and demolition solid waste would be less than significant.

Impacts to solid waste disposal capacity as a result of construction under Alternatives A, B, and C would be substantially greater than the No Action/No Project Alternative, which would involve fewer construction activities.

### **Design, Art and Architecture Application/Aesthetics**

Under Alternatives A, B, and C, extensive and widespread construction during the demolition and construction of structures and roadways would create a strong visual contrast in and around the airport. Major areas of construction activity would be focused at the eastern end of the airport at the Continental City project site and in areas to the north, at the WTA, and along the northern boundary of the airport at Westchester Southside and areas east of Sepulveda Boulevard. Construction would be evident along the Century Boulevard and Sepulveda Boulevard approaches to the airport. Construction activities would also be visible along the southern boundary of the airport, near the Sepulveda Boulevard/Imperial Highway intersection and areas extending east to the I-405.

Areas most exposed and sensitive to views of the construction activities would include: residential and hotel uses along the southern boundary between Sepulveda Boulevard and Pershing Drive; residential areas adjacent to Westchester Southside; residential neighborhoods along the northern boundary east of Sepulveda Boulevard; and areas along Sepulveda Boulevard and Century Boulevard, two key approaches to the airport.

Under Alternative B, construction activities would also involve construction at the Manchester Square and Belford sites, and at one of two optional fuel farm sites. The activities at the Scattergood site would be visible from coastal areas and the Vista del Mar Scenic Highway.

## **4.20 Construction Impacts**

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Although construction would be phased from the time of approval of the LAX Master Plan through 2015, these construction activities would cause areas of the airport environs to have an incomplete, disrupted, and unattractive quality. The short-term aesthetic effects of construction on surrounding uses and airport visitors are considered to be significant. With implementation of Mitigation Measure MM-DA-1, Construction Fencing (Alternatives A, B, C, and D), construction-related aesthetic and view impacts would be reduced to a less than significant level.

In comparison, the short-term aesthetic effects of construction under the No Action/No Project Alternative would not be as extensive.

### **Earth/Geology (CEQA)**

As with the No Action/No Project Alternative, earth-related construction considerations for Alternatives A, B, and C would include grading and earthwork activities, alteration of topography (landforms), erosion, stability of temporary construction slopes and excavations, and settlement of existing structures.

Under Alternatives A, B, and C, project components that may require substantial grading include the WTA, ancillary facilities, new/expanded fuel farm, new cargo complexes, new runways and taxiways, the ring road and regional roads, Westchester Southside, and the Green Line. Total earthwork volumes estimated for Alternatives A, B, and C range from 12 to 13.5 million cubic yards of cut (approximately 5 to 6 million cubic yards of which would be unsuitable for replacement as fill) and 16.5 to 20 million cubic yards of fill, resulting in a net import fill requirement of approximately 9.7 to 12.2 million cubic yards.

As discussed under the No Action/No Project Alternative, grading operations would result in temporary slopes and vertical excavations, which would have the potential to fail, would generate fugitive dust and would expose earth materials to erosion. Grading-related changes to topography (landforms) associated with Alternatives A, B, and C would include leveling the existing rolling topography at the Westchester Southside site. Because most of this area was previously developed and the existing landforms highly modified, this is not considered to be a significant impact. Minor grading of small areas for navigational aids would be performed in the Dunes west of Pershing Drive. Although the Dunes are considered to be a distinct topographic feature, because of the small area involved, the overall topography of the Dunes would not be altered. Consequently, this impact would be less than significant.

As with the No Action/No Project Alternative, grading would be performed in accordance with grading plans based on site-specific geotechnical investigations. These investigations would provide recommendations for reducing the impacts of grading and earthwork, including recommendations for temporary slopes and excavations, fill placement, erosion control, and dust suppression. Potential construction recommendations and procedures are listed in Section 4.22, *Earth/Geology*, and described above under the No Action/No Project Alternative. These measures would reduce potential impacts from grading to a level that is less than significant.

Existing structures subject to settlement induced by construction of adjacent fills or structures, or construction de-watering, would be monitored. Existing structures would be protected from excessive construction-related settlement through various methods, as discussed in Section 4.22, *Earth/Geology*.

Construction of tunnels could result in settlement, ground loss, and earth movement, which could affect or damage the ground surface, utility lines, roadways, and nearby structures. Tunnel construction and underground excavation would be associated with the WTA, reconfiguration of the CTA, WTA access via Pershing Drive, Aviation Boulevard (where depressed between Century Boulevard and Imperial Highway), Sepulveda Boulevard (where tunneled between Westchester Parkway and Century Boulevard), the APM, the LAX Expressway, and the Green Line. Construction of certain tunnels could be performed using cut and cover techniques, but underground excavation of sections of certain tunnel alignments would probably be necessary where existing structures or tunnel depth would preclude cut and cover construction. Tunnel construction would be conducted to minimize settlement using proven tunneling techniques (such as cut and cover or shielded tunnel boring machines). Monitoring of the ground surface and existing structures for early signs of deformation would typically be performed during tunnel construction. Design and construction of proposed improvements would be reviewed by the City of Los Angeles, Department of Building and Safety, or Caltrans, as applicable. Implementation of approved design plans and construction procedures would ensure that the impacts of tunneling for proposed improvements would be less than significant.

The above potential impacts related to construction of tunnels would not occur under the No Action/No Project Alternative. Other impacts related to changes in topography, erosion, stability of temporary construction slopes and excavations, and settlement from construction under Alternatives A, B, and C would be substantially greater than the No Action/No Project Alternative, which would involve fewer construction activities.

### **Hazardous Materials**

Construction of Alternatives A, B, and C would have the potential to adversely affect existing soil and/or groundwater remediation activities. Numerous soil and groundwater remediation projects are planned or underway both at LAX and within the acquisition areas. In some cases, improvements are proposed in areas where remediation systems are located. Construction of these improvements and associated demolition of existing facilities have the potential to require the closure of some of these remediation systems. Specifically, LAXFUEL's BFSF and Continental's Maintenance Facility have existing groundwater remediation systems in areas of proposed improvements, and soil remediation is planned at Taxiway 75, also in an area of proposed improvements. Improvements are also proposed within the acquisition areas in areas currently undergoing remediation of subsurface contamination. It is possible that remediation would not be complete at these sites prior to the initiation of construction activities and that part, or all, of the remediation systems in operation would have to be removed during construction. This would be a potentially significant impact.

To prevent Master Plan-related construction from interfering with planned or ongoing remediation such that environmental contamination is exacerbated or permanent clean up of sites prevented, LAWA would implement Master Plan Commitment HM-1, Ensure Continued Implementation of Existing Remediation Efforts (Alternatives A, B, C, and D). Implementation of this commitment would ensure that remediation projects would be completed to the extent possible and necessary before constructing Master Plan improvements, or that alternate clean up methods would be implemented during construction to prevent contaminant migration, if necessary. As part of this commitment, remediation systems would be reinstated following the completion of construction, if required. Therefore, no significant impacts would occur.

As with the No Action/No Project Alternative, under Alternatives A, B, and C, grading in areas with soil contamination could expose construction workers to hazardous materials. Due to the many safety measures required by local, state, and federal laws and regulations that govern the discovery, handling, remediation, and ultimate disposal of contaminated materials encountered during construction, worker health and safety and the environment would be protected to the maximum extent possible. As a result, potential impacts associated with construction in areas that may be contaminated would be less than significant. In addition, implementation of Master Plan Commitment HM-2, Handling of Contaminated Materials Encountered During Construction (Alternatives A, B, C, and D), would further reduce potential adverse effects associated with excavating contaminated materials.

Hazardous building materials, such as asbestos, PCBs, and lead-based paint, are known to be, or are suspected of being, present in structures both at LAX and within the acquisition areas. Construction workers could potentially encounter and be exposed to these hazardous building materials during the building demolition and renovation activities associated with implementation of Alternatives A, B, and C. In particular, one electrical distribution station, DS-111, may be relocated as part of these alternatives. If this occurs, the station would have to be demolished and rebuilt. Because the equipment in this distribution station contains low levels of PCBs, there is a potential for worker exposure.

As described under the No Action/No Project Alternative, exposure to hazardous building materials would be minimized by implementing measures required by federal, state, and local laws and regulations. In addition, waste materials would be characterized and disposed of in accordance with all applicable laws and regulations. As such, potential impacts associated with the presence of hazardous building materials at LAX and within the acquisition areas would be less than significant.

Implementation of Alternatives A, B, and C would substantially alter ground access to, from, and around LAX. During construction, many local arterials would be closed for varying periods; however, roadway access would be maintained by construction of detours and diversions. Details on roadway access changes are provided in Section 4.4.4, *Community Disruption and Alteration of Surface Transportation Patterns*. A lack of adequate access could impair the effective implementation of adopted emergency response plans by impeding the movement of emergency vehicles. Because local access would be

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adequately maintained through detours and diversions and emergency access would be coordinated and ensured through Master Plan Commitment C-1, Establishment of a Ground Transportation/Construction Coordination Office (Alternatives A, B, C, and D), and Master Plan Commitments ST-9 through ST-19, project-related construction would not significantly impair the implementation of emergency response plans, and no adverse impact would occur.

Construction activities would include the use and transport of hazardous substances, including fuels for construction equipment. As such, there is the potential for an accidental discharge of hazardous substances during construction activities. Compliance with safety precautions and regulatory requirements identified in Section 4.23, *Hazardous Materials*, would be required and would reduce the risk of an accidental release of hazardous materials to a level less than significant.

Due to the overall increase in activity levels forecast to occur at LAX with implementation of any of these build alternatives, it is likely that hazardous materials use and waste generation would increase. Potential impacts from increased use of hazardous materials and increased hazardous waste generation may result from spills or releases during construction activities and interference with emergency response plans. These potential increases would be greater under Alternatives A, B, and C because their activity levels would be greater than those projected under the No Action/No Project Alternative. Additionally, these build alternatives would entail construction and demolition impacts not associated with the No Action/No Project Alternative that could result in exposure of workers to hazardous waste.

### **Public Utilities (CEQA)**

#### **Water Use**

Water would be required for dust suppression during construction of Alternatives A, B, and C improvements and Westchester Southside, as well as for construction-related demolition. Additionally, water would be used during construction for the mixing of concrete. It is not possible to quantify this water usage with any level of certainty. It is possible that reclaimed water could be used for dust suppression, reducing the quantity of potable water required. Due to the projected availability of local water supplies, construction water usage would be a less than significant impact.

