PUBLIC REVIEW DRAFT

LIVERMORE MUNICIPAL AIRPORT GENERAL PLAN AMENDMENT AND REZONING PROJECT ENVIRONMENTAL IMPACT REPORT

STATE CLEARINGHOUSE NO. 2008102103

LSA

September 2009

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STATE CLEARINGHOUSE NO. 2008102103

Submitted to the:

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I. INTRODUCTION

A. PURPOSE OF THE EIR

In compliance with the California Environmental Quality Act (CEQA), this Draft Environmental Impact Report (EIR) describes the environmental consequences of the Livermore Municipal Airport General Plan Amendment and Rezoning project, the "proposed project." This EIR is designed to fully inform decision-makers in the City of Livermore, other responsible agencies, and the general public of the project and the potential environmental consequences of approval and implementation. The EIR also examines various alternatives to the proposed project and recommends a set of mitigation measures to reduce or avoid potentially significant impacts.

The City of Livermore (City) is the lead agency for environmental review of the proposed project. This EIR will be used by City of Livermore staff and the public in their review of the proposed project and future approvals for specific development projects within the project site. It may also be used by other agencies whose discretionary approval may be required to allow specific development projects to be constructed in the site.

This EIR is a Program EIR. Specific projects proposed within the project site will be examined in light of the Program EIR to determine whether additional environmental documents must be prepared. Section 15168 of the *CEQA Guidelines* defines a Program EIR as follows:

> *A program EIR is an EIR which may be prepared on a series of actions that can be characterized as one large project and are related either: (1) geographically; (2) as logical parts in the chain of contemplated actions; (3) in connection with issuance of rules, regulations, plans, or other general criteria to govern the conduct of a continuing program; or (4) as individual activities carried out under the same authorizing statutory or regulatory authority and having generally similar environmental effects which can be mitigated in similar ways.*
>
> *Use of a program EIR can provide the following advantages: (1) provide an occasion for a more exhaustive consideration of effects and alternatives than would be practical in an EIR on an individual action; (2) ensure consideration of cumulative impacts that might be slighted in a case-by-case analysis; (3) avoid duplicative reconsideration of basic policy considerations; (4) allow the Lead Agency to consider broad policy alternatives and program wide mitigation measures at an early time when the agency has greater flexibility to deal with basic problems or cumulative impacts; and (5) allow reduction in paperwork.*

This Program EIR identifies the environmental effects of the proposed General Plan Amendment and Rezoning. Individual development projects proposed within the project site would receive project-specific environmental evaluation, as necessary, during the development review process. This review would likely take the form of an Initial Study checklist, which would be used to determine whether the environmental impacts of an individual project are adequately addressed in this Program EIR.

B. PROPOSED PROJECT

The proposed project would involve changes to City land use policies and regulations to guide future development within a 403-acre portion of the Airport. The purpose of the project is to revise the land use regulations on the site to be more consistent with the underlying General Plan designation of Community Facilities – Airport (CF-AIR). The existing zoning regulations on the site (Education & Institutions (E) and Planned Development (PD)) are not specific to airport uses. The project is intended to better enable City staff to review development proposals on Airport land, and to ensure that these proposed developments would allow for the safe and efficient operation of the Airport.

The project contains the following two components. Please refer to Chapter III, Project Description, for additional detail.

- *General Plan Amendment*: The General Plan would be amended to remove all references to the 1975 Master Plan, which would be rescinded as a separate administrative action independent of the proposed project, as described in Chapter III, Project Description. The General Plan would also be amended to acknowledge revised forecasts of annual aircraft operations and identify the number of stored/parked aircraft at the Airport (although only the FAA may regulate flight operations) based on the aviation forecasts prepared by Coffman Associates, Inc. (see Appendix B).[1]
- *Airport Use Rezoning*: The entire project site would be rezoned from Education and Institution (E) and Planned Development (PD) to a new Airport (AIR) Zoning District. The purpose of the rezoning is to ensure that future development at the Airport is aviation-related and would allow for the safe and efficient operation of the Airport. The AIR Zoning District would consist of two Subdistricts: 1) the Airport Operations (AIR-OP) Zoning Subdistrict and 2) the Airport Service (AIR-SE) Zoning Subdistrict. The proposed AIR Zoning District would limit the amount and type of future development at the Airport compared to the 1975 Master Plan, and also takes into account the revised aviation forecasts.

C. EIR SCOPE

On October 28, 2008, the City released the first Notice of Preparation (NOP) for the EIR, which included notice of a scoping session on November 25, 2008 which was subsequently held on that day. An amended NOP was released on May 14, 2009. The amended NOP included additional information not included in the first NOP about amendments to the General Plan to remove references to the 1975 Airport Master Plan. A second scoping meeting was held on May 28, 2009. Both NOPs and public and agency comments received in response to these NOPs are included in Appendix A.

This Draft EIR focuses on the areas of concern identified in the NOP and comments received on the NOP. The following environmental topics are addressed in this EIR:

A. Land Use
B. Transportation, Circulation and Parking
C. Air Quality and Global Climate Change

[1] Coffman Associates, Inc., 2008 *"Unconstrained" Forecasts; Airport Rezoning Project, Livermore Municipal Airport*. October 10.

D. Noise
E. Hydrology and Water Quality
F. Geology, Soils and Seismicity
G. Hazards and Hazardous Materials
H. Public Services and Utilities
I. Biological Resources
J. Cultural and Paleontological Resources
K. Visual Resources

The following topics were not included as a separate topic within this EIR: Agricultural Resources; Population and Housing; Schools and Libraries; and Solid Waste. As Lead Agency, the City determined that the project would not cause significant impacts related to these topics. These topics are discussed in the Effects Found Not to Be Significant section of Chapter VII, CEQA-Required Assessment Conclusions.

D. REPORT ORGANIZATION

This EIR is organized into the following chapters:

- *Chapter I – Introduction*: Discusses the overall EIR purpose, provides a summary of the proposed project, describes the EIR scope, and summarizes the organization of the EIR.
- *Chapter II – Summary*: Provides a summary of the impacts that would result from implementation of the proposed project, and describes mitigation measures recommended to reduce or avoid significant impacts.
- *Chapter III – Project Description*: Provides a description of the project, the project site, the project objectives, project alternatives, discretionary actions, and uses of this EIR.
- *Chapter IV – Consistency with Plans and Policies*: Identifies relevant regional and local plans and evaluates the proposed project's consistency with these plans and policies.
- *Chapter V – Setting, Impacts and Mitigation Measures*: Describes the following for each environmental technical topic: existing conditions (setting), potential environmental impacts and their level of significance, and mitigation measures recommended to mitigate identified impacts. Potential adverse impacts are identified by levels of significance, as follows: less-than-significant impact (LTS), significant impact (S), and significant and unavoidable impact (SU). The significance of each impact is categorized before and after implementation of any recommended mitigation measures(s).
- *Chapter VI – Alternatives*: Provides an evaluation of three alternatives to the proposed project.
- *Chapter VII – CEQA-Required Assessment Conclusions*: Provides an analysis of growth-inducing impacts, significant irreversible changes, unavoidable significant effects, effects found not to be significant, and cumulative impacts.
- *Chapter VIII – Report Preparation*: Identifies preparers of the EIR, references used, and the persons and organizations contacted.
- *Appendices*: The appendices contain the initial and amended NOPs and comments on the NOPs, technical calculations, and other documentation prepared in conjunction with this EIR.

