4.6 Air Quality

4.6.1 Introduction

The air quality analysis addresses LAX-related emissions from on-airport and off-airport sources, including those from construction-related activities. Appendix G, *Air Quality Impact Analysis,* Appendix S-E, *Supplemental Air Quality Impact Analysis,* Appendix F-B, *Air Quality Appendix*, Technical Report 4, *Air Quality Technical Report*, and Technical Report S-4, *Supplemental Air Quality Technical Report*, provide additional detail on the methodologies used to estimate emissions, analyze ambient air pollution concentrations, and identify mitigation options. The assessment of toxic air pollutant impacts is provided in Section 4.24.1, *Human Health Risk Assessment*, Technical Report 14a, *Health Risk Assessment,* and Technical Report S-9a, *Supplemental Human Health Risk Assessment*.

The following summary of air quality impacts is provided so that conclusions regarding the impacts of the project are readily accessible despite the complex and quantitative nature of the analysis found in the rest of this section.

The Master Plan alternatives would affect air quality by changing the amount of emissions released by sources at or near LAX, as well as by changing the locations of those emission sources. The changes can be positive or negative. Airport infrastructure development in some cases can support increases in activity levels at the airport (such as the number of aircraft operations and the number of vehicles accessing the airport) and, thus, increases in emissions. However, infrastructure improvements can also reduce congestion (through airfield and roadway changes) and the need for aircraft to idle at the gates (by providing ground-based electrical power and air conditioning). These improvements can reduce emissions.

One of the criteria used to develop the LAX Master Plan alternatives was to mitigate or reduce, to the extent feasible, the environmental impacts associated with airport operations. Therefore, various design features were incorporated into the alternatives to reduce air quality impacts. For example, in all of the build alternatives:

- ♦ Improvements to the roadways and improved parking facilities would reduce automobile idling time, which in turn would reduce motor vehicle air emissions.
- ♦ Modifications to the airfield taxiways and runways would reduce airfield delay and congestion, thus decreasing aircraft idling times and air emissions.
- ♦ Installation of preconditioned air and electrical power hookups at terminal gates would allow airlines to minimize the use of auxiliary power units (on-board turbines).
- ♦ Increased separation of aircraft and ground support equipment from vehicles accessing the airport (such as automobiles and shuttles) would reduce the airport-generated peak air pollutant concentrations in community locations.

In addition to the design features associated with the Master Plan, LAWA has prepared an extensive list of mitigation measure components that it proposes to implement. These mitigation components were developed from reviews of mitigation measures and plans used at other airports, extensions of ongoing LAWA environmental policies, and public comments received on the Draft EIS/EIR and the Supplement to the Draft EIS/EIR. These mitigation measures include the following general approaches to reduce air quality impacts:

- ♦ *LAX Master Plan Mitigation Plan for Air Quality* to expand and revise the existing air quality mitigation programs at LAX in consultation with FAA, the U.S. Environmental Protection Agency (USEPA), the California Air Resources Board (CARB), and the South Coast Air Quality Management District (SCAQMD).
- ♦ *Transportation-Related Measure* to develop and construct at least eight additional FlyAway service terminals; other components may be included.
- ♦ *Operations-Related Measure* to convert ground support equipment to extremely low emission technology (such as electric power, fuel cells, or future technology developments); other components may be included.

- *Construction-Related Measure* to reduce construction equipment and activity emissions. LAWA would implement steps to reduce fugitive dust and engine emissions from construction activities. These steps would include: requiring the use of emissions-reduction engine and fuel technology; requiring watering or soil stabilization; paving on-site construction routes; covering truck beds; requiring construction-vehicle wheel washing facilities at entrances to public roads; minimizing the use of portable generators; specifying clean diesel technology with emission control devices for all portable generators; and using an on-site rock crushing facility to reuse rock/concrete, thus reducing off-site haul truck trips.

Approach to Analysis: Five criteria pollutants were evaluated, including sulfur dioxide (SO_2), carbon monoxide (CO), particulate matter (PM_{10}), nitrogen dioxide (NO_2), and ozone (O_3). The evaluation of O_3 was conducted using the standard practice of evaluating volatile organic compounds (VOC) and nitrogen oxides (NO_X), which are key components in the formation of ozone. Although lead (Pb) is a criteria pollutant, it was not included in the analysis since airport operations are expected to have negligible emission potential for this pollutant.

Data collection studies and modeling analyses have been conducted to estimate the impact that LAX activities would have on future air quality around the airport. Data on existing aircraft operations, traffic counts, and other airport tenant operations were collected for 1996 baseline conditions. Supplemental information was collected to characterize Year 2000 conditions. Forecasts of future year activity were developed and emission inventories were estimated for the 1996 baseline, Year 2000 conditions, and future conditions under the No Action/No Project Alternative and the four build alternatives. Both unmitigated and mitigated emission inventories were developed for each build alternative.

The emission inventories were used with air dispersion models to predict future ambient air pollutant concentrations. The calculated incremental emissions, relative to the 1996 baseline inventories, were compared to CEQA significance thresholds, and modeled air pollutant concentrations were compared to California Ambient Air Quality Standards (CAAQS). These comparisons were made to evaluate the significance of each build alternative with respect to CEQA thresholds. For NEPA purposes, estimated emissions for each build alternative were compared to those for the No Action/No Project Alternative, and modeled pollutant concentrations for each build alternative were compared to National Ambient Air Quality Standards (NAAQS).

The impact that the design features and recommended air quality mitigation measures for the Master Plan have on air quality is best seen by comparing the estimated future emission inventories for each build alternative to those for the environmental baseline (CEQA) and to those for the No Action/No Project Alternative (NEPA) as well as by comparing the resulting air pollutant concentrations predicted for each build alternative (including future background concentrations) to the relevant ambient air quality standards.

Emissions: Alternatives A, B, C, and D would have lower total (on-airport plus off-airport) CO and VOC emissions in 2015 than the environmental baseline or the No Action/No Project Alternative. In addition, Alternative D would have lower PM_{10} emissions in 2015 than the environmental baseline and the No Action/No Project Alternative and lower NO_X and SO_2 emissions in 2015 than the No Action/No Project Alternative. Finally, Alternative D would have the lowest criteria pollutant emissions of the four build alternatives.

Comparing the mitigated operation and construction emissions to CEQA significance thresholds for any year analyzed indicates that:

- On-airport emissions of CO, VOC, and PM_{10} are less than significant for Alternatives A, B, C, and D.
- On-airport emissions of NO_X and SO_2 are significant for Alternatives A, B, C, and D.
- Off-airport emissions of SO_2 are less than significant for Alternatives A, B, C, and D.
- Off-airport emissions of CO, VOC, NO_X, and PM_{10} are significant for Alternatives, A, B, C, and D.
- Construction emissions of SO_2 are less than significant for Alternative D, and are significant for Alternatives A, B, and C.
- Construction emissions of CO, VOC, NO_X, and PM_{10} are significant for Alternatives A, B, C, and D.

Ambient Air Pollutant Concentrations: Alternative D is the only build alternative that meets (is less than) the NAAQS for all criteria pollutants in all years analyzed. For the interim year of 2005, Alternatives

A, B, and C would exceed the NAAQS for both PM_{10} and NO_2, and Alternative A would exceed the CO standard.

None of the alternatives, including the No Action/No Project Alternative, would meet the CAAQS for PM_{10}. However, Alternatives B and D would have lower PM_{10} concentrations in 2015 than either the 1996 environmental baseline or the No Action/No Project Alternative. In the interim year, Alternative A would exceed the 8-hour averaged CO CAAQS. For 2015, Alternative C would exceed the 1-hour averaged CO CAAQS.

Conformity Applicability: A demonstration of conformity with the purpose of the State Implementation Plan (SIP) must be made for a proposed federal action (the selected alternative) in a federal nonattainment or maintenance area when incremental emission rates attributable to the proposed federal action would exceed the general conformity applicability thresholds. The attainment status of the South Coast Air Basin with respect to the NAAQS is addressed in subsection 4.6.3.2. For the LAX Master Plan, Alternative D is the LAWA staff-preferred alternative; the FAA has not yet selected an alternative as the proposed federal action. As the incremental emissions of NO_X, NO_2, and PM_{10} attributable to Alternative D are greater than the general conformity applicability thresholds, a general conformity determination was required to demonstrate that Alternative D conforms to the SIP. A draft general conformity determination was published by FAA on January 9, 2004.

Differences between emissions and dispersion analysis results between the alternatives are explained by several factors that each contribute to impacts in different areas around the airport:

- Alternatives A, B, C, and D would allow more efficient aircraft operations and improved traffic flows on and near LAX compared to the No Action/No Project Alternative. The result would be fewer emissions from aircraft taxi/idle, ground support equipment (GSE), and gasoline and diesel vehicles when compared to the No Action/No Project Alternative.
- Alternative D CO, VOC, NO_X, SO_2, and PM_{10} emissions would be lower than those emissions for Alternatives A, B, and C, due to lower passenger levels and fewer aircraft operations.
- Fence line and runway configurations vary among the alternatives. The concentration differences associated with Alternative D are due in large part to the runway configuration. The runway configuration proposed under Alternatives A, B, and C would result in runways that would be closer to residences than the configuration proposed under Alternative D. Alternative D does not include the proposed West Terminal Area (WTA) that is included in Alternatives A, B, and C and has little to no traffic traveling to the existing Central Terminal Area (CTA). Parking and traffic emissions would primarily occur around the proposed Ground Transportation Center (GTC) and Intermodal Transportation Center (ITC), unique to this build alternative.
- Alternative D has lower passenger levels and fewer overall aircraft operations than Alternatives A, B, or C, resulting in generally lower impacts to air quality than the other build alternatives.

4.6.2 General Approach and Methodology

The objectives of this analysis are to determine baseline ambient air quality in the vicinity of the airport, quantify baseline LAX-related emissions, predict future LAX-related emissions and the associated impact on local ambient air quality, and determine the applicability of the general conformity regulations. Additional analyses of air quality impacts were conducted for proposed roadway improvements that fall under the jurisdiction of the Federal Highway Administration (FHWA). Specifically, the LAX Expressway (Alternatives A and C) and State Route 1 Realignment (Alternatives A, B, and C) air quality impacts are presented in Appendix K, *Supplemental Environmental Evaluation for LAX Expressway and State Route 1 Improvements*.

This air quality assessment was conducted in accordance with the FAA guidelines[250, 251, 252] for assessing airport environmental impacts under NEPA and with the *SCAQMD CEQA Air Quality Handbook*[253]

---

250 Federal Aviation Administration, "Airport Environmental Handbook," FAA Order 5050.4A, October 8, 1985.

251 Federal Aviation Administration, "Policies and Procedures for Considering Environmental Impacts," FAA Order 1050.1D, December 5, 1986.

252 Federal Aviation Administration, Office of Environment and Energy, and U.S. Air Force Armstrong Laboratory, Tyndall Air Force Base, Air Quality Procedures for Civilian Airports & Air Force Bases, 1997.

253 South Coast Air Quality Management District, CEQA Air Quality Handbook, 1993.

(SCAQMD *CEQA Handbook*) for evaluating air quality impacts. The methodology for determining baseline conditions, estimating airport-related air emissions and dispersion, and assessing the significance of impacts is summarized below and discussed in detail in the Air Quality Modeling Protocol for Criteria Pollutants (see Technical Report 4*, Air Quality Technical Report*).

The air quality assessment is limited to an evaluation of criteria pollutants (i.e., those pollutants for which USEPA or the California Air Resources Board (CARB) has set criteria for ambient air quality); toxic air pollutants are addressed in Section 4.24.1, *Human Health Risk Assessment*. For this analysis, the following criteria pollutants were considered: ozone (O_3), carbon monoxide (CO), nitrogen dioxide (NO_2), sulfur dioxide (SO_2), particulate matter with an equivalent aerodynamic diameter less than or equal to 10 micrometers (PM_{10}), lead (Pb), and (in California) sulfates. Because O_3 is a secondary pollutant (i.e., it is not directly emitted but is formed in the atmosphere), emissions of volatile organic compounds (VOC) and oxides of nitrogen (NO_X), which react in the presence of sunlight to form O_3, were used as surrogates to assess O_3 for emission impacts. Because ozone is a regional pollutant and ambient concentrations can only be adequately predicted using regional photochemical models that account for all sources of precursors in the South Coast Air Basin, it is beyond the scope of this document to address ambient ozone concentrations. The emissions of NO_X are also used to determine NO_2 impacts, as described in the Air Quality Modeling Protocol for Criteria Pollutants (see Technical Report 4, *Air Quality Technical Report*). For the emissions analysis, as a conservative assumption, it was assumed that all NO_X is emitted as NO_2, therefore, for the emissions analysis, NO_X and NO_2 are considered equivalent.

In 1997, the USEPA set ambient air quality standards for fine particulate matter with an equivalent aerodynamic diameter less than or equal to 2.5 micrometers ($PM_{2.5}$).[254] USEPA will designate non-attainment/attainment areas for these standards in 2004. SCAQMD staff expects that the South Coast Air Basin will be designated as non-attainment for these standards. The USEPA has recommended that compliance with the PM_{10} standards be considered a surrogate for compliance with the $PM_{2.5}$ standards[255] before final designations are made and implementation guidance can be developed, and the analysis in this document follows that guidance. The SCAQMD has confirmed that, at this time, it would be premature to fully analyze $PM_{2.5}$ since the SCAQMD has not yet developed CEQA significance emission thresholds or other guidance regarding $PM_{2.5}$ analysis.[256] Background PM_{10} monitoring data from the ambient air monitoring sites is included in the air quality analysis.

In accordance with the *State CEQA Guidelines*, the impacts of the build alternatives were compared to the impacts of the environmental baseline and adjusted environmental baseline (as defined in the Introduction to Chapter 4) to determine significance under CEQA. For purposes of this analysis, the environmental baseline represents activity levels at LAX in 1996 and facilities generally as of 1997. The impacts of the build alternatives were also compared to the No Action/No Project Alternative impacts for NEPA purposes.

The analysis also serves to identify the applicability of the general conformity provisions of the federal Clean Air Act (CAA).[257] A primary goal of the CAA is to protect and enhance air quality to promote the public health and welfare. To meet this goal, USEPA has set NAAQS and state agencies have either adopted those or set more stringent standards, such as the CAAQS. Numerous federal, state, and local emission limits have also been developed to support attainment and maintenance of the NAAQS and CAAQS. Each state must develop a state implementation plan (SIP) to provide a roadmap outlining how the standards will be attained and maintained. The SCAQMD is responsible for developing the local air quality management plan (AQMP) for the South Coast Air Basin, the airshed basin within which LAX is located. The AQMP becomes part of the SIP once CARB adopts it and submits it to USEPA as a SIP revision and USEPA approves it. Projects requiring federal actions, including changes to an airport layout plan, must comply with the general conformity regulations by demonstrating that project-related impacts conform with the purpose of the SIP. The first step in the conformity process is determining if the emissions of the "LAWA staff-preferred" alternative would exceed the conformity applicability thresholds. Unlike NEPA and CEQA, the general conformity regulations require that only the proposed federal action

---

254 Federal Register, Vol. 62, No. 138, July 18, 1997.

255 U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards, Interim Implementation of New Source Review Requirements for $PM_{2.5}$, Memorandum from John S. Seitz, Director, October 21, 1997.

256 Smith, S., SCAQMD, Personal Communication, December 17, 2003.

257 Pub. L. No. 91-604, 84 Stat. 1676 (1970); Pub. L. No. 95-95, 91 Stat. 686 (1977); and Pub. L. No. 101-549, 104 Stat. 2399 (1990).

(i.e., the selected alternative) be analyzed. A draft general conformity evaluation and determination was prepared for the LAWA staff-preferred alternative and issued for public comment on January 9, 2004. FAA will publish a final general conformity determination prior to the publication of the Final EIS/EIR that will be approved by FAA.

The basic steps conducted in performing this air quality analysis are listed below. The steps were performed for both the interim and 2015 horizon years for each alternative:

- Identification of LAX-related emission sources.
- Development of associated emissions inventories for the environmental baseline and future conditions.
- Dispersion modeling of future year pollutant concentrations, with and without the four build alternatives.
- Estimation of future background concentrations.
- Estimation of milestone and attainment years (years other than 2005, 2013 and 2015) emissions and concentrations.
- Identification of potential mitigation measures.
- Modeling to determine residual impacts following implementation of potential mitigation measures.

The general approach for each of these steps is discussed below.

4.6.2.1 Interim Year Analysis

The air quality analysis was performed for both an interim year and the 2015 horizon year. The interim year for the No Action/No Project Alternative and Alternatives A, B, and C is 2005. Construction emissions associated with Alternatives A, B, and C were also analyzed for 2004, the peak year of construction emissions, as originally assumed and addressed in the Draft EIS/EIR.[258] The interim year for the analysis of air quality impacts from on- and off-airport sources under Alternative D is 2013, as this is the peak year of combined emissions from construction and operational sources for PM_{10}. On-airport and construction emissions associated with Alternative D were also analyzed for 2005, the peak year of CO, VOC, and NO_X construction emissions.

4.6.2.2 LAX-Related Emission Sources

As part of the analysis, all on- and off-airport emission sources associated with LAX were identified. The air quality impact analysis addressed all sources located on airport property, motor vehicles carrying passengers and cargo to or from the airport, and construction activity on airport property. These sources were divided into three general categories: mobile, stationary, and area sources. Data for environmental baseline conditions were obtained through surveys of tenants and traffic as well as from various reference sources, including FAA operations summaries. Examples of LAX-related mobile sources include aircraft, ground support equipment (GSE), and on-road motor vehicles. Examples of LAX-related stationary sources include the Central Utility Plant (CUP), aircraft maintenance facilities, restaurants and catering kitchens, and emergency generators. An example of an LAX-related area source is landscape maintenance equipment.

Several large stationary sources are located near LAX, including the Chevron El Segundo Refinery, Los Angeles Department of Water and Power (LADWP) Scattergood Generating Station, Southern California Edison El Segundo Generating Station, and Hyperion Treatment Plant. Also located near LAX are two major freeways (I-405 and I-105) and a number of major arterial roadways, which carry a substantial amount of non-airport traffic. A number of large commercial buildings (which generate emissions from building heating and cooling systems) as well as commercial operations, such as gasoline stations (which generate fugitive VOC emissions), are also in close proximity to LAX. Emissions from these non-LAX sources have not been quantified. However, contributions from these sources are reflected in the environmental baseline concentrations discussed in subsection 4.6.3.4, *Environmental Baseline Ambient Air Quality*.

---

258 Although the actual peak construction year for Alternatives A, B, and C would be later than 2004, based on delays in completing the environmental review process resulting in a later construction start year, the peak year assumptions and analysis from the Draft EIS/EIR were retained to provide a basis of comparison for impacts associated with Alternative D.

Mobile Sources

For purposes of this analysis, mobile sources include both non-road and on-road vehicles. Non-road vehicles include aircraft, on-board auxiliary power units (APUs), GSE, and heavy construction vehicles that operate in the nonpublic access areas of LAX. The APU is a small, on-board engine that operates to provide power to an aircraft while it is parked at the gate when the main engines are off. The GSE are surface vehicles used to service a flight while an aircraft is parked at a gate, including baggage tugs, lavatory carts, and push-back tractors. On-road vehicles include the automobiles, trucks, buses, and other motor vehicles that operate on the public roadways and in the parking areas at and near LAX. The on-road vehicles were further characterized as either on-airport or off-airport for the purpose of comparison to appropriate inventory thresholds to determine conformity applicability.[259]

Aircraft

Information on the number and type of aircraft operations at LAX for each year considered was developed as part of the LAX Master Plan forecasts. The aircraft activity levels for the environmental baseline conditions are from calendar year 1996. These data were used to develop airport simulation models (SIMMOD) of future aircraft operations for each alternative. The simulation models use information about the facilities and operations to predict specific timing, volume, and location (e.g., runway used) for future aircraft operations.

GSE and APU

Data on the specific GSE types and times-in-mode[260] used for servicing several common aircraft types were obtained from a survey at LAX.[261] Default APU information included in the FAA's Emissions and Dispersion Modeling System (EDMS)[262] was used to supplement the site-specific data. Centralized gate power (400 Hertz) and preconditioned air (PCA) systems, which reduce APU operation and replace portable air conditioning (AC) units at terminal gates, were assumed for the No Action/No Project Alternative and the four build alternatives. See Appendix S-E, *Supplemental Air Quality Impact Analysis*, subsection 2.3.1 for a discussion of LAWA's commitment to equip all aircraft gates with 400-Hertz power and PCA. Default GSE information included in EDMS, along with emission factors taken from the CARB OFFROAD model,[263] were used to supplement the site-specific data. The use of alternative-fueled GSE under environmental baseline conditions was also determined. The future year inventories of alternative-fueled GSE were based on these evaluations[264, 265] and LAX environmental policies.[266]

Construction Equipment

Nonroad construction equipment usage was based on construction schedules and activity data, including quarterly estimates of manpower loading, fuel consumption, and brake horsepower, for the total project and for each specific activity (demolition, earthwork/foundations/utilities, structures/systems, pavement, and construction support). These data were correlated with equipment types from the *Caterpillar Performance Handbook*[267] and the *National Construction Estimator*.[268] Construction equipment usage was based on common practices for the types of construction to be undertaken.

---

259 On-airport emissions, including those from on-airport traffic, are subject to the general conformity regulations. Off-airport traffic emissions indirectly caused by the project are subject to general conformity requirements, but may already be covered by a transportation conformity determination prepared by the Metropolitan Planning Organization for a Regional Transportation Improvement Program or Regional Transportation Plan.

260 Time-in-mode is the time that an emission source spends in a specific mode of operation.

261 Landrum & Brown, GSE Times-in-Mode, 1997.

262 U.S. Department of Transportation, Federal Aviation Administration, Emission and Dispersion Modeling System (EDMS) Reference Manual (FAA-AEE-01-01), 2001 (with supplements through 2002).

263 Futaba, D., California Air Resources Board, Personal Communication, October 21, 2001.

264 CALSTART, Clean Fuel Vehicle Mitigation Strategy Assessment, April 1999.

265 Janneh, Mustapha, CALSTART, Personal Communication, March 3, 2000.

266 Laham, Maurice, Los Angeles World Airports, Environmental Management Division, Letter to Doris Lo (USEPA Region IX), January 23, 1997.

267 Caterpillar, Caterpillar Performance Handbook, 24th Edition, 1993.

268 Ogershok, D., Editor, National Construction Estimator, 49th Edition, Craftsman Book Co., 2001.

On-Road Vehicles

All vehicles traveling to or from LAX were considered in the analysis, including privately-owned vehicles, government-owned vehicles, and commercially-owned vehicles such as rental cars, shuttles, buses, taxicabs, and trucks. Environmental baseline traffic counts were conducted and included in the baseline traffic analysis (see Section 4.3.1, *On-Airport Surface Transportation*). Emissions from on-road vehicles to be used during project construction were also addressed in the analysis. Scheduled manpower and material data were used to develop construction related traffic data. Temporal data that identify the vehicle volumes by hour of the day for traffic and on-airport parking were determined from the transportation analysis.

Stationary Sources

Stationary sources include fixed combustion equipment, coating and solvent activities, organic liquid storage and transfer activities, and miscellaneous activities. The environmental baseline equipment capacities, typical operating hours, existing control equipment, and emissions data were obtained from a survey of LAWA and tenant facilities conducted in 1997 and 1998. The results of the survey are provided in Technical Report 4, *Air Quality Technical Report*. Future capacities and hours of operation for stationary sources were scaled up based on future-to-baseline ratios of either aircraft operations, number of passengers, or terminal area.

Area Source Emissions

Area sources include numerous small sources such as nonroad/nonvehicular engines, commercial/ residential combustion equipment, reentrained dust from vehicular activity, and construction-related sources (such as fugitive dust). Several areas within the Master Plan boundaries are proposed to be developed for non-airport related activities, such as general commercial or light industrial facilities. These types of facilities often include small natural gas heating units.

4.6.2.3 Emissions Estimates

The emissions estimates (also called emissions inventories) were developed using emission factors from various USEPA, FAA, CARB, and SCAQMD references. The complete set of references included or cited is presented in Appendix G, *Air Quality Impact Analysis*, and Technical Report 4, *Air Quality Technical Report*.

Mobile Sources

Aircraft

Aircraft criteria pollutant emissions (except particulate matter) were calculated using the FAA's Emissions and Dispersion Modeling System[269] (EDMS). EDMS is an air quality model that estimates emissions from airport sources based on information input to the model, and considers the sources and meteorological conditions to estimate "dispersion" -- how the pollutants behave and what the pollutant concentrations will be at specified locations. The EDMS -- Version 3.2[270] model (EDMS 3.2) was used as the primary model in developing airport emissions inventories for the 1996 baseline, the No Action/No Project Alternative, and Alternatives A, B, and C for the Draft EIS/EIR. The newer Version 4.11[271] (EDMS 4.11) was published subsequent to the publication of the Draft EIS/EIR. This version was used to develop on-airport emission inventories for Alternative D for the Supplement to the Draft EIS/EIR. Alternative D was also modeled using EDMS 3.2. A comparison of the EDMS 3.2 and EDMS 4.11 models can be found in Appendix S-E, *Supplemental Air Quality Impact Analysis*. EDMS 4.11 has been used to calculate emissions for the 1996 baseline, 2005 and 2015 No Action/No Project Alternative, and 2013 and 2015 Alternative D (with and without mitigation) scenarios. For purposes of comparison to EDMS 3.2 results,

---

269 U.S. Department of Transportation, Federal Aviation Administration, Emission and Dispersion Modeling System (EDMS) Reference Manual (FAA-AEE-01-01), 2001 (with supplements through 2002).

270 U.S. Department of Transportation, Federal Aviation Administration, Office of Environment and Energy, and U.S. Air Force Armstrong Laboratory, Tyndall Air Force Base, Emission and Dispersion Modeling System (EDMS) Reference Manual (FAA-AEE-97-01), 1997 (with supplements through 1999).

271 U.S. Department of Transportation, Federal Aviation Administration, Emissions and Dispersion Modeling System (EDMS) Reference Manual (FAA-AEE-01-01), 2001 (with supplements through 2002).

ratios were calculated herein to provide approximate EDMS 4.11 results for the build alternatives presented in the Draft EIS/EIR. Ratios between the emissions predicted by EDMS 3.2 and 4.11 were calculated for each modeled criteria pollutant and source type (aircraft, GSE, APU, and stationary sources; see the "On-Road Vehicles" discussion in this section for methods used to estimate traffic emissions for all alternatives). These ratios were then used to estimate impacts for the alternative and year combinations previously modeled using EDMS 3.2 in the Draft EIS/EIR. The ratios were also used to develop Year 2000 emissions for comparison purposes. The use of emission ratios is an acceptable approach to estimate air quality impacts as long as the underlying source parameters do not change substantially. For the emissions analysis, applying emission ratios to each of the previous EDMS 3.2 analyses is reasonable since no changes were made to the assumed activity levels and source locations in the other alternatives. The only change was the difference in emission factors used in the emission inventory calculations. For dispersion analyses, any changes in the source parameters are accounted for in the EDMS 4.11 to EDMS 3.2 pollutant concentration ratios developed for Alternative D in 2015. Applying the concentration ratios for each pollutant to the previously estimated concentrations from EDMS 3.2 will provide a reasonable estimate of EDMS 4.11 concentrations for each alternative. The updated results are presented in subsections 4.6.6 and 4.6.8 below, and are the values used to determine impacts in this Final EIS/EIR.

Particulate matter emission estimates were calculated using particulate matter emission indices (mass of pollutant emitted per mass of fuel consumed) developed for the LAX Master Plan (see Technical Report 4, *Air Quality Technical Report*). EDMS contains aircraft engine emission certification values for most commercially available engines, and all such emission indices comply with current FAA and USEPA aircraft engine emission standards. Although cleaner aircraft engines may come into use in the future, the current engine emission certification values were used in this air quality analysis for all horizon years. Aircraft fleet turnover between 1996 and 2015, as discussed in the Draft LAX Master Plan, is addressed by eliminating or reducing operations of certain older aircraft types (e.g., B727, BAE146) and adding or increasing operations of certain newer aircraft types (e.g., B757, B777).

Emissions produced by LAX activity during four aircraft operational modes (approach, taxi/idle, takeoff, and climbout) were calculated for each alternative. Airport-specific taxi/idle times-in-mode were used in the modeling, because LAX handles more operations than a typical airport. Taxi and queue (idle) times were developed from the LAX Master Plan SIMMOD results. The EDMS default times-in-mode[272] were the basis for climbout, approach, and takeoff times; however, climbout and approach times were adjusted according to the average mixing height[273] adjustment parameters contained in EDMS, as discussed in Technical Report 4, *Air Quality Technical Report*, Attachment A, Air Quality Modeling Protocol for Criteria Pollutants. An average mixing height of 549 meters (approximately 1,800 feet), based on USEPA guidance,[274, 275] was used to calculate the adjustments to approach and climbout times-in-mode as stated in the Air Quality Modeling Protocol for Criteria Pollutants. A mixing height of approximately 1,800 feet has been used in other aircraft emissions inventory calculations for LAX.[276]

GSE and APU

Emissions from GSE and APUs were calculated using the accepted procedures in *Air Quality Procedures for Civilian Airports and Air Force Bases* (FAA Air Quality Procedures)[277] and *Procedures for Emission Inventory Preparation, Volume IV*.[278] Emission factors for gasoline, diesel, and compressed natural gas

---

272 Default times-in-mode are the standard durations assumed for each operational mode used in the model, unless other specific information is provided by the user.

273 Mixing height is the vertical distance between the earth's surface and the height to which convection movements within the atmosphere extend, typically a few thousand feet. The height is often located at the interface of warm air situated on top of cooler air (thermal inversion). The thermal inversion suppresses turbulent mixing and thus limits the upward dispersion of polluted air.

274 Holzworth, George C., U.S. Environmental Protection Agency, Office of Air Programs, Mixing Heights, Wind Speeds and Potential for Urban Air Pollution Throughout the Contiguous United States (AP-101), 1972.

275 U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards, Procedures for Emission Inventory Preparation, Volume IV: Mobile Sources (EPA-450/4-81-026d Revised), 1992.

276 Energy and Environmental Analysis, Inc., Technical Support Document: Civil and Military Aviation (California FIP NPRM), March 24, 1994.

277 Federal Aviation Administration, Office of Environment and Energy, and U.S. Air Force Armstrong Laboratory, Tyndall Air Force Base, Air Quality Procedures for Civilian Airports & Air Force Bases, 1997.

278 U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards, Procedures for Emission Inventory

(CNG)/liquefied natural gas (LNG) fueled GSE were obtained from CARB's OFFROAD Model.[279] It was assumed that 400 hertz (Hz) electric power and preconditioned air would be available at all commercial airline gates.[280] However, since APUs would continue to be used some of the time, APU emission factors from EDMS were used to generate APU emission rates.

On-Road Vehicles

Emissions from on-road vehicles for all alternatives were estimated using CARB-mandated methodology. Future year emissions from on-road vehicles were calculated using the CARB Emission Factor 2002 model (EMFAC2002),[281] approved for use by USEPA.[282] EMFAC2002 uses site-specific data regarding vehicle trip distances, idle times, hot start vs. cold soak,[283] and average travel speeds to estimate vehicle emissions. The data used for this analysis were based on specific roadway segments analyzed in Section 4.3.2, *Off-Airport Surface Transportation*. Temporal[284] data for traffic and on-airport parking were determined from the transportation analysis. For Alternative D, traffic volumes and characteristics for the interim year, 2013, were assumed to be equal to those of the horizon year 2015. Emission inventories were calculated using the traffic information developed for 2015 with the EMFAC2002 emission factors for 2013; it is expected that this will represent a conservative estimate (i.e., overestimate) of emissions from on-road vehicles for 2013.

It should be noted that on September 28, 2000, CARB adopted a risk reduction plan for diesel-fueled engines and vehicles. If this plan is implemented in its entirety as adopted, it could result in substantial reductions in diesel particulate emissions from on-road vehicles. This air quality analysis accounts for any final rules published by CARB prior to the publication of this Final EIS/EIR that are related to the risk reduction plan.

Construction Equipment

Construction emissions were based on the construction equipment activity levels projected for the build alternatives.[285, 286] Equipment types, sizes, manufacturer, and quantity of each type of equipment were identified for each construction phase. Construction vehicle data, such as brake horsepower and fuel consumption estimates, were based on manufacturer's published information.

Construction emissions were calculated using emission factors from CARB's OFFROAD Model,[287] and specific equipment manufacturer-supplied data. SO_X emissions factors were derived from sulfur limits set by SCAQMD Rule 431.2, which specifies that a liquid fuel's maximum sulfur content is 500 parts-per-million, by weight (ppmw) until January 1, 2005, and 15 ppmw thereafter. Emission factors for PM_{10} entrainment from soil disturbance due to construction vehicles were derived from the *Compilation of Air Pollutant Emission Factors, Volume 1* (AP-42 Volume 1)[288] and the *SCAQMD CEQA Handbook*. VOC emissions due to architectural coatings and solvents, and PM_{10} emissions from demolition activities, were calculated from protocols outlined in the *SCAQMD CEQA Handbook*. Exhaust emission factors from

---

Preparation, Volume IV: Mobile Sources (EPA-450/4-81-026d Revised), 1992.

279 California Air Resources Board, Emission Inventory of Off-Road Large Compression-Ignited Engines (>25 HP) Using the New Offroad Emissions Model (Mailout MSC #99-32), March 2003 http://www.arb.ca.gov/msei/msei.htm.

280 Laham, Maurice, Los Angeles World Airports, Environmental Management Division, Letter to Doris Lo (USEPA Region IX), January 23, 1997.

281 California Air Resources Board, Research Division, EMFAC2001/EMFAC2002: Calculating Emission Inventories for Vehicles in California, March 2003, http://www.arb.ca.gov/msei/on-road/latest_version.htm.

282 Federal Register, Vol. 68, No. 62, April 1, 2003, pp. 15720-15723.

283 A hot start occurs when a vehicle is started before the engine has cooled from its previous use. A cold soak is when the engine has reached ambient temperature from its previous use and needs to warm up again. Cold soaks result in greater emissions of air pollutants.

284 Temporal data provides information about the timing of operation and activities by hour-of-day, day-of-week, or month-of-year.

285 Bechtel Corporation, Compilation of DEIS Input Data Alternative C Construction Impacts, Prepared for Landrum & Brown, April 28, 2000.

286 MARRS Services, Inc. Compilation of DEIS Construction Impacts Input Data, Excluding Crossfield Taxiway Projects, Prepared for URS Corporation, August 2, 2002.

287 California Air Resources Board, Emission Inventory of Off-Road Large Compression-Ignited Engines (>25 HP) Using the New Offroad Emissions Model (Mailout MSC #99-32), March 2003 http://www.arb.ca.gov/msei/msei.htm.

288 U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards, Compilation of Air Pollutant Emission Factors, Volume 1: Stationary Point and Area Sources (AP-42), Fifth Edition and Supplements, Available: http: //www.epa.gov/ttn/chief/ap42.html#chapter and http://www.epa.gov/ttn/chief/ap42supp.html [May 23, 2000].

construction worker commuter trips and truck material and debris haul trips were calculated from emission factors modeled from EMFAC2002.

The project construction plan is assumed to include soil stabilization and other fugitive dust control measures to comply with the requirements of SCAQMD Rule 403.[289] A control efficiency[290] of 50 percent has been applied to the uncontrolled[291] PM_{10} emissions factor to account for soil stabilization, truck washing, and other dust control practices.[292] In addition, construction equipment will be required to use cleaner burning diesel fuel and exhaust emission controls.

Stationary Sources

Emissions from on-site power plants, heating units, food preparation facilities, fuel storage tanks, aircraft maintenance facilities, and training fires were calculated using AP-42 Volume 1 and FAA Air Quality Procedures, as well as SCAQMD accepted methodologies.[293] Where appropriate, SCAQMD case-by-case Best Available Control Technology (BACT) guidance[294] requirements were incorporated into the emission estimates. The uncontrolled emission factors were obtained primarily from AP-42 Volume 1. Control efficiencies were applied to those units with control devices/technologies.

An emission inventory has been created for those secondary emissions from regional power plants resulting from the net increase in electricity consumption at LAX with the implementation of the build alternatives. Emissions were calculated using SCAQMD guidance and emission factors. A detailed discussion of the calculation methodology and results can be found in subsection 4.6.10, *Secondary Air Emissions - Electricity Production*, below.

Area Source Emissions

Emissions from area sources were estimated using the methodology in the *SCAQMD CEQA Handbook*. These factors were applied to both new area sources within the airport (such as Westchester Southside), and to existing area sources, including residential and commercial uses that would be acquired and demolished to various degrees under the build alternatives.

4.6.2.4 Air Dispersion Modeling

Air dispersion modeling is used to predict ground-level ambient[295] concentrations of pollutants in the vicinity of known air emission sources. Concentrations of criteria air pollutants were determined at publicly accessible areas on and off airport property and at the property line. In addition, the concentrations at each point in a receptor grid were modeled to identify the locations of highest concentrations, or the maximum impact point. Details of the modeling approach are included in the Air Quality Modeling Protocol for Criteria Pollutants (see Technical Report 4, *Air Quality Technical Report*).

Models

Dispersion of the on-airport pollutant emissions was predicted for mobile and stationary (including point, area, and volume) sources using several different models, as no one model currently available can cover all the different emission sources and pollutants at LAX. **Table F4.6-1**, Models Used in Air Quality Dispersion Analyses for the LAX Master Plan EIS/EIR, presents a summary of the models used and their application in this air quality analysis. The on-airport dispersion analysis was conducted using EDMS 3.2, EDMS 4.11, and the Industrial Source Complex - Short-Term (ISCST3) model.[296] EDMS is the FAA-

---

289 South Coast Air Quality Management District, "Rule 403. Fugitive Dust," SCAQMD Rules and Regulations, December 11, 1998, Available: http://www.aqmd.gov/rules [May 24, 2000].

290 A control efficiency accounts for the effects of a mechanism or activity that will reduce emissions.

291 Uncontrolled emissions assume that no mechanisms or activities are in place to reduce emissions.

292 South Coast Air Quality Management District, CEQA Air Quality Handbook, 1993.

293 South Coast Air Quality Management District and Ecotek, AQMD 1998-1999 Emissions Inventory Reporting Program, Available: http:// www.ecotek.com/aqmd.htm [May 23, 2000].