Construction of subsurface structures under Alternatives A, B, and C may interfere with existing water supply and distribution facilities. Preliminary review of Alternatives A, B, and C indicates that relocation/adjustment of water system facilities may be required, potentially including: a 24" recycled water line located northeast of the existing LAX complex; a regulator station at Century Boulevard and Aviation Way; a 26" trunkline in Sepulveda Boulevard; a 16" main in Aviation Boulevard; and, a 24" trunkline in Pershing Drive and within LAX property south of Westchester Parkway. Under Master Plan Commitment PU-1, Develop a Utility Relocation Program (Alternatives A, B, C, and D), a utility relocation program would be implemented during construction to minimize potential impacts on existing subsurface utilities. It is possible that some connections would experience brief, temporary disruption of service during utility relocation. The utility relocation program would be prepared to minimize these disruptions. Developing and implementing this utility relocation program would ensure that potential impacts on existing water supply and distribution facilities would be less than significant.

The above potential impacts to existing water supply and distribution facilities would not occur under the No Action/No Project Alternative. Construction-related impacts to water supply under Alternatives A, B, and C would be substantially greater than the No Action/No Project Alternative, which would involve fewer construction activities.

#### **Wastewater**

Construction of subsurface structures under Alternatives A, B, and C may interfere with existing wastewater collection infrastructure. As discussed in Section 4.25.2, *Wastewater*, three major sewer outfalls, the North Central Outfall Sewer (NCOS), North Outfall Relief Sewer (NORS), and the Central Outfall Sewer (COS), underlie LAX. Construction of major subsurface structures, such as the proposed close-in parking garage near the West Terminal Area and the APM, could potentially interfere with these outfalls. The NCOS and NORS are larger and deeper than the COS and, based on a preliminary analysis, design and construction would be performed so it would not interfere with these sewers. However, the COS is much more shallow. Based on preliminary engineering analysis, it appears that the COS would be affected by construction of Alternatives A, B, and C and would require relocation or modification. Under Master Plan Commitment PU-1, Develop a Utility Relocation Program (Alternatives

A, B, C, and D), a utility relocation program would be implemented during construction to minimize potential impacts on existing subsurface utilities and ensure that potential impacts to existing wastewater outfalls would be less than significant.

The above potential impacts to existing wastewater collection infrastructure would not occur under the No Action/No Project Alternative.

### **Public Services (CEQA)**

#### **Fire Protection and Law Enforcement**

The traffic congestion associated with the demolition and construction of major projects for Alternatives A, B, and C within and adjacent to the LAX property would have the potential to hamper or delay emergency response. However, temporary roadway Level of Service (LOS) deficiencies associated with compromised emergency response would be avoided through implementation of Master Plan Commitment C-1, Establishment of a Ground Transportation/Construction Coordination Office (Alternatives A, B, C, and D), and Master Plan Commitments ST-9 through ST-19. Implementation of Master Plan Commitment C-1 would ensure proper advanced coordination with LAFD, LAWAPD, and LAPD and planning of detours and emergency access routes to maintain response times. These commitments would avoid potentially significant traffic-related impacts on fire protection and law enforcement response times and ensure adequate fire protection and law enforcement service levels are maintained. Therefore, impacts of construction on emergency response times would be less than significant.

Without proper coordination and phasing, the relocation process for on-airport fire protection and police facilities could temporarily compromise fire protection and/or law enforcement services. To address this potentially significant impact and maintain adequate fire protection and law enforcement services with new development under Alternatives A, B, and C, Master Plan Commitment PS-1, Fire and Police Facility Relocation Plan (Alternatives A, B, C, and D), would be implemented to properly coordinate relocation of facilities with the LAFD, LAWAPD, and LAPD. These impacts would not occur under the No Action/No Project Alternative.

#### **Parks and Recreation**

Construction of transportation facilities and other improvements in proximity to park facilities are not expected to restrict access to area parks. A possible exception would be construction associated with the expansion of Carl E. Nielson Youth Park, although it is expected that LAWA would time the construction of these improvements so that they would minimally interfere with youth sports. As described in Section 4.1, *Noise*, construction noise impacts would occur at Imperial Strip, just south of Imperial Highway in the City of El Segundo. However, Imperial Strip serves as a buffer between the airport and the City of El Segundo and much of its use is for viewing aircraft. Furthermore, construction noise at Imperial Strip would be temporary. Therefore, construction noise impacts at Imperial Strip relative to park use are considered to be less than significant. Construction of Westchester Southside may temporarily impair access to Westchester Park Recreation Center (via Lincoln Boulevard). However, implementation of Master Plan Commitment ST-18, Construction Traffic Management Plan (Alternatives A, B, C, and D) would ensure that alternate routes or detours would be provided if access is impaired. Furthermore, as the focus of construction would be largely on airport property and within immediately adjacent acquisition areas, there would be no significant impacts on Westchester Park Recreation Center, Vista del Mar Park, Dockweiler State Beach, or the South Bay Bicycle Trail. Effects on parks and recreational facilities associated with the LAX Expressway and State Route 1 improvements under Alternatives A, B, and C are described in Appendix K, *Supplemental Environmental Evaluation for LAX Expressway and State Route 1 Improvements*. Under the No Action/No Project Alternative, impacts on access due to construction activities are anticipated to only potentially affect Westchester Park Recreation Center.

#### **Libraries**

The new combined Westchester-Loyola Village Branch Library is located approximately 1,400 feet from the nearest area of the airport that is proposed for construction. This distance, combined with intervening buildings and topography, is sufficient to preclude construction noise impacts or limitations to access. The El Segundo Main Library is located even more remotely from the site and would not be impacted by construction. Therefore, construction activities associated with Alternatives A, B, and C would not result in impacts to local libraries.

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### **Schools (CEQA)**

Analyses of impacts on schools of Alternatives A, B, and C relative to noise, air quality, and health risk are addressed in their corresponding sections (i.e., Section 4.1, *Noise*, Section 4.2, *Land Use*, Section 4.6, *Air Quality*, and Section 4.24.1, *Human Health Risk Assessment*) and technical reports and appendices (i.e., Appendix G, *Air Quality Impact Analysis*, Technical Report 1, *Land Use Technical Report*, Technical Report 4, *Air Quality Technical Report*, Technical Report 14, *Human Health and Safety Technical Report*, Appendix S-E, *Supplemental Air Quality Impact Analysis*, Technical Report S-1, *Supplemental Land Use Technical Report*, Technical Report S-4, *Supplemental Air Quality Technical Report*, and Technical Report S-9a, *Supplemental Human Health and Safety Technical Report*). Section 4.2, *Land Use*, summarizes noise impacts to schools resulting from construction activities associated with the proposed project. Four public schools within the El Segundo Unified School District and Los Angeles Unified School District would be potentially impacted by noise associated with construction activities. Although Mitigation Measures MM-N-7, Construction Noise Control Plan (Alternatives A, B, C, and D), MM-N-8, Construction Staging (Alternatives A, B, C, and D), MM-N-9, Equipment Replacement (Alternatives A, B, C, and D), and MM-N-10, Construction Scheduling (Alternatives A, B, C, and D), and Master Plan Commitment C-1, Establishment of a Ground Transportation/Construction Coordination Office (Alternatives A, B, C, and D), would reduce temporary construction noise impacts on schools, periodically impacts could remain significant following implementation of these mitigation measures (see Section 4.1, *Noise*). Master Plan Commitments C-1, Establishment of a Ground Transportation/Construction Coordination Office (Alternatives A, B, C, and D), and ST-16, Designated Haul Routes (Alternatives A, B, C, and D), would reduce potential impacts on school access and safety to less than significant levels.

### **4.20.6.3 Alternative D - Enhanced Safety and Security Plan**

#### **Noise**

Construction activities located within the vicinity of noise-sensitive uses includes the development of airport property north of Westchester Parkway and west of Sepulveda Boulevard, the RAC, the ANMP acquisition area (Belford), the GTC (Manchester Square), and on-site cargo facilities near the airport's southern boundary.

Noise-sensitive uses abut the airport property north of Westchester Parkway and west of Sepulveda Boulevard, as well as at the proposed RAC to the north. Ambient noise levels are estimated to be between 62 dBA  $L_{eq}$  and 66 dBA  $L_{eq}$  during daytime hours. It is estimated that construction equipment noise would dissipate to no more than 67 dBA  $L_{eq}$  within 600 feet of the noise source. Accordingly, all noise-sensitive uses within 600 feet of these construction activities would be significantly impacted (see Figure F4.1-10, Potential Construction Noise Impacts - Alternative D, in Section 4.1, *Noise*). Construction activities related to runway/airfield improvements may occur during evening and nighttime hours, when ambient noise levels are lower than during daytime hours; however, such activities would not occur in proximity to sensitive uses such as residential areas.

Residential units closest to the ANMP acquisition area are located to the northeast across Arbor Vitae on Ramsgate and Morely Streets. Residential units closest to demolition activities are approximately 450 feet away. Construction equipment noise levels of 86 dBA at 50 feet potentially could generate noise levels of 72 dBA at 450 feet in the absence of shielding. Ambient noise is estimated to be approximately 68 dBA  $L_{eq}$  and therefore 4 dBA less than the construction equipment noise. Arbor Vitae Street and local warehouse uses separate the two areas, and these would both mask and buffer the noise in the residential areas to less than significant levels.

The noise-sensitive uses closest to the proposed GTC are single-family dwelling units located approximately 1,000 feet or more to the east across La Cienega Boulevard and the I-405 in the City of Inglewood within the 1996 and No Action/No Project Alternative 65 dBA CNEL aircraft noise contour. Construction equipment noise is predicted to dissipate to approximately 66 dBA  $L_{eq}$  at 1,000 feet, and the road traffic and other noise would mask any construction equipment noise. This area would have a less than significant impact from construction equipment noise.

The nearest noise-sensitive land uses to the proposed on-site cargo facilities are located approximately 500 feet away, south of the I-105. Daytime ambient noise levels at these locations are estimated to be 65 dBA  $L_{eq}$  or higher, owing to both road traffic and aircraft noise. Construction equipment noise of 70 dBA

$L_{eq}$  or higher would potentially occur 600 feet from construction activities, because there is no substantial shielding between the noise source and the noise-sensitive receptors. Consequently, several first-row residences within 600 feet of nearby cargo facility construction would be significantly impacted by construction equipment noise. Mitigation Measures MM-N-7 through MM-N-10 are proposed to reduce construction-related noise impacts on nearby sensitive uses.