II. SUMMARY

A. PROJECT UNDER REVIEW

In compliance with the California Environmental Quality Act (CEQA), this Draft Environmental Impact Report (EIR) describes the environmental consequences of the Livermore Municipal Airport General Plan Amendment and Rezoning project (project). The purpose of the project is to revise the land use regulations on the site to be more consistent with the underlying General Plan designation of Community Facilities – Airport (CF-AIR). The existing zoning regulations on the site are not specific to airport uses. The project is intended to better enable City staff to review development proposals on Airport land, and to ensure that these proposed developments would allow for the safe and efficient operation of the Airport. The existing 1975 Airport Master Plan is outdated and, as an action independent of the proposed project, would not be updated or replaced, and would be rescinded. Because the Master Plan would not be updated or replaced, all references to the Master Plan in the General Plan would be deleted as part of the project.

The project contains two components: 1) a General Plan Amendment to remove all references to the Master Plan and to acknowledge revised estimates of annual aircraft operations and the proposed number of stored/parked aircraft at the Airport (although only the Federal Aviation Administration (FAA)_may regulate flight operations) and 2) a rezoning to change the zoning of the entire project site from Education and Institution (E) and Planned Development (PD) to a new Airport (AIR) Zoning District, which would consist of two Subdistricts: the Airport Operations (AIR-OP) Zoning Subdistrict and the Airport Service (AIR-SE) Zoning Subdistrict. A more detailed description of the proposed project is provided in Chapter III, Project Description.

B. SUMMARY OF IMPACTS AND MITIGATION MEASURES

This summary provides an overview of the analysis contained in Chapter IV, Setting, Impacts and Mitigation Measures. CEQA requires a summary to include discussion of: (1) potential areas of controversy; (2) significant impacts; (3) cumulative impacts; (4) significant irreversible and unavoidable impacts; and (5) alternatives to the proposed project.

1. Potential Areas of Controversy

Comment letters from agencies and individuals were received in response to the Notice of Preparation (NOP) circulated on October 28, 2008 and an amended NOP circulated on May 14, 2009. Letters received as comments on the NOP raised a number of potential areas of controversy, including the following:

- Jet operations, future flight patterns, and associated noise contours.
- Effects of specific projects expected to be developed at the Airport.
- Analysis of cumulative impacts.
- Airport capacity.

- Future limits on Airport development.
- Airport-related hazards.
- Changes in air quality.
- Visual changes to the Airport and its surroundings.
- Vehicle traffic associated with Airport development.
- Policy consistency.
- Rescinding the Master Plan.

2. Significant Impacts

Under CEQA, a significant impact on the environment is defined as, "…a substantial, or potentially substantial, adverse change in any of the physical conditions within the area affected by the project including land, air, water, minerals, flora, fauna, ambient noise, and objects of historic or aesthetic significance." Implementation of the proposed project has the potential to result in adverse environmental impacts in several environmental areas. Impacts in the following areas would be significant without the implementation of mitigation measures, but would be reduced to a less-than-significant level if the mitigation measures noted in this EIR are implemented:

- Air Quality and Global Climate Change
- Noise
- Hydrology and Water Quality
- Geology, Soils and Seismicity
- Hazards and Hazardous Materials
- Public Services and Utilities
- Biological Resources
- Cultural and Paleontological Resources
- Visual Resources

3. Significant Unavoidable Impacts

Implementation of the proposed project would not result in significant unavoidable impacts.

4. Alternatives to the Project

The following alternatives to the proposed project are considered in this EIR:

- The **No Project alternative** assumes that the existing land use regulations for the project site would not change in the near-term. The General Plan would not be amended and the existing zoning designations on the project site – Education and Institution (E) and Planned Development (PD) – would remain and would not be replaced with the Airport (AIR) Zoning District. Development on the site would occur according to existing land use regulations. This alternative assumes total buildout of all areas identified in the existing Airport Layout Plan (ALP) (shown in Figure VI-1).

- The **Modified Development Scenario alternative** assumes that the proposed General Plan Amendment and rezoning would occur, as under the proposed project. However, this alternative assumes that development on the project site would be more dense and would be reconfigured compared to the proposed project within the Airport Service (AIR-SE) Zoning Subdistrict.
- The **Reduced Development alternative** assumes that the proposed General Plan Amendment and rezoning would occur, as under the proposed project. However, this alternative assumes that development on the project site would be reduced when compared to the proposed project, particularly within the Airport Service (SE) Zoning Subdistrict. While the area that would comprise the AIR-SE Subdistrict would be the same as under the proposed project, the allowable square footage of development would be less.

CEQA requires the identification of the environmentally superior alternative in an EIR, which is in this case the Reduced Development alternative. This alternative would have virtually the same impacts as the proposed project, although some impacts would be lessened; these impacts include demand for utilities and public services, impacts on local circulation, and traffic-related air quality/global climate change and noise impacts. However, it should be noted that the environmental impacts of the project are very similar those of the environmentally superior alternative.

5. Cumulative Impacts

The proposed project in conjunction with other foreseeable projects associated with buildout of the City of Livermore General Plan, as well as growth in surrounding jurisdictions (based on the adopted general plans of these jurisdictions), would not result in cumulatively considerable impacts after implementation of mitigation measures identified in the EIR.

C. SUMMARY TABLE

Information in Table II-1, Summary of Impacts and Mitigation Measures, has been organized to correspond with environmental issues discussed in Chapter V. The table is arranged in four columns: (1) impacts; (2) level of significance prior to mitigation measures; (3) mitigation measures; and (4) level of significance after mitigation. Levels of significance are categorized as follows: SU = Significant and Unavoidable; S = Significant; and LTS = Less Than Significant. For a complete description of potential impacts and recommended mitigation measures, please refer to the specific discussions in Chapter V.