294 South Coast Air Quality Management District, Best Available Control Technology (http://www.aqmd.gov/bact).

295 Ambient air is typically considered to be air in locations where the general public has unrestricted access; see 40 CFR 50.1(e), July 1, 2003.

296 U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards, User's Guide for the Industrial Source Complex (ISC3) Dispersion Models, Volumes 1 and 2 (EPA-454/B-95-003a,b), as amended April 2000, Available: http://www.epa.gov/ttn/scram [May 23, 2000].

required[297] model for airport air quality analysis of aviation sources and was used to develop projected concentrations of air pollutants associated with the No Action/No Project Alternative and the four build alternatives. As a result of the upgrade in dispersion modeling algorithms from EDMS 3.2 to EDMS 4.11, results predicted by the two models for each of the alternatives would be different. The AMS/EPA Regulatory Model (AERMOD) system, which was incorporated into EDMS 4.11, represents the latest joint effort by both the American Meteorological Society and the USEPA to develop a state-of-the-art dispersion model. A detailed description of the differences between EDMS 3.2 to EDMS 4.11 can be found in Appendix S-E, *Supplemental Air Quality Impact Analysis*. EDMS 3.2 was used to model dispersion for the No Action/No Project Alternative as well as Alternatives A, B, C, and D. EDMS 4.11 was also used to model dispersion for the No Action/No Project Alternative and Alternative D. Ratios between the predicted concentrations by EDMS 3.2 and 4.11 were developed for each modeled criteria pollutant. These ratios were then used to estimate impacts for the alternative and year combinations previously modeled using EDMS 3.2 in the Draft EIS/EIR. PM_{10} emissions from aircraft cannot be modeled using EDMS. EDMS can be used for PM_{10} emissions from other on-airport sources.

Table F4.6-1

Models Used in Air Quality Dispersion Analyses for the LAX Master Plan EIS/EIR

Model	Application
Emissions and Dispersion Modeling System (EDMS) - EDMS 3.2 and EDMS 4.11 (with AERMOD)	Dispersion of aircraft, ground support equipment (GSE), motor vehicle, and stationary source emissions from on-airport operational sources - CO, NO_X, and SO_2. Dispersion of GSE, motor vehicle, and stationary source emissions from on-airport operational sources - PM_{10}. Several key alternatives (NA/NP and Alt D) were modeled using AERMOD independently of EDMS 4.11 for all on-airport operational and construction sources to obtain PM_{10} concentrations.
Industrial Source Complex - Short-Term (ISCST3)	Dispersion of aircraft source emissions from on-airport operational sources - PM_{10} only. Dispersion of on-airport and off-airport construction sources - CO, NO_X, and PM_{10}.
CAL3QHCR	Dispersion of CO emissions from off-airport motor vehicles to identify potential "hot spots" at intersections, consistent with the *SCAQMD CEQA Handbook*.
CALMPRO	Refinement of results from EDMS 3.2, EDMS 4.11, ISCST3, and CAL3QHCR.
ARM and ISC-OLM	Refinement of NO_2 results from EDMS and ISCST3.

Source: Camp Dresser & McKee Inc., 2003.

ISCST3 is a USEPA-preferred dispersion model[298] and is identified as an available model by the FAA Air Quality Procedures for addressing various industrial sources as well as assessing toxic air pollutant impacts. ISCST3 is a steady-state Gaussian dispersion model capable of predicting the short-term and annual concentrations from stationary (i.e., point, area, or volume) sources. The ISCST3 model was used to predict PM_{10} concentrations from aircraft engines.

The ISCST3 model was also used to predict dispersion from construction emission sources.[299] Construction activities typically occur over a sizeable construction site; therefore, construction activities were modeled as area sources.

Dispersion modeling concentration results for on-airport operational and construction-related sources have been combined to provide the total ambient air quality impact from the various alternatives. For

297 Federal Register, Vol. 63, No. 70, April 13, 1998, pp. 18068-18069.

298 Code of Federal Regulations, Title 40, Part 51, Appendix W, July 1, 2003.

299 EDMS 3.2 is set up to model dispersion during operation of an airport. It cannot model the dispersion associated with construction activities and equipment.

each alternative and year, the highest predicted concentrations for operational and construction-related sources were added together on a pollutant-by-pollutant basis, regardless of impact location, with the exception of NO_2 concentrations that were combined as described below.

The method for estimating annual NO_2 concentrations for both operational sources and construction sources, based on the estimations of NO_X from the dispersion modeling analysis, is described in Technical Report 4, *Air Quality Technical Report*, Attachment A, Air Quality Modeling Protocol for Criteria Pollutants. However, to provide a more precise estimate of the 1-hour NO_2 concentrations for Alternative D, the LAWA staff-preferred alternative, the Ozone Limiting Method (OLM), as presented in Attachment P, of Technical Report S-4, *Supplemental Air Quality Technical Report*, was used to determine the 1-hour NO_X-to-NO_2 concentrations for the No Action/No Project Alternative and Alternative D. The OLM uses ozone concentrations and the chemical formation of NO and NO_2 to determine hourly NO_2 concentrations at each individual receptor. The currently available version of USEPA's ISC-OLM model (version 96113) does not include the most current version of the ISCST3 model and, therefore, the ISC-OLM model was modified to include the current ISCST3 model and algorithms (version 02035). The model utilizes one year of hourly meteorological data and one year of hourly ozone data. The meteorological data discussed below were used for this analysis. One year of ozone data was provided by SCAQMD for use in this analysis.[300, 301] For Alternative D, EDMS emissions results using on-airport operational NO_X emissions in 2015 and construction-related NO_X emissions in 2013 were combined using the modified ISC-OLM model to determine the overall maximum 1-hour NO_2 concentration and peak concentration location for Alternative D. The 2013 NO_X construction emissions were used to model 1-hour peak NO_2 concentrations as there are no construction activities in 2015. The operational NO_X emissions estimation for 2013 is within 2 percent of the operational NO_X emissions estimation for 2015.

To provide a more precise estimate of the 1-hour NO_2 concentrations for the No Action/No Project Alternative and Alternatives A, B, and C, the equation presented in Attachment Q in Technical Report S-4, *Supplemental Air Quality Technical Report*, was used to determine the NO_2-to-NO_X (NO_2/NO_X) ratio. The equation is conservatively based on three years of hourly monitored data collected at SCAQMD Monitoring Station No. 094, and seven months of hourly monitored data collected at LAX, downwind of Runway 25R. This ratio is based on the predicted peak hourly NO_X concentration and is different for each hour analyzed in the dispersion model. The hourly NO_X concentrations were multiplied by the corresponding hourly NO_2/NO_X ratio. The peak NO_2 concentration was then added to the background concentration for comparison to the CAAQS.

In addition to the on-airport sources, off-airport emissions from motor vehicles traveling to or from airport-owned property (including the airport and adjacent airport-owned developments) were considered in this analysis. The CAL3QHCR model[302] was used to model CO concentrations at selected off-airport street intersections due to vehicle traffic.[303] CAL3QHCR is a USEPA-developed model for analyzing CO concentrations at roadway intersections. The CAL3QHCR model allows the use of one year of hourly meteorological data, and one-week temporalized (i.e., by time of day) vehicle flow data. Additionally, it provides one-hour and running eight-hour CO concentrations for intersections and roadway links. The specific intersection and roadway links were selected based on results of the off-airport transportation analyses. The intersections with the greatest potential increase in project-related traffic, based on level of service and traffic volume, were included in the air quality analysis. Seventeen intersections located around the airport were modeled for the No Action/No Project Alternative and Alternatives A, B, and C. For Alternative D, traffic volume information was made available for an additional 24 individual intersections. The same methodology was used to select additional intersections for the CO concentration analysis. Based on this methodology, two additional intersections were selected and analyzed for Alternative D.

---

300 Chico, T., SCAQMD, Personal Communication, March 11, 2003.

301 Durkee, K., SCAQMD, Personal Communication, April 11, 2003.

302 U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards, User's Guide to CAL3QHC Version 2.0: A Modeling Methodology for Predicting Pollutant Concentrations Near Roadway Intersections (EPA-454/R-02-006 Revised), September 1995.

303 Selection of intersections for evaluation was based on California Department of Transportation, Transportation Project-Level Carbon Monoxide Protocol, (December 1997).

Meteorology

Airport-specific meteorological data were used to analyze air quality impacts. The data set used consisted of twelve continuous months of hourly surface and upper air data collected at LAX between March 1, 1996, and February 28, 1997, at the National Weather Service (NWS) Meteorological Station. This data set, provided by the SCAQMD, included ambient temperature, wind speed, wind direction, atmospheric stability, and mixing height parameters. The location of the station is identified in **Figure F4.6-1**, Meteorological Station and Air Quality Monitoring Station Locations.

EDMS 4.11 uses the AERMOD modeling system, which requires more detailed meteorological data than either EDMS 3.2 or ISCST3. An AERMOD format dataset was created for the calendar year 1996. Surface data used to create this dataset came from the on-site data collected by SCAQMD at LAX, with missing surface data being supplemented from National Weather Service (NWS) data collected at LAX. Twice-daily upper air sounding data were from San Diego Miramar Weather Service Contract Meteorological Observatory (WSCMO) which is the closest WSCMO to the project location with available upper air soundings. The AERMOD meteorological preprocessing program, AERMET, was used to create the appropriate dataset.

Source and Receptor Locations

Locations for mobile and stationary emissions sources were determined from a review of the proposed airport layouts for each alternative and related LAX Master Plan documents. Receptor points are the geographic locations where the air dispersion model(s) calculates air pollutant concentrations. These receptor locations were placed in areas where the general public has unrestricted access. Receptors were located on the airport property line shown in each alternative and at publicly accessible areas on and off airport property. Receptor grids were also overlaid on the proposed airport layouts for each alternative. The receptor grids were extended some distance beyond airport property to ensure that the peak airport-related concentrations were identified.

4.6.2.5 Future Background Concentrations

The above-described modeling accounts for the projected future concentrations of pollutants due to airport-related activities, but cannot reflect other pollutant sources in the area that contribute to total air pollutant levels. Therefore, future background concentrations were calculated to reflect the future emissions from distant and nearby off-airport sources, based on baseline ambient air quality measurements. Future background concentrations, when added to the airport modeling results, reflect the total pollutant concentrations predicted at a specific site. The future background concentrations of CO, NO_2, and SO_2 near LAX in the interim years and 2015 were estimated using the linear rollback approach identified in the 1997 AQMP. This approach assumes that changes in emissions inventories will change the ambient concentrations proportionally. The future background concentrations of PM_{10} for the vicinity of LAX were estimated by calculating the ratio of environmental-baseline PM_{10} concentrations for downtown Los Angeles to future-year PM_{10} concentrations for downtown Los Angeles (taken from the 1997 AQMP) and multiplying this ratio by the environmental-baseline PM_{10} concentrations for the vicinity of LAX. This method allowed for inclusion of secondary PM_{10} formation, as modeled by the SCAQMD and presented in the 1997 AQMP. A more detailed discussion on the determination of future background concentrations is included in the Air Quality Modeling Protocol for Criteria Pollutants (see Technical Report 4, *Air Quality Technical Report*). **Table F4.6-2**, Future Background Concentrations, presents the background concentrations of each pollutant used for this air quality impact analysis.

Table F4.6-2

Future Background Concentrations

Pollutant [2]	Averaging Period	Future Background Concentration[1] 2005	2013	2015
O_3 (ppm) [3]	1-Hour	≤0.09[4]	<0.09[4]	≤0.09[4]
CO (ppm)	8-Hour	4.9	3.7	3.4
	1-Hour	6.2	4.6	4.2
NO_2 (ppm)	AAM[5]	0.0196	0.0159	0.0150
	1-Hour	0.0998	0.0812	0.0765
SO_2 (ppm)	AAM[5]	0.0023	0.0026	0.0027
	24-Hour	0.0065	0.0073	0.0075
	3-Hour	0.016	0.018	0.018
	1-Hour	0.019	0.021	0.022
PM_{10} (µg/m³) [6]	AAM[5]	28	25	24
	AGM[7]	24	21	20
	24-Hour	61	47	43

1 Future background concentrations were estimated using a linear rollback approach and future year controlled CO, NO_2 and SO_2 emission inventories from Appendices III and V of the 1997 AQMP (SCAQMD 1996b, 1996c). Future background concentrations of PM_{10} were estimated using the ratio of future year (SCAQMD 1996c) to current year PM_{10} concentrations for downtown Los Angeles applied to the current year PM_{10} concentration at LAX. Future background concentrations are based on monitored ambient air quality and therefore already include contributions from airport sources. Predicted future airport contributions were added to calculated future background concentrations to estimate future total concentrations. Consequently, this approach represents a conservative method for estimating future total concentrations.

2 Lead (Pb) and sulfate concentrations currently meet the NAAQS and CAAQS limits. No significant sources of these pollutants exist or are proposed at LAX.

3 ppm = parts per million (by volume).

4 Ozone concentrations with or without the proposed LAX Master Plan, as listed in the 1997 AQMP, Appendix V.

5 AAM = Annual Arithmetic Mean.

6 µg/m^3 = micrograms per cubic meter.

7 AGM = Annual Geometric Mean.

Source: Camp Dresser & McKee Inc., 2003.

4.6.2.6 Emissions in Milestone and Attainment Years

In accordance with the general conformity regulations, conformity must be shown for the selected federal action for rate of progress milestone years defined by the Clean Air Act, attainment years, and the year of maximum emissions.[304] The milestone and attainment years in the South Coast Air Basin that are within the LAX Master Plan construction schedule include 2005, 2006, 2008, and 2010.[305] Air pollutant emissions for the No Action/No Project Alternative and for Alternative D (the LAWA staff-preferred alternative) were estimated for these milestone and attainment years (years other than 1996, 2005/2013, and 2015) through interpolation of the baseline conditions and predicted results for 2005 and 2015. These inventories are presented in Technical Report S-4, *Supplemental Air Quality Technical Report*.

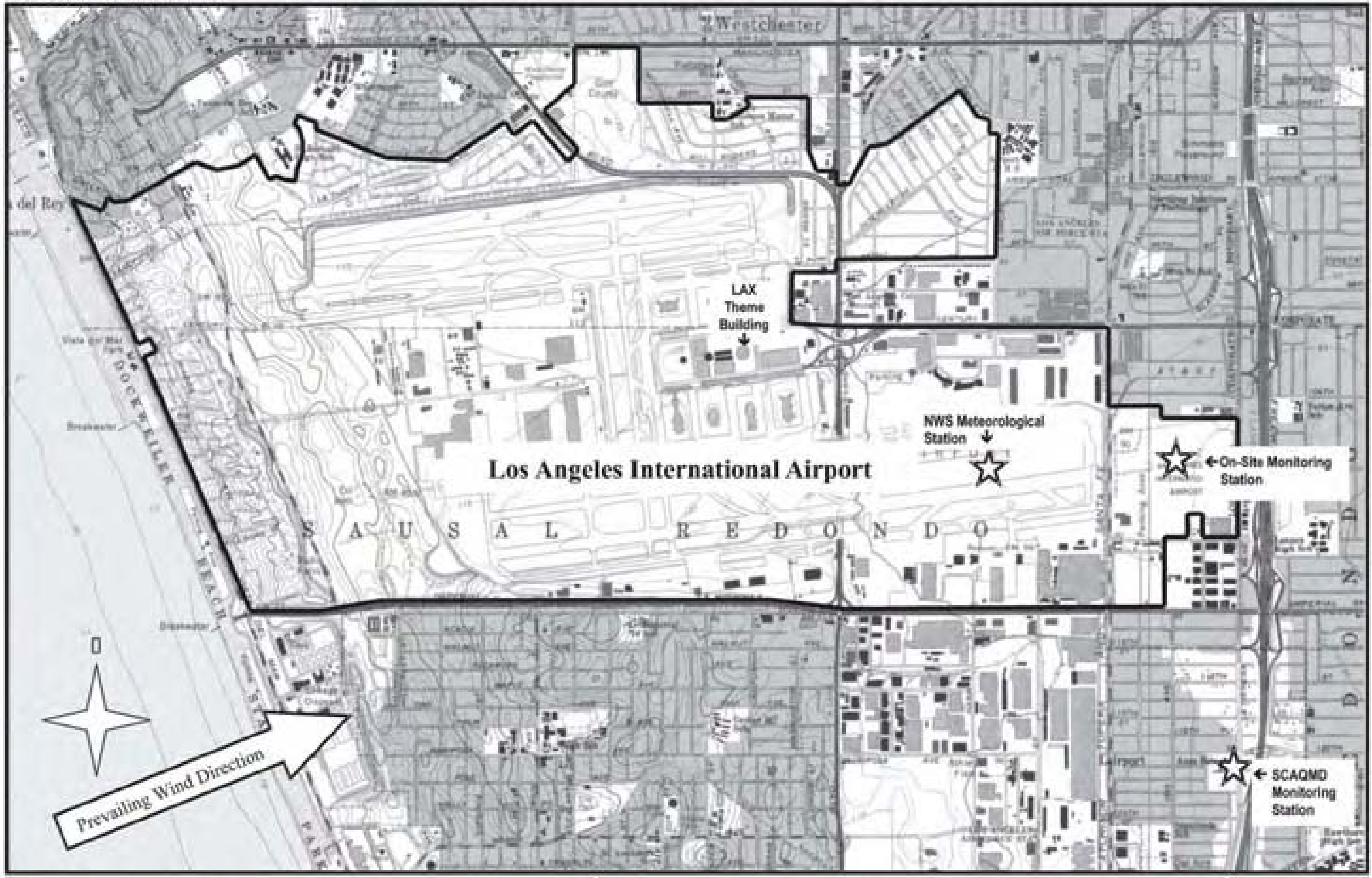
4.6.2.7 Methods of Determining Significance

The pollutant emission rates and concentrations presented in subsection 4.6.4, *Thresholds of Significance*, reflect the thresholds against which the air quality impacts from the alternatives were measured. For the purposes of CEQA, in general, significance was determined by comparison of: (1) estimated pollutant emissions from each build alternative in the interim year and 2015 to the pollutant emissions from the environmental baseline, (2) maximum predicted concentrations of pollutants from

304 Code of Federal Regulations, Title 40, Part 93, Section 93.158, July 1, 2003.

305 South Coast Air Quality Management District, 1997 Air Quality Management Plan, November 1996.

Fig04_06-01.cdr - Negretegd - 01/12/2004



LAX Master Plan
Final EIS/EIR

Meteorological Station and
Air Quality Monitoring Station Locations

Figure
F4.6-1

each build alternative in the interim year and 2015 to the ambient air quality standards, and (3) estimated nonattainment pollutant emissions from Alternative D (the LAWA staff-preferred alternative) to the respective estimated pollutant emissions from the No Action/No Project Alternative in the year of maximum emissions for purposes of determining the applicability of the general conformity regulations, as discussed in subsection 4.6.6.5, *Alternative D - Enhanced Safety and Security Plan*. The selection of the appropriate environmental baseline depends on whether the sources were on-airport or off-airport. On-airport source impacts were compared to the "environmental baseline" and off-airport source impacts were compared to the "adjusted environmental baseline," as described in the Introduction to Chapter 4. The difference in emissions between the environmental baseline and each build alternative was defined as the incremental project-related emissions. These incremental project-related emissions were then compared to the emission thresholds presented in subsection 4.6.4*, Thresholds of Significance*. Consistent with the *SCAQMD CEQA Handbook*,[306] an air quality impact analysis (dispersion modeling) is included in the EIS/EIR for each alternative with incremental emission rates that exceed the operations or construction emission thresholds. All of the build alternatives exceeded one or both of these analysis thresholds.

Maximum predicted concentrations resulting from airport operations, construction, and cumulative activities in each build alternative were added to the future background concentrations and compared to the ambient air quality standards presented in **Table F4.6-3**, National and California Ambient Air Quality Standards. A comparison to the ambient air quality standards was made for those pollutants that currently attain the NAAQS or CAAQS in the South Coast Air Basin. For those pollutants that currently do not attain the ambient air quality standards in the basin, two different comparisons were made. First, prior to the projected attainment date, the pollutant concentration from each build alternative was compared to the environmental baseline concentration. Second, after the projected attainment date, the pollutant concentration was compared to the appropriate ambient air quality standard. Potential mitigation was developed for each alternative with incremental emission or concentration impacts that exceed the significance thresholds, with the goal of reducing the impact to the maximum extent practicable.

---

[306] South Coast Air Quality Management District, CEQA Air Quality Handbook, 1993.

Table F4.6-3

National and California Ambient Air Quality Standards

Pollutant	Averaging Time	CAAQS	NAAQS Primary	NAAQS Secondary
Ozone (O_3)	8-Hour	N/A[2]	0.08 ppm[1] (157 μg/m[3]) [3]	Same as Primary
	1-Hour	0.09 ppm (180 μg/m[3])	0.12 ppm (235 μg/m[3])	Same as Primary
Carbon Monoxide (CO)	8-Hour	9.0 ppm (10 mg/m[3])[4]	9 ppm (10 mg/m[3])	N/A
	1-Hour	20 ppm (23 mg/m[3])	35 ppm (40 mg/m[3])	N/A
Nitrogen Dioxide (NO_2)	Annual	N/A	0.053 ppm (100 μg/m[3])	Same as Primary
	1-Hour	0.25 ppm (470 μg/m[3])	N/A	N/A
Sulfur Dioxide (SO_2)	Annual	N/A	0.030 ppm (80 μg/m[3])	N/A
	24-Hour	0.04 ppm (105 μg/m[3])	0.14 ppm (365 μg/m[3])	N/A
	3-Hour	N/A	N/A	0.5 ppm (1300 μg/m[3])
	1-Hour	0.25 ppm (655 μg/m[3])	N/A	N/A
Particulate Matter (PM_{10})	AAM[5]	20 μg/m[3]	50 μg/m[3]	Same as Primary
	24-Hour	50 μg/m[3]	150 μg/m[3]	Same as Primary
Particulate Matter ($PM_{2.5}$)	AAM	12 μg/m[3]	15 μg/m[3]	Same as Primary
	24-Hour	N/A	65 μg/m[3]	Same as Primary
Lead (Pb)	Quarterly	N/A	1.5 μg/m[3]	Same as Primary
	Monthly	1.5 μg/m[3]	N/A	N/A
Sulfates	24-Hour	25 μg/m[3]	N/A	N/A

1 ppm = parts per million (by volume).
2 N/A = Not applicable.
3 μg/m[3] = micrograms per cubic meter.
4 mg/m[3] = milligrams per cubic meter.
5 AAM = Annual arithmetic mean.
6 AGM = Annual geometric mean.

Source: California Air Resources Board, Ambient Air Quality Standards (California and Federal), July 9, 2003 http://www.arb.ca.gov/aqs/aqs.htm.

For purposes of NEPA analysis, the pollutant concentrations for each build alternative were compared to the applicable pollutant's NAAQS. In addition, the future-year emissions and pollutant concentrations for each build alternative were compared to those for the No Action/No Project Alternative.

4.6.2.8 Assessment of Mitigation Measures

An extensive list of potential mitigation options for air quality was developed. The list was developed based on an evaluation of mitigation opportunities associated with the four build alternatives and from suggestions provided in public scoping comments, as well as comments received from the public (including government agencies) on both the Draft EIS/EIR and the Supplement to the Draft EIS/EIR. The list is presented in Technical Report 4, *Air Quality Technical Report*. A preliminary assessment of the technical, economic, and legal feasibility of these measures was undertaken. Those options that appeared to have substantial or measurable air quality benefits were modeled, using similar models and techniques as described above, to determine the residual impacts of each build alternative after mitigation. In conjunction with the relevant air quality regulatory agencies, LAWA will develop an LAX Master Plan-Mitigation Plan for Air Quality (LAX MP-MPAQ), which will specify the unique mitigation measure components to be implemented for construction, transportation, and operational emissions. Mitigation measures already identified to be included or to be considered for the LAX MP-MPAQ, along with their estimated emission reductions, are presented in subsection 4.6.8, Mitigation Measures.

4.6.3 Affected Environment/Environmental Baseline

The affected environment/environmental baseline for LAX is determined by the:

- Climate and meteorology of the air basin in which it is located
- State and regulatory framework that identifies limits on the concentration of pollutants
- Local plans and policies intended to bring the Basin into compliance with the state and federal ambient air quality standards
- Existing ambient air quality in the LAX area
- Existing sources of emissions at LAX and in the vicinity

4.6.3.1 Climate and Meteorology

LAX is located within the South Coast Air Basin. The meteorological conditions at LAX are heavily influenced by the airport's proximity to the Pacific Ocean to the west. The annual minimum mean, maximum mean, and overall mean temperatures for LAX are 55°F, 70°F, and 63°F, respectively. The prevailing wind direction at LAX is from the west-southwest with an average wind speed of roughly 8 knots (9.2 mph or 4.1 m/s). Maximum recorded gusts range from 27 knots (31 mph or 13.9 m/s) in July to 54 knots (62 mph or 27.8 m/s) in March. The monthly average wind speeds range from 5 knots (5.8 mph or 2.6 m/s) in December to 9 knots (10 mph or 4.6 m/s) during the spring, March through June. The Basin is enclosed by mountains to the north and east which, combined with the air structure and southerly location, produce a regular daily reversal of wind direction: onshore (westerly) during the day and offshore (easterly) at night.

4.6.3.2 Federal and State Regulatory Framework

The regulatory agencies with primary responsibility for air quality in the South Coast Air Basin include the SCAQMD and CARB with oversight by USEPA Region IX. This air quality analysis reflects applicable federal, state, and regional requirements in effect as of February 2003.[307] Not addressing more recent air quality regulations makes this analysis conservative, since not accounting for emission reductions that may result from such more recent regulations is expected to result in an overestimate of likely emissions. USEPA and CARB have established NAAQS and CAAQS, respectively, for criteria air pollutants. These standards are applicable to the study area and are summarized in **Table F4.6-3**.

In July 1997, USEPA promulgated a new 8-hour O_3 NAAQS and new 24-hour and annual $PM_{2.5}$ NAAQS. While these standards were the subject of judicial challenges, they are currently in force and in the process of being implemented by USEPA, CARB, and SCAQMD. USEPA will designate nonattainment/attainment areas for these standards in 2004. SCAQMD staff expects that the South Coast Air Basin will be in nonattainment for these standards. Because ozone is a regional pollutant and ambient concentrations can only be adequately predicted using regional photochemical models that account for all sources of precursors in the South Coast Air Basin, it is beyond the scope of this document to address the future attainment of either the 1-hour or 8-hour ozone ambient air quality standards. With respect to $PM_{2.5}$, until USEPA issues guidance on the implementation of the $PM_{2.5}$ ambient air quality standards, that agency has recommended that compliance with the PM_{10} standards be considered a surrogate for compliance with the $PM_{2.5}$ standards,[308] and the analysis in this document follows that guidance.

The Southern California Association of Governments (SCAG) is the Metropolitan Planning Organization for six counties, including Los Angeles County. As the Metropolitan Planning Organization, SCAG is mandated by the federal government to research and draw up plans for transportation, growth management, hazardous waste management, and air quality. SCAG is responsible under the federal Clean Air Act for determining conformity of transportation projects, plans, and programs with applicable air quality plans.

LAX is located in an area that is designated as being in nonattainment of the NAAQS for O_3, CO, and PM_{10}. The severity of the nonattainment status has been classified as "extreme" for O_3, "serious" for CO, and "serious" for PM_{10}. On July 24, 1998, the area was redesignated from nonattainment to

307 Modeling for this air quality analysis began shortly after this date, and it was not considered feasible to adjust model inputs to reflect air quality rules adopted after that date. Because this analysis does not take into account some recent air quality regulations it is conservative in its estimate of future emissions, and actual emissions may be lower.

308 U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards, Interim Implementation of New Source Review Requirements for $PM_{2.5}$, Memorandum from John S. Seitz, Director, October 21, 1997.

attainment/maintenance status for NO_2 by the USEPA.[309] The area is in attainment of the NAAQS for SO_2 and Pb. The area also has been designated as being in nonattainment of the CAAQS for O_3, CO, and PM_{10}. The area is in attainment of the CAAQS for NO_2, SO_2, Pb, and sulfates. **Table F4.6-4**, NAAQS and CAAQS Attainment Status in the Airport Vicinity, summarizes the attainment status for these pollutants. The attainment or nonattainment status of the region defines the levels of emissions that are considered significant for air quality impacts.

Table F4.6-4

NAAQS and CAAQS Attainment Status in the Airport Vicinity

Pollutant	NAAQS Status	CAAQS Status
Carbon monoxide (CO)[1]	Nonattainment (serious)	Nonattainment
Lead (Pb)	Attainment	Attainment
Nitrogen dioxide (NO_2)	Attainment/Maintenance	Attainment
Ozone (O_3)	Nonattainment (extreme)	Nonattainment
Particulate matter (PM_{10})	Nonattainment (serious)	Nonattainment
Sulfur dioxide (SO_2)	Attainment	Attainment
Sulfates	Not applicable	Attainment

1 Attainment demonstrations with the CO NAAQS and CAAQS in 2002 and beyond are included in the Draft 2003 AQMP.

Sources: U.S. Environmental Protection Agency, Region IX Air Quality Maps, Available: http://www.epa.gov/region09/air/maps/maps-top.html [May 23, 2000]; California Air Resources Board, Area Designations (Activities and Maps), Available: http://www.arb.ca.gov/desig/desig.htm [May 13, 2002]; South Coast Air Quality Management District, Draft 2003 Air Quality Management Plan, Available: http://www.aqmd.gov/aqmp/AQMD03AQMP.htm [February 2003].

The CAA requires attainment of the NAAQS as expeditiously as practicable, but no later than the statutory dates listed below. Upon redesignation to attainment for each standard, the area will be considered to be a maintenance area for that standard, and as such must meet all applicable requirements to maintain the standard.

- Extreme O_3: November 15, 2010. (This designation and attainment date apply to the 1-hour O_3 NAAQS only.)
- Serious CO: December 31, 2000. (The CO attainment demonstration provided in 1997 has lapsed. The SCAQMD has prepared a revised CO attainment demonstration that indicates the standard was attained in 2002 and will be maintained into the future.)
- Serious PM_{10}: December 31, 2006. (USEPA approved[310] an extension request from December 31, 2001 to December 31, 2006.)

The California Clean Air Act requires attainment of the CAAQS as expeditiously as practicable. To achieve the standards, SCAQMD must update its AQMP every three years to demonstrate progress in reducing emissions by five percent per year or, alternatively, to demonstrate that all feasible measures are being implemented.

A myriad of rules and regulations is implemented and enforced by federal, state, regional, and local agencies to protect and enhance ambient air quality in the South Coast Air Basin. Although an exhaustive list of current air quality regulatory requirements applicable to LAX would be lengthy, examples of the nature and extent of the requirements with which LAWA complies, and will continue to comply, are identified below. An essential assumption of the air quality analyses for the LAX Master Plan and the accompanying air quality mitigation program, is the fact that LAWA complies with these requirements and would continue to do so under the No Action/No Project Alternative and Alternatives A, B, C, and D. These requirements include, but are not limited to, the following:

309 Federal Register, Vol. 63, No. 142, July 24, 1998, pp. 39747-39752.

310 Federal Register, Vol. 68, No. 75, April 18, 2003, pp. 19315-19318.

- USEPA Rule 40 CFR 61 Subpart M, National Emission Standard for Asbestos: requires containment and proper disposal of asbestos encountered during demolition and renovation of buildings and structures (Cf. SCAQMD Rule 1403, Asbestos Emissions from Demolition/ Renovation Activities).
- CARB Rule 13 CCR 1956.8, California Exhaust Emission Standards and Test Procedures for 1985 and Subsequent Model Heavy-Duty Diesel Engines and Vehicles: requires significant reductions in emissions of NO_X, particulate matter, and non-methane organic compounds using exhaust treatment on heavy-duty diesel engines manufactured in model year 2007 and later years.
- SCAQMD Rule 403, Fugitive Dust: identifies the minimum particulate controls for construction-related fugitive dust. For example, Rule 403 requires twice daily watering of all active grading or construction sites. Haul trucks leaving the facility must be covered and maintain at least two feet of freeboard (CVC Section 23114). Low emission street sweepers must be used at the end of each construction day if visible soil is carried onto adjacent public paved roads. Wheel washers must be used to clean off the trucks, particularly the tires, prior to them entering the public roadways. (For the LAX Master Plan construction, wheel washers would be installed at every entrance and exit to the construction site where an unpaved area connects to a paved area.)
- SCAQMD Rule 431.2, Sulfur Content of Liquid Fuels: requires that, after January 1, 2005, only low sulfur diesel fuel (containing 15 ppmw sulfur) will be permitted for sale in the South Coast Air Basin.
- SCAQMD Rule 1134, Emissions of Oxides of Nitrogen from Stationary Gas Turbines: requires stringent limits on emissions of NO_X.
- SCAQMD Rule 1146, Emissions of Oxides of Nitrogen from Industrial, Institutional, and Commercial Boilers, Steam Generators, and Process Heaters: requires stringent limits on emissions of NO_X.
- SCAQMD Rule 1146.1, Emissions of Oxides of Nitrogen from Small Industrial, Institutional, and Commercial Boilers, Steam Generators, and Process Heaters: requires stringent limits on emissions of NO_X.
- SCAQMD Rule 1146.2, Emissions of Oxides of Nitrogen from Large Water Heaters and Boilers: requires stringent limits on emissions of NO_X.
- SCAQMD Rule 1191, Clean On-Road Light- and Medium-Duty Public Fleet Vehicles: requires operators of publicly owned fleets of 15 or more light- and medium-duty vehicles to acquire low-emitting gasoline or alternatively fueled vehicles when adding or replacing vehicles.
- SCAQMD Rule 2202, On-Road Motor Vehicle Mitigation Options: requires employers in the South Coast Air Basin with more than 250 part-time or full-time employees at a worksite to implement an approved rideshare program and attain an average vehicle ridership of at least 1.5.
- Los Angeles City Council directive on diesel engine particulate traps, approved by the Mayor on December 2, 2002: requires that all existing City-owned and City-contracted diesel-fueled vehicles be retrofitted with particulate traps, which engines would henceforth be required to use ultra low sulfur diesel fuel (15 ppmw or less); some exceptions include emergency vehicles and off-road vehicles.

4.6.3.3 Air Quality Plans and Policies

The purpose of a regional Air Quality Management Plan (AQMP) is to demonstrate attainment with the CAAQS and NAAQS. Every three years, SCAQMD must prepare and submit an AQMP to CARB and USEPA. CARB and USEPA have approved[311, 312] the sections of the 1997 AQMP addressing NO_2 and CO, and have approved[313] the 1999 Amendments to the 1997 AQMP addressing O_3. USEPA has approved[314] the 1997 AQMP sections addressing PM_{10}. SCAQMD has issued the Final 2003 AQMP,[315] and CARB submitted the Final 2003 AQMP to USEPA for approval on January 9, 2004. The 2003 AQMP includes the CO attainment and maintenance demonstration for 2002 and beyond. The development of the AQMP is supported by SCAG, which provides transportation and growth projections to SCAQMD.

---

311 Federal Register, Vol. 63, No. 76, April 21, 1998, pp. 19661-19662.
312 Federal Register, Vol. 63, No. 142, July 24, 1998, pp. 39747-39752.
313 Federal Register, Vol. 65, No. 69, April 10, 2000, pp. 18903-18906.
314 Federal Register, Vol. 68, No. 75, April 18, 2003, pp. 19315-19318.
315 South Coast Air Quality Management District, 2003 Final Air Quality Management Plan, August 2003, http://www.aqmd.gov/aqmp/AQMD03AQMP.htm.

SCAG received federal approval of its 2001 Regional Transportation Plan (RTP) in June 2001, and is scheduled to complete the 2004 RTP in the spring of 2004.

In the development of the emissions inventories for the 1997 AQMP and 2003 AQMP, SCAQMD assumed that USEPA would adopt new regulations to control aircraft engine emissions below the existing limits. The CAA grants sole authority for setting aircraft engine emission standards to USEPA.[316] The 1997 AQMP emissions budget for aircraft reflects these assumed reduced emission levels. Since USEPA did not adopt such regulations, and since commercially available aircraft engine technologies are not capable of meeting the SCAQMD-assumed reductions, these 1997 and 2003 AQMP inventories for airports underestimate actual baseline as well as projected future airport emissions with or without the LAX Master Plan.

Since 1998, LAWA has been an active participant in a national effort to reduce aircraft and airport emissions. Stakeholders, including representatives from FAA, USEPA, state and local air quality agencies, environmental groups, air carriers, and airports have been meeting on a regular basis to negotiate an agreement to voluntarily reduce emissions from aircraft and airport-related sources. Although the focus of the discussions has been reducing NO_X emissions, consideration is also being given to limiting other pollutants generated by aviation activities, such as VOC, CO_2, PM_{10}, and air toxics. Although at the time of publication of this Final EIS/EIR there have been no final actions taken under this stakeholders' process, it is anticipated to result in a proposal for a voluntary national aviation emissions reduction program.

USEPA, CARB, SCAQMD, airlines, and airports in the South Coast Air Basin are engaged in a "consultative process" established by USEPA as part of its approval of the 1994 SIP. The focus of this consultative process has been on the voluntary conversion of GSE to clean fuels. A memorandum of understanding setting forth goals for reducing emissions from GSE was signed by ten air carriers and CARB in December 2002.

CARB, SCAQMD, and the City of Los Angeles have proposed and implemented programs and regulations that target air pollutant emissions from on-road mobile vehicles or ground access vehicles (GAV). Some of these programs and regulations have been incorporated into the air quality analysis through the use of the CARB emission factor model, EMFAC2002, used to calculate GAV emissions. USEPA has approved the use of the EMFAC2002 model for SIP development purposes throughout California.[317] The EMFAC2002 model incorporates forecast clean fuel technologies and emission reductions for various pollutants resulting from recent state legislation and implementation goals.[318] The state emission standards and programs incorporated into EMFAC2002 include district Inspection and Maintenance (I/M) programs, California Cleaner Burning Gasoline (reformulated gasoline), near-zero evaporative standards, on-road motorcycle standards, low-emission vehicle standards (LEV I and LEV II), and standards for heavy-duty engines. The standards for heavy-duty engines include off-cycle NO_X mitigation and exhaust emissions standards for urban transit buses. The EMFAC2002 model does not incorporate the future changes in vehicle fleet composition resulting from proposed state legislation and proposed and recently adopted local legislation.