### **Land Use**

Major components of Alternative D under construction would include runway and airfield modifications, new and modified terminal facilities, LAX Northside, and a number of transportation improvements including the GTC, ITC, RAC, and APM. A variety of activities would occur within these areas, including demolition, excavation and grading, utility installation, and construction of foundations, buildings, and other facilities. The majority of construction activities would occur during daytime hours, with second and third shifts used for work activities that cannot be accomplished during the daytime shift due to coordination or interference issues (i.e., airport operations, safety, delivery of materials and equipment). Nighttime construction is expected to occur on the airfield and for roadway projects.

Construction haul routes would be located away from residential streets and noise-sensitive parcels as provided for under Master Plan Commitment ST-16, Designated Haul Routes (Alternatives A, B, C, and D). Construction staging areas would be located away from residential areas, as stated in Mitigation Measure MM-N-8, Construction Staging (Alternatives A, B, C, and D), and Master Plan Commitment ST-12, Designated Truck Delivery Hours (Alternatives A, B, C, and D), would limit construction delivery hours.

Construction effects associated with noise, air emissions, degraded views, surface transportation disruption, and other issues would impact land uses surrounding the Master Plan boundaries. The most notable impact affecting adjacent land uses would be construction noise. As further described in Section 4.1, *Noise*, even with the implementation of mitigation measures MM-N-7 through MM-N-10, there would be significant unavoidable impacts in noise-sensitive areas located within 600 feet of construction sites. Land uses potentially affected by significant construction noise levels of 5 dBA above the lowest ambient noise levels would be those primarily located to the south of the airport in El Segundo and to the north of the airport in Westchester. These areas are shown in Figure F4.1-10, Potential Construction Noise Impacts - Alternative D, in Section 4.1, *Noise*. Within the City of El Segundo, these areas include 132 dwelling units fronting Imperial Highway. To the north of the airport in the Westchester community, 1,360 dwelling units, 2 churches, and 5 schools would have similar potential to be periodically exposed to significant construction noise levels. Affected schools would include Paseo del Rey Magnet School, Visitation Elementary School, Westchester-Emerson Community Adult School, Westchester High School, and Saint Bernard High School.

Although most construction impacts would be intermittent and temporary, and would be reduced to less than significant levels through mitigation measures presented below in subsection 4.20.8, *Mitigation Measures*, significant unavoidable impacts from construction noise and air quality would affect sensitive land uses. Construction-related traffic and lane closures would temporarily disrupt normal traffic flows, and construction related traffic would result in a temporarily significant and unavoidable impact on Century Boulevard between Aviation and Sepulveda Boulevards.

In addition to mitigation measures provided below in subsection 4.20.8, *Mitigation Measures*, Master Plan Commitment C-1, Establishment of a Ground Transportation/Construction Coordination Office (Alternatives A, B, C, and D), and Master Plan Commitments ST-9, ST-12, ST-14 and ST-16 through ST-22 would address construction-related impacts on sensitive land uses.

Under the No Action/No Project Alternative, construction impacts associated with the airport improvements, the demolition of Manchester Square and Belford, and the development of LAX Northside and Continental City would occur. However, no construction impacts associated with the development of the GTC, ITC, RAC, and APM would occur under the No Action/No Project Alternative and the extent of impacts would be reduced when compared to Alternative D, with less overall construction proposed.

### **Surface Transportation**

#### **On-Airport**

In 2008, the year of peak construction traffic, Alternative D proposes no changes to the CTA curbside. By that time, all parking would be relocated from the CTA to the ITC, which would have the same number of parking spaces as the CTA. The ITC would also provide a connection to all Metropolitan Transportation Authority (MTA) buses and the MTA Green Line station.

The CTA curbside would continue to operate as it does today; however, the demand on the curbside would have different characteristics than today. First, closure of the CTA parking operations would relocate all short-term parking to the ITC, causing a shift in parking-related traffic. Second, shuttle buses would transport passengers and visitors between the CTA and ITC, introducing a new mode of transportation (and source of demand) that does not currently exist. Third, some motorists, who might have otherwise parked if close-in CTA parking were available, would simply recirculate around the CTA curbside system while waiting for arriving passengers. As a result, some components of the curbside demand would increase; however, this added demand would likely be offset by the reduction in CTA traffic due to the parking closure.

Almost all curbside segments would deteriorate with Alternative D in 2008, compared to the 1996 environmental baseline. Only Terminals 1 and 3 on the arrivals (lower) level would improve their operating conditions. Similar to the 1996 condition, the terminals that would experience the worst operating conditions would be those at the beginning and end of the CTA horseshoe, including Terminals 1, 7 and 8. Further, all of the segments on the departures (upper) level and six of the nine arrivals level segments would deteriorate sufficiently to meet the criteria for significance. This is a significant impact.

Also, the on-airport surface transportation analysis revealed other potential issues and impacts in the CTA. The airport peak hour (11:00 a.m. to 12:00 noon) ridership demand estimated for 2008 would necessitate an estimated 153 bus trips to transport passengers between the ITC and the CTA. With the buses traversing both the arrivals and departures levels, an average round trip is estimated to exceed one hour. Even with an extremely large fleet of over 150 buses, the existing curbsides in the arrival levels would not be able to maintain an acceptable level of service during the airport peak hour. Inasmuch as the need for, and impacts from, this sizeable fleet of buses is attributable to construction phasing and activities associated with Alternative D, it is considered to be a significant impact (i.e., generates sufficient construction-related traffic to disrupt normal background traffic operations).

As in the No Action/No Project Alternative, the recirculation roadway from the upper level to the lower level would also experience high volumes, primarily due to a large number of courtesy vehicles, and thus operate at LOS F.

Finally, the ITC is expected to accommodate approximately 2,918 entering vehicles and 2,615 exiting vehicles during the peak hour, including construction and air passenger vehicles. Master Plan Commitment ST-7, Adequate GTC, ITC, and APM Design (Alternative D), would ensure that this volume of traffic is adequately accommodated.

#### **Off-Airport**

The Ground Access Plan would include a phased mitigation plan to address interim impacts (i.e., temporary construction-related impacts) as they occur. The phasing plan would primarily revolve around the construction and implementation of the ITC, which would be developed north of Imperial Highway and east of Aviation Boulevard. That facility would be a replacement facility for the close-in parking that currently exists in the CTA. When the ITC comes on-line, the existing CTA parking would close and all "close-in" parking activity would take place at the ITC, with shuttle service to the CTA.

When the ITC comes on-line, there is expected to be a substantial shift in airport traffic patterns, as much of the CTA traffic shifts to the ITC. This traffic shift would result in significant impacts to various roadway intersections and ramps, as discussed below. As much as possible, it is important that the mitigation of these impacts be in place prior to opening the ITC, so that the corresponding traffic shifts can be adequately accommodated.

The other major surface transportation element that would come on-line in Alternative D would be the Ground Transportation Center (GTC). That facility is not expected to be opened until after 2008, at which time most of the final mitigation plan should be in place. The openings of these two facilities are the

drivers for the surface transportation mitigation plan discussed below, although some specific improvements would be in place at other years. The timing of these other improvements will be determined through both the peak construction year traffic impact analysis and ongoing program management of the LAX Master Plan construction.

Based on a construction activity analysis completed for Alternative D, which estimates on a quarterly calendar basis the nature, location, and equipment/work force associated with construction activities underway at that specific time, the year with the highest construction workforce and truck demand for Alternative D is Year 2008.<sup>754</sup> During that peak construction year, there will be an average daily employment of 5,125 and an average of 1,064 truck trips per day.

Similar to the analysis of Year 2015 conditions, Year 2008 conditions were analyzed to determine potential significant impacts of off-airport surface transportation facilities. Specific construction traffic was also analyzed with Year 2008 project-related traffic (i.e., traffic associated with operations at LAX as projected to occur in 2008 with the Alternative D improvements completed by that time). This approach thereby accounts for both the construction-related and operations-related traffic impacts associated with Alternative D at that time, and established a basis by which mitigation measures for the combined traffic can be formulated.

Total traffic at every roadway analyzed except one would be higher during the morning commuter peak hour (8:00 a.m. to 9:00 a.m.) than during the construction peak hour of 6:00 a.m. to 7:00 a.m. Similarly, the evening commuter peak hour (5:00 p.m. to 6:00 p.m.) would have higher traffic volumes than the afternoon construction peak hour of 3:00 p.m. to 4:00 p.m. at every location except one. The only exception in both cases is Century Boulevard east of Sepulveda Boulevard, where the with-construction volume is higher during the a.m. and p.m. construction peak hours than during the morning and evening commuter peak hours. Although this meets the threshold criteria for a significant impact, the circumstance should be temporary. As a result, this is a temporary and significant impact. No other additional significant traffic impacts are introduced by airport construction traffic that are not already included in the analysis of the morning commuter, evening commuter, and airport peak hours. This analysis demonstrates that the three peak hours studied in detail capture the hours with the greatest total traffic levels (construction, passenger-related, and non-airport) and resulting project impacts. The addition of construction traffic would not cause the total traffic during any other hour to exceed the traffic volumes during the three peak hours except on Century Boulevard.

### **Social Impacts**

#### **Employment/Socio-Economics**

Alternative D construction-related expenditures, excluding land acquisition and relocation costs, would be approximately \$6.4 billion (in 1997 dollars), and there would be an estimated 48,778 jobs directly involved in design and construction. When a multiplier effect is taken into account, construction of Alternative D would generate 102,244 construction-related jobs. Based on estimated direct construction expenditures, Alternative D would yield an estimated \$11.3 billion dollars in total economic output in Los Angeles County, a beneficial effect. Therefore, construction employment/socio-economic impacts would be beneficial.

Compared to the No Action/No Project Alternative, which would not entail capital expenditures beyond those already programmed by LAWA and the City of Los Angeles, Alternative D would require greater construction expenditures and would consequently generate a greater number of construction jobs. When accounting for the multiplier effect of direct construction jobs, Alternative D would also generate a greater total employment impact and greater total economic output in the county as compared with the No Action/No Project Alternative.

#### **Environmental Justice**

Overall, construction noise impacts would fall predominantly on non-minority/non low-income communities, with approximately 99 percent of the area exposed to high levels of noise falling within these communities. Due to the magnitude of construction activities, CO, VOC, NO<sub>x</sub>, and PM<sub>10</sub> emissions

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<sup>754</sup> MARRS Services, Inc., LAX Master Plan Alternative D, Compilation of Draft Environmental Impact Statement (DEIS) Construction Impacts Input Data, Excluding Crossfield Taxiway Projects, May 21, 2003.