Table II-1: Summary of Impacts and Mitigation Measures

Environmental Impacts	Level of Significance Without Mitigation	Mitigation Measures	Level of Significance With Mitigation
A. Land Use			
There are no significant impacts to land use.			
B. Transportation, Circulation and Parking			
There are no significant impacts to transportation, circulation and parking			
C. Air Quality and Global Climate Change			
AIR-1: Demolition and construction period activities associated with specific development projects could generate significant dust, exhaust, and organic emissions.	S	AIR-1: Consistent with guidance from the BAAQMD, the following actions shall be required of construction contracts and specifications for any construction operations on the project site. The sponsors of specific development projects shall develop and implement a construction-period air pollution control plan, consistent with dust and emission-abatement actions outlined in the BAAQMD CEQA handbook. The air pollution control plan shall include the following elements: *Demolition.* The following controls shall be implemented during demolition activities (including removal of pavement): • Water during demolition work, including the break-up of pavement and infrastructure, to control dust generation; • Cover all trucks hauling demolition debris from the site; and • Use dust-proof chutes to load debris into trucks whenever feasible. *Construction.* The following controls shall be implemented at all construction sites: • Water all active construction areas at least twice daily and more often during windy periods; active areas adjacent to existing land uses shall be kept damp at all times, or shall be treated with non-toxic stabilizers to control dust; • Cover all trucks hauling soil, sand, and other loose materials; • Pave, apply water three times daily, or apply (non-toxic) soil stabilizers on all unpaved access roads, parking areas, and staging areas at construction sites;	LTS

Table II-1 *Continued*

Environmental Impacts	Level of Significance Without Mitigation	Mitigation Measures	Level of Significance With Mitigation
AIR-1 *Continued*		• Sweep daily (with water sweepers) all paved access roads, parking areas, and staging areas at construction sites; water sweepers shall vacuum up excess water to avoid runoff-related impacts to water quality; • Sweep streets daily (with water sweepers) if visible soil material is carried onto adjacent public streets; • Apply non-toxic soil stabilizers to inactive construction areas; • Enclose, cover, water twice daily, or apply non-toxic soil binders to exposed stockpiles (dirt, sand, etc.); • Limit traffic speeds on unpaved roads to 15 mph; • Install sandbags or other erosion control measures to prevent silt runoff to public roadways; • Replant vegetation in disturbed areas as quickly as possible; • Install baserock at entryways for all exiting trucks, and wash off the tires or tracks of all trucks and equipment in designated areas before leaving the site; and • Suspend excavation and grading activity when winds (instantaneous gusts) exceed 25 mph.	
D. Noise			
NOISE-1: In the cumulative condition, flight operations would result in an increased exposure of sensitive receptors to exterior noise levels in excess of 60 dBA CNEL.	S	NOISE-1: The City of Livermore shall develop and implement a program by the year 2010 to identify residences subject to excessive Airport noise. The program shall ensure that the State's 45 dBA CNEL/L_{dn} interior noise standard for residential uses is achieved for these affected residences. The program shall include conducting annual exterior noise measurements, beginning along the block nearest the eastern edge of the Airport and, over the years, moving eastward, away from the Airport. If/when the exterior noise levels are within one dBA of 60 dBA CNEL on any block, the City shall purchase and install air conditioning units for identified impacted single family residences that do not have existing air conditioning systems. Installation of such air conditioning units would allow residences to close their windows for prolonged periods of time.	LTS

Table II-1 *Continued*

Environmental Impacts	Level of Significance Without Mitigation	Mitigation Measures	Level of Significance With Mitigation
E. Hydrology and Water Quality			
HYD-1: Construction of specific development projects that could occur under buildout of the proposed project could degrade water quality due to erosion and sedimentation, inadvertent hazardous materials releases, and groundwater discharges during construction and operation activities.	S	HYD-1a: To address potential impacts to receiving waters during construction, the proponents of specific development projects shall fully comply with the requirements of the Construction General Permit (Water Quality Order No. 99-08-DWQ). The Construction General Permit requires that each project sponsor prepare and implement a SWPPP for construction activities. The SWPPP for the Construction General Permit must meet the following objectives: • Identify sources of pollutants that could affect stormwater quality. • Identify non-stormwater discharges. • Identify, implement, inspect, and maintain BMPs to reduce or eliminate pollutants in stormwater discharges and authorized non-stormwater discharges from the construction site. • Develop a maintenance schedule for any post-construction BMPs. • Identify a sampling and analysis program for discharges that have been discovered through visual monitoring to be potentially contaminated by pollutants not visually detectable in the runoff. At a minimum, BMPs shall include practices to minimize the contact of construction materials, equipment, and maintenance supplies (e.g., fuels, lubricants, paints, solvents, and adhesives) with stormwater. The SWPPP shall specify properly-designed centralized storage areas that keep these materials out of the rain.	LTS

Table II-1 *Continued*

Environmental Impacts	Level of Significance Without Mitigation	Mitigation Measures	Level of Significance With Mitigation
HYD-1 *Continued*		BMPs designed to reduce erosion of exposed soil may include, but are not limited to: soil stabilization controls, watering for dust control, perimeter silt fences, fiber rolls, and sediment basins. The potential for erosion is generally increased if grading is performed during the rainy season because disturbed soil can be exposed to rainfall and stormwater runoff. If grading must be conducted during the rainy season, the primary BMPs selected shall focus on erosion control (i.e., keeping sediment on the site). End-of-pipe sediment control measures (e.g., basins and traps) shall be used only as secondary measures. Ingress and egress from construction areas shall be carefully controlled to minimize off-site tracking of sediment. Vehicle and equipment wash-down facilities shall be designed to be accessible and functional during both dry and wet conditions. To educate on-site personnel and maintain awareness of the importance of stormwater quality protection, site supervisors of specific development projects shall conduct regular tailgate meetings to discuss pollution prevention. The frequency of the meetings and required personnel attendance list shall be specified in the SWPPP. The SWPPP shall specify a monitoring program to inspect and maintain the construction site BMPs prior to an anticipated storm event and after actual storm events. It is not required that the SWPPP be submitted to the Water Board, but it must be maintained on-site and made available to Water Board or City staff upon request. Water Board personnel, who may make unannounced site inspections, are empowered to levy considerable fines if it is determined that the SWPPP has not been properly prepared and implemented.	

Table II-1 *Continued*

Environmental Impacts	Level of Significance Without Mitigation	Mitigation Measures	Level of Significance With Mitigation
HYD-1 *Continued*		HYD-1b: To address potential impacts to receiving water quality during the operation of new industrial facilities at the project site, project sponsors of "industrial projects" (as defined in the Industrial General Permit) shall fully comply with the requirements of the Industrial General Permit (Water Quality Order No. 97-03-DWQ). The Industrial General Permit requires Airport facilities that have vehicle maintenance shops, equipment cleaning operations, or Airport deicing operations to implement a SWPPP. The SWPPP for the Industrial General Permit shall meet the following objectives: • Identify and evaluate sources of pollutants associated with industrial activities that may affect the quality of stormwater discharges and authorized non-stormwater discharges. • Identify, implement, inspect, and maintain BMPs to reduce or prevent pollutants associated with industrial activities in stormwater discharges and authorized non-stormwater discharges. The SWPPP shall describe BMPs to be implemented for each potential pollutant source associated with industrial processes, material handling and storage areas, dust and particulate generating activities, significant spills and leaks, non-stormwater discharges, and soil erosion. Each facility operator shall conduct an Annual Comprehensive Site Compliance Evaluation to evaluate the effectiveness of the BMPs and revise the SWPPP as necessary. A monitoring program shall be prepared to aid in the implementation and evaluation of the SWPPP. The monitoring program shall include visual monitoring of non-stormwater discharges on a quarterly basis and visual monitoring of stormwater discharges from storm events once per month during the wet season (October 1 to May 30). The facility operator shall collect stormwater samples during the first hour of discharge from the first	