In the South Coast Air Basin, the SCAQMD and the City of Los Angeles have adopted and proposed additional rules and policies that govern cleaner fuel use and pollutant emission reductions in public vehicle fleets.[319] The SCAQMD has recently adopted the following rules for clean on-road vehicles: 1191 for Light-and Medium-Duty Public Fleet Vehicles, 1192 for Clean On-Road Transit Buses, 1193 for Refuse Collection Vehicles, and 1194 for Commercial Airport Operations GAV. The SCAQMD has proposed a series of rules that apply to clean fuel technology use in on-road school buses, on-road heavy-duty public fleets, street sweepers, and the reduction of sulfur content in liquid fuels. In addition, the City of Los Angeles adopted Policy CF#00-0157 requiring that all city-owned or operated diesel-fueled vehicles be equipped with particulate traps and use low-sulfur diesel by the end of 2002.

---

316 42 USC 7571.

317 Federal Register, Vol. 68, No. 62, April 1, 2003, pp. 15720-15723.

318 California Air Resources Board, Public Meeting to Consider Approval of Revisions to the State's On-Road Motor Vehicle Emissions Inventory; Technical Support Document, May 2000.

319 South Coast Air Quality Management District, Final Program Environmental Assessment for: Proposed Fleet Vehicle Rules and Related Rule Amendments, June 5, 2000.

CARB recently adopted its Risk Reduction Plan for Diesel-Fueled Engines and Vehicles. These rules, plans, and policies have not been incorporated into this air quality analysis. The SCAQMD has conducted a regional environmental assessment of the clean on-road vehicle rules. The air quality benefits from these rules have larger regional implications, where public fleets make up roughly 25 percent of the vehicle universe. Within the LAX study area, however, the municipal government fleets represent a much smaller portion of the total vehicle miles traveled (VMT) than in the South Coast Air Basin as a whole. For the purposes of emission calculations and dispersion modeling, the adopted and proposed SCAQMD rules, City policies, and CARB plans will not substantially change the emission factors or the vehicle fleet mix used in the emissions calculation. The emission forecasts developed for this EIS/EIR do not assume reductions from these recently-adopted rules, plans and policies and, therefore, provide conservative results.

4.6.3.4 Environmental Baseline Ambient Air Quality

The majority of the pollutants currently emitted in the South Coast Air Basin are from mobile sources, with over 60 percent of total criteria pollutant emissions originating from on-road motor vehicles. Even with the mitigation options included in the 1997 AQMP, motor vehicle emission estimates will account for over 50 percent of basin-wide pollutant emissions in future years. Aircraft operating at LAX contribute less than one percent of the basin-wide emissions[320] of CO, NO_X, VOC, SO_2, and PM_{10}.

Actual measurements of ambient air quality were undertaken for the LAX Master Plan analysis to provide a context for the modeling of air pollutant concentrations in the vicinity of the airport. Where concentrations were not actually measured at LAX, measurements collected by SCAQMD at a nearby monitoring station were used. Ambient air quality monitoring was conducted by LAWA on LAX property for approximately 7.5 months, from August 13, 1997, through March 31, 1998[321] (see Technical Report 4, *Air Quality Technical Report*). The location of the on-site monitoring station is shown in **Figure F4.6-1**. Pollutants measured at the on-site monitoring station included CO, NO_2, SO_2, and PM_{10}. The data collection period included the summer, fall, and winter seasons. Therefore, these data were representative of both high O_3 periods (summer) and high CO and NO_2 periods (winter). The short-term (one-hour through 24-hour) average concentrations from the on-site monitoring station represent baseline ambient air quality at LAX. The on-site ambient air quality conditions, given as baseline concentrations of air pollutants, are briefly summarized in **Table F4.6-5**, Maximum Measured Ambient Air Quality in the Vicinity of LAX (1996 Environmental Baseline and Year 2000).

---

320 South Coast Air Quality Management District, 1997 Air Quality Management Plan - Appendix III, November 1996.

321 AeroVironment Environmental Services Inc., Los Angeles International Airport Master Plan Phase III, Environmental Impact Survey/Report Preparation Air Quality and Meteorological Monitoring Program - Measurements Report (AVES-R-50185-001rev), May 1998.

Table F4.6-5

Maximum Measured Ambient Air Quality in the Vicinity of LAX (1996 Environmental Baseline and Year 2000)

Pollutant	Average Time	Baseline Air Pollutant Concentration[1] 1996	Baseline Air Pollutant Concentration[1] Year 2000[5]	NAAQS/CAAQS
O_3 (ppm)	8-Hr	0.09[2]	0.09	0.08 / -
	1-Hr	0.13[2]	0.15	0.12 / 0.09
CO (ppm)	8-Hr	8.5[3]	9.4	9 / 9.0
	1-Hr	10.6[3]	11	35 / 20
NO_2 (ppm)	AAM	0.0295[2]	0.0295	0.053 / -
	1-Hr	0.15[3]	0.15	- / 0.25
SO_2 (ppm)	AAM	0.0025[2]	0.004	0.030 / -
	24	0.007 [3]	0.020	0.14 / 0.04
	3-Hr	0.017 [3]	Not Reported	0.50 / -
	1-Hr	0.021 [3]	0.017	/0.25
PM_{10} (μg/m³)	AAM	36[2]	36.1	50 / -
	AGM	34[2, 4]	33.4	- / 30
	24-Hr	82[3]	74	150 / 50
$PM_{2.5}$ (μg/m³)	AAM	Not Reported	Not Reported	15 / -
	24-Hr	Not Reported	Not Reported	65 / -
Pb (μg/m³)	Qtr	0.05[2, 4]	0.05	1.5 / -
	Monthly	0.06[2, 4]	0.08	- / 1.5
Sulfates (μg/m³)	24-Hr	18.4[2]	18.8	- / 25

Note: Baseline conditions reflect actual measurements undertaken for the LAX Master Plan analysis. Where pollutants were not measured on site (O_3, Pb, sulfates, and annual averages), data collected by the SCAQMD at Monitoring Station 094 (about 2.4 miles southeast of the LAX Theme Building) were used, as noted below.

AAM = Annual Arithmetic Mean, AGM = Annual Geometric Mean.
ppm = part per million (by volume).
μg/m³ = micrograms per cubic meter.
1 ppm NO_2 = 1881 μg/m³ NO_2.mn
1 ppm SO_2 = 2618 μg/m³ SO_2.
1 ppm CO = 1145 μg/m³ CO.

1 Baseline ambient air quality includes the contribution from airport and non-airport sources.
2 Highest reported 1996 through 1998 concentrations from SCAQMD Monitoring Station 094, SW Coastal Los Angeles County.
3 Highest measured concentration from on-site monitoring station (operated from August 1997 through March 1998).
4 Less than 12 full months of data.
5 Highest reported 1998 through 2000 concentrations from SCAQMD Monitoring Station 094, SW Coastal Los Angeles County.

Sources: AeroVironment Environmental Services Inc., Los Angeles International Airport Master Plan Phase III, Environmental Impact Survey/Report Preparation Air Quality and Meteorological Monitoring Program - Measurements Report (AVES-R-50185-0001rev), May 1998; South Coast Air Quality Management District, 1996 Air Quality (Summary), 1997; South Coast Air Quality Management District, 1997 Air Quality (Summary), 1998; South Coast Air Quality Management District, 1998 Air Quality (Summary), 1999; South Coast Air Quality Management District, 1999 Air Quality (Summary), 2000; South Coast Air Quality Management District, 2000 Air Quality (Summary), 2001.

SCAQMD maintains a network of air quality monitoring stations throughout the South Coast Air Basin. The monitoring location nearest to LAX is Station No. 094, Southwest Coastal Los Angeles County, located in Hawthorne. The location of this monitoring station is shown in **Figure F4.6-1** and is roughly 2.4 miles southeast of the LAX Theme Building and 0.60 mile south of the LAX southeast property line.

Data from this station are used to describe baseline O_3, Pb, and sulfate concentrations as well as annual average NO_2, SO_2, and PM_{10} concentrations in the vicinity of LAX. These concentrations are also presented in **Table F4.6-5**. Since the Hawthorne monitoring station is not on-site, the highest O_3, Pb, sulfate, and annual average values from the previous three years (1996, 1997, and 1998) were used to describe environmental baseline air quality for these pollutants. Updated data from the Hawthorne station through Year 2000 are also presented in the table.

The data in **Table F4.6-5** indicate that pollutant concentrations on and around the airport under baseline conditions exceed the NAAQS and CAAQS for O_3 and exceed the CAAQS for PM_{10}. All other pollutant concentrations measured on the airport and at the Hawthorne monitoring station are lower than the NAAQS and CAAQS levels.

4.6.3.5 Environmental Baseline LAX Emissions Inventory

Developing emissions inventories for baseline conditions is one of the steps in the air quality impact analysis. This inventory for LAX-specific sources is summarized in **Table F4.6-6**, LAX Environmental Baseline (1996) Emissions Inventory for On-Airport Sources. The environmental baseline represents activity levels at LAX in 1996 and facilities generally as of 1997.

Table F4.6-6

LAX Environmental Baseline (1996) Emissions Inventory for On-Airport Sources

	CO		VOC		NO_X		SO_2		PM_{10}	
Source Category	**lbs/day**	**tpy**	**lbs/day**	**tpy**	**lbs/day**	**tpy**	**lbs/day**	**tpy**	**lbs/day**	**tpy**
Aircraft Total[1]	24,076	4,394	5,579	1,018	18,862	3,442	1,709	312	278	51
GSE Total	15,035	2,744	1,378	251	6,763	1,234	77	14	378	69
APU Total	1,131	206	64	12	733	134	114	21	0	0
Stationary Total[1]	627	115	277	50	1,098	200	32	6	189	34
Motor Vehicles On-Airport[2]	30,356	5,540	3,956	722	2,636	481	9	2	55	10
Fugitive Dust									181	33
Total Operating Emissions	71,227	12,999	11,249	2,053	30,093	5,492	1,941	355	1,081	197

tpy = tons per year

1 Aircraft engine testing included in stationary total. Note that in Attachment C to Technical Report 4, *Air Quality Technical Report*, aircraft engine testing is included with the Aircraft source category instead.

2 Includes only on-airport motor vehicle emissions. Off-airport motor vehicle emissions included in **Table F4.6-10**, Unmitigated Operational Emissions Inventories for Off-Airport Sources.

Source: Camp Dresser & McKee Inc., 2004.

For this analysis, the environmental baseline emission inventory was updated as described in subsection 4.6.2.3 by using current emission factors and emission estimation models for the sources that existed in 1996. The 2000 emissions inventory is provided for informational purposes. The 1996 baseline inventory for LAX-specific sources is summarized in **Table F4.6-6**. The inventory for the Year 2000 is summarized in **Table F4.6-7**, LAX Year 2000 Emissions Inventory for On-Airport Sources. The emissions inventory for on-airport sources is higher in 2000, compared to the 1996 inventory, for each pollutant measured, due to an increase in the number of aircraft operations and on-airport traffic volumes. The major sources of CO emissions at the airport in 1996 were motor vehicles (42 percent), aircraft engines (34 percent), and GSE (21 percent). The major sources of VOC emissions were aircraft engines (50 percent), motor vehicles (35 percent), and GSE (12 percent). Aircraft were the major source of NO_X emissions (63 percent) and SO_2 emissions (88 percent). The major sources of PM_{10} emissions were GSE (35 percent), aircraft engines (26 percent), and motor vehicles (22 percent). The major sources of CO emissions at the airport in 2000 were motor vehicles (42 percent), aircraft engines (33 percent), and GSE (24 percent). The major sources of VOC emissions were aircraft engines (41 percent), motor vehicles (37 percent), and GSE (21 percent). Aircraft were the major source of NO_X emissions (50 percent) and SO_2 emissions (88 percent). The major sources of PM_{10} emissions were GSE (40 percent), motor vehicles (26 percent), and aircraft engines (19 percent).

Table F4.6-7

LAX Year 2000 Emissions Inventory for On-Airport Sources

Source Category	CO lbs/day	CO tpy	VOC lbs/day	VOC tpy	NO_X lbs/day	NO_X tpy	SO_2 lbs/day	SO_2 tpy	PM_{10} lbs/day	PM_{10} tpy
Aircraft Total[1]	22,158	4,044	3,316	605	19,653	3,587	1,801	328	280	51
GSE Total	15,969	2,914	1,725	315	9,350	1,706	106	19	582	105
APU Total	264	48	17	3	203	37	31	6	0	0
Stationary Total [1]	240	44	97	18	364	66	28	5	119	22
Motor Vehicles On-Airport[2]	28,262	5,158	2,960	541	9,485	1,733	65	12	372	68
Fugitive Dust									107	19
Total Operating Emissions	66,893	12,208	8,115	1,482	39,054	7,129	2,031	371	1,459	265

1 Aircraft engine testing included in stationary total. Note that in Attachment C to Technical Report 4, *Air Quality Technical Report*, aircraft engine testing is included with the Aircraft source category instead.

2 Includes only on-airport motor vehicle emissions. Off-airport motor vehicle emissions included in **Table F4.6-10**, Unmitigated Operational Emissions Inventories for Off-Airport Sources.

Source: Camp Dresser & McKee Inc., 2003.

4.6.4 Thresholds of Significance

4.6.4.1 CEQA Thresholds of Significance

Subsection 4.6.2.7, *Methods of Determining Significance*, provides the basis for the determination of significance used in this analysis. The SCAQMD has developed operations- and construction-related thresholds of significance for air quality impacts of projects proposed in the South Coast Air Basin. These thresholds, included in the *SCAQMD CEQA Handbook*, are utilized for purposes of CEQA. In accordance with the *SCAQMD CEQA Handbook*, a significant air quality impact would occur if the direct and indirect changes in the environment that may be caused by the particular build alternative would potentially result in one or more of the future conditions listed below.

Operations Emissions

- Estimated incremental, or net increase from baseline emissions in, nonconstruction-related emissions attributable to a build alternative that would be greater than the operations emission thresholds presented in **Table F4.6-8**, CEQA Thresholds of Significance for Air Pollutants in the South Coast Air Basin.

Table F4.6-8

CEQA Thresholds of Significance for Air Pollutants in the South Coast Air Basin

Pollutant	Stationary Source Concentration Thresholds[1] (Averaging Period)	Operations Emission Thresholds[2]	Construction Emission Thresholds[2]	
		lbs/day	lbs/day	tons/quarter
Sulfates	1 µg/m^3 (24-Hour) State only	N/A	N/A	N/A
CO	500 µg/m^3 (8-Hour) Fed./State 1100 µg/m^3 (1-Hour) State only 2000 µg/m^3 (1-Hour) Fed. Only	550	550	24.75
NO_2	1 µg/m^3 (Annual) Fed./State 20 µg/m^3 (1-Hour) State only	N/A	N/A	N/A
Total NO_X	N/A	55	100	2.5
VOC	N/A	55	75	2.5
SO_X	N/A	150	150	6.75
PM_{10}	1 µg/m^3 (Annual) Fed./State 5.0 µg/m^3 (24-Hour) Fed. Only 2.5 µg/m^3 (24-Hour) State only	150	150	6.75

N/A = Not applicable.
ppm = part per million (by volume).
µg/m^3 = micrograms per cubic meter.

[1] South Coast Air Quality Management District, Regulation XIII - New Source Review, Rule 1303, Appendix A, May 10, 1996.
[2] South Coast Air Quality Management District, CEQA Air Quality Handbook, 1993.

Sources: South Coast Air Quality Management District, Regulation XIII - New Source Review, Rule 1303, Appendix A, December 6, 2002, http: www.aqmd.gov/rules/; South Coast Air Quality Management District, CEQA Air Quality Handbook, 1993.

Construction Emissions

- Estimated incremental, or net increase in, construction-related emissions attributable to a build alternative that would be greater than the daily or quarterly construction emission thresholds presented in **Table F4.6-8**.

Project Concentrations (Operations and Construction, Combined)

- Project concentrations from stationary sources that would be greater than the concentration thresholds presented in **Table F4.6-8.**
- Maximum predicted combined operation and construction-related concentrations attributable to a build alternative combined with calculated future background concentrations for NO_2 and SO_2 that would exceed the ambient air quality standards presented in **Table F4.6-3.**

- Maximum predicted concentrations for a build alternative combined with calculated future background concentrations for CO and PM_{10} that would exceed the ambient air quality standards presented in **Table F4.6-3** after the attainment date for each pollutant (December 31, 2000 for CO[322] and December 31, 2006 for the PM_{10} NAAQS). Prior to the attainment date, project concentrations associated with a build alternative were considered significant if they were higher than both the NAAQS/CAAQS and the environmental baseline concentration.

Cumulative

- Maximum estimated concentrations from the project, considered together with maximum concentrations from past, present, and probable future projects in the impact area, that would be greater than the NO_2, SO_2, or Pb NAAQS, or NO_2, SO_2, Pb, or sulfate CAAQS presented in **Table F4.6-3**.
- Maximum estimated concentrations from the project, considered together with maximum impacts from past, present, and probable future projects in the impact area, that would be greater than the CO or PM_{10} ambient air quality standards presented in **Table F4.6-3** after the attainment date for each pollutant (December 31, 2000 for CO and December 31, 2006 for PM_{10} NAAQS).

These thresholds of significance were developed based on guidance developed by SCAQMD.

4.6.4.2 Federal Standards

Two primary federal statutes apply to air quality analysis and compliance, the Clean Air Act (CAA) and NEPA. Under the CAA, USEPA has established National Ambient Air Quality Standards that are applicable to the project area. These standards are identified in **Table F4.6-3**. Geographic areas are evaluated for their compliance with the NAAQS and are designated as either attainment/unclassifiable, attainment/maintenance, or nonattainment based on ambient air quality measurements in those areas.

In geographic areas designated as nonattainment or maintenance, a demonstration of conformity with the purpose of the SIP must be made for a proposed federal action (i.e., the selected alternative) when incremental emissions attributable to the proposed action would exceed the general conformity applicability thresholds.[323] Incremental emissions are determined by taking the difference between the selected alternative and No Action/No Project Alternative emissions. These incremental emissions must be compared to the following general conformity applicability thresholds in the South Coast Air Basin:

- 100 tons per year for CO emissions.
- 100 tons per year for NO_2 emissions.
- 10 tons per year for NO_X emissions.
- 10 tons per year for VOC emissions.
- 70 tons per year for PM_{10} emissions.

In addition, analysis under NEPA takes into account a comparison of the emissions attributable to each build alternative to the emissions of the No Action/No Project Alternative as well as the impact of each build alternative on the NAAQS. Additional discussion of conformity applicability is included in subsection 4.6.6.5, *Alternative D - Enhanced Safety and Security Plan*, (the LAWA staff-preferred alternative).

4.6.5 Master Plan Commitments

No Master Plan commitments for air quality impacts are proposed.

4.6.6 Environmental Consequences

This section describes the air quality impacts of the No Action/No Project Alternative and the four build alternatives. The air pollutant emissions and associated concentrations during airport operations and construction are discussed for each alternative at each horizon year.

---

322 The CO attainment demonstration provided in 1997 has lapsed. The SCAQMD has prepared a revised CO attainment demonstration that indicates the standard was attained in 2002 and will be maintained into the future.

323 40 CFR 93, Subpart B, July 1, 2003.

The emissions of Pb are addressed in Section 4.24.1, *Human Health Risk Assessment*, and Technical Report 14a, *Health Risk Assessment Technical Report.* The LAX inventories of Pb are relatively low and would not contribute to a violation of the Pb NAAQS or CAAQS. Sulfate compounds (e.g., ammonium sulfate) are generally not emitted directly into the air but are formed through various chemical reactions in the atmosphere; thus, sulfate is considered to be a secondary pollutant. All sulfur emitted by airport-related sources included in this analysis was assumed to be released and to remain in the atmosphere as SO_2. Therefore, no sulfate inventories or concentrations were estimated.

The following tables present summaries of inventories for the No Action/No Project Alternative and Alternatives A, B, C, and D without mitigation. **Table F4.6-9**, Unmitigated Operational Emissions Inventories for On-Airport Sources, summarizes on-airport source emissions. **Table F4.6-10**, Unmitigated Operational Emissions Inventories for Off-Airport Sources, summarizes off-airport source emissions. **Table F4.6-11**, Unmitigated Construction Emissions (Peak Daily, Peak Quarterly, and Annual) - Interim, 2015, and Peak Year, summarizes construction source emissions. Note that the construction emissions for Alternatives A, B, and C are estimated to peak in 2004 (see subsection 4.6.2.1); for Alternative D, construction emissions are estimated to peak in 2005. **Table F4.6-9** also summarizes the environmental baseline conditions and **Table F4.6-10** summarizes the adjusted environmental baseline conditions. In addition, **Table F4.6-11a**, Total Operational and Construction Emissions - Unmitigated, summarizes the on-airport, off-airport, and construction emissions for the No Action/No Project Alternative and for Alternatives A, B, C, and D.

Table F4.6-9

Unmitigated Operational Emissions Inventories for On-Airport Sources (tons per year)

			Interim Year[2,3] Alternative				
Pollutant	**1996 Baseline**	**Year 2000**	**NA/NP[1]**	**A**	**B**	**C**	**D**
CO	12,999	12,208	11,848	10,292	10,197	10,315	10,681
VOC	2,053	1,482	1,652	1,454	1,448	1,452	1,522
NO_X	5,492	7,129	6,356	5,715	5,714	5,754	5,854
SO_2	355	371	405	382	382	382	437
PM_{10}	197	265	181	135	133	139	182

			Horizon Year 2015 Alternative				
Pollutant	**1996 Baseline**	**Year 2000**	**NA/NP**	**A**	**B**	**C**	**D**
CO	12,999	12,208	9,451	11,075	11,562	11,201	10,380
VOC	2,053	1,482	1,513	1,572	1,654	1,605	1,512
NO_X	5,492	7,129	5,729	6,690	6,776	6,287	5,814
SO_2	355	371	449	495	514	490	437
PM_{10}	197	265	167	171	174	165	180

1 NA/NP = No Action/No Project Alternative.
2 See Attachment V in Technical Report 4, *Air Quality Technical Report*, for source contribution details.
3 Interim year is 2005 for NA/NP and Alternatives A-C, and 2013 for Alternative D.

Source: Camp Dresser & McKee Inc., 2003.

Table F4.6-10

Unmitigated Operational Emissions Inventories for Off-Airport Sources (tons per year)

Pollutant[1]	2005 Adjusted Environmental Baseline	Interim Year[2] Alternative NA/NP[3]	A	B	C	D
CO	21,209	31,114	30,386	30,366	29,672	17,917
VOC	1,639	2,795	2,344	2,319	2,221	1,426
NO_X	3,252	4,665	4,499	4,592	4,542	2,724
SO_2	37	52	50	52	51	26
PM_{10}	1,124	1,617	1,894	1,664	1,633	1,823
Pollutant[1]	**2015 Adjusted Environmental Baseline**	**Horizon Year 2015 Alternative NA/NP[3]**	**A**	**B**	**C**	**D**
CO	9,175	15,188	17,433	17,292	17,401	14,342
VOC	723	1,606	1,338	1,327	1,326	1,152
NO_X	1,527	2,368	2,806	2,801	2,824	2,198
SO_2	17	27	32	32	32	26
PM_{10}	1,126	1,780	2,241	2,231	2,213	1,817

1 These inventories include emissions from on-road mobile sources within the South Coast Air Basin traveling to or from LAX.
2 Interim year is 2005 for NA/NP and Alternatives A-C, and 2013 for Alternative D. Linear interpolation of the 2005 and 2015 Adjusted Environmental Baseline was used to estimate the 2013 Adjusted Environmental Baseline of (in tons per year): CO = 11,671; VOC = 1,076; NO_X = 1,877; SO_2 = 21; and PM_{10} = 1,125. These values are used in assessing the impacts of Alternative D interim year off-airport emissions.
3 NA/NP = No Action/No Project Alternative.

Source: Camp Dresser & McKee Inc., 2003.

Table F4.6-11

Unmitigated Construction Emissions (Peak Daily, Peak Quarterly, and Annual) - Interim, 2015, and Peak Year

	Year	CO	VOC	NO_X	SO_2	PM_{10}
Daily Emissions (lbs/day)						
Alternative A	2004[1]	14,828	2,682	41,054	1,233	10,721
	2005[2]	11,027	1,733	28,317	74	7,598
	2015	3,545	460	6,180	20	1,939
Alternative B	2004[1]	12,940	2,341	35,829	1,076	9,356
	2005[2]	9,623	1,513	24,713	64	6,631
	2015	3,094	402	5,394	18	1,692
Alternative C	2004[1]	13,480	2,438	37,322	1,121	9,746
	2005[2]	10,024	1,576	25,743	67	6,907
	2015	3,223	418	5,618	18	1,763
Alternative D	2005[1]	5,589	873	14,564	32	4,722
	2013[2]	5,614	759	11,625	34	3,933
	2015[3]	-	-	-	-	-
No Action/No Project Alternative	2004[1]	13,253	12,785	3,274	1,857	2,169
	2005[2]	5,267	7,792	3,215	32	556
	2015[3]	-	-	-	-	-
Quarterly Emissions (tons/quarter)						
Alternative A	2004[1]	489	89	1,355	41	354
	2005[2]	353	55	906	2	243
	2015	113	15	198	1	62

Table F4.6-11

Unmitigated Construction Emissions (Peak Daily, Peak Quarterly, and Annual) - Interim, 2015, and Peak Year

	Year	CO	VOC	NO_X	SO_2	PM_{10}
Alternative B	2004[1]	427	77	1,182	36	309
	2005[2]	308	48	791	2	213
	2015	99	13	173	1	54
Alternative C	2004[1]	445	80	1,232	37	322
	2005[2]	321	50	824	2	221
	2015	103	13	180	1	56
Alternative D	2005[1]	182	28	473	1	153
	2013[2]	182	25	378	1	128
	2015[3]	-	-	-	-	-
No Action/No Project Alternative	2004[1]	431	416	106	60	71
	2005[2]	171	253	104	1	18
	2015[3]	-	-	-	-	-
Annual Emissions (tons/year)						
Alternative A	2004[1]	1,773	321	4,910	147	1,282
	2005[2]	1,121	176	2,878	7	772
	2015	363	47	633	2	199
Alternative B	2004[1]	1,548	280	4,285	129	1,191
	2005[2]	978	154	2,511	7	674
	2015	317	41	553	2	173
Alternative C	2004[1]	1,612	292	4,464	134	1,166
	2005[2]	1,019	160	2,616	7	702
	2015	330	43	576	2	181
Alternative D	2005[1]	567	89	1,483	3	484
	2013[2]	563	76	1,166	3	394
	2015[3]	-	-	-	-	-
No Action/No Project Alternative	2004[1]	1,547	1,463	383	215	262
	2005[2]	667	909	405	3	68
	2015[3]	-	-	-	-	-

[1] Construction emissions for Alternatives A, B, C, and the No Action/No Project Alternative would peak in the year 2004. Construction emissions for Alternative D would peak in the year 2005.
[2] Interim year for Alternatives A, B, C, and the No Action/No Project Alternative is the year 2005. Interim year for Alternative D is the year 2013.
[3] There would be no construction emissions in 2015 under the No Action/No Project Alternative or Alternative D.

Source: Environmental Compliance Solutions, 2003.

Table F4.6-11a

Total Operational and Construction Emissions - Unmitigated (tons per year)

	Interim Year[2]					Horizon Year 2015				
Pollutant and Source	**NA/NP[1]**	**A**	**B**	**C**	**D**	**NA/NP**	**A**	**B**	**C**	**D**
VOC - On-Airport	1,652	1,454	1,448	1,452	1,522	1,513	1,572	1,654	1,605	1,512
VOC - Off-Airport	2,795	2,344	2,319	2,221	1,426	1,606	1,338	1,327	1,326	1,152
VOC - Construction	909	176	154	160	89	-	47	41	43	-
VOC - Total	5,356	3,974	3,921	3,833	3,037	3,119	2,957	3,022	2,974	2,664
CO - On-Airport	11,842	10,292	10,197	10,315	10,681	9,451	11,075	11,562	11,201	10,380
CO - Off-Airport	31,114	30,386	30,366	29,672	17,917	15,188	17,433	17,292	17,401	14,342
CO - Construction	667	1,121	978	1,019	567	-	363	317	330	-
CO - Total	43,623	41,799	41,541	41,006	29,165	24,639	28,871	29,171	28,932	24,722
NO_X - On-Airport	6,356	5,715	5,714	5,754	5,854	5,729	6,690	6,776	6,287	5,814
NO_X - Off-Airport	4,665	4,499	4,592	4,542	2,724	2,368	2,806	2,801	2,824	2,198
NO_X - Construction	405	2,878	2,511	2,616	1483	-	633	553	576	-
NO_X - Total	11,426	13,092	12,817	12,912	10,061	8,097	10,129	10,130	9,687	8,012
SO_2 - On-Airport	405	382	382	382	437	449	495	514	490	437
SO_2 - Off-Airport	52	50	52	51	26	27	32	32	32	26
SO_2 - Construction	3	7	7	7	3	-	2	2	2	-
SO_2 - Total	460	439	441	440	466	476	529	548	524	463
PM_{10} - On-Airport	181	135	133	139	182	167	171	174	165	180
PM_{10} - Off-Airport	1,617	1,894	1,664	1,633	1,823	1,780	2,241	2,231	2,213	1,817
PM_{10} - Construction	68	772	674	702	484	-	199	173	181	-
PM_{10} - Total	1,866	2,801	2,471	2,474	2,489	1,947	2,611	2,578	2,559	1,997

1 NA/NP=No Action/No Project Alternative.
2 Interim year is 2005 for NA/NP and Alternatives A, B, and C, and 2013 for Alternative D.

Source: Camp Dresser & McKee Inc., 2004.

Table F4.6-12, Unmitigated, Combined Operational and Construction Air Pollutant Concentrations (Including Background), presents summaries of the maximum concentrations associated with each alternative in the interim year and 2015 as well as the environmental baseline. **Figure F4.6-2** through **Figure F4.6-7**, Criteria Pollutant Peak Concentrations and Locations, No Action/No Project Alternative (2005), Criteria Pollutant Peak Concentrations and Locations, No Action/No Project Alternative (2015), Alternatives A, B, and C (2005), Alternative A (2015), Alternative B (2015), and Alternative C (2015), present the points of maximum impact for each pollutant in the interim year and 2015 for the No Action/No Project Alternative and Alternatives A, B, and C. **Figure F4.6-8**, Criteria Pollutant Peak Concentrations and Locations, Alternative D (2013), and **Figure F4.6-9**, Criteria Pollutant Peak Concentrations and Locations, Alternative D (2015), respectively, present the results for Alternative D. **Table F4.6-13**, Unmitigated Local CO Concentrations at Off-Airport Intersections (Including Background), presents summaries of the CO hot spots analysis for each alternative in the interim year and 2015. The pollutant concentration data summarized and discussed in this air quality analysis represent the maximum concentrations predicted in the study area and no location is predicted to experience any higher concentrations as a result of LAX Master Plan-related emissions than those presented herein.

Table F4.6-12

Unmitigated, Combined Operational and Construction Air Pollutant Concentrations (Including Background)

Pollutant (Conc. Units)	Averaging Period	NAAQS/ CAAQS	1996 Baseline	Alternative - Interim Year[7]					Alternative 2015				
				NA/NP[1]	A	B	C	D	NA/NP	A	B	C	D
CO (ppm)[2]	8-hr	9 / 9.0	8.5	8.3	9.2	9.0	8.3	5.1	6.0	6.0	6.0	7.0	4.6
	1-hr	35 / 20	10.6	17.2	17.8	17.4	15.6	11.2	13.3	18.5	19.9	21.5	10.1
NO_2 (ppm)	Annual	0.053 / NA	0.030	0.041	0.064	0.060	0.089	0.049	0.038	0.040	0.043	0.051	0.036
	1-hr[6]	NA / 0.25	0.13	0.16	0.15	0.13	0.14	0.16	0.083	0.11	0.19	0.18	0.153
SO_2 (ppm)	Annual	0.030 / NA	0.0025	0.008	0.0052	0.0070	0.0098	0.005	0.005	0.0056	0.0062	0.0069	0.005
	24-hr	0.14 / 0.04	0.007	0.021	0.020	0.022	0.026	0.017	0.011	0.022	0.023	0.028	0.017
	3-hr	0.5 / NA	0.017	0.066	0.073	0.083	0.100	0.059	0.033	0.062	0.073	0.088	0.059
	1-hr	NA / 0.25	0.021	0.156	0.098	0.112	0.136	0.108	0.051	0.135	0.185	0.232	0.109
PM_{10} ($\mu g/m^3$)[3]	AAM[4]	50 / NA	36	43	76	86	82	49	36	37	34	37	39
	AGM[5]	NA / 20	34	39	72	82	78	45	32	33	30	33	35
	24-hr	150 / 50	82	94	336	246	232	115	67	69	63	66	81

1 NA/NP = No Action/No Project Alternative.
2 ppm = parts per million (by volume).
3 $\mu g/m^3$ = micrograms per cubic meter.
4 AAM = Annual Arithmetic Mean.
5 AGM = Annual Geometric Mean.
6 See Attachments P and Q to Technical Report S-4, *Supplemental Air Quality Technical Report*, for analysis of improved NO_2 modeling methodology.
7 Interim year is 2005 for NA/NP and Alternatives A, B, and C, and 2013 for Alternative D.

Source: Camp Dresser & McKee Inc., 2004.