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from construction would remain significant after mitigation, as would predicted ambient concentrations of PM<sub>10</sub>. Based on the characteristics of pollutant dispersion from construction activities, the populations adversely affected would be those in close proximity to the airport boundaries; generally, the same non-minority/non low-income communities exposed to adverse levels of construction noise. Other construction impacts, such as those associated with traffic and visual impacts would also fall predominantly on non-minority/non low-income communities.

### **Community Disruption and Alteration of Surface Transportation Patterns**

During the construction of Alternative D, several improvements would take place along the primary arterials and roadways in the vicinity of the APM alignment, the GTC, and the ITC. During construction, there would be the potential for temporary detours and congestion from construction traffic to compromise access to community facilities, services, residences, and businesses, although haul routes and construction areas would generally be to the south of the Westchester community and north of El Segundo. Implementation of Master Plan Commitments C-1, ST-8, ST-9, ST-12, ST-14, and ST-16 through ST-22 would reduce the potential for impacts associated with community disruption from changes in transportation circulation patterns. These commitments involve establishing a ground transportation/construction coordination office, managing construction traffic, developing a detour plan and designated truck routes, limiting short-term lane closures and imposing closure restrictions on existing roadways. However, temporary construction-related traffic impacts would be significant and unavoidable at Century Boulevard (between Aviation Boulevard and Sepulveda Boulevard) even with implementation of relevant Master Plan commitments. Therefore, the potential for temporary impacts associated with community disruption of adjacent communities during construction work would be significant.

Alternative D would result in greater overall disruption to communities and transportation facilities from construction than the No Action/No Project Alternative. However, under both Alternative D and the No Action/No Project Alternative, increased construction traffic resulting from development of LAX Northside has the potential to temporarily compromise access in portions of the Westchester community. With the implementation of Master Plan commitments identified in Section 4.4.4, *Community Disruption and Alteration of Surface Transportation Patterns*, effects on access to community facilities during construction of LAX Northside would be less than significant.

### **Air Quality**

Construction activities for Alternative D would result in emissions from construction equipment, haul vehicles, earth-moving activities, and employee vehicles. Unpaved construction haul roads would be periodically watered-down to reduce fugitive dust, and construction equipment would be properly maintained to reduce vehicle emissions. The peak year for emissions under Alternative D would be 2005. Construction would be completed by 2014. The incremental daily and quarterly emissions of CO, VOC, NO<sub>x</sub>, and PM<sub>10</sub> would exceed the SCAQMD's thresholds of significance for these pollutants. Therefore, construction emissions under Alternative D would be significant for these pollutants. Mitigation Measure MM-AQ-2, Construction Related Measures (Alternatives A, B, C, and D), is proposed to reduce construction-related air quality impacts.

For purposes of the CEQA significance determination, a combined peak concentration for construction and on-airport operational sources was developed. An individual concentration for construction-related sources was not developed, so the significance of the combined concentration was conservatively assumed for construction-related sources. The maximum combined concentrations for construction and on-airport operational sources for Alternative D would not exceed the 1-hour and 8-hour CO NAAQS and CAAQS, the annual NO<sub>2</sub> NAAQS, the 1-hour NO<sub>2</sub> CAAQS, or the annual and 24-hour PM<sub>10</sub> NAAQS in 2005. However, the maximum concentrations for Alternative D, when added to future background concentrations, would exceed the 24-hour and annual PM<sub>10</sub> CAAQS. Therefore, PM<sub>10</sub> concentration impacts from operational and construction activities under Alternative D would be significant. Generally, impacts to air quality during construction under Alternative D would be greater than the No Action/No Project Alternative, which would involve fewer construction activities.

### **Hydrology and Water Quality**

Under Alternative D, construction could create sources of pollution that could potentially affect water quality. As these construction activities would affect an area greater than one acre, LAWA's existing

construction policy would require the development of a construction SWPPP in compliance with the state's Construction Permit. By following the procedures contained in the SWPPP and employing temporary construction BMPs, as described in Technical Report 6, *Hydrology and Water Quality Technical Report*, impacts to water quality associated with construction activities under Alternative D would be less than significant.

Potential water quality impacts during construction under Alternative D would be greater than the No Action/No Project Alternative, which would involve fewer construction activities.

### **Department of Transportation Act, Section 4(f)**

Under Alternative D, the disturbance or destruction of potentially significant undiscovered archaeological/cultural sites during construction would be considered a use under Section 4(f), if these sites are considered to have greater value if preserved in place. Mitigation Measures MM-HA-4 through MM-HA-10, identified in Section 4.9.1, *Historic/Architectural and Archaeological/Cultural Resources*, would address impacts to archaeological/cultural resources.

### **Historic/Architectural and Archaeological/Cultural and Paleontological Resources**

At the federal level, construction activities associated with Alternative D would not affect any significant historic resources. However, at the state level construction-related activities associated under Alternative D would affect one historic resource, the International Airport Industrial District. The partial demolition of the District would result in a significant adverse change to the historic resource, which would be a significant impact at the state level. Mitigation Measures MM-HA-1, Historic American Buildings Survey (HABS) Document (Alternatives A, B, C, and D), and MM-HA-2, Historic Educational Materials (Alternatives A, B, C, and D), are proposed to address impacts on the International Airport Industrial District associated with implementation of Alternative D. Please see Section 4.9.1, *Historic/Architectural and Archaeological/Cultural Resources*, for further discussion.

Alternative D would not result in construction impacts on known archaeological/cultural resources at the federal or state level. However, some loss of as-yet discovered archaeological/cultural resources could occur during grading and excavation activities. This disturbance or destruction of potentially significant undiscovered archaeological/cultural resources by these activities would be considered a significant impact. With implementation of Mitigation Measures MM-HA-4 through MM-HA-10, project impacts on archaeological/cultural resources would be reduced to a less than significant level at the state level, and at the federal level, sufficiently mitigated in accordance with federal standards as described in Section 4.9.1, *Historic/Architectural and Archaeological/Cultural Resources*.

Under Alternative D, construction-related activities involving depths generally greater than six feet are likely to expose and possibly damage potentially important paleontological resources. Construction activities would also increase the potential for making the project site accessible for unauthorized fossil collection, which could result in the loss of additional fossil remains, associated scientific data, and fossil sites. These construction-related impacts are considered significant. Implementation of Mitigation Measures MM-PA-1 through MM-PA-7 would reduce potential adverse impacts to paleontological resources to a less than significant level.

Potential impacts to archaeological and paleontological resources during construction associated with potential disturbance of previously undiscovered resources under Alternative D would be greater than those of the No Action/No Project Alternative, which would involve fewer construction activities and disturb less area.

### **Biotic Communities**

Under Alternative D, construction activities, including staging, near the Los Angeles/El Segundo Dunes, including the El Segundo Blue Butterfly Habitat Restoration Area, would result in potentially significant impacts to state-designated sensitive habitats. Under Alternative D, installation of navigational aids and associated service roads would result in impacts to 66,675 square feet (1.53 acres) of state-designated sensitive habitats within the Los Angeles/El Segundo Dunes, which is considered to be a significant impact, including 33,334 square feet (0.77 acre) within the Habitat Restoration Area. Within this area, 10,597 square feet (0.24 acre) of habitat occupied by the El Segundo blue butterfly would be impacted. Under Alternative D, construction activities, including staging and stockpiling of materials proximal to the Los Angeles/El Segundo Dunes, including the Habitat Restoration Area, would have the potential to result

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in deposition of fugitive dust within state-designated sensitive habitat. Implementation of Mitigation Measures MM-BC-1, Conservation of State-Designated Sensitive Habitat Within and Adjacent to the El Segundo Blue Butterfly Habitat Restoration Area (Alternatives A, B, C, and D), MM-BC-13, Replacement of State-Designated Sensitive Habitat (Alternative D), and MM-ET-3, El Segundo Blue Butterfly Conservation: Dust Control (Alternatives A, B, C, and D) would reduce impacts to a level less than significant.

Implementation of LAX Northside would result in the removal of approximately 300 mature trees. Implementation of Mitigation Measure MM-BC-3, Conservation of Floral Resources: Mature Tree Replacement (Alternatives A, B, C, and D), would reduce impacts to mature trees to a level less than significant.

The construction impacts under Alternative D would be greater than those under the No Action/No Project Alternative.

### **Endangered and Threatened Species of Flora and Fauna**

Under Alternative D, 0.04 acres (1,853 square feet) of degraded wetland habitat containing embedded cysts of the Riverside fairy shrimp would be directly affected by construction activities and staging. This would result in a significant impact. Potential indirect impacts to 1.26 acres of degraded wetland habitat containing cysts of the Riverside fairy shrimp would be avoided through the implementation of construction avoidance measures, including Best Management Practices (BMPs), and the creation of a buffer area around the degraded wetland habitat. Implementation of Mitigation Measure MM-ET-1, Riverside Fairy Shrimp Habitat Restoration (Alternatives A, B, C, and D), which incorporates the conservation measures detailed in the Biological Opinion would reduce direct impacts and potential indirect impacts to embedded cysts of the Riverside fairy shrimp to a level less than significant.

Under Alternative D, the installation of navigational aids and associated service roads would occur within habitat occupied by the El Segundo blue butterfly in the Habitat Restoration Area. These construction activities would cause a significant impact. Implementation of Mitigation Measures MM-ET-4, El Segundo Blue Butterfly Conservation: Habitat Restoration (Alternative D) and MM-ET-3, El Segundo Blue Butterfly Conservation: Dust Control (Alternatives A, B, C, and D), which incorporate the conservation measures detailed in the Biological Opinion would reduce impacts to the El Segundo blue butterfly to a level less than significant.

The construction impacts to endangered and threatened species under Alternatives D, described above, would be greater than those under the No Action/No Project Alternative.

### **Wetlands**

Under Alternative D, 0.04 acre (1,853 square feet) subject to the jurisdiction of the USACOE would be permanently converted as a result of construction staging, airfield operations and maintenance, and/or airfield improvements. Direct impacts to 0.04 acre (1,853 square feet) is considered to be a significant impact. Potential indirect impacts to 1.26 acres of jurisdictional area could also occur from the aforementioned activities and improvements, although implementation of construction avoidance measures, including BMPs, and the creation of a buffer area around the wetland sites would reduce the potential for such indirect impacts. Implementation of Mitigation Measure MM-ET-1, Riverside Fairy Shrimp Habitat Restoration (Alternatives A, B, C, and D), would reduce direct and potential indirect impacts to a level less than significant. The construction impacts to wetlands under Alternative D would be greater than those under the No Action/No Project Alternative.