Table II-1 *Continued*

Environmental Impacts	Level of Significance Without Mitigation	Mitigation Measures	Level of Significance With Mitigation
HYD-1 *Continued*		storm event of the wet season and at least one other storm event during the wet season. The Airport operators shall analyze samples of stormwater discharges for total suspended solids, pH, specific conductance, total organic carbon, biological oxygen demand, chemical oxygen demand, ammonia, toxic chemicals, and other pollutants which are likely to be present in stormwater discharges. Facility operators may reduce the analysis of some chemical based on evidence that the chemical is not likely to be present in significant quantities. An Annual Report shall be submitted to the Water Board by July 1 each year that includes a summary of monitoring activities, laboratory reports, the Annual Comprehensive Site Compliance Evaluation Report, an explanation regarding any activities required by the Industrial General Permit not implemented, and an evaluation of the effectiveness of the BMPs.	
		HYD-1c: To address potential impacts to receiving water quality from specific development projects at the project site, each project sponsor shall fully comply with the City of Livermore's Municipal Code and the Countywide NPDES Permit (Water Quality Order No. R2-2003-0021). For all specific development projects that would create or replace a total of 10,000 square feet or more of impervious surfaces, the project sponsor shall submit a description of site design and source control measures and a preliminary design of treatment measures to reduce pollutants in stormwater discharges to the City of Livermore. All site design, source control, and treatment measures shall be based on guidance from the ACCWP's C.3 Stormwater Technical Guidance Handbook. All treatment measures shall be designed in accordance with the numeric sizing criteria for pollutant removal systems defined in Provision C.3.d of the Countywide NPDES Permit. Volume-based treatment measures are required to capture 100 percent of the annual stormwater runoff and treat 80 percent of the annual runoff. Flow-based treatment systems shall be sized to treat at least 0.2 inches of rain per hour. Alternative methods for designing a flow-based treatment system are also identified in the Countywide NPDES Permit.	

Table II-1 *Continued*

Environmental Impacts	Level of Significance Without Mitigation	Mitigation Measures	Level of Significance With Mitigation
HYD-1 *Continued*		Flow-based treatment systems shall be sized to treat at least 0.2 inches of rain per hour. Alternative methods for designing a flow-based treatment system are also identified in the Countywide NPDES Permit. For all specific development projects that would create or replace a total of 1 acre or more of impervious surface, the project sponsor shall comply with performance criteria in the ACCWP's Hydrograph Modification Management Plan and submit an evaluation of runoff under pre-project and post-project conditions to the City of Livermore. A preliminary design of the HM measures to ensure the volumes and durations of post-project runoff match the characteristics of pre-project runoff shall also be submitted to the City of Livermore. The HM measures shall be designed using the Bay Area Hydrology Model (BAHM) software to calculate the size of hydromodification control facilities necessary to match pre-project runoff conditions. The project sponsor shall establish a self-perpetuating drainage system maintenance program that includes annual inspections and maintenance of stormwater treatment or HM measures for the life of the project. An Operations and Maintenance Agreement shall be submitted to the City of Livermore with building permit applications.	
HYD-2: Construction of specific development projects that could occur under buildout of the proposed project could deplete groundwater resources or reduce groundwater recharge.	S	HYD-2: Implement Mitigation Measure HYD-1c.	LTS
HYD-3: Construction of specific development projects that could occur under buildout of the proposed project could increase erosion and flooding due to alteration of drainage patterns or an increase in impervious surfaces.	S	HYD-3: Implement Mitigation Measure HYD-1c.	LTS
F. Geology, Soils and Seismicity			
GEO-1: Seismically-induced ground shaking and liquefaction in the area of the proposed project could result in injuries, fatalities, and/or property damage.	S	GEO-1: A geotechnical investigation, prepared by a licensed professional, shall be required under the terms of the SHMA for any future development within the project site. The geotechnical investigation shall also meet the requirements of the City of Livermore Building Division. The recommendations of the geotechnical investigation shall be adopted into future project design, and eventual construction shall be in conformance with standards in the applicable California Building Code.	LTS

Table II-1 *Continued*

Environmental Impacts	Level of Significance Without Mitigation	Mitigation Measures	Level of Significance With Mitigation
GEO-2: Structures or improvements could be adversely affected by expansive and/or corrosive soils.	S	GEO-2a: Plans for future projects, such as building foundations and improvements, including sidewalks, parking lots, and subsurface utilities, shall show consideration of expansive soil conditions and incorporate measures to ensure that potential damage due to shrink/swell potential of soils is minimized. Corrective measures may include removal and replacement of problematic soils with engineered and compacted fill, proper drainage design, or design and construction of improvements to withstand the forces exerted by expected shrink/swell cycles. The design criteria shall be in accordance with the recommendations of a licensed professional.	LTS
		GEO-2b: Plans for future projects shall be based on an evaluation of site soils for corrosion potential. If the results of the evaluation indicate corrosive soil conditions, appropriate measures to mitigate these conditions shall be incorporated into the design of project improvements that may come into contact with site soils as determined by the Building Division. Wherever corrosive soils are found in sufficient concentrations, recommendations shall be made to protect iron, steel, metal, and/or concrete, as appropriate, from long-term deterioration caused by contact with corrosive on-site soils.	
G. Hazardous Materials and Public Health and Safety			
HAZ-1: Construction of specific development projects that could occur under buildout of the proposed project could result in the accidental release of hazardous materials.	S	HAZ-1: Implement Mitigation Measure HYD-1a.	LTS

Table II-1 *Continued*

Environmental Impacts	Level of Significance Without Mitigation	Mitigation Measures	Level of Significance With Mitigation
HAZ-2: Construction of specific development projects that could occur under buildout of the proposed project could result in exposure to hazardous materials in soil and building materials.	S	HAZ-2a: Prior to construction of each specific development project, a soil investigation shall be performed by a licensed professional to determine if organochlorine and inorganic pesticides are present in shallow soils that will be disturbed during project construction. A licensed professional shall review the results of the soil investigation and provide recommendations regarding further investigation activities, soil management during construction, or remediation of soil, if applicable. Any investigation and/or remediation of soil shall be conducted with oversight from a local or State regulatory agency. Any remedial actions (either source removal or institutional and/or engineering controls) shall be implemented to levels that will ensure that future site users and the environment would not be subject to excessive risks, as determined by the regulatory agency. HAZ-2b: A site-specific Health and Safety Plan (HASP) shall be prepared by a certified industrial hygienist for the contractor of each specific development project. The HASP shall include measures to protect construction workers and the general public by including monitoring, engineering controls, administrative controls, and security measures to prevent unauthorized entry to the construction area. If prescribed exposure levels for contaminants (see Mitigation Measure HAZ-2a), are exceeded, personal protective equipment shall be required for workers in accordance with State and federal regulations. The HASP shall address the possibility of encountering unknown contamination or subsurface hazards and emergency response procedures in the event of a hazardous materials release. The sponsor of the specific development project shall verify that the HASP is incorporated into the contractor's worker health and safety programs.	LTS