Table F4.6-13

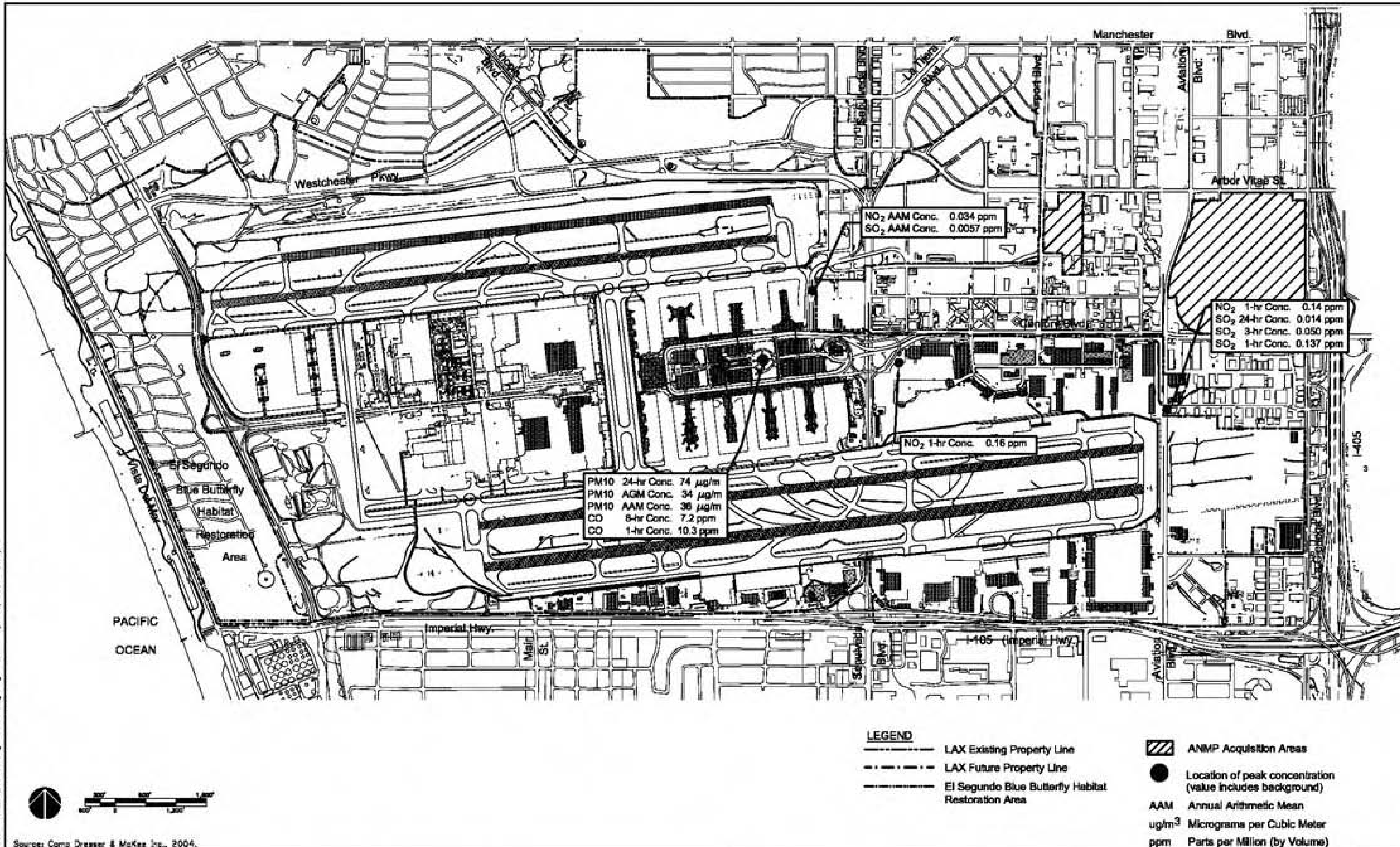
Unmitigated Local CO Concentrations at Off-Airport Intersections (Including Background)

	Horizon Year - Interim[3,4] (concentrations in ppm)									
	NA/NP		Alt. A		Alt. B		Alt. C		Alt. D	
Intersection	1-Hr[1]	8-Hr[2]	1-Hr	8-Hr	1-Hr	8-Hr	1-Hr	8-Hr	1-Hr	8-Hr
Airport Blvd. and Century Blvd.	6.5	5.0	6.8	5.1	6.7	5.1	6.6	5.1	4.8	3.6
Aviation Blvd. and Century Blvd.	6.6	5.0	6.4	5.1	6.7	5.3	6.7	5.3	5.1	3.8
La Cienega Blvd. and Arbor Vitae St.	6.4	4.9	6.4	5.0	6.6	5.1	6.6	5.1	5.2	4.0
La Cienega Blvd. and Century Blvd.	6.3	5.0	6.3	5.0	6.9	5.1	6.7	5.1	5.2	3.9
La Cienega Blvd. and I-405 Ramps N/O Century Blvd.	6.4	5.0	6.4	5.0	6.6	5.1	6.5	5.1	5.0	3.8
La Cienega Blvd. and Florence Ave.	6.4	5.0	6.6	5.1	6.7	5.2	6.6	5.2	4.9	3.8
La Cienega Blvd. and Manchester Ave/	6.1	4.9	6.4	5.0	6.6	5.2	7.0	5.2	5.2	3.8
Lincoln Blvd. and Manchester Ave.	6.8	5.2	6.5	5.1	6.6	5.2	6.6	5.1	5.5	3.9
Lincoln Blvd. and 83rd St.	6.6	5.1	6.4	5.0	6.5	5.0	6.5	5.0	5.2	3.8
Lincoln Blvd. and La Tijera Blvd.	8.4	6.3	6.5	5.1	6.6	5.2	6.5	5.1	4.9	3.7
Sepulveda Blvd. and Imperial Hwy.	6.2	4.9	6.6	5.1	7.0	5.2	6.6	5.2	5.4	4.1
Sepulveda Blvd. and I-105 Ramps	6.3	5.1	6.2	4.9	6.4	5.0	6.1	4.9	5.7	4.0
Sepulveda Blvd. and Manchester Ave.	6.8	5.0	6.9	5.3	6.8	5.3	6.7	5.2	5.1	3.7
Sepulveda Blvd. and La Tijera Blvd.	6.5	5.0	7.5	5.3	7.7	5.4	7.5	5.3	4.9	3.7
Sepulveda Blvd. and Mariposa Ave.	6.5	5.0	6.9	5.2	7.0	5.3	6.8	5.3	5.3	3.8
Sepulveda Blvd. and Rosecrans Ave.	6.4	5.0	6.7	5.2	7.0	5.3	7.0	5.2	5.2	4.0
Vista del Mar and Imperial Hwy.	7.4	5.2	6.5	5.0	6.5	5.0	6.4	5.0	4.8	3.7
La Cienega & Centinela[5]	-	-	-	-	-	-	-	-	5.4	3.9
Lincoln & Washington[5]	-	-	-	-	-	-	-	-	4.8	3.7

	Horizon Year 2015 (concentrations in ppm)[6]									
	NA/NP		Alt. A		Alt. B		Alt. C		Alt. D	
Intersection	1-Hr	8-Hr	1-Hr	8-Hr	1-Hr	8-Hr	1-Hr	8-Hr	1-Hr	8-Hr
Airport Blvd. and Century Blvd.	4.4	3.5	4.3	3.5	4.3	3.5	4.3	3.6	4.8	3.6
Aviation Blvd. and Century Blvd.	4.5	3.5	4.4	3.6	4.4	3.5	4.6	3.7	5.0	3.7
La Cienega Blvd. and Arbor Vitae St.	4.5	3.6	4.6	3.5	4.4	3.5	4.6	3.5	5.1	3.9
La Cienega Blvd. and Century Blvd.	4.4	3.6	4.4	3.5	4.4	3.5	4.5	3.5	4.7	3.6
La Cienega Blvd. and I-405 Ramps N/O Century Blvd.	4.4	3.5	4.3	3.5	4.3	3.5	4.2	3.5	4.8	3.7
La Cienega Blvd. and Florence Ave.	4.3	3.5	4.3	3.5	4.3	3.5	4.3	3.6	4.6	3.6
La Cienega Blvd. and Manchester Ave.	4.3	3.5	4.5	3.5	4.5	3.5	4.6	3.5	5.1	3.7
Lincoln Blvd. and Manchester Ave.	4.6	3.7	4.7	3.6	4.6	3.5	4.7	3.6	5.3	3.8
Lincoln Blvd. and 83rd St.	4.7	3.6	4.3	3.5	4.3	3.5	4.3	3.5	5.0	3.7
Lincoln Blvd. and La Tijera Blvd.	4.7	3.7	4.5	3.7	4.5	3.6	4.5	3.7	4.9	3.6
Sepulveda Blvd. and Imperial Hwy.	4.4	3.5	4.6	3.6	4.5	3.5	4.5	3.6	5.2	3.9
Sepulveda Blvd. and I-105 Ramps	4.2	3.5	4.1	3.4	4.1	3.3	4.2	3.4	5.3	3.9
Sepulveda Blvd. and Manchester Ave.	4.3	3.5	4.2	3.4	4.2	3.4	4.2	3.5	5.0	3.7
Sepulveda Blvd. and La Tijera Blvd.	4.3	3.5	4.4	3.6	4.5	3.6	4.4	3.6	4.7	3.7
Sepulveda Blvd. and Mariposa Ave.	4.3	3.4	4.4	3.6	4.4	3.5	4.5	3.6	5.0	3.8
Sepulveda Blvd. and Rosecrans Ave.	4.2	3.4	4.7	3.7	4.5	3.7	4.7	3.6	5.2	3.9
Vista del Mar and Imperial Hwy.	5.1	3.6	4.2	3.4	4.2	3.4	4.2	3.4	4.7	3.6
La Cienega & Centinela[5]	-	-	-	-	-	-	-	-	5.2	3.8
Lincoln & Washington[5]	-	-	-	-	-	-	-	-	4.7	3.6

1 1-hr CO CAAQS = 20 ppm; 1-hr CO NAAQS = 35 ppm.
2 8-hr CO CAAQS = 9.0 ppm; 8-hr CO NAAQS = 9 ppm.
3 Interim year is 2005 for NA/NP and Alternatives A, B, and C, and 2013 for Alternative D.
4 Background CO concentration for 2005 is 6.2 ppm 1-hr average, and 4.9 ppm 8-hr average. Background CO concentration for 2013 is 4.6 ppm 1-hr average, and 3.7 ppm 8-hr average.
5 Additional intersection, modeled for Alternative D only.
6 Background CO concentration for 2015 is 4.2 ppm 1-hr average, and 3.2 ppm 8-hr average.

Source: Camp Dresser & McKee Inc., 2003.



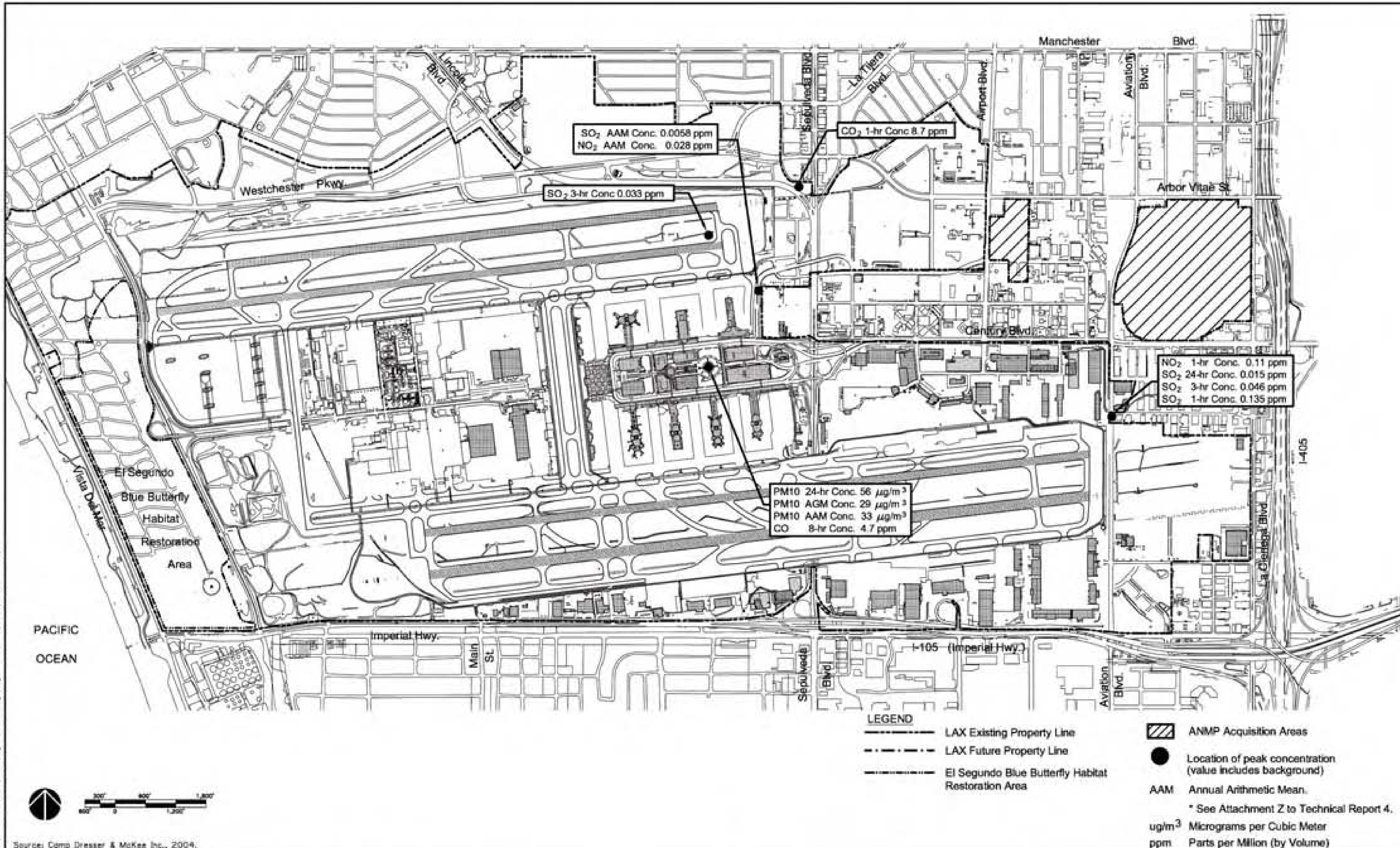
Source: Camp Dresser & McKee Inc., 2004.

DWG: FEIS_04_06-02.dwg USER: nagrabad DATE: Apr 16, 2004 3:33pm

LAX Master Plan Final EIS/EIR

Criteria Pollutant Peak Concentrations and Locations
No Action/No Project Alternative (2005)

Figure F4.6-2

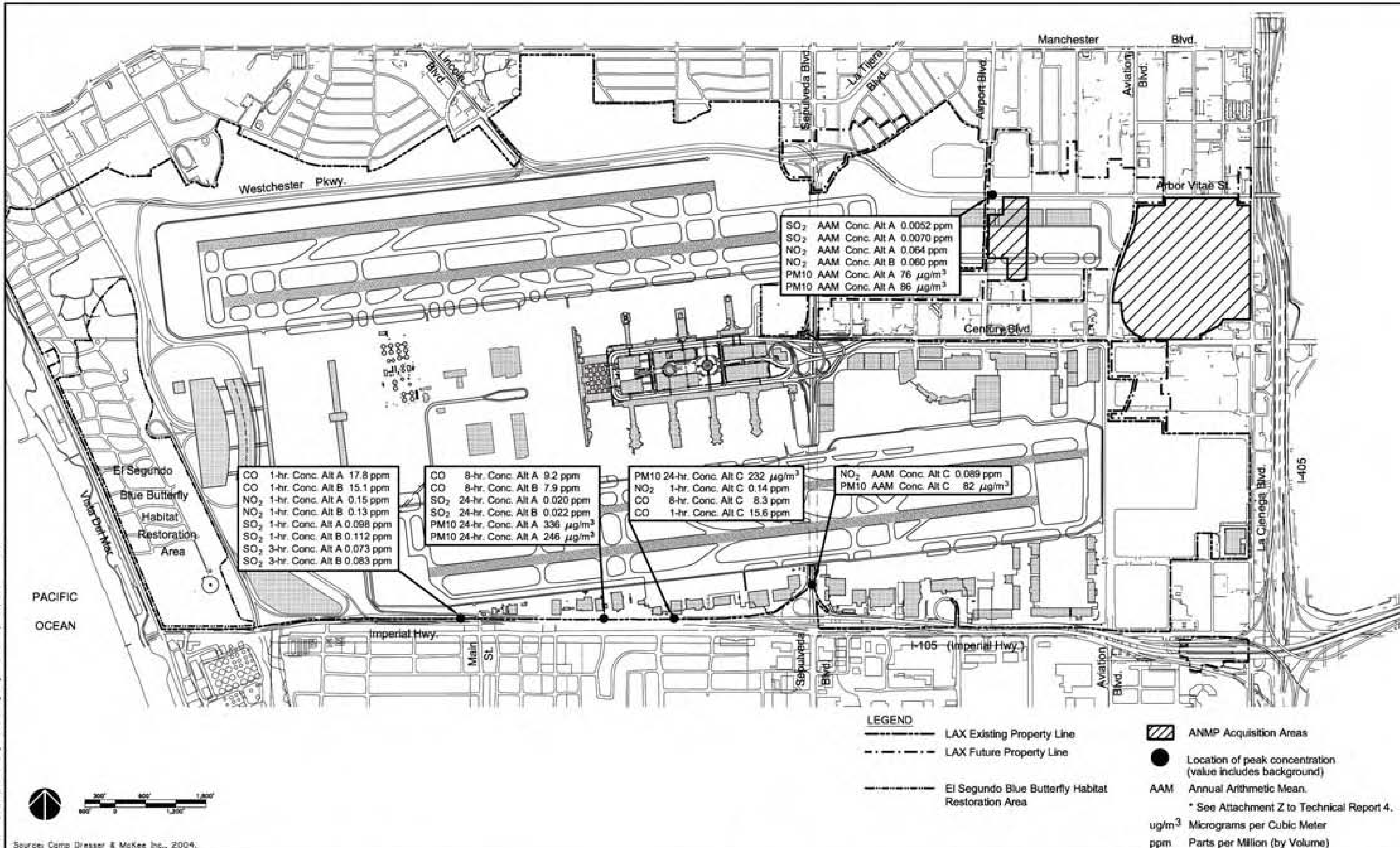


DWG: FEIS_04_06-03.dwg USER: negrelagd DATE: Apr 16, 2004 4:55pm

LAX Master Plan Final EIS/EIR

Criteria Pollutant Peak Concentrations and Locations
No Action/No Project Alternative (2015)

Figure
F4.6-3

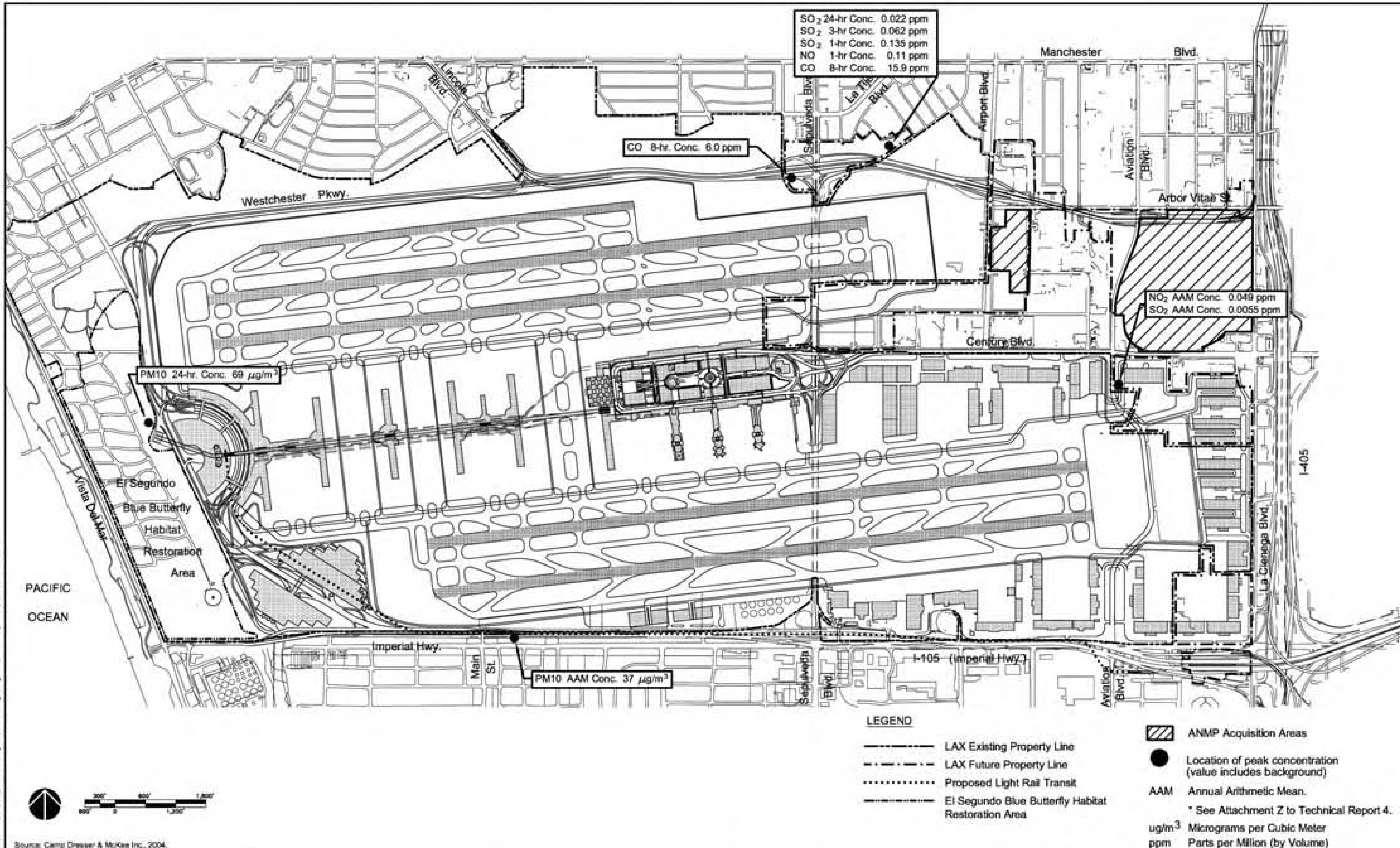


DWG: FEIS_04_06-04.dwg USER: negretegd DATE: Apr 20, 2004 11:26am

LAX Master Plan Final EIS/EIR

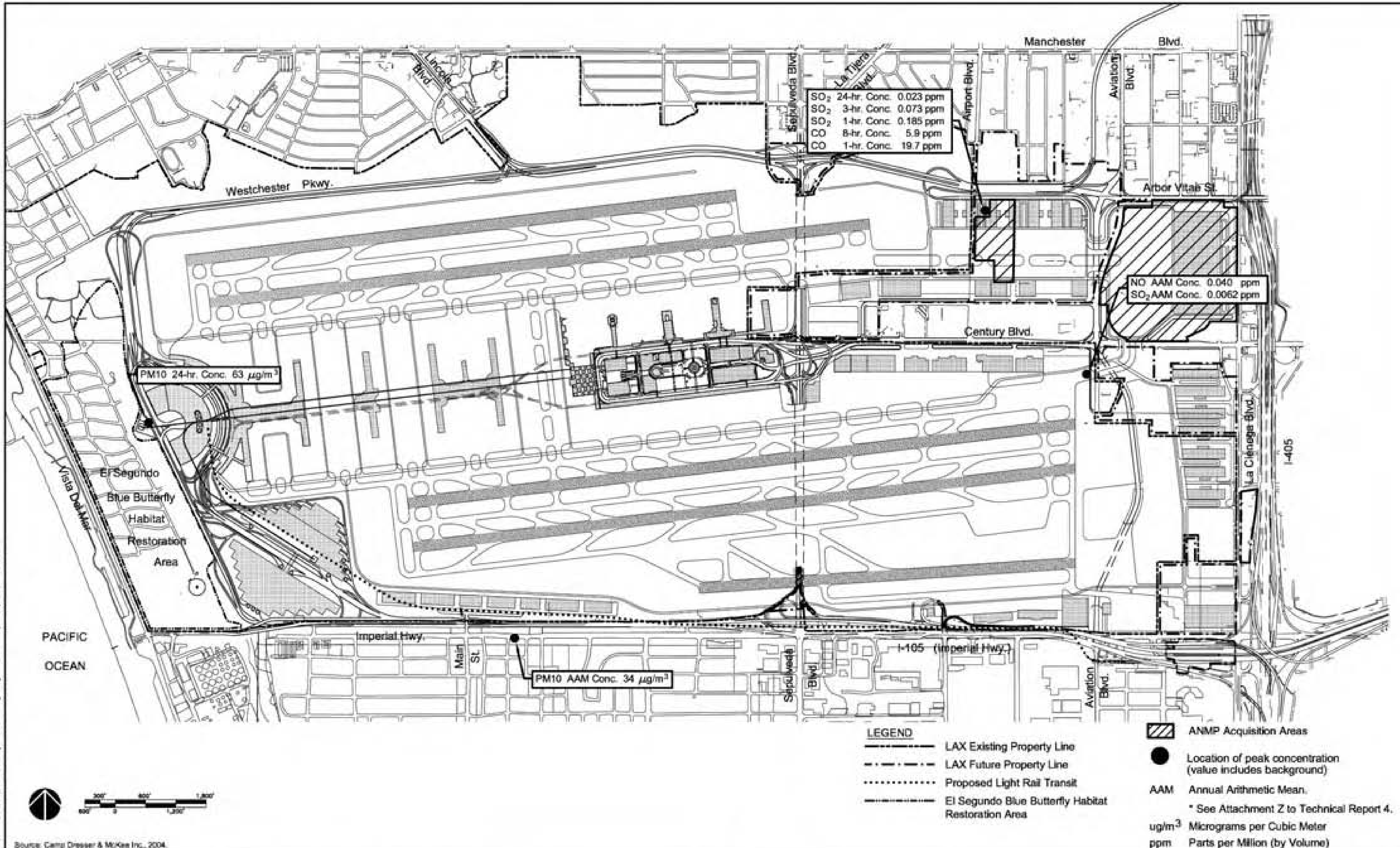
Criteria Pollutant Peak Concentrations and Locations Alternatives A, B and C (2005)

Figure F4.6-4



Criteria Pollutant Peak Concentrations and Locations
Alternative A (2015)

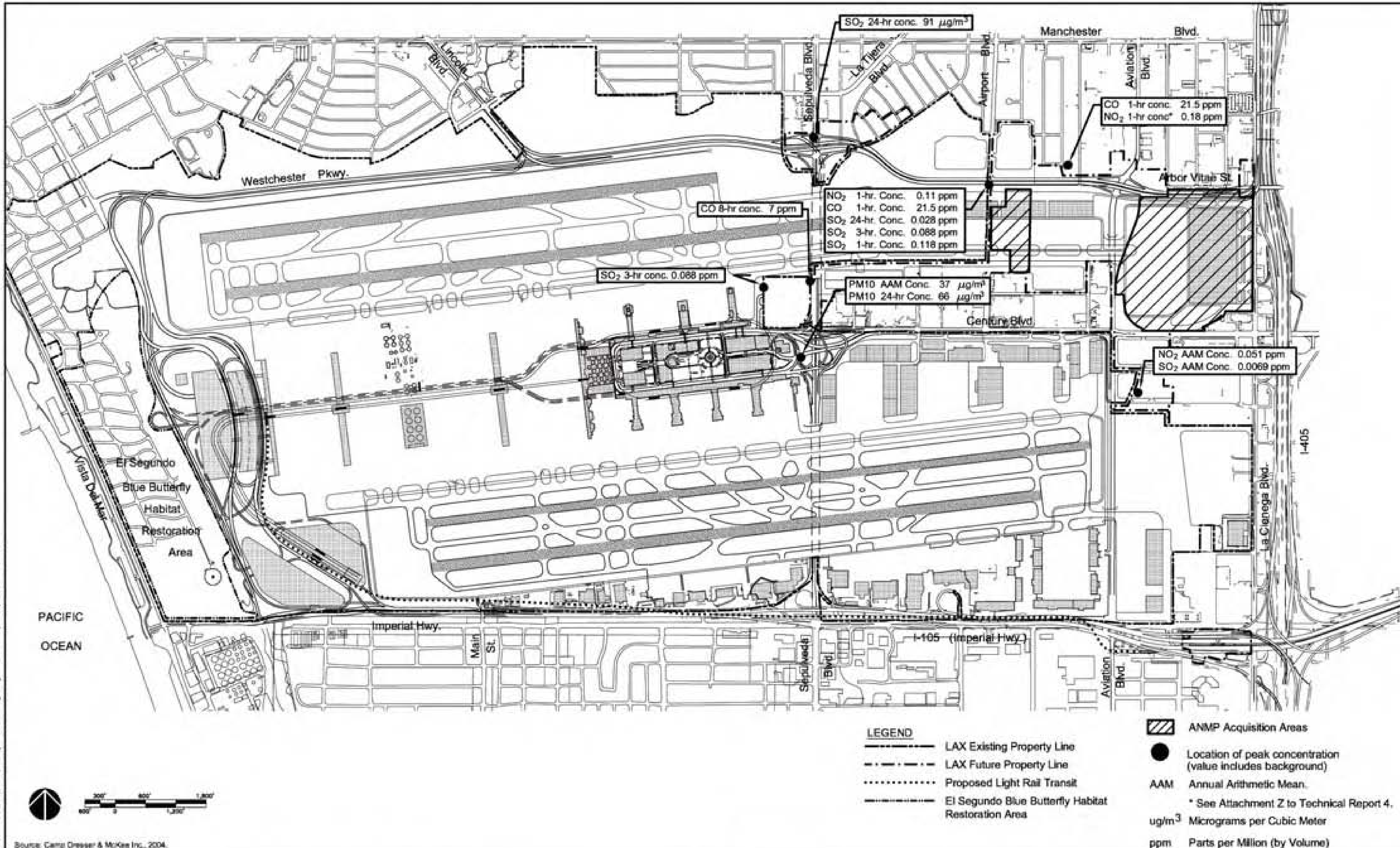
Figure
F4.6-5



LAX Master Plan Final EIS/EIR

Criteria Pollutant Peak Concentrations and Locations Alternative B (2015)

Figure F4.6-6

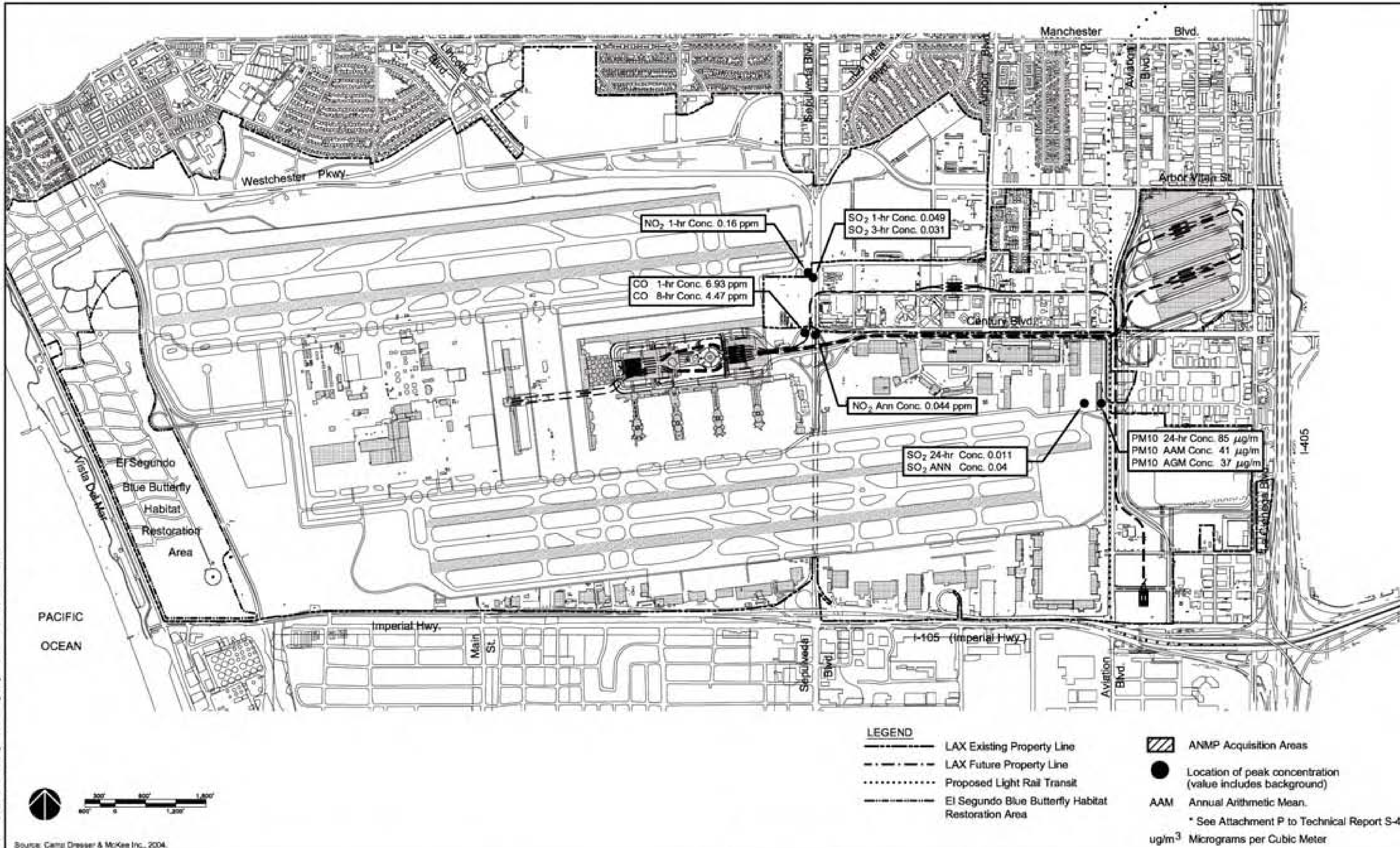


DWG: FDS_04_06-07.dwg USER: negretegd DATE: Apr 21, 2004 10:56am

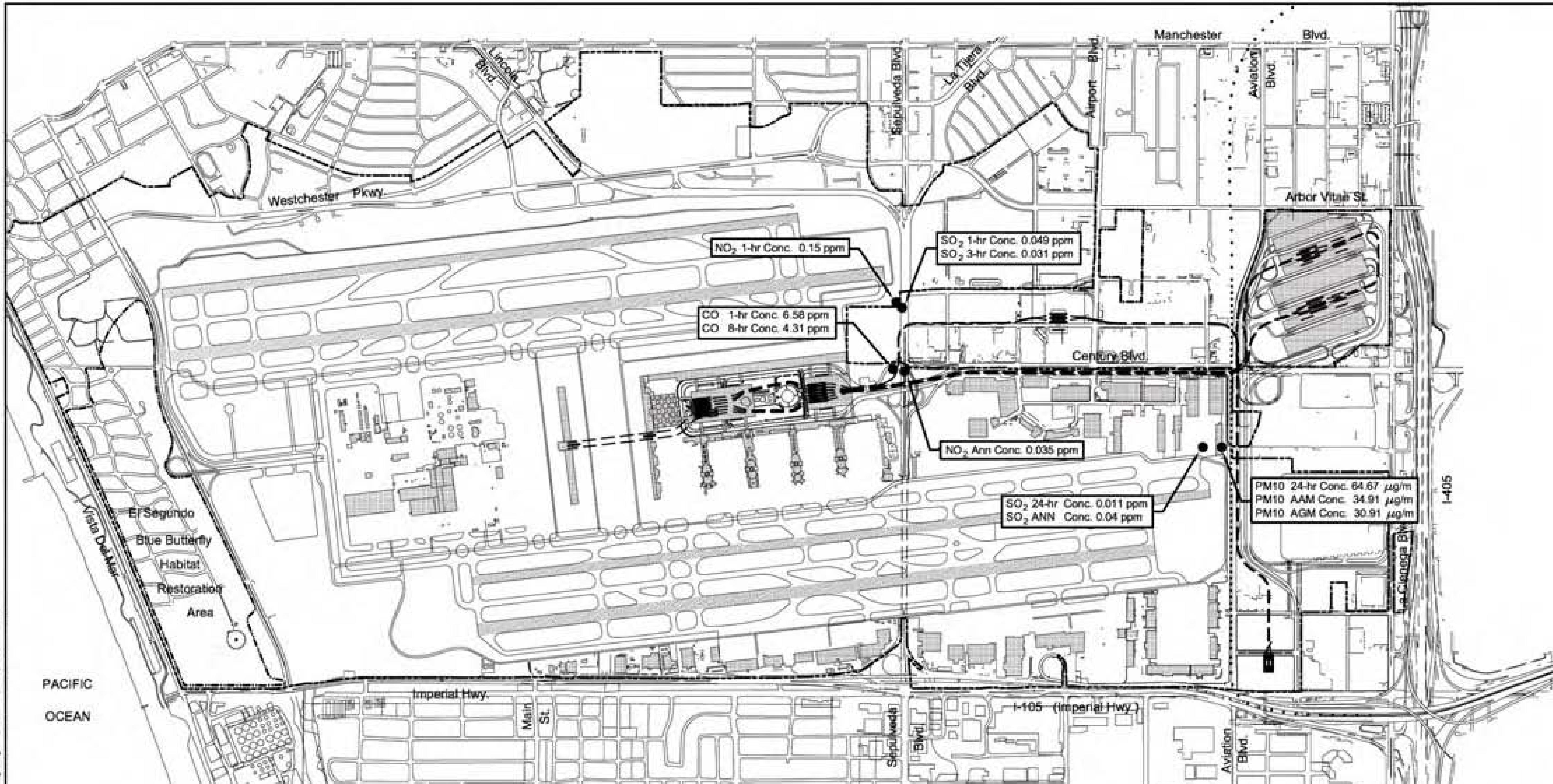
LAX Master Plan Final EIS/EIR

Criteria Pollutant Peak Concentrations and Locations Alternative C (2015)

Figure F4.6-7



LAX Master Plan Final EIS/EIR	**Criteria Pollutant Peak Concentrations and Locations Alternative D (2013)**	Figure **F4.6-8**



Source: Camp Dresser & McKee Inc., 2004.

LEGEND

- LAX Existing Property Line
- LAX Future Property Line
- Proposed Light Rail Transit
- El Segundo Blue Butterfly Habitat Restoration Area
- ANMP Acquisition Areas
- Location of peak concentration (value includes background)
- AAM Annual Arithmetic Mean.
- * See Attachment P to Technical Report S-4.
- ug/m^3 Micrograms per Cubic Meter

LAX Master Plan Final EIS/EIR	Criteria Pollutant Peak Concentrations and Locations Alternative D (2015)	Figure F4.6-9

The significance findings for each alternative are summarized in **Table F4.6-14**, Significance of Unmitigated Air Quality Impacts in Interim Year - Emissions; **Table F4.6-15**, Significance of Unmitigated Air Quality Impacts in Interim Year - Concentrations; **Table F4.6-16**, Significance of Unmitigated Air Quality Impacts in 2015 - Emissions; and **Table F4.6-17**, Significance of Unmitigated Air Quality Impacts in 2015 - Concentrations. Subsection 4.6.2.7, *Methods of Determining Significance,* and subsection 4.6.4, *Thresholds of Significance*, discuss the approach and thresholds used to determine significance.

Table F4.6-14

Significance of Unmitigated Air Quality Impacts in Interim Year - Emissions

Criteria	Operations										Construction[2]				
	On-Airport Alternative					Off-Airport Alternative					Alternative				
Pollutant	NA/NP	A	B	C	D	NA/NP	A	B	C	D	NA/NP	A	B	C	D
CO[1]	<T	LS	LS	LS	LS	>T	S	S	S	S	>T	S	S	S	S
VOC[1]	<T	LS	LS	LS	LS	>T	S	S	S	S	>T	S	S	S	S
NO_X[1]	>T	S	S	S	S	>T	S	S	S	S	>T	S	S	S	S
SO_2[1]	>T	S	S	S	S	<T	LS	LS	LS	LS	>T	S	S	S	LS
PM_{10}[1]	<T	LS	LS	LS	LS	>T	S	S	S	S	>T	S	S	S	S

Note: Interim year is 2005 for NA/NP and Alternatives A, B, and C, and 2013 for Alternative D.

NA/NP = No Action/No Project Alternative.
LS = Less than Significant.
S = Significant.
NA = Not applicable.
>T = Incremental impacts for the No Action/No Project Alternative would be greater than the emission thresholds in **Table F4.6-8**.
<T = Incremental impacts for the No Action/No Project Alternative would be less than the emission thresholds in **Table F4.6-8**.

1 Emissions: significance determined by comparison of incremental emissions to the thresholds in **Table F4.6-8**.
2 Construction impacts are based upon the peak emissions year: 2004 for NA/NP and Alternatives A, B, and C, and 2005 for Alternative D.

Source: Camp Dresser & McKee Inc., 2004.

Table F4.6-15

Significance of Unmitigated Air Quality Impacts in Interim Year - Concentrations

Criteria Pollutant	On-Airport Operations and Construction[3]					Off-Airport				
	Alternative					Alternative				
	NA/NP	A	B	C	D	NA/NP	A	B	C	D
CO[1]	<T	S	LS	LS	LS	<T	LS	LS	LS	LS
VOC[1]	NM	NM	NM	NM	NM	NA	NA	NA	NA	NA
NO_2[1]	<T [3]	S[3]	S[3]	S[3]	LS[3]	NA	NA	NA	NA	NA
SO_2[1]	<T	LS	LS	LS	LS	NA	NA	NA	NA	NA
PM_{10}[1]	>T	S	S	S	S	NA	NA	NA	NA	NA

Note: Interim year is 2005 for NA/NP and Alternatives A-C, and 2013 for Alternative D.

NA/NP = No Action/No Project Alternative.
LS = Less than Significant.
S = Significant.
NA = Not applicable.
NM = Not modeled.
>T = Impacts for the No Action/No Project Alternative would be greater than the concentration thresholds in **Table F4.6-3**.
<T = Impacts for the No Action/No Project Alternative would be less than the concentration thresholds in **Table F4.6-3**.

1 Dispersion: significance determined by comparison of predicted ambient concentration to NAAQS and CAAQS in **Table F4.6-3**.
2 Construction impacts are based upon the peak emissions year: 2004 for NA/NP and Alternatives A, B, and C, and 2005 for Alternative D.
3 Significance based on NO_2 predictions from EDMS modeling and OLM modeling; supplemental 1-hour NO_2 analysis presented in Attachments P and Q to Technical Report S-4, *Supplemental Air Quality Technical Report*.