### **Coastal Zone Management and Coastal Barriers**

Vehicle, bicycle, and pedestrian access to the coast is not expected to be significantly affected by construction activities. Any impact to coastal access along Westchester Parkway, Pershing Drive and Imperial Highway is expected to be minimal. In addition, alternative coastal access would be available; therefore, impacts to coastal access during construction would be less than significant.

Impacts to coastal access during construction under Alternative D, while expected to be minimal, would be greater than those under the No Action/No Project Alternative, which does not include construction of facilities such as the west employee parking garage.

Under Alternative D, construction activities have the potential to result in deposition of fugitive dust within state-designated sensitive habitat, including habitat within the El Segundo Blue Butterfly Habitat Restoration Area. The potential indirect impacts to state-designated sensitive habitat due to construction activities would be reduced to a level less than significant with implementation of the mitigation measures described in Section 4.10, *Biotic Communities*, and Section 4.11, *Endangered and Threatened Species of Flora and Fauna*.

The indirect impacts to state-designated sensitive habitat associated with Alternative D would be greater than those under the No Action/No Project Alternative, based on the comparative difference in the level of construction activity.

Under Alternative D, installation of navigational aids and associated service roads would directly impact state-designated sensitive habitat within the Los Angeles/El Segundo Dunes. The direct impacts would be less than significant with implementation of the mitigation measures described in Section 4.10, *Biotic Communities*, and Section 4.11, *Endangered and Threatened Species of Flora and Fauna*.

In comparison, the No Action/No Project Alternative would not result in any direct impacts to state-designated sensitive habitat within the Los Angeles/El Segundo Dunes as the No Action/No Project Alternative would not require changes to navigational aids.

### **Energy Supply and Natural Resources**

#### **Energy Supply**

Construction activities under Alternative D would require fuel for the operation of construction equipment and for construction-related vehicle trips, as well as electricity for lighting. Because adequate electricity, gasoline, and diesel supplies are anticipated to be available through 2015, the impact associated with the consumption of these energy resources for construction-related activities would be less than significant.

Construction associated with Alternative D would include activity near existing natural gas and electrical power lines. Excavating near natural gas or electrical power lines could cause an interruption in service to LAX or the surrounding area if improper construction methods are used or poor planning occurs. Construction near submerged high voltage electrical power lines could later affect the transmission capacity of the lines if surrounding insulation material is improperly changed. The ability of utility providers to access underground pipes or lines could also be affected by construction. Under Master Plan Commitments E-2, Coordination with Utility Providers (Alternatives A, B, C, and D), and PU-1, Develop a Utility Relocation Program (Alternatives A, B, C, and D), LAWA would work with the utility providers to assure that changes to the electrical distribution system performed under Alternative D would not adversely affect electricity or natural gas service to the surrounding area. Development and implementation of these commitments would reduce potential impacts to the existing electricity supply and distribution system from construction activities to a level that is less than significant.

The above potential impacts to the energy distribution system would not occur under the No Action/No Project Alternative. Impacts to energy supply during construction under Alternative D would be greater than those associated with the No Action/No Project Alternative, which would involve fewer construction activities.

#### **Natural Resources**

Under Alternative D, aggregate materials would be used for construction of the various proposed improvements. The estimated aggregate consumption for construction under Alternative D is 11.4 million tons, or less than 1 percent of the estimated 1.7 billion tons of currently permitted reserves in the Los Angeles region. Construction materials from demolition work would be recycled; therefore, not all of this demand for aggregate would require raw materials.

The CDMG anticipates that currently permitted aggregate reserves in the Los Angeles region will be available through 2046. Although use of materials from more distant production areas may be more costly, the need for aggregate materials for Alternative D would not result in a significant impact on available reserves.

Impacts to natural resources as a result of construction under Alternative D would be substantially greater than the No Action/No Project Alternative, which would involve fewer construction activities.

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### **Light Emissions**

Construction activities on the airport under Alternative D may involve nighttime activities that would require lighting of work areas. More concentrated and substantial construction would occur at the LAX Northside, Manchester Square, Continental City, and CTA sites. Other construction activities would not be as extensive and widespread or in view along primary roadways or airport approaches. Because no nighttime construction or construction lighting would occur in areas close enough to disturb residential uses, no significant impacts from construction lighting are expected with development of Alternative D. Although no significant construction lighting impacts would occur, there would be greater levels of ambient lighting during construction of Alternative D than under the No Action/No Project Alternative.

### **Solid Waste**

Construction and demolition activities for Alternative D would generate a substantial amount of inert solid waste requiring disposal. The estimated quantities of solid waste are provided in Section 4.19, *Solid Waste*. To the extent possible, suitable materials would be recycled or reused at LAX. Additionally, Master Plan Commitments SW-2, Requirements for the Use of Recycled Materials During Construction (Alternatives A, B, C, and D), and SW-3, Requirements for the Recycling of Construction and Demolition Waste (Alternatives A, B, C, and D), would reduce the amount of demolition and construction waste requiring disposal by requiring contractors to use recycled construction materials and to recycle demolition and construction-related waste. Recycling of construction materials would be consistent with FAA policies pertaining to waste minimization and resource conservation. Inert disposal capacity is anticipated to be available well beyond the 2015 planning horizon. Therefore, impacts with respect to construction and demolition solid waste would be less than significant.

Impacts to solid waste disposal capacity as a result of construction under Alternative D would be substantially greater than the No Action/No Project Alternative, which would involve fewer construction activities.

### **Design, Art and Architecture Application/Aesthetics**

Under Alternative D, extensive and widespread construction during the demolition and construction of structures and roadways would create a strong visual contrast in and around the airport. Major areas of construction activity would be focused within the CTA; at the eastern end of the airport along Aviation Boulevard, within the Manchester Square area, and at the Continental City project site; along the northern boundary of the airport at LAX Northside; and east of Sepulveda Boulevard along 98<sup>th</sup> Street. Construction would be evident along the Century Boulevard and Sepulveda Boulevard approaches to the airport. Construction activities would also be visible along the southern boundary of the airport, near the Sepulveda Boulevard/Imperial Highway intersection and areas extending east to the I-405.

Areas most exposed and sensitive to views of the construction activities would include: residential and hotel uses along the southern site boundary along Imperial Highway west of Sepulveda Boulevard; residential areas adjacent to LAX Northside; residential neighborhoods along the northern boundary east of Sepulveda Boulevard; and areas along Sepulveda and Century Boulevards, two key approaches to the airport.

Although construction would be phased from the time of approval of the LAX Master Plan, these construction activities would cause areas of the airport environs to have an incomplete, disrupted, and unattractive quality. The short-term aesthetic effects of construction on surrounding uses and airport visitors are considered to be significant. With implementation of Mitigation Measure MM-DA-1, Construction Fencing (Alternatives A, B, C, and D), construction-related aesthetic and view impacts would be reduced to a less than significant level.

In comparison, the short-term aesthetic effects of construction under the No Action/No Project Alternative would not be as extensive.

### **Earth/Geology (CEQA)**

Earth-related construction considerations for Alternative D would include grading and earthwork activities, alteration of topography (landforms), erosion, stability of temporary construction slopes and excavations, and settlement of existing structures. Under Alternative D, total earthwork volumes are estimated to

include 4,121,926 cubic yards of cut (1,264,870 cubic yards which are unsuitable for fill) and 1,400,666 cubic yards of fill, resulting in a net disposal fill requirement of 1,456,390 cubic yards.

Compliance with requirements to conduct site-specific geotechnical investigations during design and to design and implement remedial and protective measures would ensure that the potential impacts associated with earth-related construction considerations under Alternative D would be less than significant.

Impacts related to changes in topography, erosion, stability of temporary construction slopes and excavations, and settlement from construction under Alternative D would be substantially greater than the No Action/No Project Alternative, which would involve fewer construction activities.

### **Hazardous Materials**

Under Alternative D, several projects would have a potential for conflicts with ongoing remediation efforts due to the substantial excavation required. These projects include the West Employee Parking Garage and new maintenance facilities, which would be constructed on the west side of the airport, within the area contaminated by the Continental Maintenance Facility; the Landside APM, which would be constructed in the vicinity of LAFD Station #95, Allied Signal Aerospace and Budget Rent-A-Car; and the Baggage Tunnel, which would be constructed along the 98<sup>th</sup> Street corridor near the Allied Signal Aerospace site and Budget Rent-A-Car. It is unlikely that implementation of the landside APM or baggage tunnel would interfere with the remediation efforts at nearby sites due to the relatively limited nature and extent of remediation at these sites. However, it is likely that remediation would still be underway at Continental's Maintenance Facility when construction activities proposed for this area under Alternative D are planned to be initiated, and that part, or all, of the remediation systems in operation would have to be removed during construction. This would be a potentially significant impact.

In the event that construction would conflict with remediation activities underway at the time, implementation of Master Plan Commitment HM-1, Ensure Continued Implementation of Existing Remediation Efforts (Alternatives A, B, C, and D), would ensure that remediation projects at LAX would be completed to the extent possible and necessary before constructing Master Plan improvements or that alternate clean up methods would be implemented during construction to prevent contaminant migration, if necessary. As part of this commitment, remediation systems would be reinstated following the completion of construction, if required. Therefore, potential impacts would be less than significant.

In comparison the No Action/No Project Alternative would not involve a substantial amount of excavation or grading in areas of known contamination and remediation.

Under Alternative D, grading in areas with soil contamination could expose construction workers to hazardous materials. Alternative D improvements of greatest potential for exposure include the CTA/TBIT, Landside/Airside APM, West Satellite Concourse, GTC, Baggage Tunnel, West Employee Parking Garage, and New Maintenance Facilities as they would entail major excavation in areas of known contamination. In addition, it is possible that, during other construction activities for implementing Alternative D, previously unidentified soil and/or perched groundwater contamination would be encountered. Due to the many safety measures required by local, state, and federal laws and regulations that govern contaminated materials encountered during construction, worker health and safety and the environment would be protected to the maximum extent possible. As a result, potential impacts associated with construction in areas that may be contaminated would be less than significant. In addition, implementation of Master Plan Commitment HM-2, Handling of Contaminated Materials Encountered During Construction (Alternatives A, B, C, and D), would further reduce potential adverse effects encountered with excavating contaminated materials.