Table II-1 *Continued*

Environmental Impacts	Level of Significance Without Mitigation	Mitigation Measures	Level of Significance With Mitigation
HAZ-2 *Continued*		HAZ-2c: Hazardous building materials surveys shall be conducted by a qualified professional for structures proposed for demolition or renovation at the project site. Lead-based paint and ACM should be included in the hazardous materials building surveys for buildings constructed prior to 1978 and 1981, respectively. All loose and peeling lead-based paint and ACM shall be abated by a certified contractor(s) in accordance with local, State, and federal requirements. All other hazardous materials shall be removed from buildings prior to demolition in accordance with DOSH regulations. The findings of the abatement activities shall be documented by a qualified environmental professional(s) and submitted to the City of Livermore prior to the issuance of construction and demolition permits.	
H. Public Services and Utilities			
UTIL-1: Construction of specific development projects that could occur under buildout of the proposed project would increase impervious surfaces on the project site, and contribute to flooding at Arroyo Las Positas during storm events.	S	UTIL-1a: Project sponsors for future specific development projects within the project site shall pay flood protection and stormwater drainage development impact fees to the Zone 7 Water Agency, per the requirements of Alameda County Ordinance No. 2009-01. These development fees will be used to help fund flood control improvement projects at Arroyo Las Positas identified in the Stream Management Master Plan, including: 1) Project R5-2, Airway Improvement Project, which includes removing sediment along Kitty Hawk Road and Airway Boulevard, re-vegetating Airway Boulevard, and constructing a sediment basin and levees; and 2) Project R5-3, Arroyo Las Positas Diversion Project, which includes the construction of a diversion channel and widening Arroyo Las Positas through the golf course and downstream of the proposed diversion.	LTS
		UTIL-1b: Implement Mitigation Measure HYD-1c.	
I. Biological Resources			
BIO-1: Ground-disturbing activities associated with development of specific projects that could occur under buildout of the proposed project could result in the removal or disturbance of occupied western burrowing owl burrows.	S	BIO-1: Preconstruction surveys shall be conducted for burrowing owls prior to any project involving construction, including clearing and grubbing. These surveys shall conform to the survey protocol established by the California Burrowing Owl Consortium. Preconstruction surveys shall be conducted no more than 30 days prior to the initiation of construction activities, and at succeeding 30-day intervals if construction activities are delayed.	LTS

Table II-1 *Continued*

Environmental Impacts	Level of Significance Without Mitigation	Mitigation Measures	Level of Significance With Mitigation
BIO-1 *Continued*		The following measures shall also apply: a) If burrowing owl is found on-site, they shall be avoided to the extent practicable. A clearly defined area shall be delineated around each burrowing owl burrow to be avoided using orange construction fencing or other readily visible barrier. No disturbance should occur within 50 meters (approx. 160 feet) of occupied burrows during the non-breeding season of September 1 through January 31 or within 75 meters (approx. 250 feet) during the breeding season of February 1 through August 31. b) If burrowing owls occurs on the project site and construction is planned to begin before February or after the end of August, and the burrows cannot be avoided, then passive relocation techniques may be used to relocate owls from the site. Passive relocation techniques consist of excavating potential burrows after excluding owls from the burrows for a length of time specified by the CDFG. Passive relocation shall be conducted according to the current protocol established by the CDFG. Artificial burrows shall be provided at a mitigation site at a ratio of 2:1 (two artificial burrows created for each occupied burrow destroyed). c) If burrowing owl occurs on the project site and construction is planned to begin during the breeding season (February through August), then a buffer with a radius of 75 meters (250 feet) shall be established around any burrows containing owls. d) Removal of burrowing owl on the project site shall conform to the requirements of CDFG's *Staff Report on Burrowing Owl Mitigation*. This entails establishing 6.5 acres of suitable habitat for each pair of burrowing owls displaced from the project site. These 6.5 acres shall be adjacent to an area already used by burrowing owl. The replacement mitigation site shall be preserved in perpetuity for use as burrowing owl and wildlife habitat. An endowment for management and monitoring of the site shall also be established.	

Table II-1 *Continued*

Environmental Impacts	Level of Significance Without Mitigation	Mitigation Measures	Level of Significance With Mitigation
BIO-2: Ground-disturbing activities associated with development of specific projects that could occur under buildout of the proposed project could result in the removal or disturbance of occupied bird nests.	S	BIO-2: A qualified biologist shall conduct bird nest surveys to locate any active nests on or immediately adjacent to the project site prior to tree pruning, tree removal, ground disturbing activities, or grading. Preconstruction surveys shall be conducted at 30-day intervals until the activities begin. Preconstruction surveys shall be conducted between February 1 and August 31. Locations of active nests shall be described and protective measures implemented. Protective measures shall include delineating avoidance areas with orange construction fencing or other highly-visible barrier around each nest site. The avoidance area shall extend a minimum of 300 feet from the dripline of the nest tree or nest for raptors, 100 feet for shrikes, and 50 feet for other bird species. The active nest sites within an exclusion zone shall be monitored on a weekly basis throughout the nesting season to identify any signs of disturbance. These protection measures shall remain in effect until the young have left the nest and are foraging independently or the nest is no longer active. A report shall be prepared at the end of each construction season detailing the results of the preconstruction surveys. The report shall be submitted to CDFG by November 30 of each year.	LTS
BIO-3: Ground-disturbing activities associated with development of specific projects that could occur under buildout of the proposed project could result in the removal or disturbance of occupied bat roosts.	S	BIO-3: A qualified biologist shall conduct pre-construction surveys of any on-site building proposed for demolition to identify bat roosting colonies within the structure or within 100 feet of the proposed demolition area. These surveys shall be conducted no sooner than 2 weeks prior to the start of demolition activities. Impacts to active bat roosts shall be avoided by establishing exclusion zones around all roosting bat colonies. Construction-related activities shall be prohibited within the exclusion zone until the bats have abandoned the roost site. Passive exclusion measures that allow bats to leave but not return to the roost shall be allowed unless the roost site supports a maternity colony. Exclusion measures shall only be allowed at a maternity roost site when the young are fledged. A qualified biologist shall monitor each roost once per week in order to track the status of each roost and inform the project proponent of when a roost site has been cleared for construction.	LTS

Table II-1 *Continued*

Environmental Impacts	Level of Significance Without Mitigation	Mitigation Measures	Level of Significance With Mitigation
J. Cultural and Paleontological Resources			
CULT-1: Ground-disturbing activities associated with site preparation for specific development projects that could occur under buildout of the proposed project could affect archaeological site P-01-010526.	S	CULT-1: Prior to the implementation of specific development projects on the site, the boundary of P-01-010526 shall be determined and impacts to the resource shall be avoided (e.g., through the relocation of the helicopter and corporate aviation facilities). If impact avoidance is not feasible, the resource's eligibility for listing in the California Register shall be assessed by a qualified archaeologist. If P-01-010526 is not eligible, then no further study or protection is necessary. If P-01-01526 is eligible (and thereby considered a historical resource under Public Resources Code section 21084.1), then impacts to the significant archaeological deposits shall be mitigated through the development and implementation of a data recovery plan pursuant to the requirements of *CEQA Guidelines* section 15126.4(b)(3)(C). The desired future condition for P-01-010526, should it be considered significant under CEQA, would be for the resource to retain those qualities that convey its significance and that justify its status as a historical resource. Such a condition can be achieved through data recovery.	LTS
CULT-2: Ground-disturbing activities associated with site preparation for specific development projects that could occur under buildout of the proposed project could affect previously unrecorded prehistoric and/or historical archaeological deposits.	S	CULT-2: If deposits of prehistoric or historical archaeological materials are encountered during the construction of specific development projects on the site, all work within 25 feet of the discovery shall be redirected and a qualified archaeologist shall be contacted to assess the find, consult with agencies as appropriate, and make recommendations for the treatment of the discovery. Project personnel shall not collect or move any archaeological materials or human remains and associated materials. Prehistoric materials can include flaked-stone tools (e.g., projectile points, knives, choppers) or obsidian, chert, basalt, or quartzite toolmaking debris; bone tools; culturally darkened soil (i.e., midden soil often containing heat-affected rock, ash and charcoal, shellfish remains, faunal bones, and other cultural materials); and stone-milling equipment (e.g., mortars, pestles, handstones). Prehistoric archaeological sites often contain human remains. Historical materials can include wood, stone, concrete, or adobe footings, walls, and other structural remains; debris-filled wells or privies; and deposits of wood, glass, ceramics, metal, and other refuse.	LTS