Source: Camp Dresser & McKee Inc., 2003.

Table F4.6-16

Significance of Unmitigated Air Quality Impacts in 2015 - Emissions

Criteria Pollutant	Operations										Construction[2]				
	On-Airport					Off-Airport									
	Alternative					Alternative					Alternative				
	NA/NP	A	B	C	D	NA/NP	A	B	C	D	NA/NP	A	B	C	D
CO[1]	<T	LS	LS	LS	LS	>T	S	S	S	S	NA	S	S	S	NA
VOC[1]	<T	LS	LS	LS	LS	>T	S	S	S	S	NA	S	S	S	NA
NO_X[1]	>T	S	S	S	S	>T	S	S	S	S	NA	S	S	S	NA
SO_2[1]	>T	S	S	S	S	<T	LS	LS	LS	LS	NA	LS	LS	LS	NA
PM_{10}[1]	<T	LS	LS	LS	LS	>T	S	S	S	S	NA	S	S	S	NA

NA/NP = No Action/No Project Alternative.
LS = Less than Significant.
S = Significant.
NA = Not applicable.
NM = Not modeled.
>T = Incremental impacts for the No Action/No Project Alternative would be greater than the emission thresholds in **Table F4.6-8**.
<T = Incremental impacts for the No Action/No Project Alternative would be less than the emission thresholds in **Table F4.6-8**.

1 Emissions: significance determined by comparison of incremental emissions to the thresholds in **Table F4.6-8**.
2 There would be no construction activities in 2015 under the No Action/No Project Alternative or Alternative D.

Source: Camp Dresser & McKee Inc., 2003.

Table F4.6-17

Significance of Unmitigated Air Quality Impacts in 2015 - Concentrations

Criteria Pollutant	On-Airport Operations and Construction[1] Alternative					Off-Airport Alternative				
	NA/NP	A	B	C	D	NA/NP	A	B	C	D
CO^2	<T	LS	LS	S	LS	<T	LS	LS	LS	LS
VOC[2]	NM	NM	NM	NM	NM	NA	NA	NA	NA	NA
NO_2[2]	<T[2]	LS[3]	LS[3]	LS[3]	LS[3]	NA	NA	NA	NA	NA
SO_2[2]	<T	LS	LS	LS	LS	NA	NA	NA	NA	NA
PM_{10}[2]	>T	S	S	S	S	NA	NA	NA	NA	NA

NA/NP = No Action/No Project Alternative.
LS = Less than Significant.
S = Significant.
NA = Not applicable.
NM = Not modeled.
>T = Impacts for the No Action/No Project Alternative would be greater than the concentration thresholds in **Table F4.6-3**.
<T = Impacts for the No Action/No Project Alternative would be less than the concentration thresholds in **Table F4.6-3**.

1 There are no construction activities in 2015 under Alternative D.
2 Dispersion: significance determined by comparison of predicted ambient concentration to NAAQS and CAAQS in **Table F4.6-3**.
3 Significance based on NO_2 predictions from EDMS modeling and OLM modeling; supplemental 1-hour NO_2 analysis presented in Attachments P and Q to Technical Report S-4, *Supplemental Air Quality Technical Report*.

Source: Camp Dresser & McKee Inc., 2003.

4.6.6.1 No Action/No Project Alternative

Airport Emissions Inventory and Dispersion Analysis

Operations - 2005

Emissions of NO_X and SO_2, from on-airport sources under the No Action/No Project Alternative are estimated to be greater than those under the environmental baseline conditions.

The regional traffic emissions of CO, VOC, NO_X, and PM_{10} for the No Action/No Project Alternative are estimated to exceed those for the adjusted environmental baseline in 2005. The increase in SO_2 emissions between the No Action/No Project Alternative and environmental baseline conditions would be less than the operational emission thresholds presented in **Table F4.6-8**. Local CO hot spot analyses at 17 intersections are not predicted to exceed the CO NAAQS or CAAQS in 2005. In addition, the CO concentrations at these intersections under the No Action/No Project Alternative in 2005 are predicted to be lower than the environmental baseline CO concentrations.

Operations - 2015

Emissions of CO, VOC, and PM_{10} from on-airport sources under the No Action/No Project Alternative are estimated to be lower than those under the environmental baseline conditions. Emissions of NO_X and SO_2 from on-airport sources under the No Action/No Project Alternative are estimated to be greater than those under the environmental baseline conditions.

The regional traffic emissions of CO, VOC, NO_X, and PM_{10} for the No Action/No Project Alternative are estimated to exceed those of the adjusted environmental baseline. The increase in SO_2 emissions between the No Action/No Project Alternative and environmental baseline conditions would be less than the operational emission thresholds presented in **Table F4.6-8**.

Local CO hot spot analyses at 17 intersections are not predicted to exceed the CO NAAQS or CAAQS in 2015. In addition, the CO concentrations at these intersections under the No Action/No Project Alternative in 2015 would be lower than the environmental baseline CO concentrations.

Construction Emissions - Peak Year

Non-Master Plan and previously approved projects that would be constructed under the No Action/No Project Alternative include LAX Northside and Continental City. These projects would have emissions occurring in the time periods considered for this analysis. The peak-year emissions (2004) of CO, VOC, NO_X, SO_2, and PM_{10} for the No Action/No Project Alternative are estimated to be greater than the construction emissions for the environmental baseline conditions.

Combined Concentrations - 2005

The combined, peak concentrations of CO, NO_2, SO_2, and PM_{10} for construction and operation sources when added to the 2005 future background concentrations, as presented in **Table F4.6-12,** are predicted to meet the applicable NAAQS for all pollutants as well as the 1-hour and 8-hour CO CAAQS and the 1-hour NO_2[324] CAAQS. The maximum concentrations are predicted to exceed the environmental baseline PM_{10} concentrations, and the PM_{10} CAAQS.

Combined Concentrations - 2015

The combined, peak concentrations of CO, NO_2, SO_2, and PM_{10} for operational and construction sources, when added to the 2015 future background concentrations, as presented in **Table F4.6-12**, are not predicted to exceed the SO_2 NAAQS and CAAQS for all averaging periods, the 1-hour and 8-hour CO NAAQS and CAAQS, the annual NO_2 NAAQS, the 1-hour NO_2 CAAQS,[325] or the 24-hour and annual PM_{10} NAAQS. The maximum PM_{10} concentrations for the No Action/No Project Alternative, when added to future background concentrations, are predicted to exceed the 24-hour and annual PM_{10} CAAQS in 2015.

Overall Evaluation of the No Action/No Project Alternative

The No Action/No Project Alternative would exceed significance thresholds for CO, VOC, NO_X, SO_2, and PM_{10} due to the following operational and non-Master Plan construction-related impacts:

- On-airport emissions from operational sources for NO_X and SO_2 are estimated to exceed those for the environmental baseline.
- Off-airport traffic emissions for CO, VOC, NO_X, SO_2, and PM_{10} are estimated to exceed those for the environmental baseline.
- Peak construction emissions for CO, VOC, NO_X, SO_2, and PM_{10} would exceed CEQA construction thresholds.
- Concentrations from on-airport operational and construction related sources for PM_{10}, when added to calculated future background concentrations, are predicted to exceed the CAAQS.

The overall factors that would contribute to increased emissions and concentrations of criteria air pollutants under the No Action/No Project Alternative would be the increases in aircraft operations and off-airport VMT associated with projected growth at LAX. In addition, construction of non-Master Plan on-airport improvements, as well as LAX Northside and Continental City, would result in increased emissions as a result of construction activities.

---

324 See Attachment P to Technical Report S-4, *Supplemental Air Quality Technical Report*, for supplemental 1-hour NO_2 dispersion analysis.

325 See Attachment P to Technical Report S-4, *Supplemental Air Quality Technical Report*, for supplemental 1-hour NO_2 dispersion analysis.

4.6.6.2 Alternative A - Added Runway North

Unmitigated Airport Emissions Inventory and Dispersion Analysis

Operations - 2005

As indicated in **Table F4.6-9**, emissions of CO, VOC, and PM_{10} from on-airport sources under Alternative A for 2005 are estimated to be lower than those under environmental baseline conditions. The increase in emissions of NO_X and SO_2 from on-airport sources under Alternative A as compared to environmental baseline conditions would exceed the operations emissions thresholds presented in **Table F4.6-8**. Therefore, emissions of NO_X and SO_2 from on-airport sources under Alternative A would be significant in 2005. In comparing emissions from on-airport sources under Alternative A for 2005 to those under the No Action/No Project Alternative, emissions of CO, VOC, NO_X, SO_2, and PM_{10} from on-airport sources under Alternative A are estimated to be lower than those under the No Action/No Project Alternative.

As indicated in **Table F4.6-10**, the differences in regional traffic emissions of CO, VOC, NO_X, and PM_{10} between Alternative A and the adjusted environmental baseline are estimated to be higher than the operations emissions thresholds presented in **Table F4.6-8** in 2005. The increase in SO_2, emissions between Alternative A and the adjusted environmental baseline conditions would be less than the operations emissions threshold presented in **Table F4.6-8**. Therefore, the Alternative A regional emissions of CO, VOC, NO_X, and PM_{10}, as compared to the adjusted environmental baseline conditions, would be significant in 2005. In comparing the regional traffic emissions under Alternative A for 2005 to those under the No Action/No Project Alternative, emissions of CO, VOC, NO_X, and SO_2 under Alternative A are estimated to be lower than those under the No Action/No Project Alternative; however, emissions of PM_{10} under Alternative A are estimated to be greater than those under the No Action/No Project Alternative.

As indicated in **Table F4.6-13**, local CO hot spot analyses at 17 intersections indicate that 1-hour and 8-hour CO concentrations are not predicted to exceed the NAAQS or CAAQS in 2005. In addition, the CO concentrations at these intersections under Alternative A in 2005 would be lower than the environmental baseline CO concentrations. Therefore, CO concentrations at off-airport intersections under Alternative A would be less than significant in 2005. In comparing the predicted CO concentrations at these same 17 intersections under Alternative A for 2005 to those predicted under the No Action/No Project Alternative, the predicted peak 1-hour CO concentrations under Alternative A would exceed those predicted under the No Action/No Project Alternative at 8 intersections, would be lower than those predicted under the No Action/No Project Alternative at 6 intersections, and would be the same as those predicted under the No Action/No Project Alternative at 3 intersections. The predicted peak 8-hour CO concentrations under Alternative A would exceed those predicted under the No Action/No Project Alternative at 10 intersections, would be lower than those predicted under the No Action/No Project Alternative at 5 intersections, and would be the same as those predicted under the No Action/No Project Alternative at 2 intersections.

Operations - 2015

As indicated in **Table F4.6-9**, emissions of CO, VOC, and PM_{10} from on-airport sources under Alternative A for 2015 are estimated to be lower than those emissions from on-airport sources under environmental baseline conditions. The increase in emissions of NO_X and SO_2 from on-airport sources between Alternative A and environmental baseline conditions would exceed the operations emissions thresholds presented in **Table F4.6-8**. Therefore, emissions of NO_X and SO_2 from on-airport sources under Alternative A would be significant in 2015. In comparing emissions from on-airport sources under Alternative A for 2015 to those under the No Action/No Project Alternative, emissions of CO, VOC, NO_X, SO_2, and PM_{10} from on-airport sources under Alternative A are estimated to be greater than those under the No Action/No Project Alternative.

As indicated in **Table F4.6-10**, the differences in regional traffic emissions of CO, VOC, NO_X, and PM_{10} between Alternative A and the adjusted environmental baseline are estimated to be higher than the operations emissions thresholds presented in **Table F4.6-8** in 2015. The increase in SO_2 emissions between Alternative A and the adjusted environmental baseline conditions would be less than the operations emissions threshold presented in **Table F4.6-8**. Therefore, the Alternative A regional emissions of CO, VOC, NO_X, and PM_{10}, as compared to the adjusted environmental baseline conditions, would be significant in 2015. In comparing the regional traffic emissions under Alternative A for 2015 to those under the No Action/No Project Alternative, emissions of CO, NO_X, SO_2, and PM_{10} under Alternative A are estimated to be greater than those under the No Action/No Project Alternative; however, emissions of VOC under Alternative A are estimated to be lower than those under the No Action/No Project Alternative.

As indicated in **Table F4.6-13**, local CO hot spot analyses at 17 intersections indicate that 1-hour and 8-hour CO concentrations are not predicted to exceed the NAAQS or CAAQS in 2015. In addition, the CO concentrations at these intersections under Alternative A in 2015 would be lower than the environmental baseline CO concentrations. Therefore, CO concentrations at off-airport intersections under Alternative A would be less than significant in 2015. In comparing the predicted CO concentrations at these same 17 intersections under Alternative A for 2015 to those predicted under the No Action/No Project Alternative, the predicted peak 1-hour CO concentrations under Alternative A would exceed those predicted under the No Action/No Project Alternative at 7 intersections, would be lower than those predicted under the No Action/No Project Alternative at 8 intersections, and would be the same as those predicted under the No Action/No Project Alternative at 2 intersections. The predicted peak 8-hour CO concentrations under Alternative A would exceed those predicted under the No Action/No Project Alternative at 5 intersections, would be lower than those predicted under the No Action/No Project Alternative at 7 intersections, and would be the same as those predicted under the No Action/No Project Alternative at 5 intersections.

Construction Emissions - Peak Year

As indicated in **Table F4.6-11**, the differences in daily and quarterly emissions of CO, VOC, NO_X, SO_2, and PM_{10} between Alternative A and environmental baseline conditions are predicted to be higher than the construction emissions thresholds presented in **Table F4.6-8**. The peak year for construction emissions under Alternative A is 2004. Therefore, construction emissions under Alternative A would be significant for CO, VOC, NO_X, $SO_{2,}$ and PM_{10}. In comparing construction emissions under Alternative A for the peak year to those under the No Action/No Project Alternative, annual emissions of CO, NO_X, and PM_{10} from construction-related sources under Alternative A are estimated to be greater than those under the No Action/No Project Alternative, and annual emissions of VOC and SO_2 from construction-related sources under Alternative A are estimated to be lower than those under the No Action/No Project Alternative.

Combined Concentrations - 2005

The combined, peak concentrations of CO, NO_2, and SO_2 for construction and operation sources under Alternative A, when added to the 2005 future background concentrations, as presented in **Table F4.6-12,** are predicted to meet the 1-hour CO CAAQS, the 1-hour NO_2 CAAQS, and all SO_2 CAAQS. The maximum concentrations are predicted to exceed the 8-hour CO CAAQS, the environmental baseline PM_{10} concentrations, and the 24-hour and annual PM_{10} CAAQS. The combined, peak concentrations of CO, NO_2, and SO_2 for construction and operation sources under Alternative A, when added to the 2005 future background concentrations, as presented in **Table F4.6-12,** are predicted to meet the 1-hour CO NAAQS and all SO_2 NAAQS. The maximum concentrations are predicted to exceed the 8-hour CO NAAQS, the annual NO_2[326] NAAQS, and the 24-hour and annual PM_{10} NAAQS. In comparing the combined, peak concentrations for operations and construction sources, when added to the 2005 future background concentrations, under Alternative A for 2005 to those under the No Action/No Project Alternative, the maximum 1-hour and 8-hour CO, annual NO_2, 3-hour SO_2, and annual and 24-hour PM_{10} concentrations under Alternative A are estimated to be greater than those under the No Action/No Project Alternative, while the maximum annual and 24-hour SO_2 concentrations under Alternative A are estimated to be lower than those under the No Action/No Project Alternative.

Combined Concentrations - 2015

The combined, peak concentrations of CO, NO_2, SO_2, and PM_{10} for operational and construction sources under Alternative A, when added to the 2015 future background concentrations, as presented in **Table F4.6-12**, are not predicted to exceed the SO_2 CAAQS for all averaging periods, the 1-hour and 8-hour CO CAAQS, the 1-hour NO_2 CAAQS.[327] The maximum PM_{10} concentrations for Alternative A, when added

[326] See Attachment P to Technical Report S-4, *Supplemental Air Quality Technical Report*, for supplemental 1-hour NO_2 dispersion analysis.

[327] See Attachment P to Technical Report S-4, *Supplemental Air Quality Technical Report*, for supplemental 1-hour NO_2

to the 2015 or future background concentrations, are predicted to exceed the 24-hour and annual PM_{10} CAAQS in 2015. The combined, peak concentrations of CO, NO_2, SO_2, and PM_{10} for operational and construction sources, when added to the 2015 future background concentrations, as presented in **Table F4.6-12**, are not predicted to exceed the SO_2 NAAQS for all averaging periods, the 1-hour and 8-hour CO NAAQS, the annual NO_2 NAAQS, or the annual and 24-hour PM_{10} NAAQS. In comparing the combined, peak concentrations for operations and construction sources, when added to the 2015 future background concentrations, under Alternative A for 2015 to those under the No Action/No Project Alternative, the maximum 1-hour CO, annual NO_2, and the annual, 24-hour, and 3-hour SO_2, concentrations under Alternative A are predicted to be greater than those under the No Action/No Project Alternative, while the maximum 8-hour CO and annual and 24-hour PM_{10} concentrations under Alternative A are predicted to be lower than those under the No Action/No Project Alternative.

Overall Significance of Alternative A

A variety of factors would contribute to changes in air pollutant emissions under Alternative A. The majority of the increase in overall emissions would be attributable to increases in aircraft operations and increases in off-airport VMT. On a relative basis, aircraft would contribute a greater proportion of emissions than under baseline conditions or the No Action/No Project Alternative. This would be due to relative decreases in the contribution of on-airport vehicles and GSE to pollutant emissions. These decreases would result from improvements to traffic flow around the terminal areas as well as from the acceleration of the conversion of GSE to alternative fuels. Emissions from stationary sources, primarily those associated with on-site aircraft maintenance, would also decrease as aircraft maintenance activities are reduced at LAX.

The differences between emissions and dispersion analysis results for Alternative A and the No Action/No Project Alternative are due to a combination of factors. These factors, listed below, would each contribute to differences in impacts in different areas around the airport:

- Hourly utilization of the airport is an important factor in explaining differences between Alternative A and the No Action/No Project Alternative. The addition of a fifth runway under Alternative A would allow much greater flexibility in aircraft operations, resulting in reduced aircraft taxi/idle emissions and ambient concentrations attributable to GSE emissions.
- By 2015, the increase in aircraft operations under Alternative A would cause NO_X and SO_2 emissions to exceed the No Action/No Project Alternative emissions.
- Enhancements to the airport under Alternative A would improve on-airport roadway traffic flows compared to the No Action/No Project Alternative, resulting in lower emissions from gasoline and diesel on-road vehicles.
- Fence line and runway configurations differ between Alternative A and the No Action/No Project Alternative. Land acquisitions under Alternative A would result in greater average distances between emissions sources and off-site receptors.
- Alternative A would not have any major cargo or other facilities in the northeast corner of the airport that would add GSE or traffic impacts near the east side of the airport. However, the addition of a new runway and the increase in aircraft operations in the North Airfield would increase emissions in this area. Compared to the No Action/No Project Alternative, the predicted maximum air quality impacts under Alternative A would generally move from the CTA or east of the south runways to east-northeast of the north runways.
- Alternative A would also include activity in and around the proposed WTA that would not exist under the No Action/No Project Alternative. Under the No Action/No Project Alternative, most activities would be concentrated on the east side in and around the CTA. Operations in the proposed WTA would spread landside emissions from east to west, decreasing concentrations on the east side.

Additional air quality impact analyses were conducted for the LAX Expressway and State Route 1 realignment. These analyses are included in Appendix K, *Supplemental Environmental Evaluation for LAX Expressway and State Route 1 Improvements,* and did not identify any new significant impacts.

dispersion analysis.

CEQA Conclusions

Relative to the CEQA analysis, Alternative A would exceed the Thresholds of Significance presented in subsection 4.6.4.1 with respect to CO, VOC, NO_2, NO_X, SO_2, and PM_{10} due to the following operational and construction-related findings:

- On-airport emissions from operational sources would be significant for NO_X and SO_2.
- Off-airport traffic emissions would be significant for CO, VOC, NO_X, and PM_{10}.
- Construction emissions would be significant for CO, VOC, NO_X, $SO_{2,}$ and PM_{10}.
- Concentrations from on-airport operational and construction-related sources would be significant for CO, $NO_{2,}$ and PM_{10}.

NEPA Conclusions

Relative to the NEPA analysis, the following findings were identified under Alternative A:

- Total emissions of CO, NO_X, SO_2, and PM_{10} estimated for Alternative A would be greater than those estimated for the No Action/No Project Alternative and total emissions of VOC estimated for Alternative A would be lower than those estimated for the No Action/No Project Alternative, as presented in **Table F4.6-11a**.
- The predicted peak CO concentrations associated with regional traffic emissions due to Alternative A would be lower than both the 1-hour and 8-hour CO NAAQS at all intersections modeled.
- The predicted peak concentrations for combined operations and construction emissions for Alternative A, when added to the future background concentrations, would be greater than the NAAQS for 8-hour CO, annual NO_2, and annual and 24-hour PM_{10} and be lower than the NAAQS for 1-hour CO and annual, 24-hour, and 3-hour SO_2.

4.6.6.3 Alternative B - Added Runway South

<u>Unmitigated Airport Emissions Inventory and Dispersion Analysis</u>

Operations - 2005

As indicated in **Table F4.6-9**, emissions of CO, VOC, and PM_{10} from on-airport sources under Alternative B are estimated to be lower than those emissions from on-airport sources under environmental baseline conditions. The increase in emissions of NO_X and SO_2 from on-airport sources under Alternative B as compared to environmental baseline conditions would exceed the operations emissions thresholds presented in **Table F4.6-8**. Therefore, emissions of NO_X and SO_2 from on-airport sources under Alternative B would be significant in 2005. In comparing emissions from on-airport sources under Alternative B for 2005 to those under the No Action/No Project Alternative, emissions of CO, VOC, NO_X, SO_2, and PM_{10} from on-airport sources under Alternative B are estimated to be lower than those under the No Action/No Project Alternative.

As indicated in **Table F4.6-10**, the differences in regional traffic emissions of CO, VOC, NO_X, and PM_{10} between Alternative B and the adjusted environmental baseline are estimated to be higher than the operations emissions thresholds presented in **Table F4.6-8** in 2005. The increase in SO_2 emissions between Alternative B and the adjusted environmental baseline conditions would be less than the operations emissions threshold presented in **Table F4.6-8**. Therefore, the Alternative B regional emissions of CO, VOC, NO_X, and PM_{10}, as compared to the adjusted environmental baseline conditions, would be significant in 2005. In comparing the regional traffic emissions under Alternative B for 2005 to those under the No Action/No Project Alternative, emissions of CO, VOC, NO_X, and SO_2 under Alternative B are estimated to be lower than or the same as those under the No Action/No Project Alternative; however, emissions of PM_{10} under Alternative B are estimated to be greater than those under the No Action/No Project Alternative.

As indicated in **Table F4.6-13**, local CO hot spot analyses at 17 intersections indicate that 1-hour and 8-hour CO concentrations are not predicted to exceed the NAAQS or CAAQS in 2005. In addition, the CO concentrations at these intersections under Alternative B in 2005 would be lower than the environmental baseline CO concentrations. Therefore, CO concentrations at off-airport intersections under Alternative B would be less than significant in 2005. In comparing the predicted CO concentrations at these same 17 intersections under Alternative B for 2005 to those predicted under the No Action/No Project Alternative, the predicted peak 1-hour CO concentrations under Alternative B would exceed those predicted under the No Action/No Project Alternative at 12 intersections, would be lower than those predicted under the No Action/No Project Alternative at 4 intersections, and would be the same as those predicted under the No Action/No Project Alternative at 1 intersection. The predicted peak 8-hour CO concentrations under Alternative B would exceed those predicted under the No Action/No Project Alternative at 12 intersections, would be lower than those predicted under the No Action/No Project Alternative at 4 intersections, and would be the same as those predicted under the No Action/No Project Alternative at 1 intersection.

Operations - 2015

As indicated in **Table F4.6-9**, emissions of CO, VOC, and PM_{10} from on-airport sources under Alternative B are estimated to be lower than those emissions from on-airport sources under environmental baseline conditions. The increase in emissions of NO_X and SO_2 from on-airport sources under Alternative B as compared to environmental baseline conditions would exceed the operations emissions thresholds presented in **Table F4.6-8.** Therefore, emissions of NO_X and SO_2 from on-airport sources under Alternative B would be significant in 2015. In comparing emissions from on-airport sources under Alternative B for 2015 to those under the No Action/No Project Alternative, emissions of CO, VOC, NO_X, SO_2, and PM_{10} from on-airport sources under Alternative B are estimated to be greater than those under the No Action/No Project Alternative.

As indicated in **Table F4.6-10**, the differences in regional traffic emissions of CO, VOC, NO_X, and PM_{10} between Alternative B and the adjusted environmental baseline are estimated to be higher than the operations emissions thresholds presented in **Table F4.6-8** in 2015. The increase in SO_2 emissions between Alternative B and the adjusted environmental baseline conditions would be less than the operations emissions threshold presented in **Table F4.6-8**. Therefore, the Alternative B regional emissions of CO, VOC, NO_X, and PM_{10}, as compared to the adjusted environmental baseline conditions would be significant in 2015. In comparing the regional traffic emissions under Alternative B for 2015 to those under the No Action/No Project Alternative, emissions of CO, NO_X, SO_2, and PM_{10} under Alternative A are estimated to be greater than those under the No Action/No Project Alternative; however, emissions of VOC under Alternative B are estimated to be lower than those under the No Action/No Project Alternative.

As indicated in **Table F4.6-13**, local CO hot spot analyses at 17 intersections indicate that 1-hour and 8-hour CO concentrations are not predicted to exceed the NAAQS or CAAQS in 2015. In addition, the CO concentrations at these intersections under Alternative B in 2015 would be lower than the environmental baseline CO concentrations. Therefore, CO concentrations at off-airport intersections under Alternative B would be less than significant in 2015. In comparing the predicted CO concentrations at these same 17 intersections under Alternative B for 2015 to those predicted under the No Action/No Project Alternative, the predicted peak 1-hour CO concentrations under Alternative B would exceed those predicted under the No Action/No Project Alternative at 5 intersections, would be lower than those predicted under the No Action/No Project Alternative at 9 intersections, and would be the same as those predicted under the No Action/No Project Alternative at 3 intersections. The predicted peak 8-hour CO concentrations under Alternative B would exceed those predicted under the No Action/No Project Alternative at 3 intersections, would be lower than those predicted under the No Action/No Project Alternative at 8 intersections, and would be the same as those predicted under the No Action/No Project Alternative at 6 intersections.

Construction Emissions - Peak Year

As indicated in **Table F4.6-11**, the differences in daily and quarterly emissions of CO, VOC, NO_X, SO_2, and PM_{10} between Alternative B and environmental baseline conditions are estimated to be higher than the construction emissions thresholds presented in **Table F4.6-8**. The peak year for construction emissions under Alternative B would be 2004. Therefore, construction emissions under Alternative B would be significant for CO, VOC, NO_X, SO_2, and PM_{10}. In comparing construction emissions under Alternative B for the peak year to those under the No Action/No Project Alternative, annual emissions of CO, NO_X, and PM_{10} from construction-related sources under Alternative B are estimated to be greater than those under the No Action/No Project Alternative, and annual emissions of VOC and SO_2 from construction-related sources under Alternative B are estimated to be lower than those under the No Action/No Project Alternative.

Combined Concentrations - 2005

The combined, peak concentrations of CO, NO_2, and SO_2 for construction and operation sources when added to the 2005 future background concentrations, as presented in **Table F4.6-12,** are predicted to meet the 1-hour and 8-hour CO CAAQS, the 1-hour NO_2 CAAQS, and all SO_2 CAAQS. The maximum concentrations are predicted to exceed the environmental baseline PM_{10} concentrations and the 24-hour and annual PM_{10} CAAQS. The combined, peak concentrations of CO and SO_2 for construction and operation sources, when added to the 2005 future background concentrations, as presented in **Table F4.6-12,** are predicted to meet the 1-hour and 8-hour CO NAAQS and all SO_2 NAAQS. The maximum concentrations are predicted to exceed the annual NO_2[328] NAAQS and the 24-hour and annual PM_{10} NAAQS. In comparing the combined, peak concentrations for operations and construction sources, when added to the 2005 future background concentrations, under Alternative B for 2005 to those under the No Action/No Project Alternative, the maximum 1-hour and 8-hour CO, annual NO_2, 24-hour and 3-hour SO_2, and annual and 24-hour PM_{10} concentrations under Alternative B are estimated to be greater than those under the No Action/No Project Alternative, while the maximum annual, and 1-hour SO_2 concentration under Alternative B is estimated to be lower than that under the No Action/No Project Alternative.

Combined Concentrations - 2015

The combined, peak concentrations of CO, NO_2, SO_2, and PM_{10} for operational and construction sources, when added to the 2015 future background concentrations, as presented in **Table F4.6-12**, are not predicted to exceed the SO_2 CAAQS for all averaging periods, the 1-hour and 8-hour CO CAAQS, or the 1-hour NO_2 CAAQS.[329] The maximum PM_{10} concentrations for Alternative B, when added to future background concentrations, are predicted to exceed the 24-hour and annual PM_{10} CAAQS in 2015. The combined, peak concentrations of CO, NO_2, SO_2, and PM_{10} for operational and construction sources, when added to the 2015 future background concentrations, as presented in **Table F4.6-12**, are not predicted to exceed the SO_2 NAAQS for all averaging periods, the 1-hour and 8-hour CO NAAQS, the annual NO_2 NAAQS, and the 24-hour and annual PM_{10} NAAQS. In comparing the combined, peak concentrations for operations and construction sources, when added to the 2015 future background concentrations, under Alternative B for 2015 to those under the No Action/No Project Alternative, the maximum 1-hour CO, annual NO_2, and the 24-hour and 3-hour SO_2, concentrations under Alternative B are predicted to be greater than those under the No Action/No Project Alternative, while the maximum 8-hour CO, the annual SO_2, and the 24-hour and annual PM_{10} concentrations under Alternative B are predicted to be lower than those under the No Action/No Project Alternative.

Overall Significance of Alternative B

The overall factors that would contribute to changes in air pollutant emissions under Alternative B would be the same as those under Alternative A. As with Alternative A, under Alternative B, the majority of the increase in overall emissions would be attributable to increases in aircraft operations and VMT. On a relative basis, the contribution of on-airport vehicles and GSE to pollutant emissions would decrease due to improvements in on-airport traffic flows and the accelerated conversion of GSE to alternative fuels. Emissions associated with stationary sources would also decrease as aircraft maintenance activities are reduced at LAX.

The differences between emissions and dispersion analysis results for Alternative B and either the No Action/No Project Alternative or Alternative A are due to several factors that each contribute to differences in impacts in different areas around the airport:

- Alternative B, like Alternative A, would allow more efficient aircraft operations and improved traffic flows on and near LAX compared to the No Action/No Project Alternative. The result would be fewer emissions from aircraft in taxi/idle mode, GSE, and gasoline and diesel vehicles.
- By 2015, the increase in aircraft operations would cause Alternative B NO_X, SO_2, and PM_{10} emissions to exceed the No Action/No Project Alternative emissions. Alternative B would also have more aircraft operations than Alternative A, resulting in higher emissions of all pollutants.

[328] See Attachment P to Technical Report S-4, *Supplemental Air Quality Technical Report*, for supplemental 1-hour NO_2 dispersion analysis.

[329] See Attachment P to Technical Report S-4, *Supplemental Air Quality Technical Report*, for supplemental 1-hour NO_2 dispersion analysis.

- Alternative B would place major cargo facilities in the northeast corner of the airport that would add aircraft, GSE, and traffic air quality impacts near the east side. The highest incremental concentrations would be found just east of the north runways.
- Hourly utilization of the airport is also very important. Alternative B, for example, would have higher aircraft operations during unfavorable meteorological conditions (i.e., at night) than would Alternative A, resulting in somewhat higher short-term (less than 8-hour) impacts.
- Alternative B would have lower activity in and around the proposed WTA than would Alternative A. West end activity helps spread emissions from almost all sources from east to west, and moves many sources further from the east side of the airport where air quality impacts would be highest. Less west-side activity, therefore, would increase the incremental impacts of Alternative B when compared to Alternative A.

Additional air quality impact analyses were conducted for the State Route 1 realignment. These analyses are included in Appendix K, *Supplemental Environmental Evaluation for LAX Expressway and State Route 1 Improvements*, and did not identify any new significant impacts.

CEQA Conclusions

Relative to the CEQA analysis, Alternative B would exceed the Thresholds of Significance presented in subsection 4.6.4.1 with respect to CO, VOC, NO_2, NO_X, SO_2, and PM_{10} due to the following operational and construction-related findings:

- On-airport emissions from operational sources would be significant for NO_X and SO_2.
- Off-airport traffic emissions would be significant for CO, VOC, NO_X, and PM_{10}.
- Construction emissions would be significant for CO, VOC, NO_X, SO_2, and PM_{10}.
- Concentrations from on-airport operational and construction-related sources would be significant for NO_2 and PM_{10}.

NEPA Conclusions

Relative to the NEPA analysis, the following findings were identified under Alternative B:

- Total emissions of CO, NO_X, SO2, and PM_{10} estimated for Alternative B would be greater than those estimated for the No Action/No Project Alternative and total emissions of VOC estimated for Alternative B would be lower than those estimated for the No Action/No Project Alternative, as presented in **Table F4.6-11a**.
- The predicted peak CO concentrations associated with regional traffic emissions due to Alternative B would be lower than both the 1-hour and 8-hour CO NAAQS at all intersections modeled.
- The predicted peak concentrations for combined operations and construction emissions for Alternative B, when added to the future background concentrations, would be greater than the NAAQS for annual NO_2 and annual and 24-hour PM_{10} and be lower than the NAAQS for 1-hour and 8-hour CO and annual, 24-hour, and 3-hour SO_2.

4.6.6.4 Alternative C - No Additional Runway

Unmitigated Airport Emissions Inventory and Dispersion Analysis

Operations - 2005

As indicated in **Table F4.6-9**, emissions of CO, VOC, and PM_{10} under Alternative C are estimated to be lower than those emissions from on-airport sources under environmental baseline conditions. The increase in emissions of NO_X and SO_2 from on-airport sources under Alternative C as compared to environmental baseline conditions would exceed the operations emissions thresholds presented in **Table F4.6-8.** Therefore, emissions of NO_X and SO_2 from on-airport sources under Alternative C would be significant in 2005. In comparing emissions from on-airport sources under Alternative C for 2005 to those under the No Action/No Project Alternative, emissions of CO, VOC, NO_X, SO_2, and PM_{10} from on-airport sources under Alternative C are estimated to be lower than those under the No Action/No Project Alternative.

As indicated in **Table F4.6-10**, the differences in regional traffic emissions of CO, VOC, NO_X, and PM_{10} between Alternative C and the adjusted environmental baseline are estimated to be higher than the operations emissions thresholds presented in **Table F4.6-8** in 2005. The increase in SO_2 emissions between Alternative C and the adjusted environmental baseline conditions would be less than the operations emissions threshold presented in **Table F4.6-8.** Therefore, the Alternative C regional emissions of CO, VOC, NO_X, and PM_{10}, as compared to the adjusted environmental baseline conditions, would be significant in 2005. In comparing the regional traffic emissions under Alternative C for 2005 to those under the No Action/No Project Alternative, emissions of CO, VOC, NO_X, and SO_2 under Alternative A are estimated to be lower than those under the No Action/No Project Alternative; however, emissions of PM_{10} under Alternative C are estimated to be greater than those under the No Action/No Project Alternative.

As indicated in **Table F4.6-13**, local CO hot spot analyses at 17 intersections indicate that 1-hour and 8-hour CO concentrations are not predicted to exceed the NAAQS or CAAQS in 2005. In addition, the CO concentrations at these intersections under Alternative C in 2005 would be lower than the environmental baseline CO concentrations. Therefore, CO concentrations at off-airport intersections under Alternative C would be less than significant in 2005. In comparing the predicted CO concentrations at these same 17 intersections under Alternative C for 2005 to those predicted under the No Action/No Project Alternative, the predicted peak 1-hour CO concentrations under Alternative C would exceed those predicted under the No Action/No Project Alternative at 11 intersections and would be less than those predicted under the No Action/No Project Alternative at 6 intersections. The predicted peak 8-hour CO concentrations under Alternative C would exceed those predicted under the No Action/No Project Alternative at 12 intersections and would be lower than those predicted under the No Action/No Project Alternative at 5 intersections.

Operations - 2015

As indicated in **Table F4.6-9**, emissions of CO, VOC, and PM_{10} from on-airport sources under Alternative C are estimated to be lower than those emissions from on-airport sources under environmental baseline conditions. The increase in emissions of NO_X and SO_2 from on-airport sources under Alternative C as compared to environmental baseline conditions would exceed the operations emissions thresholds presented in **Table F4.6-8.** Therefore, emissions of NO_X and SO_2 from on-airport sources under Alternative C would be significant in 2015. In comparing emissions from on-airport sources under Alternative C for 2015 to those under the No Action/No Project Alternative, emissions of CO, VOC, NO_X, and SO_2 from on-airport sources under Alternative C are estimated to be greater than those under the No Action/No Project Alternative, and emissions of PM_{10} from on-airport sources under Alternative C are estimated to be lower than those under the No Action/No Project Alternative.

As indicated in **Table F4.6-10**, the differences in regional traffic emissions of CO, VOC, NO_X, and PM_{10} between Alternative C and the adjusted environmental baseline are estimated to be higher than the operations emissions thresholds presented in **Table F4.6-8** in 2015. The increase in SO_2 emissions between Alternative C and the adjusted environmental baseline conditions would be less than the operations emissions threshold presented in **Table F4.6-8.** Therefore, the Alternative C regional emissions of CO, VOC, NO_X, and PM_{10}, as compared to the adjusted environmental baseline conditions, would be significant in 2015. In comparing the regional traffic emissions under Alternative C for 2015 to those under the No Action/No Project Alternative, emissions of CO, NO_X, SO_2, and PM_{10} under Alternative C are estimated to be greater than those under the No Action/No Project Alternative; however, emissions of VOC under Alternative C are estimated to be lower than those under the No Action/No Project Alternative.