Demolition and renovation of existing structures at LAX and within the acquisition areas under Alternative D could disturb hazardous building materials and could pose a risk of exposure for construction workers. Other hazardous materials may also be encountered during demolition activities. Under Alternative D, electrical distribution station DS-111, which contains low levels of polychlorinated biphenyls (PCBs), may be relocated. By implementing the measures required by federal, state, and local laws and regulations, the potential impacts associated with hazardous building materials would be less than significant.

Potential impacts associated with hazardous building materials under Alternative D, while less than significant, would be greater than those under the No Action/No Project Alternative, which would result in less demolition and renovation.

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Implementation of Alternative D would alter ground access in the vicinity of the airport during construction. Because local access would be adequately maintained through detours and diversions and emergency access would be coordinated and ensured through Master Plan Commitment C-1, Establishment of a Ground Transportation/Construction Coordination Office (Alternatives A, B, C, and D), and Master Plan Commitments ST-9, ST-12, ST-14, and ST-16 through ST-22, project-related construction would not significantly impair the implementation of emergency response plans, and no significant impact would occur.

The impacts related to interference with an adopted emergency response plan or emergency evacuation plan under Alternative D, while less than significant, would be greater than those under the No Action/No Project Alternative, which does not include development of the GTC and ITC.

Construction activities would include the use and transport of hazardous substances, including fuels for construction equipment. As such, there is the potential for an accidental discharge of hazardous substances during construction activities. Compliance with safety precautions and regulatory requirements identified in Section 4.23, *Hazardous Materials*, would be required and would reduce the risk of an accidental release of hazardous materials during construction to a level less than significant.

During construction activities, hazardous materials usage/hazardous waste generation under Alternative D would be greater than that under the No Action/No Project Alternative, which would result in less overall construction.

### **Public Utilities (CEQA)**

#### **Water Use**

Water would be required during construction of Alternative D improvements and LAX Northside. Additionally, water would be used during construction for the mixing of concrete. It is not possible to quantify this water usage with any level of certainty. It is possible that reclaimed water could be used for dust suppression, reducing the quantity of potable water required. Due to the projected availability of local water supplies, construction water usage would be a less than significant impact.

Construction of subsurface structures under Alternative D may interfere with existing water supply and distribution facilities. Preliminary review of Alternative D indicates that relocation/adjustment of water system facilities may be required. Under Master Plan Commitment PU-1, Develop a Utility Relocation Program (Alternatives A, B, C, and D), a utility relocation program would be implemented during construction to minimize potential impacts on existing subsurface utilities. It is possible that some connections would experience brief, temporary disruption of service during utility relocation. The utility relocation program would be prepared to minimize these disruptions. Developing and implementing this utility relocation program would ensure that potential impacts on existing water supply and distribution facilities would be less than significant.

The above potential impacts to existing water supply and distribution facilities would not occur under the No Action/No Project Alternative. Construction-related impacts to water supply under Alternative D would be substantially greater than the No Action/No Project Alternative, which would involve fewer construction activities.

#### **Wastewater**

Construction of subsurface structures under Alternative D may interfere with existing wastewater collection infrastructure. As discussed in Section 4.25.2, *Wastewater*, three major sewer outfalls, the North Central Outfall Sewer (NCOS), North Outfall Relief Sewer (NORS), and the Central Outfall Sewer (COS), underlie LAX. Construction of major subsurface structures, such as the proposed APM and the consolidated RAC facility, as well as improvements to the CTA and the south airfield, could potentially interfere with these outfalls. The NCOS and NORS are larger and deeper than the COS and, based on a preliminary analysis, design and construction would be performed so Alternative D would not interfere with these sewers. However, the COS is much more shallow. Based on preliminary engineering analysis, it appears that the COS would be affected by construction of Alternative D and would require relocation or modification. Under Master Plan Commitment PU-1, Develop a Utility Relocation Program (Alternatives A, B, C, and D), a utility relocation program would be implemented during construction to minimize potential impacts on existing subsurface utilities and ensure that potential impacts to existing

wastewater outfalls would be less than significant. The above potential impacts to existing wastewater collection infrastructure would not occur under the No Action/No Project Alternative.

### **Public Services (CEQA)**

#### **Fire Protection and Law Enforcement**

The traffic congestion associated with the demolition and construction of major projects for Alternative D within and adjacent to the LAX property would have the potential to hamper or delay emergency response. However, temporary roadway Level of Service (LOS) deficiencies associated with compromised emergency response would be avoided through implementation of Master Plan Commitment C-1, Establishment of a Ground Transportation/Construction Coordination Office (Alternatives A, B, C, and D), and Master Plan Commitments ST-9, ST-12, ST-14, and ST-16 through ST-22. These commitments would ensure proper advanced coordination with LAFD, LAWAPD, and LAPD and planning of detours and emergency access routes to maintain response times. Implementation of Master Plan Commitment C-1 would avoid potentially significant traffic-related impacts on fire protection and law enforcement response times and ensure adequate fire protection and law enforcement service levels are maintained. Therefore, impacts of construction on emergency response times would be less than significant.

Without proper coordination and phasing, the relocation process for on-airport fire protection and police facilities could temporarily compromise fire protection and/or law enforcement services. To address this potentially significant impact and maintain adequate fire protection and law enforcement services with new development under Alternative D, Master Plan Commitment PS-1, Fire and Police Facility Relocation Plan (Alternatives A, B, C, and D), would be implemented to properly coordinate relocation of facilities with the LAFD, LAWAPD, and LAPD.

#### **Parks and Recreation**

Construction of transportation facilities and other improvements in proximity to park and recreational facilities are not expected to restrict access to area parks and recreation areas. As described in Section 4.1, *Noise*, construction noise impacts would occur at a small portion of Imperial Strip, just south of Imperial Highway in the City of El Segundo. However, Imperial Strip serves as a buffer between the airport and the City of El Segundo and much of its use is for viewing aircraft, rather than quiet activities. Furthermore, construction noise at Imperial Strip would be temporary and additive to a currently noisy environment. Therefore, construction noise impacts at Imperial Strip relative to park use are considered to be less than significant. Construction of the LAX Northside project may temporarily impair access to Westchester Park Recreation Center (via Lincoln Boulevard). However, Master Plan Commitment ST-18, Construction Traffic Management Plan (Alternatives A, B, C, and D), would provide alternate routes or detours if access is impaired. Therefore, impacts to the Westchester Park Recreation Center would be less than significant.

As the focus of construction would be largely on airport property and within immediately adjacent acquisition areas, there would be no significant impacts on Vista del Mar Park, Dockweiler State Beach, or the South Bay Bicycle Trail.

#### **Libraries**

Construction of projects within and adjacent to LAX property under Alternative D, such as the LAX Northside project, cargo facilities, and parking facilities, would not occur adjacent to local libraries. Due to the distance between construction activities and libraries, it is not anticipated that construction activities would cause substantial increases in noise levels or impair access to local libraries, including the Westchester-Loyola Village Branch Library (accessed via Manchester Avenue and Lincoln Boulevard). Therefore, construction activities associated with Alternative D would not result in impacts to local libraries.

### **Schools (CEQA)**

Analyses of construction impacts on schools for Alternative D relative to noise, air quality, and health risk are addressed in their corresponding sections (i.e., Section 4.1, *Noise*, Section 4.2, *Land Use*, Section 4.6, *Air Quality*, and Section 4.24.1, *Human Health Risk Assessment*) and technical reports and appendices (i.e., Appendix S-E, *Supplemental Air Quality Impact Analysis*, Technical Report S-1,

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*Supplemental Land Use Technical Report*, Technical Report S-4, *Supplemental Air Quality Technical Report*, and Technical Report S-9a, *Supplemental Human Health and Safety Technical Report*). As indicated in Section 4.2, *Land Use*, three public schools would be potentially impacted by noise associated with construction activities. Mitigation Measures MM-N-7 through MM-N-10 in Section 4.1, *Noise*, would reduce temporary construction noise impacts on schools. These impacts and potential impacts related to access and safety would also be addressed through Master Plan Commitments ST-16, Designated Haul Routes (Alternatives A, B, C, and D) and C-1, Establishment of a Ground Transportation/Construction Coordination Office (Alternatives A, B, C, and D), which includes provisions to coordinate roadway projects and address traffic concerns with other neighboring jurisdictions (including affected school districts). Even with implementation of these measures, construction-related impacts could periodically remain significant.

### **4.20.7 Cumulative Impacts**

Cumulative impacts are discussed in Sections 4.1, *Noise*, through 4.27, *Schools*. The environmental disciplines with construction-related cumulative impacts include *Noise* (Section 4.1), *Surface Transportation* (Section 4.3), *Community Disruption and Alteration of Surface Transportation Patterns* (Section 4.4.4), *Air Quality* (Section 4.6), and *Natural Resources* (Section 4.17.2).

#### **4.20.7.1 No Action/No Project Alternative**

Under the No Action/No Project Alternative, noise from construction equipment and activities would be adverse and unavoidable near the LAX Northside project. The impacts of construction equipment noise could create a cumulative impact if any other area project were located near the noise impact areas exposed to No Action/No Project Alternative construction noise. With one possible exception, it is not anticipated that any construction project would take place within the anticipated influence area of the No Action/No Project Alternative. The possible exception is the El Segundo Corporate Campus project, located between Nash and Douglas Streets in El Segundo, which is planned for construction during the LAX Master Plan project. However, no noise-sensitive land uses exist within the combined influence area of these two projects.

Traffic noise from construction activities is not considered a significant impact, and traffic from probable future projects near LAX would not be sufficient to raise noise levels to thresholds of significance. While it is acknowledged that construction traffic from LAX Northside and Continental City would be commingled with traffic from other projects, such as Playa Vista, the volumes and characteristics would not noticeably affect roadway noise levels at sensitive receptors.

Cumulative effects from construction traffic would also be important. Other development projects in the area such as Playa Vista will generate traffic on the same routes at the same time as the construction of LAX Northside and Continental City. It is likely that these projects will share haul routes, such as Sepulveda Boulevard and I-405, and may generate construction truck and worker trips. Cumulative impacts from construction traffic would therefore be considered adverse.