Table II-1 *Continued*

Environmental Impacts	Level of Significance Without Mitigation	Mitigation Measures	Level of Significance With Mitigation
CULT-2 *Continued*		Adverse effects to such deposits shall be avoided by project activities. If avoidance is not feasible (as determined by the City, in conjunction with the qualified archaeologist), the archaeological deposits shall be evaluated for their eligibility for listing in the California Register. If the deposits are not eligible, avoidance is not necessary. If the deposits are eligible, avoidance of project impacts on the deposit shall be the preferred mitigation. If adverse effects on the deposits cannot be avoided, such effects must be mitigated. Mitigation can include, but is not necessarily limited to: excavation of the deposit in accordance with a data recovery plan (see *CEQA Guidelines* section 15126.4(b)(3)(C)) and standard archaeological field methods and procedures; laboratory and technical analyses of recovered archaeological materials; production of a report detailing the methods, findings, and significance of the archaeological site and associated materials; and curation of archaeological materials at an appropriate facility for future research and/or display. Public educational outreach may also be appropriate. The City shall ensure that any mitigation involving excavation of the deposit is implemented prior to the resumption of actions that could adversely affect the deposit. Upon completion of the assessment, the archaeologist shall prepare a brief report documenting the methods and results of the analysis, and provide recommendations for the treatment of the archaeological deposits discovered. The report shall be submitted to the project applicant, the City, and the Northwest Information Center.	
CULT-3: Ground-disturbing activities associated with site preparation for specific development projects that could occur under buildout of the proposed project could affect paleontological resources.	S	CULT-3: If paleontological resources are discovered during the construction of specific development projects, all work within 25 feet of the discovery shall be redirected and a qualified paleontologist shall be contacted to asses the situation, consult with agencies as appropriate, and make recommendations for the treatment of the discovery. Paleontological resources include fossil plants and animals, and evidence of past life such as trace fossils and tracks. Ancient marine sediments may contain invertebrate fossils such as snails, clam and oyster shells, sponges, and protozoa; and vertebrate fossils such as fish, whale, and sea lion bones. Fossil vertebrate land animals may include bones of reptiles, birds, and mammals. Paleontological resources also include plant imprints, petrified wood, and animal tracks.	LTS

Table II-1 *Continued*

Environmental Impacts	Level of Significance Without Mitigation	Mitigation Measures	Level of Significance With Mitigation
CULT-3 *Continued*		Adverse effects to paleontological resources shall be avoided by project activities. If avoidance is not feasible (as determined by the City, in conjunction with the qualified paleontologist), the paleontological resources shall be evaluated for their significance. If the resources are not significant, avoidance is not necessary. If the resources are significant, adverse effects on the resources shall be avoided, or such effects shall be mitigated. Mitigation can include, but is not necessarily limited to: excavation of paleontological resources using standard paleontological field methods and procedures; laboratory and technical analyses of recovered materials; production of a report detailing the methods, findings, and significance of recovered fossils; and curation of paleontological materials at an appropriate facility (e.g., the University of California Museum of Paleontology) for future research and/or display. Public educational outreach may also be appropriate. The City shall ensure that any mitigation involving excavation of the resource is implemented prior to project construction or actions that could adversely affect the resource. Upon completion of the assessment, the paleontologist shall prepare a report documenting the methods and results, and provide recommendations for the treatment of the paleontological resources discovered. This report shall be submitted to the project applicant, the City, and the paleontological curation facility.	
CULT-4: Ground-disturbing activities associated with site preparation for specific development projects that could occur under buildout of the proposed project could disturb human remains, including those interred outside of formal cemeteries.	S	CULT-4: If human remains are encountered, work within 25 feet of the discovery shall be redirected and the County Coroner notified immediately. At the same time, an archaeologist shall be contacted to assess the situation and consult with agencies as appropriate. The project applicant shall also be notified. Project personnel shall not collect or move any human remains and associated materials. If the human remains are of Native American origin, the Coroner shall notify the Native American Heritage Commission within 24 hours of this identification. The Native American Heritage Commission will identify a Most Likely Descendant (MLD) to inspect the site and provide recommendations for the proper	LTS

Table II-1 *Continued*

Environmental Impacts	Level of Significance Without Mitigation	Mitigation Measures	Level of Significance With Mitigation
CULT-4 *Continued*		treatment of the remains and associated grave goods. Upon completion of the assessment, the archaeologist shall prepare a report documenting the assessment's methods and results and provide recommendations for the treatment of the human remains and any associated cultural materials, as appropriate and in coordination with the recommendations of the MLD. The project sponsor shall comply with these recommendations. The report shall be submitted to the project applicant, the City, the MLD, and the Northwest Information Center.	
K. Visual Resources			
AES-1: Development of specific projects under buildout of the proposed project could create additional sources of day and nighttime light and glare around the Airport.	S	AES-1a: The specific reflective properties of project building materials shall be assessed by the Airport Manager and City staff during the site plan review process, prior to approval of specific development proposals. This review shall ensure that the use of reflective exterior materials is minimized and complies with all applicable FAA requirements, and that any proposed reflective materials would not create additional daytime or nighttime glare.	LTS
		AES-1b: Specific lighting proposals shall be reviewed by the Airport Manager and City staff during the site plan review process, prior to approval of specific development proposals. This review shall ensure that any outdoor night lighting on the project site is downward facing and shielded so as not to create additional nighttime glare and that lighting conforms to all applicable FAA requirements.	

Source: LSA Associates, Inc., 2009.

III. PROJECT DESCRIPTION

This chapter describes the proposed Livermore Municipal Airport General Plan Amendment and Rezoning Project (project) that is evaluated in this program-level Environmental Impact Report (EIR). A description of the project's location, site characteristics, background, and objectives is followed by details of the project itself.

A. PROJECT SITE

The following section describes the project site's location, surrounding land uses, and site characteristics.