As indicated in **Table F4.6-13**, local CO hot spot analyses at 17 intersections indicate that 1-hour and 8-hour CO concentrations are not predicted to exceed the NAAQS or CAAQS in 2015. In addition, the CO concentrations at these intersections under Alternative C in 2015 would be lower than the environmental baseline CO concentrations. Therefore, CO concentrations at off-airport intersections under Alternative C would be less than significant in 2015. In comparing the predicted CO concentrations at these same 17 intersections under Alternative C for 2015 to those predicted under the No Action/No Project Alternative, the predicted peak 1-hour CO concentrations under Alternative C would exceed those predicted under the No Action/No Project Alternative at 9 intersections, would be lower than those predicted under the No Action/No Project Alternative at 6 intersections, and would be the same as those predicted under the No Action/No Project Alternative at 2 intersections. The predicted peak 8-hour CO concentrations under Alternative C would exceed those predicted under the No Action/No Project Alternative at 7 intersections, would be lower than those predicted under the No Action/No Project Alternative at 6 intersections, and would be the same as those predicted under the No Action/No Project Alternative at 4 intersections.

Construction Emissions - Peak Year

As indicated in **Table F4.6-11**, the differences in daily and quarterly emissions of CO, VOC, NO_X, SO_2, and PM_{10} between Alternative C and environmental baseline conditions are estimated to be higher than the construction emissions thresholds presented in **Table F4.6-8.** The peak year for construction emissions under Alternative C would be 2004. Therefore, construction emissions under Alternative C would be significant for CO, VOC, NO_X, SO_2, and PM_{10}. In comparing construction emissions under Alternative C for the peak year to those under the No Action/No Project Alternative, annual emissions of CO, NO_X, and PM_{10} from construction-related sources under Alternative C are estimated to be greater than those under the No Action/No Project Alternative, and annual emissions of VOC and SO_2 from construction-related sources under Alternative C are estimated to be lower than those under the No Action/No Project Alternative.

Combined Concentrations - 2005

The combined, peak concentrations of CO, NO_2, and SO_2 for construction and operation sources when added to the 2005 future background concentrations, as presented in **Table F4.6-12,** are predicted to meet the 1-hour and 8-hour CO CAAQS, the 1-hour NO_2 CAAQS, and the SO_2 CAAQS for all averaging periods. The maximum concentrations are predicted to exceed the environmental baseline PM_{10} concentrations and the 24-hour and annual PM_{10} CAAQS. The combined, peak concentrations of CO, NO_2, and SO_2 for construction and operation sources, when added to the 2005 future background concentrations, as presented in **Table F4.6-12,** are predicted to meet the 1-hour and 8-hour CO NAAQS and the SO_2 NAAQS for all averaging periods. The maximum concentrations are predicted to exceed the annual NO_2[330] NAAQS and the 24-hour and annual PM_{10} NAAQS. In comparing the combined, peak concentrations for operations and construction sources, when added to the 2005 future background concentrations, under Alternative C for 2005 to those under the No Action/No Project Alternative, the maximum annual NO_2, 3-hour, 24-hour, and annual SO_2, and annual and 24-hour PM_{10} concentrations under Alternative C are estimated to be greater than those under the No Action/No Project Alternative, while the maximum 1-hour and 8-hour CO concentrations under Alternative C are estimated to be lower than or the same as those under the No Action/No Project Alternative.

Combined Concentrations - 2015

The combined, peak concentrations of CO, NO_2, SO_2, and PM_{10} for operational and construction sources, when added to the 2015 future background concentrations, as presented in **Table F4.6-12**, are not predicted to exceed the SO_2 CAAQS for all averaging periods, the 8-hour CO CAAQS, the 1-hour NO_2 CAAQS,[331] or the environmental baseline PM_{10} concentrations. The maximum concentrations for Alternative C are predicted to exceed the 1-hour CO CAAQS, the annual PM_{10} CAAQS and 24-hour PM_{10} CAAQS. The combined, peak concentrations of CO, NO_2, SO_2, and PM_{10} for operational and construction sources, when added to the 2015 future background concentrations, as presented in **Table F4.6-12**, are not predicted to exceed the SO_2 NAAQS for all averaging periods, the 1-hour and 8-hour CO NAAQS, the annual NO_2 NAAQS, or the 24-hour and annual PM_{10} NAAQS for Alternative C in 2015.[332] In comparing the combined, peak concentrations for operations and construction sources, when added to the 2015 future background concentrations, under Alternative C for 2015 to those under the No Action/No Project Alternative, the maximum 1-hour and 8-hour CO, annual NO_2, the annual 24-hour and 3-hour SO_2, and the annual and 24-hour PM_{10} concentrations under Alternative C are predicted to be greater than those under the No Action/No Project Alternative, while the maximum 8-hour CO, annual SO_2, concentrations under Alternative C are predicted to be lower than those under the No Action/No Project Alternative.

---

330 See Attachment P to Technical Report S-4, *Supplemental Air Quality Technical Report*, for supplemental 1-hour NO_2 dispersion analysis.

331 See Attachment P to Technical Report S-4, *Supplemental Air Quality Technical Report*, for supplemental 1-hour NO_2 dispersion analysis.

332 See Attachment P to Technical Report S-4, *Supplemental Air Quality Technical Report*, for supplemental 1-hour NO_2 dispersion analysis.

Overall Significance of Alternative C

The overall factors that would contribute to changes in air pollutant emissions under Alternative C would be the same as those under Alternatives A and B. As with Alternatives A and B, under Alternative C, the majority of the increase in overall emissions would be attributable to increases in aircraft operations and VMT. On a relative basis, the contribution of on-airport vehicles and GSE to pollutant emissions would decrease due to improvements in on-airport traffic flows and the accelerated conversion of GSE to alternative fuels. Emissions associated with stationary sources would also decrease as aircraft maintenance activities are reduced at LAX.

Differences between emissions and dispersion analysis results for Alternative C and either the No Action/No Project Alternative or Alternatives A and B are also explained by several factors that each contribute to impacts in different areas around the airport:

- Alternative C, like Alternatives A and B, would allow more efficient aircraft operations and improved traffic flows on and near LAX compared to the No Action/No Project Alternative. The result would be fewer emissions from aircraft taxi/idle, GSE, and gasoline and diesel vehicles when compared to the No Action/No Project Alternative.
- By 2015, the increase in aircraft operations would cause Alternative C NO_X and SO_2 emissions to exceed the No Action/No Project Alternative emissions. Alternative C NO_X, SO_2, and PM_{10} emissions would be lower than those emissions for Alternatives A and B, due to fewer aircraft operations.
- Fence line and runway configuration would vary among the alternatives. The concentration differences associated with Alternative C are due in large part to the runway configuration. The runway configuration proposed under Alternatives A and B would result in runways that would be closer to residences than the configuration proposed under Alternative C.
- Alternative C would have higher CTA traffic emissions than Alternatives A and B. The increased traffic congestion would be partially responsible for greater emissions of CO and VOC, as well as higher concentrations for Alternative C than for Alternative A. Increased CTA traffic would also cause several incremental concentrations for Alternative C to exceed those estimated for Alternative B.
- Like Alternative B, Alternative C would place major cargo facilities in the northeast corner of the airport that would add aircraft, GSE, and traffic impacts near the east side. The highest incremental concentrations would be found just east of the north runways and in the CTA under Alternative C.
- Hourly utilization of the airport is also very important. Alternative C, for example, would have higher aircraft operations at night (during which unfavorable meteorological conditions are more common) than would Alternative A, resulting in somewhat higher impacts to air quality in 2015 than for Alternative A.
- Alternative C would also have lower activity in and around the proposed WTA than Alternative A. West end activity helps spread emissions from almost all sources from east to west, and thus moves many sources further from the east side of the airport where air quality impacts would be highest. Less west-side activity, therefore, would increase the incremental impacts of Alternative C when compared to Alternative A.
- Alternative C would have more gates and more aircraft operations in the CTA than either Alternatives A or B, which would cause higher GSE and aircraft emissions on the eastside of the airport. This factor may be important in causing several higher concentration estimates for Alternative C than for Alternatives A or B.

Additional air quality impact analyses were conducted for the LAX Expressway and State Route 1 realignment. These analyses are included in Appendix K, *Supplemental Environmental Evaluation for LAX Expressway and State Route 1 Improvements*, and did not identify any new significant impacts.

CEQA Conclusions

Relative to the CEQA analysis, Alternative C would exceed the Thresholds of Significance presented in subsection 4.6.4.1 with respect to CO, VOC, NO_2, NO_X, SO_2, and PM_{10} due to the following operational and construction-related findings:

- On-airport emissions from operational sources would be significant for NO_X and SO_2.
- Off-airport traffic emissions would be significant for CO, VOC, NO_X, and PM_{10}.

- Construction emissions would be significant for CO, VOC, NO_X, SO_2, and PM_{10}.
- Concentrations from on-airport operational and construction-related sources would be significant for CO, NO_2, and PM_{10}.

NEPA Conclusions

Relative to the NEPA analysis, the following findings were identified under Alternative C:

- Total emissions of CO, NO_X, SO_2, and PM_{10} estimated for Alternative C would be greater than those estimated for the No Action/No Project Alternative and total emissions of VOC estimated for Alternative C would be lower than those estimated for the No Action/No Project Alternative, as presented in **Table F4.6-11a**.
- The predicted peak CO concentrations associated with regional traffic emissions due to Alternative C would be lower than both the 1-hour and 8-hour CO NAAQS at all intersections modeled.
- The predicted peak concentrations for combined operations and construction emissions for Alternative C, when added to the future background concentrations, would be greater than the NAAQS for annual NO_2 and annual and 24-hour PM_{10} and be lower than the NAAQS for 1-hour and 8-hour CO and annual, 24-hour, and 3-hour SO_2.

4.6.6.5 Alternative D - Enhanced Safety and Security Plan

<u>Unmitigated Airport Emissions Inventory and Dispersion Analysis</u>

Operations - 2013

As indicated in **Table F4.6-9**, emissions of CO, VOC, and PM_{10} under Alternative D are estimated to be lower than those emissions from on-airport sources under environmental baseline conditions. The increase in emissions of NO_X and SO_2 from on-airport sources under Alternative D as compared to environmental baseline conditions would exceed the operations emissions thresholds presented in **Table F4.6-8.** Therefore, emissions of NO_X and SO_2 from on-airport sources under Alternative D would be significant under CEQA in 2013. In comparing emissions from on-airport sources under Alternative D for 2013 to those under the No Action/No Project Alternative, emissions of SO_2 and PM_{10} from on-airport sources under Alternative D are estimated to be greater than those under the No Action/No Project Alternative, and emissions of CO, VOC, and NO_X from on-airport sources under Alternative D are estimated to be lower than those under the No Action/No Project Alternative.

As indicated in **Table F4.6-10**, the differences in regional traffic emissions of CO, VOC, NO_X, and PM_{10} between Alternative D and the adjusted environmental baseline are estimated to be higher than the operations emissions thresholds presented in **Table F4.6-8** in 2013. The increase in SO_2 emissions between Alternative D and the 2013 adjusted environmental baseline conditions would be less than the operations emissions threshold presented in **Table F4.6-8**. Therefore, the Alternative D regional emissions of CO, VOC, NO_X, and PM_{10}, as compared to the adjusted environmental baseline conditions, would be significant under CEQA in 2013. In comparing the regional traffic emissions under Alternative D for 2013 to those under the No Action/No Project Alternative, emissions of CO, VOC, NO_X, and SO_2 under Alternative D are estimated to be lower than those under the No Action/No Project Alternative; however, emissions of PM_{10} under Alternative D are estimated to be greater than those under the No Action/No Project Alternative.

As indicated in **Table F4.6-13**, local CO hot spot analyses at 19 intersections indicate that 1-hour and 8-hour CO concentrations are not predicted to exceed the NAAQS or CAAQS in 2013. Therefore, CO concentrations at off-airport intersections under Alternative D would be less than significant in 2013. In comparing the predicted CO concentrations at these same 19 intersections under Alternative D for 2013 to those predicted under the No Action/No Project Alternative, the predicted peak 1-hour CO concentrations under Alternative D would be less than those predicted under the No Action/No Project Alternative at all modeled intersections, while the predicted peak 8-hour CO concentrations under Alternative D would be lower than those predicted under the No Action/No Project Alternative at all modeled intersections.

Operations - 2015

As indicated in **Table F4.6-9**, emissions of CO, VOC, and PM_{10} from on-airport sources under Alternative D are estimated to be lower than those emissions from on-airport sources under environmental baseline conditions. The increase in emissions of NO_X and SO_2 from on-airport sources under Alternative D as compared to environmental baseline conditions would exceed the operations emissions thresholds presented in **Table F4.6-8.** Therefore, emissions of NO_X and SO_2 from on-airport sources under Alternative D would be significant under CEQA in 2015. In comparing emissions from on-airport sources under Alternative D for 2015 to those under the No Action/No Project Alternative, emissions of CO, NO_X, and PM_{10} from on-airport sources under Alternative D are estimated to be greater than those under the No Action/No Project Alternative and emissions of VOC and SO_2 from on-airport sources under Alternative D are estimated to be lower than those under the No Action/No Project Alternative.

As indicated in **Table F4.6-10**, the differences in regional traffic emissions of CO, VOC, NO_X, and PM_{10} between Alternative D and the adjusted environmental baseline are estimated to be higher than the operations emissions thresholds presented in **Table F4.6-8** in 2015. The increase in SO_2 emissions between Alternative C and the adjusted environmental baseline conditions would be less than the operations emissions threshold presented in **Table F4.6-8.** Therefore, the Alternative D regional emissions of CO, VOC, NO_X, and PM_{10}, as compared to the adjusted environmental baseline conditions, would be significant under CEQA in 2015. In comparing the regional traffic emissions under Alternative D for 2015 to those under the No Action/No Project Alternative, emissions of PM_{10} under Alternative D are estimated to be greater than those under the No Action/No Project Alternative; however, emissions of CO, VOC, NO_X, and SO_2 under Alternative D are estimated to be lower than those under the No Action/No Project Alternative.

As indicated in **Table F4.6-13, l**ocal CO hot spot analyses at 19 intersections indicate that 1-hour and 8-hour CO concentrations are not predicted to exceed the NAAQS or CAAQS in 2015. In addition, the CO concentrations at these intersections under Alternative D in 2015 would be lower than the environmental baseline CO concentrations. Therefore, CO concentrations at off-airport intersections under Alternative D would be less than significant in 2015. In comparing the predicted CO concentrations at these same 19 intersections under Alternative D for 2015 to those predicted under the No Action/No Project Alternative, the predicted peak 1-hour CO concentrations under Alternative D would exceed those predicted under the No Action/No Project Alternative at 16 intersections and would be lower than those predicted under the No Action/No Project Alternative at 1 intersection. No comparison could be made to concentrations predicted under the No Action/No Project Alternative at 2 intersections because those 2 intersections were not modeled under the No Action/No Project Alternative. The predicted peak 8-hour CO concentrations under Alternative D would exceed those predicted under the No Action/No Project Alternative at 14 intersections, would be lower than those predicted under the No Action/No Project Alternative at 1 intersection, and would be the same as those predicted under the No Action/No Project Alternative at 2 intersections. No comparison could be made to concentrations predicted under the No Action/No Project Alternative at 2 intersections because those 2 intersections were not modeled under the No Action/No Project Alternative.

Construction Emissions

As indicated in **Table F4.6-11**, the daily and quarterly emissions of SO_2 during the peak construction year do not exceed construction emission thresholds presented in **Table F4.6-8**. The daily and quarterly emissions of CO, VOC, NO_X, and PM_{10} are estimated to be higher than the construction emissions thresholds presented in **Table F4.6-8.** The peak year for construction emissions under Alternative D would be 2005. Construction emissions under Alternative D would be significant for CO, VOC, NO_X, and PM_{10}. In comparing construction emissions under Alternative D for the peak year to those under the No Action/No Project Alternative, annual emissions of NO_X and PM_{10} from construction-related sources under Alternative D are estimated to be greater than those under the No Action/No Project Alternative, and annual emissions of CO, VOC, and SO_2 from construction-related sources under Alternative D are estimated to be lower than those under the No Action/No Project Alternative.

Combined Concentrations - 2013

The combined, peak concentrations of CO, NO_2, SO_2, and PM_{10} for construction and operation sources when added to the 2013 future background concentrations, as presented in **Table F4.6-12,** are predicted to meet the 1-hour and 8-hour CO CAAQS, the SO_2 CAAQS for all averaging periods, and 1-hour NO_2[333] CAAQS. The maximum concentrations are predicted to exceed the environmental baseline PM_{10} concentrations, and the annual and 24-hour PM_{10} CAAQS. Therefore, only concentrations of PM_{10} for Alternative D would be significant in 2013. For Alternative D in 2013, 8-hour CO concentrations are all predicted to be below the environmental baseline concentrations. The combined, peak concentrations of CO, NO_2, and SO_2 for construction and operation sources, when added to the 2013 future background concentrations, as presented in **Table F4.6-12,** are predicted to meet the 1-hour and 8-hour CO NAAQS, the SO_2 NAAQS for all averaging periods, the annual NO_2 NAAQS, and the 24-hour and annual PM_{10} NAAQS. In comparing the combined, peak concentrations for operations and construction sources, when added to the 2013 future background concentrations, under Alternative D for 2013 to those under the No Action/No Project Alternative, the maximum annual NO_2 and the annual and 24-hour PM_{10} concentrations under Alternative D are estimated to be greater than those under the No Action/No Project Alternative, while the maximum 1-hour and 8-hour CO and the annual, 24-hour, and 3-hour SO_2 concentrations under Alternative D are estimated to be lower than those under the No Action/No Project Alternative.

Combined Concentrations - 2015

The combined, peak concentrations of CO, NO_2, SO_2, and PM_{10} for operational and construction sources, when added to the 2015 future background concentrations, as presented in **Table F4.6-12**, are not predicted to exceed the SO_2 CAAQS for all averaging periods, the 1-hour and 8-hour CO CAAQS, or the 1-hour NO_2 CAAQS.[334] The maximum PM_{10} concentrations for Alternative D, when added to future background concentrations, are predicted to exceed the 24-hour and annual PM_{10} CAAQS in 2015. For Alternative D, 1-hour and 8-hour CO, and 24-hour PM_{10} concentrations are all predicted to be below the environmental baseline concentrations. The combined, peak concentrations of CO, NO_2, SO_2, and PM_{10} for operational and construction sources, when added to the 2015 future background concentrations, as presented in **Table F4.6-12**, are not predicted to exceed the SO_2 NAAQS for all averaging periods, the 1-hour and 8-hour CO NAAQS, the annual NO_2 NAAQS, or the 24-hour and annual PM_{10} NAAQS. In comparing the combined, peak concentrations for operations and construction sources, when added to the 2015 future background concentrations, under Alternative D for 2015 to those under the No Action/No Project Alternative, the maximum 24-hour, and 3-hour SO_2, and 24-hour and annual PM_{10} concentrations under Alternative D are predicted to be higher than those under the No Action/No Project Alternative; while the maximum 1-hour and 8-hour CO, annual NO_2, annual and 1-hour SO_2, under Alternative D are estimated to be lower than those under the No Acton/No Project Alternative.

Overall Significance of Alternative D

The overall factors that would contribute to changes in air pollutant emissions under Alternative D would be the same as those under Alternatives A, B, and C. As with the other build alternatives, under Alternative D, the majority of the increase in overall emissions would be attributable to increases in aircraft operations and VMT when compared to the environmental baseline. On a relative basis, the contribution of on-airport vehicles and GSE to pollutant emissions would decrease due to improvements in on-airport traffic flows and the accelerated conversion of GSE to alternative fuels. Emissions associated with stationary sources would also decrease as aircraft maintenance activities are reduced at LAX and shifted out of the South Coast Air Basin.

Differences between emissions and dispersion analysis results for Alternative D and either the No Action/No Project Alternative or Alternatives A, B, and C are explained by several factors that each contribute to impacts in different areas around the airport:

- Alternative D, like Alternatives A, B, and C, would allow more efficient aircraft operations and improved traffic flows on and near LAX compared to the No Action/No Project Alternative. The result

[333] See Attachment P to Technical Report S-4, *Supplemental Air Quality Technical Report*, for supplemental 1-hour NO_2 dispersion analysis.

[334] See Attachment P to Technical Report S-4, *Supplemental Air Quality Technical Report*, for supplemental 1-hour NO_2 dispersion analysis.

would be fewer emissions from aircraft taxi/idle, GSE, and gasoline and diesel vehicles when compared to the No Action/No Project Alternative.

- Alternative D CO, VOC, NO_X, SO_2, and PM_{10} emissions would be lower than those emissions for Alternatives A, B, and C, due to lower passenger levels and fewer aircraft operations.
- Fence line and runway configurations vary among the alternatives. The concentration differences associated with Alternative D are due in large part to the runway configuration. The runway configuration proposed under Alternatives A, B, and C would result in runways that would be closer to residences than the configuration proposed under Alternative D. Alternative D does not include the proposed WTA that is included in Alternatives A, B, and C and has little to no traffic traveling to the existing CTA. Parking and traffic emissions would primarily occur around the proposed GTC and ITC, unique to this build alternative.
- Alternative D has lower passenger levels and fewer overall aircraft operations than Alternatives A, B, or C, resulting in generally lower impacts to air quality than the other build alternatives.

CEQA Conclusions

Alternative D would have a significant overall impact on air quality with respect to CO, VOC, NO_2, NO_X, SO_2, and PM_{10} due to the following operational and construction-related impacts:

- On-airport emissions from operational sources would be significant for NO_X and SO_2.
- Off-airport traffic emissions would be significant for CO, VOC, NO_X, and PM_{10}.
- Construction emissions would be significant for CO, VOC, NO_X, and PM_{10}.
- Concentrations from on-airport operational and construction-related sources would be significant for PM_{10}.

NEPA Conclusions

Relative to the NEPA analysis, the following findings were identified under Alternative D:

- Total emissions of CO, SO_2, and PM_{10} estimated for Alternative D would be greater than those estimated for the No Action/No Project Alternative and total emissions of VOC and NO_X estimated for Alternative D would be lower than those estimated for the No Action/No Project Alternative, as presented in **Table F4.6-11a**.
- The predicted peak CO concentrations associated with regional traffic emissions due to Alternative D would be lower than both the 1-hour and 8-hour CO NAAQS at all intersections modeled.
- The predicted peak concentrations for combined operations and construction emissions for Alternative D, when added to the future background concentrations, would be lower than the NAAQS for 1-hour and 8-hour CO, annual NO_2, annual, 24-hour, and 3-hour SO_2, and annual and 24-hour PM_{10}.

Conformity Applicability

A demonstration of conformity with the purpose of the SIP must be made for a proposed federal action (i.e., the preferred alternative) in a nonattainment or maintenance area when incremental emission rates attributable to the proposed action would exceed the conformity applicability thresholds outlined in the Code of Federal Regulations.[335, 336] Alternative D has been identified by LAWA staff as the preferred alternative and implementation of this alternative would require the approval and support of FAA. Therefore, it is necessary to determine the applicability of the conformity requirements to Alternative D. The conformity requirements consist of transportation and general conformity regulations. The FAA and LAWA are working with SCAQMD, SCAG, CARB, and USEPA to ensure that information developed for the LAX Master Plan is taken into consideration in the RTP and AQMP updates. For applicability of the general conformity requirement, the net emissions (including on-airport operations and construction emissions) between Alternative D and the No Action/No Project Alternative will be compared to the general conformity applicability thresholds. The criteria pollutants potentially subject to general conformity in the South Coast Air Basin include CO, VOC, NO_X, NO_2, and PM_{10} because the South Coast

---

335 U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards, General Conformity Guidance: Questions and Answers, July 13, 1994.

336 40 CFR 51, Subpart T, July 1, 2002, and 40 CFR 51, Subpart W, July 1, 2002.

Air Basin is in nonattainment or maintenance status for these criteria pollutants. The general conformity applicability thresholds for the South Coast Air Basin are as follows:

- 100 tons per year for emissions of CO
- 100 tons per year for emissions of NO_2
- 10 tons per year for emissions of NO_X
- 10 tons per year for emissions of VOC
- 70 tons per year for emissions of PM_{10}

Incremental emissions of NO_X, NO_2, and PM_{10} would be greater than the general conformity applicability thresholds in the year of maximum emissions and are subject to a general conformity determination, whereas incremental emissions of CO and VOC would not be greater than the general conformity applicability thresholds in the year of maximum emissions and are not subject to a general conformity determination. Therefore, an evaluation and determination had to be prepared to demonstrate that Alternative D conforms to the SIP for NO_X (as an O_3 precursor), NO_2, and PM_{10}. The Draft General Conformity Determination for Alternative D, containing all supporting documentation, was issued on January 9, 2004, pursuant to federal law. The Final General Conformity Determination will be published prior to publication of the Final EIS/EIR that will be approved by the FAA. In addition, LAWA has worked with SCAQMD to incorporate information developed for the LAX Master Plan into the 2003 AQMP emission budgets for the South Coast Air Basin. The FAA must complete a final general conformity determination before making any decisions about approving or funding the proposed action.

4.6.7 Cumulative Impacts

The cumulative impacts to air quality associated with the No Action/No Project Alternative and Alternatives A, B, C, or D, in combination with other past, present, and reasonably foreseeable future projects, are discussed here.

As discussed under subsection 4.6.3, *Affected Environment/Environmental Baseline*, air quality in the vicinity of LAX is in attainment of SO_2 and NO_2 ambient air quality standards. The area does not attain O_3, PM_{10} or CO air quality standards. Operations at LAX contribute emissions of these pollutants or their precursor compounds into the atmosphere.

4.6.7.1 No Action/No Project Alternative

Operations

Under the No Action/No Project Alternative, growth of operations and activities at LAX are predicted to continue to occur until constrained by the capacity of the facilities to handle additional operations. Substantial increases in air pollutant emissions are estimated to occur under the No Action/No Project Alternative, and future predicted concentrations of several pollutants are predicted to exceed ambient air quality standards.

Relative to air quality, a notable major project in proximity to LAX is the proposed Playa Vista project, although the size and intensity of the Playa Vista project proposal was substantially reduced in November 2002. Notwithstanding, the Draft Environmental Impact Report published in August 2003 for the Playa Vista project (the "Village at Playa Vista" Project) determined that the air pollutant emissions associated with construction and operation would be, even with mitigation, significant and unavoidable. Operational emissions associated with the No Action/No Project Alternative in conjunction with the Playa Vista project emissions and those from other past, present, and reasonably foreseeable future development projects in the vicinity would be significant. Such other future development projects occurring in the vicinity of LAX include those described in Section 2.6, *Non-LAX Development Having Cumulative Impact*, of this Final EIS/EIR. Based on the size and nature of such projects, it is likely that as each project is approved, it would be constructed and fully operational by 2015.

Emissions from the No Action/No Project Alternative occurring in conjunction with emissions from other past, present, and reasonably foreseeable future development projects in the vicinity would also include direct and induced growth associated with the airport. As indicated in subsection 4.6.6, *Environmental Consequences*, air pollutant emissions from the No Action/No Project Alternative are estimated to exceed federal and state standards. Additional emissions from any other past, present, or reasonably foreseeable future project sources around LAX would contribute to this impact. Therefore, cumulative impacts are estimated to exceed federal and state standards.

Construction

Under the No Action/No Project Alternative, construction would occur at LAX through 2015, including construction of LAX Northside and Continental City. Substantial increases in pollutant emissions are estimated to occur during construction under this alternative.

Relative to air quality, construction of the Playa Vista project is a notably large, reasonably foreseeable future project in the vicinity of LAX. Air pollutant emissions from Playa Vista construction activities are anticipated to be significant. Other reasonably foreseeable future projects, such as those identified in Section 2.6 of this Final EIS/EIR, occurring within a similar time frame as the No Action/No Project Alternative improvements would increase short-term emissions associated with concurrent activities during the No Action/No Project Alternative construction period. As indicated in subsection 4.6.6, *Environmental Consequences*, construction emissions associated with the worst-case quarter for the No Action/No Project Alternative are estimated to exceed the thresholds presented in **Table F4.6-8**. Although the construction schedules for all of the reasonably foreseeable projects described in Section 2.6 are not known, it is reasonable to assume that some construction would occur during that worst-case quarter. This is particularly true relative to larger, long-term development projects such as Playa Vista. Any additional construction activities associated with the reasonably foreseeable future projects noted above, occurring during this time in the vicinity of LAX, would cumulatively increase the emissions beyond these already substantial levels.

4.6.7.2 Alternatives A, B, and C

Operations

As previously discussed in subsection 4.6.6, *Environmental Consequences*, development associated with build Alternatives A, B, and C is estimated to result in significant increases in air pollutant emissions.

Relative to air quality, a notable major project in proximity to LAX is the Playa Vista project. Operational emissions associated with Alternative A, B, or C in conjunction with the Playa Vista project emissions and those from other past, present, and reasonably foreseeable future development projects in the vicinity would be significant.

Operational emissions associated with Alternatives A, B, and C would occur in conjunction with emissions from other past, present, and reasonably foreseeable future development projects in the vicinity, including direct and induced growth related to the LAX Master Plan. Air pollutant emissions from the LAX Master Plan alternatives are estimated to be significant. Air pollutant emissions associated with other notable development projects in the vicinity, such as Playa Vista, are also anticipated to be significant. Additional emissions from any other past, present, or reasonably foreseeable future project sources around LAX, such as from the projects described in Section 2.6 of this Final EIS/EIR, would further contribute to this significant impact. Therefore, cumulative impacts associated with operations would be significant and unavoidable.

Construction

Under Alternatives A, B, and C, construction would occur at LAX through 2015. Substantial increases in pollutant emissions are estimated to occur during construction under these alternatives.

Relative to air quality, construction of the Playa Vista project is a notably large, reasonably foreseeable future project in the vicinity of LAX. Air pollutant emissions from Playa Vista construction activities are anticipated to be significant. Other reasonably foreseeable future projects, such as those identified in Section 2.6 of this Final EIS/EIR, occurring within a similar time frame as Alternatives A, B, and C would increase short-term emissions associated with concurrent activities during any day of the Master Plan's construction period. As indicated in subsection 4.6.6, *Environmental Consequences*, construction emissions associated with Alternatives A, B, and C are estimated to be significant. As noted above, the exact construction phasing schedules for all of the reasonably foreseeable development projects described in Section 2.6 are not known; however, it is reasonable to assume that some amount of overlap in construction activities would occur between those projects and Alternatives A, B, and C. This is particularly true relative to the larger long-term development projects such as Playa Vista. Any additional construction activities occurring coincidental with construction of Alternatives A, B, or C during this time in the vicinity of LAX would increase the emissions beyond these already significant levels. Cumulative emissions from LAX Master Plan Alternative A, B, or C construction activities in conjunction with construction emissions associated with reasonably foreseeable future projects would be significant and unavoidable.

4.6.7.3 Alternative D - Enhanced Safety and Security Plan

Operations

As previously discussed in subsection 4.6.6, *Environmental Consequences*, development associated with Alternative D is estimated to result in significant increases in air pollutant emissions.

Relative to air quality, a notable major project in proximity to LAX is the Playa Vista project. Operational emissions associated with Alternative D in conjunction with the Playa Vista project emissions and those from other past, present, and reasonably foreseeable future development projects in the vicinity, would be significant.

Operational emissions associated with Alternative D would occur in conjunction with emissions from other past, present, and reasonably foreseeable future development projects in the vicinity, including direct and induced growth related to the LAX Master Plan. Air pollutant emissions from Alternative D are estimated to be significant. Air pollutant emissions associated with other notable development projects in the vicinity, such as Playa Vista, are also anticipated to be significant. These emissions, in conjunction with additional emissions from any past, present, or reasonably foreseeable future sources around LAX, such as from the projects described in Section 2.6 of this Final EIS/EIR, would further contribute to a cumulatively significant air quality impact. Therefore, cumulative impacts associated with operations would be significant and unavoidable.

Construction

Under Alternative D construction would occur at LAX up to 2014. Substantial increases in pollutant emissions are estimated to occur during construction under this alternative.

Relative to air quality, construction of the Playa Vista project is a notably large, reasonably foreseeable future project in the vicinity of LAX. Air pollutant emissions from Playa Vista construction activities are anticipated to be significant. Other reasonably foreseeable future projects, such as those identified in Section 2.6 of this Final EIS/EIR, occurring within a similar time frame as Alternative D would increase short-term emissions associated with concurrent activities during any day of the Master Plan's construction period. As indicated in subsection 4.6.6, *Environmental Consequences*, construction emissions associated with Alternative D are estimated to be significant. As noted above, the exact construction phasing schedules for all of the reasonably foreseeable development projects described in Section 2.6 are not known; however, it is reasonable to assume that some amount of overlap between construction activities would occur between those projects and Alternative D. This is particularly true relative to the larger long-term development projects such as Playa Vista. Any additional construction activities coincidental with Alternative D construction occurring during this time in the vicinity of LAX would increase the emissions beyond these already significant levels. Cumulative emissions from Alternative D construction activities in conjunction with construction emissions associated with reasonably foreseeable future projects would be significant and unavoidable.

4.6.8 Mitigation Measures

The following mitigation measures have been selected to reduce air quality impacts associated with the construction and operation of the selected LAX Master Plan build alternative both in and around LAX and in the South Coast Air Basin.

- **MM-AQ-1. LAX Master Plan - Mitigation Plan for Air Quality.**

  LAWA shall expand and revise the existing air quality mitigation programs at LAX through the development of an LAX Master Plan-Mitigation Plan for Air Quality (LAX MP-MPAQ). The LAX MP-MPAQ shall be developed in consultation with FAA, USEPA, CARB, and SCAQMD, as appropriate, and shall include technologically/legally feasible and economically reasonable methods to reduce air pollutant emissions from aircraft, GSE, traffic, and construction equipment both on and off the airport.

The overall effect, and minimum requirement, of the LAX MP-MPAQ shall be reduced potential air pollutant emissions associated with implementation of the LAX Master Plan to levels equal to, if not less than, the post-mitigation levels identified in this Final EIS/EIR for the project. The LAX MP-MPAQ shall include feasible mitigation measures that are grouped into the following three categories:

- Construction-Related Measure;
- Transportation-Related Measure; and
- Operations-Related Measure.

The LAX MP-MPAQ will, initially, present the basic framework of the overall air quality mitigation program (basic LAX MP-MPAQ), and will, ultimately, define the specific measures to be implemented within the context of three (3) individual components specific to the categories of emissions indicated above (full LAX MP-MPAQ). Implementation of Mitigation Measure MM-AQ-2, Construction-Related Mitigation Measure, will define the specific measures to be included in the construction-related component; Mitigation Measure MM-AQ-3, Transportation-Related Mitigation Measure, will define the specific measures to be included in the surface transportation-related component; and Mitigation Measure MM-AQ-4, Operations-Related Mitigation Measure, will define the specific measures to be included in the operations-related component. The basic framework of the LAX MP-MPAQ and the Construction-Related component will be developed prior to initiation of construction activities for the first project to be developed under the LAX Master Plan, and the development of the other two components will occur in conjunction with implementation of the Master Plan components that materially affect surface transportation emissions and operations emissions.

- **MM-AQ-2. Construction-Related Measure.**

The required components of the construction-related air quality mitigation measure are itemized below. These components include numerous specific actions to reduce emissions of fugitive dust and of exhaust emissions from on-road and nonroad mobile sources and stationary engines. All of these components must be in place prior to commencement of the first Master Plan construction project and must remain in place through build out of the Master Plan. An implementation plan will be developed, which provides available details as to how each of the components of this construction-related mitigation measure will be implemented and monitored. Each construction subcontractor will be responsible to implement all measures that apply to the equipment and activities under his/her control, an obligation which will be formalized in the contractual documents, with financial penalties for noncompliance. LAWA will assign one or more environmental coordinators whose responsibility it will be to ensure compliance with the construction-related measure by use of direct inspections, records reviews, and investigation of complaints with reporting to LAWA management for follow-up action. The estimated ranges of emissions reductions quantified for this mitigation measure for Alternatives A, B, C, and D are shown in **Table F4.6-18,** Estimated Ranges of Emissions Reductions for Construction-Related Air Quality Mitigation Measures. Reliable emissions reductions were not able to be quantified for all of these components.

Table F4.6-18

Estimated Ranges of Emissions Reductions for Construction-Related Air Quality Mitigation Measures

Pollutant	Alternatives A, B, C, and D[1] (tons)
ROG	1 - 10
NO_X	300 - 1,100
CO	10 - 30
PM_{10}	140 - 400
SO_X	1 - 10

1 In the year of peak construction emissions.

Source: Camp Dresser & McKee Inc., 2004.

The specific components of this construction-related air quality mitigation measure include:

1. Fugitive Dust Source Controls

    - Apply non-toxic soil stabilizer to all inactive construction areas (i.e., areas with disturbed soil).
    - Following the addition of materials to, or removal of materials from, the surface of outdoor storage piles, said piles shall be effectively stabilized of fugitive dust emissions utilizing non-toxic soil stabilizer.
    - Post a publicly visible sign with the telephone number and person to contact regarding dust complaints; this person shall respond and take corrective action within 24 hours.
    - Prior to final occupancy, the applicant demonstrates that all ground surfaces are covered or treated sufficiently to minimize fugitive dust emissions.
    - All roadways, driveways, sidewalks, etc. being installed as part of project should be completed as soon as possible; in addition, building pads should be laid as soon as possible after grading.
    - Pave all construction access roads at least 100 feet on to the site from the main road.

2. On-Road Mobile Source Controls

    - To the extent feasible, have construction employees work/commute during off-peak hours.
    - Make available on-site lunch trucks during construction to minimize off-site worker vehicle trips.

3. Nonroad Mobile Source Controls

    - Prohibit staging or parking of construction vehicles (including workers' vehicles) on streets adjacent to sensitive receptors such as schools, daycare centers, and hospitals.
    - Prohibit construction vehicle idling in excess of ten minutes.
    - Utilize on-site rock crushing facility during construction to reuse rock/concrete and minimize off-site truck haul trips.

4. Stationary Point Source Controls

    - Specify combination of electricity from power poles and portable diesel- or gasoline-fueled generators using "cleaner burning diesel" fuel and exhaust emission controls.