Under the No Action/No Project Alternative, probable future projects that would occur within a similar time frame as the No Action/No Project Alternative improvements would increase short-term emissions of air pollutants associated with concurrent activities during the construction period. As indicated previously, construction emissions associated with the worst-case quarter for the No Action/No Project Alternative would exceed SCAQMD thresholds. Any additional construction activities occurring during this time in the vicinity of LAX would further increase the emissions beyond SCAQMD thresholds. Quantification of construction emissions from cumulative projects is speculative given uncertainty regarding the timing and phasing of construction activities for each of these projects and the extent to which such activities would coincide with the worst day and quarter of the No Action/No Project Alternative construction process.

Construction of improvements associated with the No Action/No Project Alternative and cumulative projects would require aggregate. According to CDMG, currently permitted aggregate reserves in the Los Angeles region are projected to be available through 2046. Construction of improvements associated with the No Action/No Project Alternative would be completed by 2015. Sufficient aggregate would be available to supply cumulative demands.

### **4.20.7.2 Alternatives A, B, and C**

Under Alternatives A, B and C, noise from construction equipment and activities would be significant and unavoidable near the Westchester Southside project, along the LAX Expressway and along portions of the ring road near Imperial Highway. No other probable future project is near the areas impacted by construction noise from these projects, with the exception of the El Segundo Corporate Campus project, which, as described above, does not have noise sensitive uses nearby. As such, no significant cumulative noise would occur from construction activities.

Traffic noise from construction activities is not considered a significant impact, and traffic from probable future projects near LAX would not be sufficient to raise noise levels to threshold of significance. While it is acknowledged that construction traffic from LAX would be commingled with traffic from other projects, such as Playa Vista, the volumes and characteristics would not significantly affect roadway noise levels at sensitive receptors.

Surface traffic impacts from LAX construction activities would be significant and unavoidable, even with the implementation of construction related commitments and mitigation measures. Other development projects in the area, such as Playa Vista, will generate traffic on the same routes at the same time as the construction of LAX. It is likely that these projects will share haul routes, such as Sepulveda Boulevard and I-405, and may generate construction truck and worker trips. Cumulative impacts from construction traffic would therefore be significant and temporarily unavoidable.

There would be significant, temporary impacts from construction traffic that, combined with construction of related projects, such as Playa Vista, would represent a significant cumulative impact due to the potential for inhibited access to community facilities.

Probable future projects that occur within a similar timeframe as Alternatives A, B, and C would increase short-term air pollutant emissions associated with concurrent activities during any day of the Master Plan's construction period. As indicated previously, construction emissions associated with Alternatives A, B, and C would be significant. Any additional construction activities occurring during this time in the vicinity of LAX would increase the emissions beyond these already significant levels. Quantification of construction emissions from cumulative projects is speculative given uncertainty regarding the timing and phasing of construction activities for each of these projects and the extent to which such activities would coincide with the worst day and quarter of the LAX Master Plan construction process. Cumulative emissions from construction activities, in conjunction with those associated with probable future projects, would be significant and temporarily unavoidable.

Construction of improvements associated with these three build alternatives and cumulative projects would require aggregate. According to CDMG, currently permitted aggregate reserves in the Los Angeles region are projected to be available through 2046. Construction of improvements associated with these build alternatives would be completed by 2015. Sufficient aggregate would be available to supply cumulative demands, including those associated with Alternatives A, B, or C, within this timeframe. Therefore, cumulative impacts on aggregate reserves would be less than significant.

### **4.20.7.3 Alternative D - Enhanced Safety and Security Plan**

No other project is expected to take place within the LAX projects' noise influence areas, where noise-sensitive uses exist. Therefore, this is a less than significant impact, and there would be no significant cumulative construction traffic or equipment noise impacts.

Traffic noise from construction activities is not considered a significant impact, and traffic from probable future projects near LAX would not be sufficient to raise noise levels to a threshold of significance. While it is acknowledged that construction traffic from LAX would be commingled with traffic from other projects, such as Playa Vista, the volumes and characteristics would not significantly affect roadway noise levels at sensitive receptors.

Other development projects in the area, such as Playa Vista, will generate traffic on some of the same routes at the same time as the construction of Alternative D. It is likely that these projects would share haul routes, such as Sepulveda Boulevard and I-405, and may generate construction truck and worker trips at the same time as Alternative D. Establishment of the traffic coordination office proposed as Master Plan Commitment C-1, Establishment of a Ground Transportation/Construction Coordination Office (Alternatives A, B, C, and D), would minimize the impacts of cumulative construction on area roads;

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however, the cumulative impacts from construction activities on the off-airport surface transportation system would still be significant and temporary

There would be significant, temporary impacts from construction traffic that, combined with construction or related projects, such as Playa Vista, would represent a significant cumulative impact due to the potential for inhibited access to community facilities.

Probable future projects that occur within a similar timeframe as Alternative D would increase short-term air pollutant emissions associated with concurrent activities during any day of Alternative D's construction period. Construction emissions associated with Alternative D would be significant. Any additional construction activities occurring during this time in the vicinity of LAX would increase the emissions beyond these already significant levels. Quantification of construction emissions from cumulative projects is speculative given uncertainty regarding the timing and phasing of construction activities for each of these projects and the extent to which such activities would coincide with the worst day and quarter of the Alternative D construction process.

Construction of improvements associated with Alternative D would require aggregate. According to CDMG, currently permitted aggregate reserves in the Los Angeles region are projected to be available through 2046. Construction of improvements associated with Alternative D would be completed by 2015. Sufficient aggregate would be available to supply cumulative demands, including those associated with Alternative D, within this timeframe. Therefore, cumulative impacts on aggregate reserves would be less than significant.

### **4.20.8 Mitigation Measures**

Implementation of Alternatives A, B, C, and D would have potentially significant impacts from construction activities. To reduce or avoid these significant impacts, mitigation measures are recommended. The following disciplines include mitigation measures, which are discussed in further detail in their respective sections. The environmental disciplines not listed below do not have any construction-related mitigation measures specific to those disciplines.

#### **Noise**

- ◆ **MM-N-7. Construction Noise Control Plan (Alternatives A, B, C, and D).**
- ◆ **MM-N 8. Construction Staging (Alternatives A, B, C, and D).**
- ◆ **MM-N-9. Equipment Replacement (Alternatives A, B, C, and D).**
- ◆ **MM-N-10. Construction Scheduling (Alternatives A, B, C, and D).**

#### **Surface Transportation**

##### **On-Airport**

- ◆ **MM-ST-1. Require CTA Construction Vehicles to Use Designated Lanes (Alternative D).**
- ◆ **MM-ST-2. Modify CTA Signage (Alternative D).**
- ◆ **MM-ST-3. Develop Designated Shuttle Stops for Labor Buses and ITC-CTA Buses (Alternative D).**

##### **Off-Airport**

- ◆ **MM-ST-14. Ground Transportation/Construction Coordination Office Outreach Program (Alternatives A, B, C, and D).**

#### **Air Quality**

- ◆ **MM-AQ-2. Construction-Related Measure (Alternatives A, B, C, and D).**

#### **Historic/Architectural and Archaeological/Cultural and Paleontological Resources**

- ◆ **MM-HA-1. Historic American Buildings Survey (HABS) Document (Alternatives A, B, C, and D).**
- ◆ **MM-HA-2. Historic Educational Materials (Alternatives A, B, C, and D).**

- ◆ MM-HA-3. Hangar One Relocation (Alternative B).
- ◆ MM-HA-4. Discovery (Alternatives A, B, C, and D).
- ◆ MM-HA-5. Monitoring (Alternatives A, B, C, and D).
- ◆ MM-HA-6. Excavation and Recovery (Alternatives A, B, C, and D).
- ◆ MM-HA-7. Administration (Alternatives A, B, C, and D).
- ◆ MM-HA-8. Archaeological/Cultural Monitor Report (Alternatives A, B, C, and D).
- ◆ MM-HA-9. Artifact Curation (Alternatives A, B, C, and D).
- ◆ MM-HA-10. Archaeological Notification (Alternatives A, B, C, and D).
- ◆ MM-PA-1. Paleontological Qualification and Treatment Plan (Alternatives A, B, C, and D).
- ◆ MM-PA-2. Paleontological Authorization (Alternatives A, B, C, and D).
- ◆ MM-PA-3. Paleontological Monitoring Specifications (Alternatives A, B, C, and D).
- ◆ MM-PA-4. Paleontological Resources Collection (Alternatives A, B, C, and D).
- ◆ MM-PA-5. Fossil Preparation (Alternatives A, B, C, and D).
- ◆ MM-PA-6. Fossil Donation (Alternatives A, B, C, and D).
- ◆ MM-PA-7. Paleontological Reporting (Alternatives A, B, C, and D).

Mitigation measures addressing potential impacts on Randy's Donuts and the Centinela Adobe, which would only be required under Alternatives A and C if the preferred LAX Expressway alternative is not selected, are described in Appendix K, *Supplemental Environmental Evaluation for LAX Expressway and State Route 1 Improvements*.

### **Biotic Communities**

- ◆ MM-BC-1. Conservation of State-Designated Sensitive Habitat Within and Adjacent to the El Segundo Blue Butterfly Habitat Restoration Area (Alternatives A, B, C, and D).
- ◆ MM-BC-2. Conservation of Floral Resources: Lewis' Evening Primrose (Alternatives A, B, C, and D).
- ◆ MM-BC-3. Conservation of Floral Resources: Mature Tree Replacement (Alternatives A, B, C, and D).
- ◆ MM-BC-4. Conservation of Faunal Resources (Alternatives A, B, and C).
- ◆ MM-BC-5. Replacement of Habitat Units (Alternative A).
- ◆ MM-BC-6. Replacement of Habitat Units (Alternative B).
- ◆ MM-BC-7. Replacement of Habitat Units (Alternative C).
- ◆ MM-BC-8. Replacement of Habitat Units (Alternative D).
- ◆ MM-BC-9. Conservation of Faunal Resources (Alternative D).
- ◆ MM-BC-10. Replacement of State-Designated Sensitive Habitat (Alternative A).
- ◆ MM-BC-11. Replacement of State-Designated Sensitive Habitat (Alternative B).
- ◆ MM-BC-12. Replacement of State-Designated Sensitive Habitat (Alternative C).
- ◆ MM-BC-13. Replacement of State-Designated Sensitive Habitat (Alternative D).

### **Endangered and Threatened Species of Flora and Fauna**

- ◆ MM-ET-1. Riverside Fairy Shrimp Habitat Restoration (Alternatives A, B, C, and D).
- ◆ MM-ET-2. El Segundo Blue Butterfly Conservation: Habitat Restoration (Alternatives A and B).