1. Location

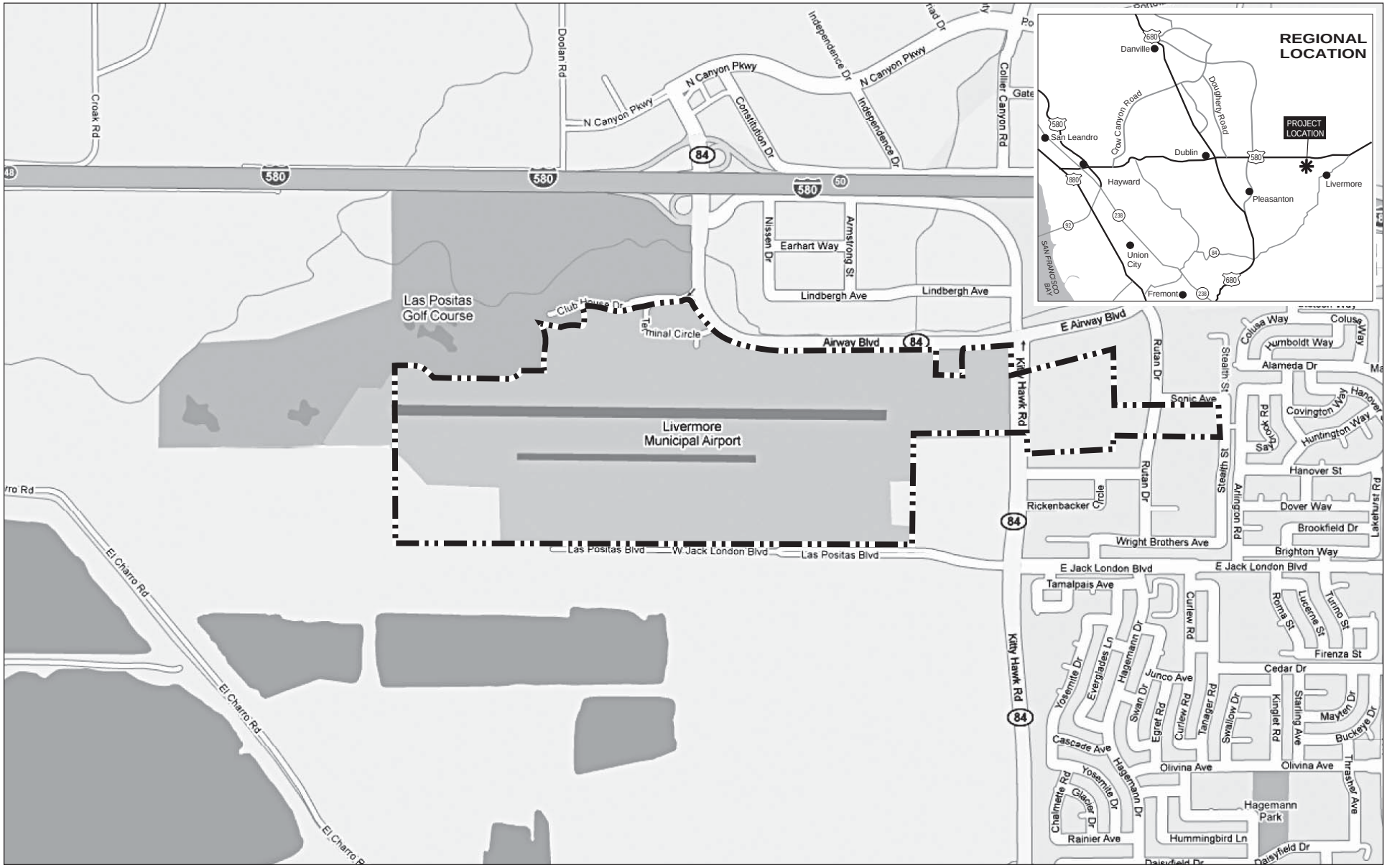
Livermore Municipal Airport (Airport) is located in the City of Livermore (City) in the northeastern portion of Alameda County, approximately 3 miles northwest of Downtown Livermore and 2 miles east of the City of Pleasanton. The irregularly-shaped project site, which comprises approximately 403 acres of the 643-acre Airport, is generally bounded by Club House Drive and Airway Boulevard on the north; parcels bordering Rutan Drive and the City's Water Reclamation Plant on the east; the Water Reclamation Plant and West Jack London Boulevard on the south; and agricultural lands and Las Positas Golf Course on the west. Figure III-1 shows the project site's regional and local context.

Regional vehicular access to the project site is provided via Interstate 580 (I-580), which links the City of Oakland on the west to the outskirts of the City of Tracy in the Central Valley on the east; access to the Airport from I-580 is via Airway Boulevard in the City of Livermore. Local access routes to the Airport, besides Airway Boulevard, include Terminal Circle, Kitty Hawk Road, and West Jack London Boulevard.

2. Surrounding Land Uses

The project site is located in the western part of the City, where residential uses transition to industrial, commercial, and open space uses that function as a buffer between the cities of Livermore and Pleasanton. Refer to Figure III-2 for an aerial photograph of the project site. Land uses surrounding the site are summarized below. Please refer to Section V.A, Land Use, for a more detailed discussion of land use patterns around the site.

- Land uses directly north of the site include a mix of low-intensity industrial and commercial buildings north and east of Airway Boulevard, and Las Positas Golf Course to the west of Airway Boulevard and north of Club House Drive. I-580 is located further to the north of these uses.
- Land uses east of the site include a City-owned and -operated Water Reclamation Plant, low-intensity industrial buildings, and neighborhoods of detached, single-family homes farther to the east and southeast.



LSA

FIGURE III-1

Livermore Municipal Airport General Plan
Amendment and Rezoning Project EIR
Project Vicinity and Regional Location