5. Mobile and Stationary Source Controls

    - Specify combination of construction equipment using "cleaner burning diesel" fuel and exhaust emission controls.
    - Suspend use of all construction equipment during a second-stage smog alert.
    - Utilize construction equipment having the minimum practical engine size (i.e., lowest appropriate horsepower rating for intended job).
    - Require that all construction equipment working on site is properly maintained (including engine tuning) at all times in accordance with manufacturers' specifications and schedules.
    - Prohibit tampering with construction equipment to increase horsepower or to defeat emission control devices.

6. Administrative Controls

    - The contractor or builder shall designate a person or persons to ensure the implementation of all components of the construction-related measure through direct inspections, records reviews, and investigations of complaints.

- **MM-AQ-3. Transportation-Related Measure.**

The primary feature of the transportation-related air quality mitigation measure is the development and construction of at least eight (8) additional sites with FlyAway service similar to the service provided by the Van Nuys FlyAway currently operated by LAWA. The intent of these FlyAway sites is to reduce the quantity of traffic going to and from LAX by providing regional locations where LAX employees and passengers can pick up an LAX-dedicated, clean-fueled bus that will transport them from a FlyAway closer to their home or office into LAX and back. The reduction in vehicle miles traveled (VMT) translates directly into reduced air emissions, as well as a reduction in traffic congestion in the vicinity of the airport. An implementation plan will be developed which provides available details as to how each of the elements of this transportation-related mitigation measure will be implemented and monitored. The estimated emissions reductions associated with this component of the transportation-related air quality mitigation measure are shown in **Table F4.6-19,** Estimated Emissions Reductions (Tons) for Eight New FlyAway Terminals - 2015.

Table F4.6-19

Estimated Emissions Reductions (Tons) for Eight New FlyAway Terminals - 2015

Pollutant[1]	Alternative A	Alternative B	Alternative C	Alternative D
ROG	56.0	56.0	56.0	56.0
NO_X	82.9	82.9	82.9	82.9
CO	1064.5	1064.5	1064.5	1064.5
PM_{10}	152.6	152.6	152.6	152.6
SO_X	1.7	1.7	1.7	1.7

Note: Reductions are the combined totals from all new FlyAway capacity, and may include expansion of the existing FlyAway.

[1] Based on EMFAC2002 Emission Factors for Calendar Year 2015.

Source: Camp Dresser & McKee Inc., 2004.

The required two (2) elements of this transportation-related air quality mitigation measure include:

1. <u>Development of New FlyAway Capacity:</u>

Additional service capacity from at least eight (8) FlyAway service terminals are required under this measure, and all eight must be operational by 2015. LAWA has already begun analyzing potential FlyAway locations. Selection of the eight general locations should be made and included in the overarching air quality mitigation program plan discussed in Mitigation Measure MM-AQ-1, LAX Master Plan Mitigation Plan for Air Quality, as well as in the implementation plan for the transportation-related measures noted above. Final selection of the sites must be completed on a schedule that allows for property acquisition or leasing, terminal design, construction, and implementation of all sites by 2015.

The sites may include, but are not limited to the following:

- West San Fernando Valley/Eastern Ventura County
- Santa Monica/Pacific Palisades
- Central Los Angeles
- Long Beach/South Bay/San Pedro
- East San Fernando Valley
- San Gabriel Valley
- Southeast Los Angeles County
- North Los Angeles County

2. <u>Public Outreach Program for FlyAway Service:</u>

This measure also requires a public outreach program to inform potential users of the terminals about their existence and their locations. The outreach program would be geared towards encouraging the use of the FlyAways with convenience and low cost being the primary selling points.

Other feasible mitigation elements may be developed to ensure that the emission reductions for this transportation-related measure are achieved. These may include, for example:

Transit Ridership measures such as:

- Constructing on-site or off-site bus turnouts, passenger benches, or shelters to encourage transit system use.
- Constructing on-site or off-site pedestrian improvements/including showers for pedestrian employees to encourage walking/bicycling to work by LAX employees.

Highway and Roadway Improvements measures such as:

- Linking ITS with off-airport parking facilities with ability to divert/direct trips to these facilities to reduce traffic/parking congestion and associate air emissions in the immediate vicinity of the airport.
- Expanding ITS/ATCS systems, concentrating on I-405 and I-105 corridors, extending into South Bay and Westside surface street corridors to reduce traffic/parking congestion and associate air emissions in the immediate vicinity of the airport.
- Linking LAX traffic management system with airport cargo facilities, with ability to reroute cargo trips to/from these facilities to reduce traffic/parking congestion and associate air emissions in the immediate vicinity of the airport.
- Developing a program to minimize the use of conventional-fueled fleet vehicles during smog alerts to reduce air emissions from vehicles at the airport.

Parking measures such as:

- Providing free parking and preferential parking locations for ULEV/SULEV/ZEV in all (including employee) LAX lots; providing free charging stations for ZEV; including public outreach to reduce air emissions from automobiles accessing airport parking.
- Measures to reduce air emissions of vehicles in line to exit parking lots such as pay-on-foot (before getting into car) to minimize idle time at parking check out, including public outreach.
- Implementing on-site circulation plan in parking lots to reduce time and associated air emissions from vehicles circulating through lots looking for parking.
- Encouraging video conferencing and providing video conferencing capabilities at various locations on the airport to reduce VMT in associated air emissions in the vicinity of the airport.

Additional Ridesharing measures such as:

- Expanding the airport's ridesharing program to include all airport tenants.

Clean Vehicle Fleets measure such as:

- Promoting commercial vehicles/trucks/vans using terminal areas (LAX and regional intermodal) to install SULEV/ZEV engines to reduce vehicle air emissions.
- Promoting "best-engine" technology (SULEV/ZEV) for rental cars using on-airport RAC facilities to reduce vehicle air emissions.
- Consolidating nonrental car shuttles using SULEV/ZEV engines to reduce vehicle air emissions.

Energy Conservation measures such as:

- Covering, if feasible, any parking structures that receive direct sunlight, to reduce volatile emissions from vehicle gasoline tanks; and installing solar panels on these roofs where feasible to supply electricity or hot water to reduce power production demand and associated air emissions at utility plants.

These other components may require the approval of other federal, state, regional, and/or local government agencies. It should be noted that no air quality benefit (i.e., pollutant reduction) was estimated in this Final EIS/EIR for these additional components; hence, implementation of any of these other components would, in conjunction with the FlyAway terminals described above, provide for additional air quality benefits over and above amount of transportation-related pollutant reductions accounted for in this Final EIS/EIR.

- **MM-AQ-4. Operations-Related Measure.**

The primary component of the operations-related air quality mitigation measure consists of one airside item, the conversion of ground support equipment (GSE) to extremely low emission technology, (such as electric power, fuel cells, or future technological developments). Due to the magnitude of the effort to convert GSE, it must be a phased program and must be completed at build out of the Master Plan in 2015. An implementation plan will be developed which provides available details as to how each of the elements of this operations-related mitigation measure will be implemented and monitored. Because this effort will apply to all GSE in use at LAX, both LAWA-owned equipment and tenant-owned equipment, the effort must begin upon City approval of the LAX Plan with a detailed inventory of the number, types, sizes, and usage history of all GSE at LAX. Because some of the tenant organizations (mainly the major domestic commercial airlines) have signed a memorandum of understanding (MOU) with the California Air Resources Board (CARB) that requires the signatories to replace a proportion of their GSE fleet with clean-fuel alternatives (including zero-emission equipment), it will be necessary for LAWA to evaluate the level of its commitment within the framework of the MOU. Because LAWA anticipates facilitating this component by providing incentives or tenant lease requirements, early negotiations with tenant organizations may allow LAWA to accommodate cost-sharing agreements to implement the GSE conversions in a timely manner, to make LAWA's financial commitment as cost effective as possible. LAWA will assign a GSE coordinator whose responsibility it will be to ensure the successful conversion of GSE in a timely manner. This coordinator must have adequate authority to negotiate on behalf of the city and have sufficient technical support to evaluate technical issues that arise during implementation of this measure. The estimated ranges of emissions reductions quantified for this component of the operations-related measure for Alternatives A, B, C, and D are shown in **Table F4.6-20,** Estimated Ranges of Emissions Reductions for GSE Conversion.

Table F4.6-20

Estimated Ranges of Emissions Reductions for GSE Conversion

Pollutant	Alternatives A, B, C, and D[1] (tons)
ROG	10 - 100
NO_X	300 - 400
CO	500 - 1000
PM_{10}	1 - 10
SO_X	1 - 5

[1] In the build-out year, 2015.

Source: Camp Dresser & McKee Inc., 2004.

The successful conversion of all GSE at LAX to zero emission or extremely low emission equipment by 2015 is the required component of this mitigation measure.

Consideration of other operations-related measures may include components such as contracting with commercial landscapers who operate lowest emitting equipment. Reliable emissions reductions have not been quantified for these other components.

An extensive list of potential mitigation measures was developed by the LAX Master Plan Team during preparation of the Draft EIS/EIR; that list was provided in Attachment X of Technical Report 4, *Air Quality Technical Report*. Based on the list of potential mitigation measures from the Draft EIS/EIR and public comments received on the Draft EIS/EIR, the LAX Master Plan Team refined the list of potential mitigation measures, which was discussed in Section 2.3 of Appendix S-E, *Supplemental Air Quality Impact Analysis*. Taking into account the air quality mitigation measure components recommended in the Supplement to the Draft EIS/EIR and public comments received on the Supplement to the Draft EIS/EIR, this Final EIS/EIR lists above the most "technologically/legally feasible and economically reasonable methods" as selected mitigation measures.

The required elements of the air quality mitigation measures include those components that have readily quantifiable air quality benefits. Those components of the air quality mitigation measures that may also be considered for implementation have air quality benefits that cannot easily be quantified. Air quality modeling was conducted for each of the build alternatives to identify the range of emission reductions associated with the readily quantifiable mitigation components.

With respect to the elements of the air quality mitigation measures that have air quality benefits that cannot readily be quantified, no emission reduction has been calculated for these components in reducing the project's significant air quality impacts and no credit has been accounted for these components in the dispersion modeling. Nonetheless, LAWA may consider implementing these elements. This approach represents a conservative quantitative analysis of air quality impacts following mitigation. For this reason, expected air quality impacts should in fact be less than those predicted in the mitigated analyses presented in this Final EIS/EIR.

4.6.8.1 Mitigated Airport Emissions Inventory

If all of the operational mitigation measure components for on-airport sources were adopted, Alternatives A, B, C, and D would achieve the mitigated on-airport emissions inventories presented in **Table F4.6-21**, Mitigated Operational Emissions Inventories for On-Airport Sources. The percent reductions in emissions as compared to the unmitigated emissions presented in **Table F4.6-9** are also included in **Table F4.6-21** under the "Reduct." columns.

Table F4.6-21
Mitigated Operational Emissions Inventories for On-Airport Sources
(tons per year)

Pollutant	1996 Baseline	Interim Year[1] NA/NP[2]	A	Reduct.	B	Reduct.	C	Reduct.	D	Reduct.
CO	12,999	11,848	9,555	11%	9,459	11%	9,578	11%	9,077	15%
VOC	2,053	1,652	1,385	7%	1,330	7%	1,384	7%	1,513	1%
NO_X	5,492	6,356	5,504	7%	5,503	7%	5,543	7%	5,760	2%
SO_2	355	405	382	0%	382	0%	382	0%	436	0%
PM_{10}	197	181	128	7%	126	7%	132	7%	182	0%

Pollutant	1996 Baseline	Horizon Year 2015 NA/NP	A	Reduct.	B	Reduct.	C	Reduct.	D	Reduct.
CO	12,999	9,451	9,053	18%	9.553	17%	9,412	16%	8,266	20%
VOC	2,053	1,513	1,497	5%	1,578	5%	1,534	4%	1,473	3%
NO_X	5,492	5,729	6,357	5%	6,440	5%	5,999	5%	5,474	6%
SO_2	355	449	494	0%	513	0%	489	0%	436	0%
PM_{10}	197	167	165	4%	168	3%	158	4%	177	2%

NA/NP = No Action/No Project Alternative.

1 Interim year is 2005 for NA/NP and Alternatives A-C, and 2013 for Alternative D.
2 As described in the introduction to Chapter 4, the evaluation of mitigation measures is not a part of the No Action/No Project Alternative analysis. Emissions provided in this table for the No Action/No Project Alternative are the same as those reported in **Table F4.6-9** and have been included here for comparative purposes.

Source: Camp Dresser & McKee Inc., 2004.

4.6.8.2 Mitigated LAX Area Air Dispersion Analysis

Using the mitigated operational, on-airport emission inventory as described above, additional dispersion modeling was performed to determine mitigated concentrations. These concentrations were combined with the mitigated construction-related concentrations, as described in subsection 4.6.8.5, *Construction*, and are presented later in this section in **Table F4.6-24,** Mitigated, Combined Operational and Construction Air Pollutant Concentrations (Including Background).

4.6.8.3 Regional Traffic Emissions

If the required components of the transportation mitigation measure were adopted, each build alternative would achieve the mitigated regional traffic emission inventories presented in **Table F4.6-22**, Mitigated Operational Emissions Inventories for Off-Airport Sources. The mitigated emission inventory includes the effect of those components specifically developed to mitigate traffic impacts as described in Section 4.3.2, *Off-Airport Surface Transportation*, as well as any off-airport measures with air quality benefits detailed above and in Appendix S-E, *Supplemental Air Quality Impact Analysis*.

Table F4.6-22

Mitigated Operational Emissions Inventories for Off-Airport Sources (tons per year)

Pollutant	2005 Adjusted Environmental Baseline	NA/NP[3]	Interim Year Alternative[1,2] A	B	C	D
CO	21,209	31,114	29,405	29,385	28,691	16,719
VOC	1,639	2,795	2,286	2,261	2,163	1,365
NO_X	3,252	4,665	4,420	4,514	4,463	2,628
SO_2	37	52	50	51	50	24
PM_{10}	1,124	1,617	1,833	1,603	1,572	1,752
Pollutant	**2015 Adjusted Environmental Baseline**	**NA/NP[3]**	**Horizon Year 2015 Alternative[1] A**	**B**	**C**	**D**
CO	9,175	15,188	16,368	16,227	16,336	13,166
VOC	724	1,606	1,282	1,271	1,270	1,091
NO_X	1,527	2,368	2,723	2,718	2,741	2,102
SO_2	17	27	30	30	30	24
PM_{10}	1,126	1,780	2,089	2,078	2,060	1,658

NA/NP = No Action/No Project Alternative.

1 These inventories include emissions from on-road mobile sources within the South Coast Air Basin traveling to or from LAX.

2 Interim year is 2005 for NA/NP and Alternatives A-C, and 2013 for Alternative D. Linear interpolation of the 2005 and 2015 Adjusted Environmental Baseline was used to estimate the 2013 Adjusted Environmental Baseline of (in tons per year): CO = 11,671; VOC = 1,076; NO_X = 1,877; SO_2 = 21; and PM_{10} = 1,125. These values are used in assessing the impacts of Alternative D interim year off-airport emissions.

3 As described in the introduction to Chapter 4, the evaluation of mitigation measures is not a part of the No Action/No Project Alternative analysis. Emissions provided in this table for the No Action/No Project Alternative are the same as those reported in **Table F4.6-10** and have been included here for comparative purposes.

Source: Camp Dresser & McKee Inc., 2003.

4.6.8.4 Roadway Intersections

The roadway intersection analysis for unmitigated CO concentrations concluded that off-airport CO impacts at intersections would not exceed the CO NAAQS or CAAQS. Therefore, no additional analysis of mitigation measures for roadway intersections was conducted. The mitigation components listed in Mitigation Measure MM-AQ-3 as described above would further improve air quality at roadway intersections around the airport, ensuring that CO ambient air quality standards would be maintained.

4.6.8.5 Construction

The construction mitigation measure components include options that would reduce off-airport truck emissions as well as on-airport construction emissions. The reductions associated with these measures are presented in **Table F4.6-23**, Mitigated Construction Emissions (Peak Daily, Peak Quarterly, and Annual) - Interim, 2015, and Peak Year. Although the reductions would improve air quality compared to the unmitigated condition, they would not reduce the build alternative emissions below the environmental baseline levels. A dispersion analysis of the proposed construction mitigation measures was also performed to calculate mitigation construction-related concentrations. These concentrations were combined with the mitigated operational concentrations, as described in subsection 4.6.8.2, *Mitigated LAX Area Air Dispersion Analysis*, and are presented in **Table F4.6-24**, Mitigated, Combined Operational and Construction Air Pollutant Concentrations (Including Background), below.

Table F4.6-23

Mitigated Construction Emissions (Peak Daily, Peak Quarterly, and Annual) - Interim, 2015, and Peak Year

	Year	CO	VOC	NO_X	SO_X	PM_{10}
Daily Emissions (lbs/day)						
Alternative A	2004[1]	14,552	2,611	32,012	1,188	7,333
	2005[2]	10,769	1,674	22,014	72	5,222
	2015	3,439	434	4,819	20	1,330
Alternative B	2004[1]	12,700	2,278	27,938	1,037	6,400
	2005[2]	9,398	1,461	19,212	63	4,558
	2015	3,002	379	4,206	17	1,161
Alternative C	2004[1]	13,229	2,373	29,102	1,080	6,667
	2005[2]	9,790	1,521	20,012	66	4,748
	2015	3,127	395	4,381	18	1,209
Alternative D	2005	5,476	847	11,203	31	3,265
	2013[2]	5,458	721	9,025	33	2,715
	2015[3]	-	-	-	-	-
No Action/No Project Alternative[4]	2004[1]	13,253	12,785	3,274	1,857	2,169
	2005[2]	5,267	7,792	3,215	32	556
	2015[3]	-	-	-	-	-
Quarterly Emissions (tons/quarter)						
Alternative A	2004[1]	480	86	1,056	39	242
	2005[2]	345	54	704	2	167
	2015	110	14	154	1	43
Alternative B	2004[1]	419	75	922	34	211
	2005[2]	301	47	615	2	146
	2015	96	12	135	1	37
Alternative C	2004[1]	437	78	960	36	220
	2005[2]	313	49	640	2	152
	2015	100	13	140	1	39
Alternative D	2005	178	28	364	1	106
	2013[2]	178	23	293	1	88
	2015[3]	-	-	-	-	-
No Action/No Project Alternative[4]	2004[1]	431	416	106	60	71
	2005[2]	171	253	104	1	18
	2015[3]	-	-	-	-	-
Annual Emissions (tons/year)						
Alternative A	2004[1]	1,741	312	3,829	142	887
	2005[2]	1,094	170	2,237	7	531

Table F4.6-23

Mitigated Construction Emissions (Peak Daily, Peak Quarterly, and Annual) - Interim, 2015, and Peak Year

	Year	CO	VOC	NO_X	SO_X	PM_{10}
	2015	352	44	494	2	137
Alternative B	2004[1]	1,519	273	3,342	124	765
	2005[2]	955	148	1,952	7	463
	2015	307	39	431	2	119
Alternative C	2004[1]	1,582	284	3,481	129	797
	2005[2]	995	155	2,034	7	482
	2015	320	40	449	2	124
Alternative D	2005	556	86	1,141	3	335
	2013[2]	547	72	905	3	272
	2015[3]	-	-	-	-	-
No Action/No Project Alternative[4]	2004[1]	1,547	1,463	383	215	262
	2005[2]	667	909	405	3	68
	2015[3]	-	-	-	-	-

1 Construction emissions for Alternatives A, B, and C and the No Action/No Project Alternative would peak in the year 2004. Construction emissions for Alternative D would peak in year 2005.

2 Interim year for Alternatives A, B, and C and the No Action/No Project Alternative is the year 2005. Interim year for Alternative D is the year 2013.

3 There would be no construction emissions in 2015 under the No Action/No Project Alternative or Alternative D.

4 As described in the introduction to Chapter 4, the evaluation of mitigation measures is not a part of the No Action/No Project Alternative analysis. Emissions provided in this table for the No Action/No Project Alternative are the same as those reported in **Table F4.6-11** and have been included here for comparative purposes.

Source: Environmental Compliance Solutions, 2003.

4.6.8.6 Combined Operational and Construction Impacts

Table F4.6-23a, Total Operational and Construction Emissions - Mitigated, presents the mitigated combined emissions from on-airport, off-airport and construction sources associated with the No Action/No Project Alternative and with Alternatives A, B, C, and D. **Table F4.6-24** presents the mitigated combined peak concentrations from operation and construction emission sources. Concentrations are combined by adding the peak concentration for each receptor from the operation source analysis to the peak concentration from the same location/receptor in the construction analysis. **Table F4.6-24** presents the highest combined total at any receptor location. It should be noted that for Alternative D in 2013, 1-hour and 8-hour CO, 1-hour and annual NO_2, and 24-hour and annual PM_{10} concentrations are all predicted to be below the environmental baseline concentrations and for Alternative D in 2015, 1-hour and 8-hour CO, 1-hour NO_2, and 24-hour and annual PM_{10} concentrations are all predicted to be below the environmental baseline concentrations.

Table F4.6-23a

Total Operational and Construction Emissions - Mitigated (tons per year)

	Interim Year					Horizon Year 2015				
Pollutant and Source	**NA/NP[1, 2]**	**A**	**B**	**C**	**D**	**NA/NP[1]**	**A**	**B**	**C**	**D**
VOC - On-Airport	1,652	1,385	1,330	1,384	1,513	1,513	1,497	1.578	1,534	1,473
VOC - Off-Airport	2,795	2,286	2,261	2,163	1,365	1,606	1,282	1,271	1,270	1,091
VOC - Construction	909	170	148	155	86	-	44	39	40	-
VOC - Total	5,356	3,841	3,739	3,702	2,964	3,119	2,823	2,888	2,844	2,564
CO - On-Airport	11,842	9,555	9,459	9,578	9,077	9,451	9,053	9,553	9,412	8,266
CO - Off-Airport	31,114	29,405	29,385	28,691	16,719	15,188	16,368	16,227	16,336	13,166
CO - Construction	667	1,094	955	995	556	-	352	307	320	-
CO - Total	43,623	40,054	39,799	39,264	26,352	24,639	25,773	26,087	26,068	21,432
NO_X- On-Airport	6,356	5,504	5,503	5,543	5,760	5,729	6,357	6,440	5,999	5,474
NO_X- Off-Airport	4,665	4,420	4,514	4,463	2,628	2,368	2,723	2,718	2,741	2,102
NO_X- Construction	405	2,237	1,952	2,034	1141	-	494	431	449	-
NO_X- Total	11,426	12,161	11,969	12,040	9,529	8,097	9,574	9,589	9,189	7,576
SO_2 - On-Airport	405	382	382	382	436	449	494	513	489	436
SO_2 - Off-Airport	52	50	51	50	24	27	30	30	30	24
SO_2 - Construction	3	7	7	7	3	-	2	2	2	-
SO_2 - Total	460	439	440	439	463	476	526	545	521	460
PM_{10} - On-Airport	181	128	126	132	182	167	165	168	158	177
PM_{10} - Off-Airport	1,617	1,833	1,603	1,572	1,752	1,780	2,089	2,078	2,060	1,658
PM_{10} - Construction	68	531	463	482	335	-	137	119	124	-
PM_{10} - Total	1,866	2,492	2,192	2,186	2,269	1,947	2,391	2,365	2,342	1,835

1 NA/NP=No Action/No Project Alternative.

2 As described in the introduction to Chapter 4, the evaluation of mitigation measures is not a part of the No Action/No Project Alternative analysis. Emissions provided in this table for the No Action/No Project Alternative are the same as those reported in **Table F4.6-11a** and have been included here for comparative purposes.

3 Interim year is 2005 for NA/NP and Alternatives A, B, and C and 2013 for Alternative D.

Source: Camp Dresser & McKee Inc., 2004.

Table F4.6-24

Mitigated, Combined Operational and Construction Air Pollutant Concentrations (Including Background)

Pollutant	Averaging Period	NAAQS/ CAAQS	1996 Baseline	Interim Year[1] Alternative NA/NP[2]	Interim Year A	Interim Year B	Interim Year C	Interim Year D	Horizon Year 2015 Alternative NA/NP[2]	Horizon Year 2015 A	Horizon Year 2015 B	Horizon Year 2015 C	Horizon Year 2015 D
CO (ppm)	8-hr	9 / 9.0	8.5	8.3	9.2	7.9	8.3	4.8	6.0	6.0	5.9	7.0	4.33
	1-hr	35 / 20	10.6	17.2	17.8	15.1	15.6	7.3	13.3	15.9	19.7	21.5	6.6
NO_2 (ppm)	Annual	0.053 / NA	0.026	0.041	0.064	0.060	0.089	0.045	0.038	0.049	0.040	0.051	0.035
	1-hr[3]	NA / 0.25	0.13	0.16	0.15	0.13	0.14	0.16	0.083	0.11	0.11	0.11	0.15
SO_2 (ppm)	Annual	0.030 / NA	0.0025	0.008	0.0052	0.0070	0.0098	0.004	0.005	0.0055	0.0062	0.0069	0.004
	24-hr	0.14 / 0.04	0.007	0.021	0.020	0.022	0.026	0.011	0.011	0.022	0.023	0.028	0.011
	3-hr	0.5 / NA	0.017	0.066	0.073	0.083	0.100	0.031	0.033	0.062	0.073	0.088	0.031
	1-hr	NA / 0.25	0.021	0.156	0.098	0.112	0.136	0.048	0.051	0.135	0.185	0.118	0.049
PM_{10} ($\mu g/m^3$)	AAM	50 / NA	36	43	76	86	82	42	36	37	34	37	35
	AGM	NA / 20	34	39	72	82	78	38	32	33	30	33	31
	24-hr	150 / 50	82	94	336	246	232	89	67	69	63	66	65

NA/NP = No Action/No Project Alternative.
AAM = Annual Arithmetic Mean.
AGM = Annual Geometric Mean.
CAAQS = California Ambient Air Quality Standards.
NAAQS = National Ambient Air Quality Standards.

1 Interim year is 2005 for NA/NP and Alternatives A, B, and C and 2013 for Alternative D.
2 As described in the introduction to Chapter 4, the evaluation of mitigation measures is not a part of the No Action/No Project Alternative analysis. Concentrations provided in this table for the No Action/No Project Alternative are the same as those reported in **Table F4.6-12** and have been included here for comparative purposes.
3 Future concentration results from EDMS modeling and ISC-OLM Modeling. See Attachments P and Q to Technical Report S-4, *Supplemental Air Quality Technical Report*, for supplemental 1-hour NO_2 modeling analyses.

Source: Camp Dresser & McKee Inc., 2004.

4.6.8.7 Environmental Impacts of Air Quality Mitigation Measures

A number of the air quality mitigation measure components analyzed herein could have impacts to other environmental aspects of the project. The most likely impacts would be to energy consumption, traffic, and roadway noise. These impacts are discussed below. Energy impacts are identified in Section 4.17.1, *Energy Supply*. Section 4.3, *Surface Transportation*, and Section 4.1, *Noise*, provide detailed analyses of traffic and noise impacts associated with the LAX Master Plan build alternatives.

Potential impacts to energy from the air quality mitigation measures analyzed herein would be beneficial or neutral. Reductions in energy use and improvements to surface transportation would result in beneficial impacts. The conversion from one energy source to another would be a neutral impact, because, while it would reduce consumption of one form of energy as compared to unmitigated conditions, it would increase consumption of another form of energy. Air quality mitigation measures would also result in beneficial noise impacts from surface transportation improvements. The measures that would contribute to these impacts are identified below.

The reduced engine taxi and clean aircraft incentive measures would reduce jet fuel consumption. Implementation of local and regional clean-fuel smart shuttles, and establishment of off-airport intermodal terminals would reduce on-road traffic. These reductions would decrease roadway noise as well as gasoline and diesel consumption. Various traffic and parking management measures would minimize congestion, thereby reducing gasoline and diesel consumption.

The conversion of GSE to electric power would reduce on-airport fossil fuel (diesel, gasoline, propane (LPG), and LNG/CNG) consumption, and increase electric power consumption. The clean motor vehicle fleet measures would reduce gasoline and diesel consumption, and would increase LNG/CNG, LPG and electric power consumption. Implementation of clean-fuel smart shuttles would have similar impacts, although to a lesser extent.

The impacts on fuel use are not expected to be significantly adverse. Increases in electric power consumption would partially occur during off-peak hours (e.g., GSE charging). The overall increase in the consumption of CNG/LNG, LPG and electric power associated with implementation of the air quality mitigation measures would be relatively small compared to the total demand by LAX and would be accommodated by the existing or proposed LAX Master Plan infrastructure. However, the additional increase in electricity would exacerbate the additional load to the electrical power distribution system that would occur under the build alternatives under unmitigated conditions. These impacts are identified in Section 4.17.1, *Energy Supply*. Implementation of LAX Master Plan Commitment E-2, Coordination with Utility Providers (Alternatives A, B, C, and D), would ensure that adequate electrical distribution facilities are available to support the electricity needs associated with post-mitigation conditions under all of the build alternatives. Therefore, no significant energy impacts would occur.

As indicated above, the air quality mitigation measures analyzed herein would also reduce traffic volume and noise. These effects would be beneficial. Section 4.3, *Surface Transportation*, and Section 4.1, *Noise*, provide detailed analyses of traffic and noise impacts associated with the LAX Master Plan build alternatives.

4.6.9 Level of Significance After Mitigation

Below is a discussion of the level of significance after mitigation for each alternative, assuming that the modeled Mitigation Measures, or substitute measures with equivalent emissions reductions, are implemented. This determination of significance may change when the final mitigation plan has been developed and approved.

Below is a discussion of the level of significance after mitigation for each alternative, assuming that the modeled mitigation measures are implemented. The significance findings are summarized in **Table F4.6-25**, Significance of Air Quality Impacts After Mitigation in Interim Year - Emissions; **Table F4.6-26**, Significance of Air Quality Impacts After Mitigation in Interim Year - Concentrations; **Table F4.6-27**, Significance of Air Quality Impacts After Mitigation in 2015 - Emissions; and **Table F4.6-28**, Significance of Air Quality Impacts After Mitigation in 2015 - Concentrations.

Table F4.6-25

Significance of Air Quality Impacts After Mitigation in Interim Year - Emissions

	Operations[1]										**Construction[2]**				
	On-Airport					**Off-Airport**									
	Alternative					**Alternative**					**Alternative**				
Criteria Pollutant	**NA/NP[3]**	**A**	**B**	**C**	**D**	**NA/NP[3]**	**A**	**B**	**C**	**D**	**NA/NP[3]**	**A**	**B**	**C**	**D**
CO[4]	<T	LS	LS	LS	LS	>T	S	S	S	S	>T	S	S	S	S
VOC[4]	<T	LS	LS	LS	LS	>T	S	S	S	S	>T	S	S	S	S
NO_X	>T	S	S	S	S	>T	S	S	S	S	>T	S	S	S	S
SO_2[4]	>T	S	S	S	S	<T	LS	LS	LS	LS	>T	S	S	S	LS
PM_{10}[4]	<T	LS	LS	LS	LS	>T	S	S	S	S	>T	S	S	S	S

NA/NP = No Action/No Project Alternative.
LS = Less than Significant.
S = Significant.
NA = Not applicable.
>T = Incremental impacts for the No Action/No Project Alternative would be greater than the emission thresholds in **Table F4.6-8**.
<T = Incremental impacts for the No Action/No Project Alternative would be less than the emission thresholds in **Table F4.6-8**.

1 Interim year is 2005 for NA/NP and Alternatives A, B, and C and 2013 for Alternative D.
2 Construction impacts are based upon the peak emissions year: 2004 for NA/NP and Alternatives A, B, and C and 2005 for Alternative D.
3 As described in the introduction to Chapter 4, the evaluation of mitigation measures is not a part of the No Action/No Project Alternative analysis. Exceedances of thresholds provided in this table for the No Action/No Project Alternative are the same as those presented in **Table F4.6-14** and have been included here for comparative purposes.
4 Emissions: significance determined by comparison of incremental emissions to the thresholds in **Table F4.6-8**.

Source: Camp Dresser & McKee Inc., 2004.

Table F4.6-26

Significance of Air Quality Impacts After Mitigation in Interim Year - Concentrations

Criteria Pollutant	On-Airport Operations and Construction[2] Alternative					Off-Airport Alternative				
	NA/NP[3]	A	B	C	D	NA/NP[3]	A	B	C	D
CO[1]	<T	S	LS	LS	LS	<T	LS	LS	LS	LS
VOC[1]	NM	NM	NM	NM	NM	NA	NA	NA	NA	NA
NO_2[1]	<T[4]	S[4]	S[4]	S[4]	LS[4]	NA	NA	NA	NA	NA
SO_2[1]	<T	LS	LS	LS	LS	NA	NA	NA	NA	NA
PM_{10}[1]	>T	S	S	S	S	NA	NA	NA	NA	NA

Note: Construction impacts are based upon the peak emissions year: 2004 for NA/NP and Alternatives A, B, and C, and 2005 for Alternative D.

NA/NP = No Action/No Project Alternative.
LS = Less than Significant.
S = Significant.
NA = Not applicable.
NM = Not modeled.
>T = Incremental impacts for the No Action/No Project Alternative would be greater than the emission thresholds in **Table F4.6-8**.
<T = Incremental impacts for the No Action/No Project Alternative would be less than the emission thresholds in **Table F4.6-8**.

1 Dispersion: significance determined by comparison of predicted ambient concentration to NAAQS and CAAQS in **Table F4.6-3**.
2 Interim year is 2005 for NA/NP and Alternatives A, B, and C, and 2013 for Alternative D.
3 As described in the introduction to Chapter 4, the evaluation of mitigation measures is not a part of the No Action/No Project Alternative analysis. Exceedances of thresholds provided in this table for the No Action/No Project Alternative are the same as those presented in **Table F4.6-15** and have been included here for comparative purposes.
4 Significance based on NO_2 predictions from EDMS modeling and OLM modeling; supplemental 1-hour NO_2 analysis presented in Attachments P and Q to Technical Report S-4, *Supplemental Air Quality Technical Report*.

Source: Camp Dresser & McKee Inc., 2003.

Table F4.6-27

Significance of Air Quality Impacts After Mitigation in 2015 - Emissions

	Operations[1]										Construction[2]				
	On-Airport					Off-Airport									
Criteria	Alternative					Alternative					Alternative				
Pollutant	NA/NP[3]	A	B	C	D	NA/NP[3]	A	B	C	D	NA/NP[3]	A	B	C	D[2]
CO[1]	<T	LS	LS	LS	LS	>T	S	S	S	S	NA	S	S	S	NA
VOC[1]	<T	LS	LS	LS	LS	>T	S	S	S	S	NA	S	S	S	NA
NO_x[1]	>T	S	S	S	**LS**	>T	S	S	S	S	NA	S	S	S	NA
SO_2[1]	>T	S	S	S	S	<T	LS	LS	LS	LS	NA	LS	LS	LS	NA
PM_{10}[1]	<T	LS	LS	LS	LS	>T	S	S	S	S	NA	S	S	S	NA

NA/NP = No Action/No Project Alternative.
LS = Less than Significant.
S = Significant.
NA = Not applicable.
>T = Incremental impacts for the No Action/No Project Alternative would be greater than the emission thresholds in **Table F4.6-8**.
<T = Incremental impacts for the No Action/No Project Alternative would be less than the emission thresholds in **Table F4.6-8**.

Bold notes a change from the unmitigated significance determination.

1 Emissions: significance determined by comparison of incremental emissions to the thresholds in **Table F4.6-8**.
2 There are no construction activities in 2015 under the No Action/No Project Alternative or Alternative D.
3 As described in the introduction to Chapter 4, the evaluation of mitigation measures is not a part of the No Action/No Project Alternative analysis. Significance values provided in this table are the same as those presented in **Table F4.6-16** and have been included here for comparative purposes.

Source: Camp Dresser & McKee Inc., 2003.

Table F4.6-28

Significance of Air Quality Impacts After Mitigation in 2015 - Concentrations

Criteria Pollutant	On-Airport Operations and Construction[1] Alternative					Off-Airport Alternative				
	NA/NP[2]	A	B	C	D	NA/NP[2]	A	B	C	D
CO[3]	<T	LS	LS	S	LS	<T	LS	LS	LS	LS
VOC[3]	NM	NM	NM	NM	NM	NA	NA	NA	NA	NA
NO_2[3]	<T[4]	LS[4]	LS[4]	LS[4]	LS[4]	NA	NA	NA	NA	NA
SO_2[3]	<T	LS	LS	LS	LS	NA	NA	NA	NA	NA
PM_{10}[3]	>T	S	S	S	S	NA	NA	NA	NA	NA

NA/NP = No Action/No Project Alternative.
LS = Less than Significant.
S = Significant.
NA = Not applicable.
NM = Not modeled.
>T = Incremental impacts for the No Action/No Project Alternative would be greater than the emission thresholds in **Table F4.6-8**.
<T = Incremental impacts for the No Action/No Project Alternative would be less than the emission thresholds in **Table F4.6-8**.

1 There are no construction activities in 2015 under Alternative D.
2 As described in the introduction to Chapter 4, the evaluation of mitigation measures is not a part of the No Action/No Project Alternative analysis. Significance values provided in this table are the same as those presented in **Table F4.6-17** and have been included here for comparative purposes.
3 Dispersion: significance determined by comparison of predicted ambient concentration to NAAQS and CAAQS in **Table F4.6-3**.
4 Significance based on NO_2 predictions from EDMS modeling and OLM modeling; supplemental 1-hour NO_2 analysis presented in Attachments P and Q to Technical Report S-4, *Supplemental Air Quality Technical Report*.

Source: Camp Dresser & McKee Inc., 2003.

4.6.9.1 Alternative A - Added Runway North

Mitigated Airport Emissions Inventory And Dispersion Analysis

Operations - 2005

As indicated in **Table F4.6-21**, the mitigated inventory for Alternative A in 2005 indicates that CO, VOC, and PM_{10} emissions are estimated to be less than the environmental baseline emissions. The inventory indicates that the incremental increase in NO_X and SO_2 would exceed the operations emissions threshold presented in **Table F4.6.8**. Therefore, the Alternative A mitigated emissions of NO_X and SO_2 would be significant in 2005. In comparing mitigated emissions from on-airport sources under Alternative A for 2005 to emissions under the No Action/No Project Alternative, emissions of CO, VOC, NO_X, SO_2, and PM_{10} from on-airport sources under Alternative A are estimated to be lower than emissions under the No Action/No Project Alternative.