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- ◆ MM-ET-3. El Segundo Blue Butterfly Conservation: Dust Control (Alternatives A, B, C, and D).
- ◆ MM-ET-4. El Segundo Blue Butterfly Conservation: Habitat Restoration (Alternative D).

### **Design, Art, and Architecture Application/Aesthetics**

- ◆ MM-DA-1. Construction Fencing (Alternatives A, B, C, and D).

## **4.20.9 Level of Significance After Mitigation**

### **4.20.9.1 Alternatives A, B, and C**

As discussed in subsection 4.20.6, *Environmental Consequences*, implementation of Alternatives A, B, and C would have potentially significant impacts from construction activities. To reduce or avoid these significant impacts, the mitigation measures listed above are recommended.

#### **Noise**

Even with Mitigation Measures MM-N-7 through MM-N-10, construction equipment operations would create noise levels over extended periods of time that are more than 5 dBA  $L_{eq}$  higher than ambient levels near sensitive residential areas and schools. This would be a significant and unavoidable impact.

#### **Land Use**

Although noise and air quality mitigation measures and surface transportation commitments would reduce the impacts on nearby land uses during construction, these impacts would remain significant and unavoidable.

#### **Surface Transportation**

Although surface transportation commitments would reduce the impacts to on- and off-airport transportation facilities during construction, these impacts would remain significant and temporarily unavoidable.

#### **Community Disruption and Alteration of Surface Transportation Patterns**

Although surface transportation mitigation measures and Master Plan commitments would minimize impacts associated with community disruption from changes in transportation circulation patterns during construction, temporary project-related and cumulative impacts would remain significant and unavoidable.

#### **Air Quality**

Mitigated construction emissions of CO, VOC, NO<sub>x</sub>, SO<sub>2</sub>, and PM<sub>10</sub> would remain significant for Alternatives A, B, and C.

Alternatives A and C would have a significant unavoidable impact on air quality with respect to CO, NO<sub>2</sub>, and PM<sub>10</sub> concentrations after the application of mitigation measures due to operational and construction-related impacts. Alternatives B and C would have a significant unavoidable impact on air quality with respect to NO<sub>2</sub> and PM<sub>10</sub> concentrations after the application of mitigation measures due to combined construction-related impacts.

#### **Historic/Architectural and Archaeological/Cultural and Paleontological Resources**

Because impacts associated with the demolition of historic resources cannot be reduced to a less than significant level under CEQA, project impacts on historic resources would be significant and unavoidable. With the implementation of the provided mitigation measures, project-related impacts on archaeological/cultural resources would be reduced to a less than significant level at the state level, and at the federal level, sufficiently mitigated in accordance with federal standards described in Section 4.9.1, *Historic/Architectural and Archaeological/Cultural Resources*. However, cumulative impacts to archaeological/cultural resources would remain potentially significant and unavoidable at the state level.

The recommended mitigation measures would not necessarily ensure that all potential direct and indirect impacts to paleontological resources would be avoided. Although residual impacts would occur, they would not be significant. Based on the recommended mitigation measures, the potential adverse impacts to paleontological resources would be reduced to a less than significant level.

### **Biotic Communities**

Implementation of mitigation measures identified in Section 4.10, *Biotic Communities*, and Section 4.11, *Endangered and Threatened Species of Flora and Fauna*, would reduce construction impacts to biotic communities to a less than significant level.

### **Endangered and Threatened Species of Flora and Fauna**

Implementation of mitigation measures identified in Section 4.11, *Endangered and Threatened Species of Flora and Fauna*, would reduce impacts to endangered and threatened species to a less than significant level.

### **Wetlands**

Implementation of Mitigation Measure MM-ET-1, Riverside Fairy Shrimp Habitat Restoration (Alternatives A, B, C, and D), would reduce impacts to wetlands to a less than significant level.

### **Coastal Zone Management and Coastal Barriers**

Implementation of mitigation measures described in Section 4.10, *Biotic Communities*, and Section 4.11, *Endangered and Threatened Species of Flora and Fauna*, would reduce direct and indirect impacts to state-designated sensitive habitat within the coastal zone to a less than significant level.

### **Design, Art and Architecture Application/Aesthetics**

Temporary impacts from construction activities would be reduced through screening measures along key roadways and other areas of visual sensitivity. With implementation of Mitigation Measure MM-DA-1, Construction Fencing (Alternatives A, B, C, and D), construction-related aesthetic and view impacts would be reduced to a less than significant level.

### **Schools (CEQA)**

Although mitigation measures and Master Plan Commitment C-1, Establishment of a Ground Transportation/Construction Coordination Office (Alternatives A, B, C, and D), would reduce the temporary construction noise impacts on schools, there would be periodic impacts that would remain significant following implementation of mitigation (see *Noise* and *Land Use* discussions).

## **4.20.9.2 Alternative D - Enhanced Safety and Security Plan**

As discussed in subsection 4.20.6, *Environmental Consequences*, implementation of Alternative D would have potentially significant impacts from construction activities. To reduce or avoid these significant impacts, the mitigation measures listed above are recommended.

### **Noise**

Even with Mitigation Measures MM-N-7 through MM-N-10, construction equipment operations would create noise levels over extended periods of time that are more than 5 dBA  $L_{eq}$  higher than ambient levels near sensitive residential areas and schools. This is a significant and unavoidable impact.

### **Land Use**

Although noise and air quality mitigation measures and surface transportation commitments would reduce the impacts on nearby land uses during construction, these impacts would remain significant and unavoidable.

### **Surface Transportation**

Although surface transportation commitments would reduce the impacts to on- and off-airport transportation facilities during construction, these impacts would remain significant and temporarily unavoidable.

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### **Community Disruption and Alteration of Surface Transportation Patterns**

Although surface transportation mitigation measures and Master Plan commitments would minimize impacts associated with community disruption from changes in transportation circulation patterns during construction, temporary project-related and cumulative impacts would remain significant and unavoidable.

### **Air Quality**

The difference between Alternative D mitigated emissions and the environmental baseline emissions for all pollutants except SO<sub>2</sub> would be higher than the construction emissions thresholds presented in subsection 4.6.4, *Thresholds of Significance*, in the year of maximum construction emissions (2005). Therefore, mitigated construction emissions of CO, VOC, NO<sub>x</sub>, and PM<sub>10</sub> would remain significant for Alternative D.

The construction mitigation measure would account for substantial emission reductions, particularly of NO<sub>x</sub> and PM<sub>10</sub>. However, due to the magnitude of construction activities, all criteria pollutant (except SO<sub>2</sub>) emissions from construction would remain significant, as would predicted ambient concentrations of PM<sub>10</sub> from commercial operations and construction activities.

### **Historic/Architectural and Archaeological/Cultural and Paleontological Resources**

Alternative D would result in the partial demolition of the International Airport Industrial District. Under CEQA, this would represent a significant and unavoidable impact. With implementation of Mitigation Measures MM-HA-4 through MM-HA-10, project impacts on archaeological/cultural resources would be reduced to a less than significant level at the state level, and at the federal level, sufficiently mitigated in accordance with federal standards described in Section 4.9.1, *Historic/Architectural and Archaeological/Cultural Resources*. The progressive cumulative loss of archaeological/cultural resources associated with other past, present and probable future projects would be cumulatively significant at the state level.

The recommended mitigation measures would not necessarily ensure that all potential direct and indirect impacts to paleontological resources would be avoided. Implementation of Alternative D could result in residual impacts because scientifically important fossil remains, associated geologic data, unrecorded fossil sites, and fossiliferous rocks could be lost or made inaccessible by ground-disturbing activities, covering with fill or structures, or unauthorized fossil collecting. Although these residual impacts would occur, they would not be significant. Based on the recommended mitigation measures, the potential adverse impacts to paleontological resources would be reduced to a less than significant level.

### **Biotic Communities**

Implementation of mitigation measures identified in Section 4.10, *Biotic Communities*, and Section 4.11, *Endangered and Threatened Species of Flora and Fauna*, including Mitigation Measures MM-BC-1, Conservation of State-Designated Sensitive Habitat Within and Adjacent to the El Segundo Blue Butterfly Habitat Restoration Area (Alternatives A, B, C, and D), MM-BC-3, Conservation of Floral Resources: Mature Tree Replacement (Alternatives A, B, C, and D), MM-BC-13, Replacement of State-Designated Sensitive Habitat (Alternative D), and MM-ET-3, El Segundo Blue Butterfly Conservation: Dust Control (Alternatives A, B, C, and D), would reduce the impacts to biotic communities to a level that is less than significant.

### **Endangered and Threatened Species of Flora and Fauna**

Implementation of Mitigation Measures MM-ET-3, El Segundo Blue Butterfly Conservation: Dust Control (Alternatives A, B, C, and D), and MM-ET-4, El Segundo Blue Butterfly Conservation: Habitat Restoration (Alternative D) would reduce impacts to the El Segundo blue butterfly to a level less than significant. Implementation of Mitigation Measure MM-ET-1, Riverside Fairy Shrimp Habitat Restoration (Alternatives A, B, C, and D), would reduce impacts to embedded cysts of the Riverside fairy shrimp to a level less than significant.

### **Wetlands**

Implementation of Mitigation Measure MM-ET-1, Riverside Fairy Shrimp Habitat Restoration (Alternatives A, B, C, and D), would reduce impacts to wetlands to a less than significant level.

### **Coastal Zone Management and Coastal Barriers**

Implementation of mitigation measures in Section 4.10, *Biotic Communities*, and Section 4.11, *Endangered and Threatened Species of Flora and Fauna*, would reduce direct and indirect impacts to state-designated sensitive habitat within the coastal zone to a less than significant level.

### **Design, Art and Architecture Application/Aesthetics**

Temporary impacts from construction activities would be reduced through screening measures along key roadways and other areas of visual sensitivity. With implementation of Mitigation Measure MM-DA-1, Construction Fencing (Alternatives A, B, C, and D), construction-related aesthetic and view impacts would be reduced to a less than significant level.

### **Schools (CEQA)**

Although mitigation measures and Master Plan Commitment C-1, Establishment of a Ground Transportation/Construction Coordination Office (Alternatives A, B, C, and D), would reduce temporary construction noise impacts on schools, there would be periodic impacts that would remain significant following implementation of mitigation (see *Noise* and *Land Use* discussions).

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