As indicated in **Table F4.6-22**, the differences in mitigated regional traffic emissions of CO, VOC, NO_X, and PM_{10} between Alternative A and the adjusted environmental baseline would be higher than the operations emissions thresholds presented in **Table F4.6-8**. The increase in SO_2 and emissions between Alternative A and the adjusted environmental baseline conditions would be less than the operational emissions threshold presented in **Table F4.6-8**. Therefore, the Alternative A regional emissions of CO, VOC, NO_X, and PM_{10} would remain significant in 2005. In comparing the mitigated regional traffic emissions under Alternative A for 2005 to emissions under the No Action/No Project Alternative, emissions of CO, VOC, NO_X, and SO_2 under Alternative A are estimated to be lower than emissions under the No Action/No Project Alternative; however, emissions of PM_{10} under Alternative A are estimated to be greater than emissions under the No Action/No Project Alternative.

Operations - 2015

As indicated in **Table F4.6-21**, the mitigated inventory for Alternative A in 2015 indicates that CO, VOC, and PM_{10} emissions are estimated to be less than the environmental baseline emissions. The incremental increase in NO_X and SO_2 for this alternative would remain above the operations emissions thresholds presented in **Table F4.6-8**. Therefore, Alternative A emissions of NO_X and SO_2 would remain significant in 2015. In comparing mitigated emissions from on-airport sources under Alternative A for 2015 to emissions under the No Action/No Project Alternative, emissions of CO, VOC, and PM_{10} from on-airport sources under Alternative A are estimated to be lower than those under the No Action/No Project Alternative; however, emissions of NO_X and SO_2 under Alternative A are estimated to be greater than emissions under the No Action/No Project Alternative.

As indicated in **Table F4.6-22**, the difference in mitigated regional traffic emissions of CO, VOC, NO_X, and PM_{10} between Alternative A and the adjusted environmental baseline would be higher than the operations emissions thresholds presented in **Table F4.6-8**. The increase in SO_2 and emissions between Alternative A and the adjusted environmental baseline conditions would be less than the operational emissions threshold presented in **Table F4.6-8**. Therefore, the Alternative A regional emissions of CO, VOC, NO_X, and PM_{10} would remain significant in 2015. In comparing the mitigated regional traffic emissions under Alternative A for 2015 to emissions under the No Action/No Project Alternative, emissions of VOC under Alternative A are estimated to be lower than emissions under the No Action/No Project Alternative; however, emissions of CO, NO_X, SO_2, and PM_{10} under Alternative A are estimated to be greater than emissions under the No Action/No Project Alternative.

Construction

As indicated in **Table F4.6-23**, the difference between Alternative A mitigated construction emissions and the environmental baseline emissions would be higher than the construction emissions thresholds presented in **Table F4.6-8**, for both horizon years, and the year of maximum construction emissions (2004). Therefore, mitigated construction emissions of CO, VOC, NO_X, SO_2, and PM_{10} would remain significant for Alternative A. In comparing mitigated construction emissions under Alternative A for the peak year to construction emissions under the No Action/No Project Alternative, annual emissions of CO, NO_X, and PM_{10} from construction-related sources under Alternative A are estimated to be greater than emissions under the No Action/No Project Alternative, and annual emissions of VOC and SO_2 from construction-related sources under Alternative A are estimated to be lower than emissions under the No Action/No Project Alternative.

Combined Concentrations - 2005

The combined, peak concentrations of CO, NO_2, and SO_2 for construction and operation sources, when added to the 2005 future background concentrations, as presented in **Table F4.6-24,** are predicted to meet the 1-hour CO CAAQS, and 1-hour NO_2 CAAQS, and all SO_2 CAAQS. The maximum concentrations are predicted to exceed the 8-hour CO CAAQS, the environmental baseline PM_{10} concentrations, and the 24-hour and annual PM_{10} CAAQS. The combined, peak concentrations of CO, NO_2, and SO_2 for construction and operation sources under Alternative A, when added to the 2005 future background concentrations, as presented in **Table F4.6-24,** are predicted to meet the 1-hour CO NAAQS and the SO_2 NAAQS for all averaging periods. The maximum concentrations are predicted to exceed the 8-hour CO NAAQS, the annual NO_2[337] NAAQS, and the 24-hour and annual PM_{10} NAAQS. In comparing the combined, peak concentrations for operations and construction sources, when added to the 2005 future background concentrations, under Alternative A for 2005 to those under the No Action/No Project Alternative, the maximum 1-hour and 8-hour CO, annual NO_2, 3-hour SO_2, and annual and 24-hour PM_{10} concentrations under Alternative A are estimated to be greater than those under the No Action/No Project Alternative, while the maximum annual and 24-hour SO_2 concentrations under Alternative A are estimated to be lower than those under the No Action/No Project Alternative.

Combined Concentrations - 2015

The combined, peak concentrations of CO, NO_2, SO_2, and PM_{10} for operational and construction sources, when added to the 2015 future background concentrations, as presented in **Table F4.6-24**, are not

337 See Attachment P to Technical Report S-4, *Supplemental Air Quality Technical Report*, for supplemental 1-hour NO_2 dispersion analysis.

predicted to exceed the SO_2 CAAQS for all averaging periods, the 1-hour and 8-hour CO, CAAQS, or the 1-hour NO_2 CAAQS.[338] The maximum PM_{10} concentrations for Alternative A, when added to future background concentrations, are predicted to exceed the 24-hour and annual PM_{10} CAAQS in 2015. The combined, peak concentrations of CO, NO_2, SO_2, and PM_{10} for operational and construction sources, when added to the 2015 future background concentrations, as presented in **Table F4.6-24**, are not predicted to exceed the SO_2 NAAQS for all averaging periods, the 1-hour and 8-hour CO NAAQS, the annual NO_2 NAAQS, or the annual and 24-hour PM_{10} NAAQS. In comparing the combined, peak concentrations for operations and construction sources, when added to the 2015 future background concentrations, under Alternative A for 2015 to those under the No Action/No Project Alternative, the maximum annual NO_2, 1-hour CO, annual SO_2, and annual and 24-hour PM_{10} concentrations under Alternative A is predicted to be greater than that under the No Action/No Project Alternative; and the maximum 8-hour CO and 24-hour and 3-hour SO_2 concentrations under Alternative A are predicted to be the same as those under the No Action/No Project Alternative.

Overall Significance of Alternative A After Mitigation

Under Alternative A, even though substantial emission reductions, particularly of NO_X, could be realized from the airside mitigation measures, on-airport emissions of NO_X and SO_2 from airport operations would remain significant after mitigation, primarily due to increases in aircraft operations under this alternative. Similarly, even though substantial emission reductions, particularly of NO_X, could be realized from the off-airport mitigation measures, these reductions would not offset the increase in traffic associated with Alternative A and off-airport emissions of all criteria pollutants except SO_2 would remain significant after mitigation. The construction mitigation measures would account for substantial emission reductions, particularly of NO_X and PM_{10}. However, due to the magnitude of construction activities, all criteria pollutant emissions from construction would remain significant. Under Alternative A, concentrations from on-airport operations and construction activities combined would be significant for CO, NO_2, and PM_{10}.

CEQA Conclusions

Relative to the CEQA analysis, Alternative A would exceed the Thresholds of Significance presented in subsection 4.6.4.1 with respect to CO, VOC, NO_X, NO_2, SO_2, PM_{10}, and O_3 (based on precursors VOC and NO_X) after the application of mitigation measures discussed above, due to the following operational and construction-related findings:

- On-airport emissions from operational sources would be significant for NO_X and SO_2.
- Off-airport traffic emissions would be significant for CO, VOC, NO_X, and PM_{10}.
- Construction emissions would be significant for CO, VOC, NO_X, SO_2, and PM_{10}.
- Concentrations from on-airport operational and construction-related sources combined would be significant for CO, NO_2, and PM_{10}.

NEPA Conclusions

Relative to the NEPA analysis, the following findings were identified under Alternative A:

- Total mitigated emissions of CO, NO_X, SO_2, and PM_{10} estimated for Alternative A would be greater than emissions estimated for the No Action/No Project Alternative, as presented in **Table F4.6-23a**. Total VOC emissions would be lower than those estimated for the No Action/No Project Alternative.
- The predicted peak concentrations for combined operations and construction mitigated emissions for Alternative A, when added to the future background concentrations, would be greater than the NAAQS for 8-hour CO, annual NO_2, and annual and 24-hour PM_{10} and be lower than the NAAQS for 1-hour CO and annual, 24-hour, and 3-hour SO_2.

---

338 See Attachment P to Technical Report S-4, *Supplemental Air Quality Technical Report*, for supplemental 1-hour NO_2 dispersion analysis.

4.6.9.2 Alternative B - Added Runway South

Mitigated Airport Emissions Inventory And Dispersion Analysis

Operations - 2005

As indicated in **Table F4.6-21**, the mitigated inventory for this alternative in 2005 indicates that CO, VOC, and PM_{10} emissions are estimated to be less than the environmental baseline emissions. The inventory indicates that the incremental increase in NO_X and SO_2 would exceed the operations emissions threshold presented in **Table F4.6-8**. Therefore, the Alternative B mitigated emissions of NO_X and SO_2 would be significant in 2005. In comparing mitigated emissions from on-airport sources under Alternative B for 2005 to emissions under the No Action/No Project Alternative, emissions of CO, VOC, NO_X, SO_2, and PM_{10} from on-airport sources under Alternative B are estimated to be lower than emissions under the No Action/No Project Alternative.

As indicated in **Table F4.6-22**, the difference in mitigated regional traffic emissions of CO, VOC, NO_X, and PM_{10} between Alternative B and the adjusted environmental baseline would be higher than the operations emissions thresholds presented in **Table F4.6-8**. Therefore, the Alternative B regional emissions of CO, VOC, NO_X, and PM_{10} would remain significant in 2005. In comparing the mitigated regional traffic emissions under Alternative B for 2005 to emissions under the No Action/No Project Alternative, emissions of CO, VOC, NO_X, SO_2 and PM_{10} under Alternative B are estimated to be lower than emissions under the No Action/No Project Alternative.

Operations - 2015

As indicated in **Table F4.6-21**, the mitigated inventory for Alternative B in 2015 indicates that CO, VOC, and PM_{10} emissions are estimated to be less than the environmental baseline emissions. The incremental increase in NO_X and SO_2 for Alternative B would remain above the operations emissions thresholds presented in **Table F4.6-8**. Therefore, Alternative B emissions of NO_X and SO_2 would remain significant in 2015. In comparing mitigated emissions from on-airport sources under Alternative B for 2015 to emissions under the No Action/No Project Alternative, emissions of CO, VOC, NO_X, SO_2, and PM_{10} from on-airport sources under Alternative B are estimated to be greater than emissions under the No Action/No Project Alternative.

As indicated in **Table F4.6-22**, the difference in mitigated regional traffic emissions of CO, VOC, NO_X, and PM_{10} between Alternative B and the adjusted environmental baseline would be higher than the operations emissions thresholds presented in **Table F4.6-8**. Therefore, the Alternative B regional emissions of CO, VOC, NO_X, and PM_{10} would remain significant in 2015. In comparing the mitigated regional traffic emissions under Alternative B for 2015 to emissions under the No Action/No Project Alternative, emissions of CO, NO_X, SO_2 and PM_{10} under Alternative B are estimated to be greater than emissions under the No Action/No Project Alternative and emissions of VOC under Alternative B are estimated to be lower than emissions under the No Action/No Project Alternative.

Construction

As indicated in **Table F4.6-23**, the difference between Alternative B mitigated emissions and the environmental baseline emissions would be higher than the construction emissions thresholds presented in **Table F4.6-8**, for both horizon years, and the year of maximum construction emissions (2004). Therefore, mitigated construction emissions of CO, VOC, NO_X, SO_2, and PM_{10} would remain significant for Alternative B. In comparing mitigated construction emissions under Alternative B for the peak year to construction emissions under the No Action/No Project Alternative, annual emissions of NO_X and PM_{10} from construction-related sources under Alternative B are estimated to be greater than emissions under the No Action/No Project Alternative, and annual emissions of CO, VOC, and SO_2 from construction-related sources under Alternative B are estimated to be lower than emissions under the No Action/No Project Alternative.

Combined Concentrations - 2005

The combined, peak concentrations of CO, NO_2, and SO_2 for construction and operation sources when added to the 2005 future background concentrations, as presented in **Table F4.6-24,** are predicted to meet the 1-hour and 8-hour CO CAAQS, and 1-hour NO_2 CAAQS, and all SO_2 CAAQS. The maximum concentrations are predicted to exceed the environmental baseline PM_{10} concentrations, and the 24-hour and annual PM_{10} CAAQS. The combined, peak concentrations of CO, NO_2, and SO_2 for construction and operation sources under Alternative B, when added to the 2005 future background concentrations, as presented in **Table F4.6-12,** are predicted to meet the 1-hour and 8-hour CO NAAQS and the SO_2 NAAQS for all averaging periods. The maximum concentrations are predicted to exceed the annual NO_2[339] NAAQS, and the 24-hour and annual PM_{10} NAAQS. In comparing the combined, peak concentrations for operations and construction sources, when added to the 2005 future background concentrations, under Alternative B for 2005 to those under the No Action/No Project Alternative, the maximum annual NO_2, 24-hour and 3-hour SO_2, and annual and 24-hour PM_{10} concentrations under Alternative B are estimated to be greater than those under the No Action/No Project Alternative, while the maximum 1-hour and 8-hour CO and annual SO_2 concentrations under Alternative B are estimated to be lower than those under the No Action/No Project Alternative.

Combined Concentrations - 2015

The combined, peak concentrations of CO, NO_2, SO_2, and PM_{10} for operational and construction sources, when added to the 2015 future background concentrations, as presented in **Table F4.6-24**, are not predicted to exceed the SO_2, CAAQS for all averaging periods, the 1-hour and 8-hour CO CAAQS, or the 1-hour NO_2 CAAQS.[340] The maximum PM_{10} concentrations for Alternative B, when added to future background concentrations, are predicted to exceed the 24-hour and annual PM_{10} CAAQS in 2015. The combined, peak concentrations of CO, NO_2, SO_2, and PM_{10} for operational and construction sources, when added to the 2015 future background concentrations, as presented in **Table F4.6-24**, are not predicted to exceed the SO_2 NAAQS for all averaging periods, the 1-hour and 8-hour CO NAAQS, the annual NO_2 NAAQS, or the annual and 24-hour PM_{10} NAAQS. In comparing the combined, peak concentrations for operations and construction sources, when added to the 2015 future background concentrations, under Alternative B for 2015 to those under the No Action/No Project Alternative, the maximum 1-hour CO, annual NO_2, and annual, 24-hour, and 3-hour SO_2 concentrations under Alternative B are predicted to be greater than those under the No Action/No Project Alternative; the maximum 8-hour CO and annual and 24-hour PM_{10} concentrations under Alternative B are predicted to be lower than those under the No Action/No Project Alternative.

Overall Significance of Alternative B After Mitigation

As with Alternative A, under Alternative B, even though substantial emission reductions, particularly of NO_X, could be realized from the airside mitigation measures, on-airport emissions of NO_X and SO_2 from airport operations would remain significant after mitigation, primarily due to increases in aircraft operations under this alternative. Similarly, even though substantial emission reductions, particularly of NO_X, could be realized from the off-airport mitigation measures, these reductions would not offset the increase in traffic associated with Alternative B and off-airport emissions of all criteria pollutants except SO_2 would remain significant after mitigation. The construction mitigation measures would account for substantial emission reductions, particularly of NO_X and PM_{10}. However, due to the magnitude of construction activities, all criteria pollutant emissions from construction would remain significant. Under Alternative B, concentrations from on-airport operations and construction activities combined would be significant for NO_2 and PM_{10}.

CEQA Conclusions

Relative to the CEQA analysis, Alternative B would exceed the Thresholds of Significance presented in subsection 4.6.4.1 with respect to CO, VOC, NO_X, NO_2, SO_2, PM_{10}, and O_3 (based on precursors VOC and NO_X) after the application of mitigation measures discussed above, due to the following operational and construction-related findings:

- On-airport emissions from operational sources would be significant for NO_X and SO_2.
- Off-airport traffic emissions would be significant for CO, VOC, NO_X, and PM_{10}.
- Construction emissions would be significant for CO, VOC, NO_X, SO_2, and PM_{10}.

---

339 See Attachment P to Technical Report S-4, *Supplemental Air Quality Technical Report*, for supplemental 1-hour NO_2 dispersion analysis.

340 See Attachment P to Technical Report S-4, *Supplemental Air Quality Technical Report*, for supplemental 1-hour NO_2 dispersion analysis.

- Concentrations from on-airport operational and construction-related sources combined would be significant for NO_2 and PM_{10}.

NEPA Conclusions

Relative to the NEPA analysis, the following findings were identified under Alternative B:

- Total mitigated emissions of CO, NO_X, SO_2, and PM_{10} estimated for Alternative B would be greater than emissions estimated for the No Action/No Project Alternative, as presented in **Table F4.6-23a**. Total VOC emissions would be lower than those estimated for the No Action/No Project Alternative.
- The predicted peak concentrations for combined operations and construction mitigated emissions for Alternative B, when added to the future background concentrations, would be greater than the NAAQS for annual NO_2, and annual and 24-hour PM_{10} and be lower than the NAAQS for 1-hour and 8-hour CO and annual, 24-hour, and 3-hour SO_2.

4.6.9.3 Alternative C - No Additional Runway

<u>Mitigated Airport Emissions Inventory And Dispersion Analysis</u>

Operations - 2005

As indicated in **Table F4.6-21**, the mitigated inventory for Alternative C in 2005 indicates that CO, VOC, and PM_{10} emissions are estimated to be less than the environmental baseline emissions. The inventory indicates that the incremental increase in NO_X and SO_2 would exceed the operations emissions threshold presented in **Table F4.6-8.** Therefore, the Alternative C mitigated emissions of NO_X and SO_2 would be significant in 2005. In comparing mitigated emissions from on-airport sources under Alternative C for 2005 to emissions under the No Action/No Project Alternative, emissions of CO, VOC, NO_X, SO_2, and PM_{10} from on-airport sources under Alternative C are estimated to be lower than emissions under the No Action/No Project Alternative.

As indicated in **Table F4.6-22**, the differences in mitigated regional traffic emissions of CO, VOC, NO_X, and PM_{10} between Alternative C and the adjusted environmental baseline would be higher than the operations emissions thresholds presented in **Table F4.6-8**. Therefore, the Alternative C regional emissions of CO, VOC, NO_X, and PM_{10} would remain significant in 2005. In comparing the mitigated regional traffic emissions under Alternative C for 2005 to emissions under the No Action/No Project Alternative, emissions of CO, VOC, NO_X, SO_2 and PM_{10} under Alternative C are estimated to be lower than emissions under the No Action/No Project Alternative.

Operations - 2015

As indicated in **Table F4.6-21**, the mitigated inventory for Alternative C in 2015 indicates that CO, VOC, and PM_{10} emissions are estimated to be less than the environmental baseline emissions. The incremental increase in NO_X and SO_2 for Alternative C would remain above the operations emissions thresholds presented in **Table F4.6-8**. Therefore, Alternative C emissions of NO_X and SO_2 would remain significant in 2015. In comparing mitigated emissions from on-airport sources under Alternative C for 2005 to emissions under the No Action/No Project Alternative, emissions of VOC, NO_X, and SO_2 from on-airport sources under Alternative C are estimated to be greater than emissions under the No Action/No Project Alternative and emissions of CO and PM_{10} from on-airport sources under Alternative C are estimated to be lower than emissions under the No Action/No Project Alternative.

As indicated in **Table F4.6-22**, the differences in mitigated regional traffic emissions of CO, VOC, NO_X, and PM_{10} between Alternative C and the adjusted environmental baseline would be higher than the operations emissions thresholds presented in **Table F4.6-8**. Therefore, the Alternative C regional emissions of CO, VOC, NO_X, and PM_{10} would remain significant in 2015. In comparing the mitigated regional traffic emissions under Alternative C for 2005 to emissions under the No Action/No Project Alternative, emissions of CO, NO_X, SO_2 and PM_{10} under Alternative C are estimated to be greater than emissions under the No Action/No Project Alternative and emissions of VOC under Alternative C are estimated to be lower than emissions under the No Action/No Project Alternative.

Construction

As indicated in **Table F4.6-23**, the difference between Alternative C mitigated emissions and the environmental baseline emissions would be higher than the construction emissions thresholds presented in **Table F4.6-8**, for both horizon years, and the year of maximum construction emissions (2004). Therefore, mitigated construction emissions of CO, VOC, NO_X, SO_2, and PM_{10} would remain significant for Alternative C. In comparing mitigated construction emissions under Alternative C for the peak year to construction emissions under the No Action/No Project Alternative, annual emissions of CO, NO_X, and PM_{10} from construction-related sources under Alternative C are estimated to be greater than emissions under the No Action/No Project Alternative, and annual emissions of VOC and SO_2 from construction-related sources under Alternative C are estimated to be lower than emissions under the No Action/No Project Alternative.

Combined Concentrations - 2005

The combined, peak concentrations of CO, NO_2, and SO_2 for construction and operation sources when added to the 2005 future background concentrations, as presented in **Table F4.6-24,** are predicted to meet the 1-hour and 8-hour CO CAAQS, and 1-hour NO_2 CAAQS, and all SO_2 CAAQS. The maximum concentrations are predicted to exceed the environmental baseline PM_{10} concentrations, and the 24-hour and annual PM_{10} CAAQS. The combined, peak concentrations of CO, NO_2, and SO_2 for construction and operation sources under Alternative C, when added to the 2005 future background concentrations, as presented in **Table F4.6-24,** are predicted to meet the 1-hour and 8-hour CO NAAQS and the SO_2 NAAQS for all averaging periods. The maximum concentrations are predicted to exceed the annual NO_2[341] NAAQS, and the 24-hour and annual PM_{10} NAAQS. In comparing the combined, peak concentrations for operations and construction sources, when added to the 2005 future background concentrations, under Alternative C for 2005 to those under the No Action/No Project Alternative, the maximum annual NO_2, annual, 24-hour, and 3-hour SO_2, and annual and 24-hour PM_{10} concentrations under Alternative C are estimated to be greater than those under the No Action/No Project Alternative, the maximum 1-hour CO concentration under Alternative C is estimated to be lower than that under the No Action/No Project Alternative, and the maximum 8-hour CO concentration under Alternative C is estimated to be the same as that under the No Action/No Project Alternative.

Combined Concentrations - 2015

The combined, peak concentrations of CO, NO_2, SO_2, and PM_{10} for operational and construction sources, when added to the 2015 future background concentrations, as presented in **Table F4.6-24**, are not predicted to exceed the SO_2 CAAQS for all averaging periods, the 8-hour CO CAAQS, the 1-hour NO_2 CAAQS.[342] The maximum concentrations for Alternative C are predicted to exceed the 1-hour CO CAAQS, the environmental baseline PM_{10} concentrations, and 24-hour and annual PM_{10} CAAQS. The combined, peak concentrations of CO, NO_2, SO_2, and PM_{10} for operational and construction sources, when added to the 2015 future background concentrations, as presented in **Table F4.6-24**, are not predicted to exceed the SO_2 NAAQS for all averaging periods, the 1-hour and 8-hour CO NAAQS, the annual NO_2 NAAQS, or the annual and 24-hour PM_{10} NAAQS. In comparing the combined, peak concentrations for operations and construction sources, when added to the 2015 future background concentrations, under Alternative C for 2015 to those under the No Action/No Project Alternative, the maximum 1-hour and 8-hour CO, annual NO_2, annual, 24-hour, and 3-hour SO_2, and annual PM_{10} concentrations under Alternative C are predicted to be greater than those under the No Action/No Project Alternative, while the maximum 24-hour PM_{10} concentration under Alternative C is predicted to be lower than that under the No Action/No Project Alternative.

Overall Significance of Alternative C After Mitigation

As with Alternatives A and B, under Alternative C, even though substantial emission reductions, particularly of NO_X, could be realized from the airside mitigation measures, on-airport emissions of NO_X and SO_2 from airport operations would remain significant after mitigation, primarily due to increases in

[341] See Attachment P to Technical Report S-4, *Supplemental Air Quality Technical Report*, for supplemental 1-hour NO_2 dispersion analysis.

[342] See Attachment P to Technical Report S-4, *Supplemental Air Quality Technical Report*, for supplemental 1-hour NO_2 dispersion analysis.

aircraft operations under this alternative. Similarly, even though substantial emission reductions, particularly of NO_X, could be realized from the off-airport mitigation measures, these reductions would not offset the increase in traffic associated with Alternative C and off-airport emissions of all criteria pollutants except SO_2 would remain significant after mitigation. The construction mitigation measures would account for substantial emission reductions, particularly of NO_X and PM_{10}. However, due to the magnitude of construction activities, all criteria pollutant emissions from construction would remain significant. Under Alternative C, concentrations from on-airport operations and construction activities combined would be significant for CO, NO_2, and PM_{10}.

CEQA Conclusions

Relative to the CEQA analysis, Alternative C would exceed the Thresholds of Significance presented in subsection 4.6.4.1 with respect to CO, VOC, NO_X, NO_2, SO_2, PM_{10}, and O_3 (based on precursors VOC and NO_X) after the application of mitigation measures discussed above, due to the following operational and construction related findings:

- On-airport emissions from operational sources would be significant for NO_X and SO_2.
- Off-airport traffic emissions would be significant for CO, VOC, NO_X, and PM_{10}.
- Construction emissions would be significant for CO, VOC, NO_X, SO_2, and PM_{10}.
- Concentrations from on-airport operational and construction-related sources combined would be significant for CO, NO_2, and PM_{10}.

NEPA Conclusions

Relative to the NEPA analysis, the following findings were identified under Alternative C:

- Total mitigated emissions of CO, NO_X, SO_2, and PM_{10} estimated for Alternative C would be greater than emissions estimated for the No Action/No Project Alternative, as presented in **Table F4.6-23a**. Total VOC emissions would be lower than those estimated for the No Action/No Project Alternative.
- The predicted peak concentrations for combined operations and construction mitigated emissions for Alternative C, when added to the future background concentrations, would be greater than the NAAQS for annual NO_2, and annual and 24-hour PM_{10} and be lower than the NAAQS for 1-hour and 8-hour CO and annual, 24-hour, and 3-hour SO_2.

4.6.9.4 Alternative D - Enhanced Safety and Security Plan

<u>Mitigated Airport Emissions Inventory And Dispersion Analysis</u>

Operations - 2013

As indicated in **Table F4.6-21**, the mitigated emissions inventory for Alternative D in 2013 in **Table F4.6-21** indicates that CO, VOC, and PM_{10} emissions are estimated to be less than the environmental baseline emissions. The inventory indicates that the incremental increase in NO_X and SO_2 would be greater than the operations emissions threshold presented in **Table F4.6-8**. Therefore, emissions of NO_X and SO_2 from on-airport sources under Alternative D mitigated would be significant under CEQA in 2013. In comparing mitigated emissions from on-airport sources under Alternative D for 2013 to emissions under the No Action/No Project Alternative, emissions of SO_2 and PM_{10} from on-airport sources under Alternative D are estimated to be greater than emissions under the No Action/No Project Alternative, and emissions of CO, VOC, NO_X from on-airport sources under Alternative D are estimated to be lower than emissions under the No Action/No Project Alternative.

As indicated in **Table F4.6-22**, the differences in mitigated regional traffic emissions of CO, VOC, NO_X, and PM_{10} between Alternative D and the adjusted environmental baselines would be higher than the operations emissions thresholds presented in **Table F4.6-8**. Therefore, the Alternative D regional emissions of CO, VOC, NO_X, and PM_{10} would remain significant under CEQA in 2013. In comparing the mitigated regional traffic emissions under Alternative D for 2013 to emissions under the No Action/No Project Alternative, emissions of CO, VOC, NO_X, and SO_2 under Alternative D are estimated to be lower than emissions under the No Action/No Project Alternative, and emissions of PM_{10} under Alternative D are estimated to be lower than emissions under the No Action/No Project Alternative.

Operations - 2015

As indicated in **Table F4.6-21**, the mitigated emissions inventory for Alternative D in 2015 indicates that CO, VOC, NO_X, and PM_{10} emissions are estimated to be less than the environmental baseline emissions. The incremental increase in SO_2 for Alternative D would remain above the operations emissions thresholds presented in **Table F4.6-8**. Therefore, Alternative D emissions of SO_2 would remain significant under CEQA in 2015. In comparing mitigated emissions from on-airport sources under Alternative D for 2015 to emissions under the No Action/No Project Alternative, emissions of PM_{10} from on-airport sources under Alternative D are estimated to be greater than emissions under the No Action/No Project Alternative and emissions of CO, VOC, NO_X, and SO_2 from on-airport sources under Alternative D are estimated to be lower than emissions under the No Action/No Project Alternative.

As indicated in **Table F4.6-22**, the difference in mitigated regional traffic emissions of CO, VOC, NO_X, and PM_{10} between Alternative D and the adjusted environmental baselines would be higher than the operations emissions thresholds presented in **Table F4.6-8**. Therefore, the Alternative D regional emissions of CO, VOC, NO_X, and PM_{10} would remain significant under CEQA in 2015. In comparing the mitigated regional traffic emissions under Alternative D for 2015 to emissions under the No Action/No Project Alternative, emissions of CO, VOC, NO_X, SO_2 and PM_{10} under Alternative D are estimated to be lower than emissions under the No Action/No Project Alternative.

Construction

As indicated in **Table F4.6-23**, the difference between Alternative D mitigated emissions and the environmental baseline emissions for all pollutants except SO_2 would be higher than the construction emissions thresholds presented in **Table F4.6-8**, for the year of maximum construction emissions (2005). Therefore, mitigated construction emissions of CO, VOC, NO_X, and PM_{10} would remain significant for Alternative D. In comparing mitigated construction emissions under Alternative D for the peak year to construction emissions under the No Action/No Project Alternative, annual emissions of NO_X and PM_{10} from construction-related sources under Alternative D are estimated to be greater than emissions under the No Action/No Project Alternative, and annual emissions of CO, VOC, and SO_2 from construction-related sources under Alternative D are estimated to be lower than emissions under the No Action/No Project Alternative.

Combined Concentrations - 2013

The combined, peak concentrations of CO and NO_2 for operational and construction-related sources in **Table F4.6-24** are predicted to meet the 1-hour and 8-hour CO and 1-hour NO_2[343] CAAQS. The maximum concentrations are predicted to exceed the environmental baseline PM_{10} concentrations and are predicted to exceed the PM_{10} CAAQS. Therefore, PM_{10} concentrations for Alternative D would be significant in 2013. It should be noted that for Alternative D, 1-hour and 8-hour CO concentrations are all predicted to be below the environmental baseline concentrations. The combined, peak concentrations of CO, NO_2, and SO_2 for construction and operation sources under Alternative D, when added to the 2013 future background concentrations, as presented in **Table F4.6-24,** are predicted to meet the 1-hour and 8-hour CO NAAQS, the SO_2 NAAQS for all averaging periods, the annual NO_2[344] NAAQS, and the 24-hour and annual PM_{10} NAAQS. In comparing the combined, peak concentrations for operations and construction sources, when added to the 2013 future background concentrations, under Alternative D for 2013 to those under the No Action/No Project Alternative, the maximum 1-hour and 8-hour CO, annual, 24-hour, and 3-hour SO_2, and annual and 24-hour PM_{10} concentrations under Alternative D are predicted to be lower than those under the No Action/No Project Alternative, while the maximum annual NO_2 concentration under Alternative D is predicted to be greater than that under the No Action/No Project Alternative.

Combined Concentrations - 2015

The mitigated combined, peak concentrations of CO, NO_2, SO_2, and PM_{10} for operational and construction sources, when added to the 2015 future background concentrations, are not predicted to

[343] See Attachment P to Technical Report S-4, *Supplemental Air Quality Technical Report*, for supplemental 1-hour NO_2 dispersion analysis.

[344] See Attachment P to Technical Report S-4, *Supplemental Air Quality Technical Report*, for supplemental 1-hour NO_2 dispersion analysis.

exceed the SO_2 CAAQS for all averaging periods, the 1-hour and 8-hour CO CAAQS, or the 1-hour and annual NO_2 CAAQS.[345] The maximum PM_{10} concentrations for Alternative D, when added to future background concentrations, are predicted to exceed the 24-hour and annual PM_{10} CAAQS in 2015. Therefore, PM_{10} concentration impacts from Alternative D would be significant in 2015. It should be noted that for Alternative D, 1-hour and 8-hour CO, and 24-hour and annual PM_{10} concentrations are all predicted to be below the environmental baseline concentrations. The combined, peak concentrations of CO, NO_2, SO_2, and PM_{10} for operational and construction sources, when added to the 2015 future background concentrations, as presented in **Table F4.6-24**, are not predicted to exceed the SO_2 NAAQS for all averaging periods, the 1-hour and 8-hour CO NAAQS, the annual NO_2 NAAQS, or the annual and 24-hour PM_{10} NAAQS. In comparing the combined, peak concentrations for operations and construction sources, when added to the 2015 future background concentrations, under Alternative D for 2015 to those under the No Action/No Project Alternative, the maximum 1-hour and 8-hour CO, annual NO_2, annual, 24-hour, and 3-hour SO_2, and 24-hour PM_{10} concentrations under Alternative D are predicted to be lower than those under the No Action/No Project Alternative, while the maximum annual PM_{10} concentration under Alternative D is predicted to be greater than that under the No Action/No Project Alternative.

Overall Significance of Alternative D After Mitigation

As with Alternatives A, B, and C, under Alternative D, even though substantial emission reductions, particularly of NO_X, could be realized from the airside mitigation measures, on-airport emissions of NO_X and SO_2 from airport operations, would remain significant after mitigation, primarily due to increases in aircraft operations under this alternative. Similarly, even though substantial emission reductions, particularly of NO_X, could be realized from the off-airport mitigation measures, these reductions would not offset the increase in traffic associated with Alternative D and off-airport emissions of all criteria pollutants except SO_2 would remain significant after mitigation. The construction mitigation measures would account for substantial emission reductions, particularly of NO_X and PM_{10}. However, due to the magnitude of construction activities, all criteria pollutant emissions from construction except SO_2 would remain significant. Under Alternative D, concentrations from on-airport operations and construction activities combined would be significant for PM_{10}.

CEQA Conclusions

Relative to the CEQA analysis, Alternative D would exceed the Thresholds of Significance presented in subsection 4.6.4.1 with respect to CO, VOC, NO_X, SO_2, PM_{10}, and O_3 (based on precursors VOC and NO_X) after the application of mitigation measures discussed above due to the following operational and construction related findings:

- On-airport emissions from operational sources would remain significant for NO_X and SO_2.
- Off-airport traffic emissions would remain significant for CO, VOC, NO_X, and PM_{10}.
- Construction emissions would remain significant for CO, VOC, NO_X, and PM_{10}.
- Concentrations from on-airport operational and construction-related sources combined would remain significant for PM_{10}.

NEPA Conclusions

Relative to the NEPA analysis, the following findings were identified under Alternative D:

- Total mitigated emissions of SO_2, and PM_{10} estimated for Alternative D would be greater than emissions estimated for the No Action/No Project Alternative (in the interim year only), and total mitigated emissions of VOC, CO and NO_X estimated for Alternative D would be lower than emissions estimated for the No Action/No Project Alternative as presented in **Table F4.6-23a**.
- The predicted peak concentrations for combined operations and construction mitigated emissions for Alternative D, when added to the future background concentrations, would be lower than the NAAQS for 1-hour and 8-hour CO, annual NO_2, annual, 24-hour, and 3-hour SO_2, and annual and 24-hour PM_{10}.

---

[345] See Attachment P to Technical Report S-4, *Supplemental Air Quality Technical Report*, for supplemental 1-hour NO_2 dispersion analysis.

- A general conformity determination is required for Alternative D (as the LAWA staff-preferred alternative) to address NO_X, NO_2, and PM_{10}.

4.6.10 Secondary Air Emissions - Electricity Production

As discussed in Section 4.17.1, *Energy Supply*, there would be a net increase in electricity consumption at LAX with implementation of Alternatives A, B, C, and D. The emissions from power plants that would help supply this electricity are considered to be indirect, or secondary, emission sources for this project. While some power would be drawn from the local power generating facilities that provide electricity to the Los Angeles area and surrounding communities in Southern California, it is difficult to pinpoint any one location or type of power plant that would be the major source of power for the project. Therefore, the secondary emissions are presented as a regional emission inventory for electricity produced in the South Coast Air Basin.

Emissions from electricity production have been calculated for Alternative D, the LAWA staff-preferred alternative. The secondary emission calculations assume that 17.3 percent of the electricity needed would be generated locally.[346] The majority of South Coast Air Basin electric generating facilities utilize natural gas, and for the purposes of this calculation, it is assumed that 100 percent of local electricity generation is from natural gas-fired facilities. The SCAQMD rules[347] provide a NO_X emission rate for power generation based on the number of kilowatt-hours used by a project. SCAQMD also provides guidelines for VOC, SO_X, CO and PM_{10} emission rates for external combustion of natural gas based on the number of cubic feet of gas used.

Secondary emissions as a result of an increase in electricity consumption from airport operations are presented in **Table F4.6-29**, Secondary Air Emission Inventory for Alternative D. Adding these numbers to the mitigated regional project-specific emissions listed in **Table F4.6-21** would result in increased regional emissions for Alternative D. Off-airport emissions of CO, VOC, NO_X, and PM_{10} would remain significant, while SO_2 emissions would remain less than significant.

Table F4.6-29

Secondary Air Emission Inventory for Alternative D

Regional Emissions for the South Coast Air Basin	
Pollutant	**Alternative D (tons per year)**
CO	9.6
VOC	0.6
NO_X	5.1
SO_2	0.07
PM_{10}	0.9

Source: Camp Dresser & McKee Inc., 2003.

346 Tucker, C., Los Angeles Department of Water and Power, Personal Communication, April 3, 2003.

347 South Coast Air Quality Management District, Rule 1135, April 2003, http://www.aqmd.gov/rules/html/r1135.html.

This page intentionally left blank.