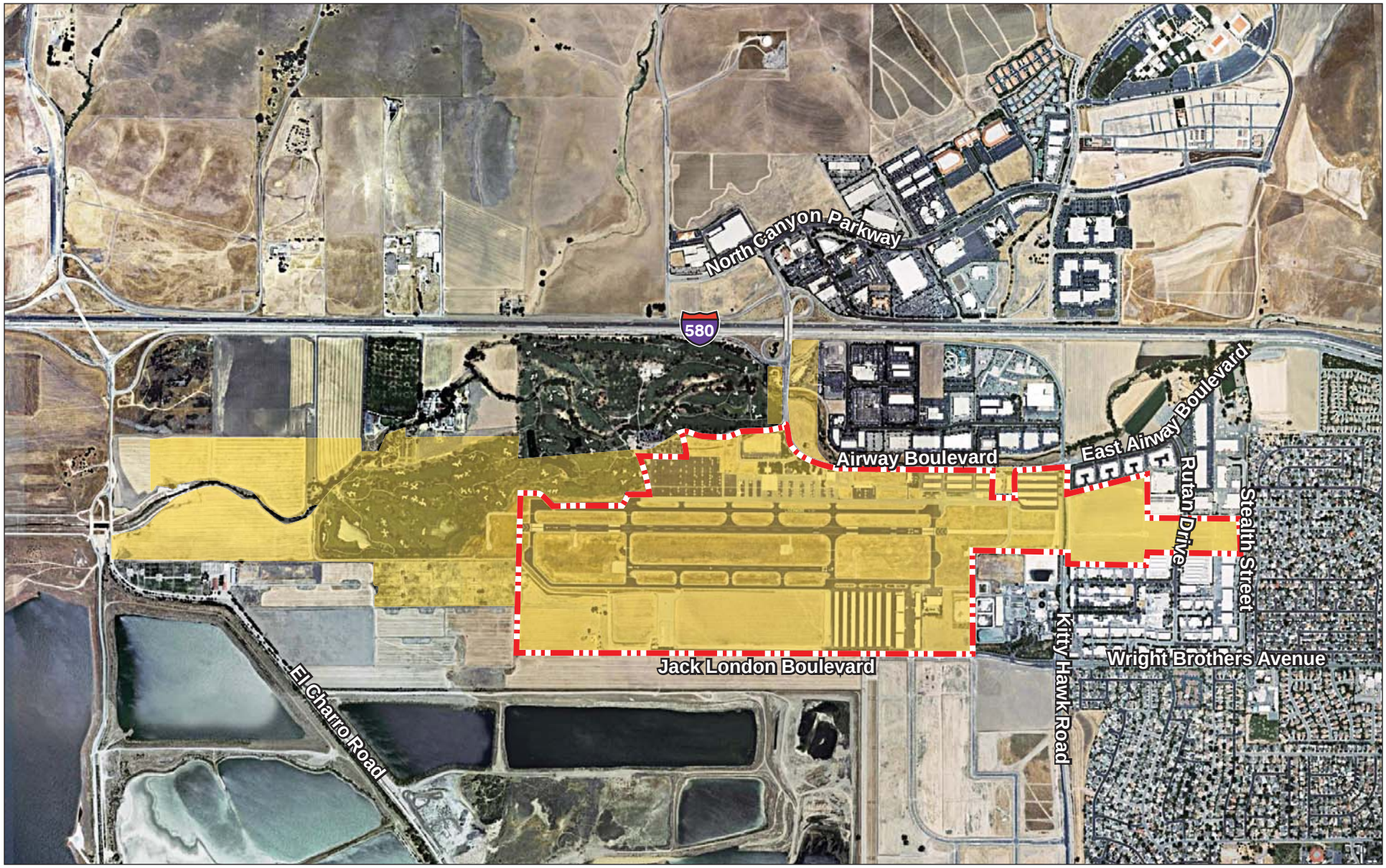
N

0 800 1600
FEET

PROJECT SITE

SOURCE: GOOGLE MAPS, 2009; LSA ASSOCIATES, INC., 2009

I:\CLV0802 Livermore Airport\figures\Fig_III1.ai (8/11/09)



LSA

FIGURE III-2

Livermore Municipal Airport General Plan Amendment and Rezoning Project EIR

Aerial Photo

N

0 600 1200

FEET

PROJECT SITE

AIRPORT/CITY OWNED PARCELS

SOURCE: GOOGLE EARTH; LSA ASSOCIATES, INC., 2009

I:\CLV0802 Livermore Airport\figures\Fig_III2.ai (6/22/09)

Back of color Figure III-2

- The area south of the site and West Jack London Boulevard consists of graded, undeveloped land and the Oaks Business Park, an undeveloped industrial subdivision. The area to the southwest of the project site consists of active gravel quarries. Land to the south and southwest of the project site is located outside Livermore's jurisdictional boundaries, but it is within the City's Planning Area.
- Land to the west of the project site consists of open space, including undeveloped, graded land owned by the Airport, as well as portions of Las Positas Golf Course. Residential areas in Pleasanton lie further to the west.

3. Site Characteristics

The project site consists primarily of the portion of the Airport developed with runways, hangars, and Airport services buildings and associated facilities, including Fixed Base Operator (FBO)[1] facilities, a fire station, commercial buildings, the air traffic control tower, and offices. The Airport is a General Aviation Airport which is used by public and private aircraft. Eleven public use airports are located within a 30-mile radius of the Livermore Municipal Airport. Of these 11 airports, four have longer runways than the Livermore Municipal Airport. The closest public use airport to the project site is the Byron Airport, which is located approximately 12 miles northeast of the project site.

The Airport has two parallel runways: 1) a 5,253-foot lighted main runway on the north and 2) a 2,700-foot unlighted training runway on the south. The Airport is accessible 24 hours a day, although during the hours when the air traffic control tower is not staffed (9:00 p.m. to 7:00 a.m.), pilots operating in and around the Airport are responsible for coordinating their own access.

a. Existing Buildings and Land Uses. The interior of the project site is primarily occupied by the two runways and flat, mowed grassland between and immediately around the runways. Buildings are clustered around the northern and southern boundaries of the site. The terminal building, Federal Aviation Administration (FAA) air traffic control tower and offices, Fire Station #10, jet parking area, and hangars are located along the northern boundary of the site. An apron, airship mooring space, and hangars are located near the southern boundary of the site. The portion of the project site east of Kitty Hawk Road is the Runway Approach Zone and is flat, sparsely vegetated open ground that will remain undeveloped.

The Airport contains 670,400 square feet of existing interior building space, including 22 hangar buildings. Existing uses are summarized in Table III-1. Key buildings on the site are listed below:

- FAA Air Traffic Control Tower and Offices (590 Terminal Circle). This FAA-owned building contains air traffic control services and administrative offices. The air traffic control tower is staffed from 7:00 a.m. to 9:00 p.m.

[1] A "Fixed Base Operator" or "FBO" means a business operating at the Airport that provides aircraft services to the general public, including but not limited to: aircraft sales, rental, maintenance, and repair; parking, tiedown, or storage of aircraft; flight training; air taxi/charter operations; and specialty services such as instrument and avionics maintenance, painting, overhaul, aerial application, and aerial photography.

Table III-1: Existing Uses at the Airport

Facility Type/Uses	Existing	
	Square Feet	**Jobs**
Northside FBO Facilities	12,420	14
Northside Corporate Hangars	0	0
Southside FBO Facilities[a]	20,560	42
Southside Corporate Hangars, City	20,100	1
Southside Corporate Hangars, Private	0	0
City Storage Hangars, North & South[b]	576,730	8
Southside Private Storage Hangars	0	0
City Power Vault & Generator Building	390	0
Fire Station No. 10	3,720	9
Airport Administration Building & Concessions	2,560	14
FAA Air Traffic Control Tower & Offices	1,500	21
Other Commercial (Non-aviation)	32,420	26
Helicopter Facility with Offices on Second floor	0	0
TOTAL	**670,400**	**135**

Notes: FBO = Fixed Base Operator
[a] Existing FBO facility is City-owned.
[b] Includes hangar units rented by FBOs, some with office space.
Source: City of Livermore, 2009.

- Terminal Building (636 Terminal Circle). This public building contains airport administrative offices and restrooms.
- Hangar S-1 (299 W. Jack London Boulevard). Hangar S-1 is a public facility with offices, a flight school, aircraft leasing and repair services, and parking.
- Fire Station #10 (330 Airway Boulevard). Fire Station #10 is owned and operated by the City and serves both the Airport and surrounding neighborhoods.
- Ruby Hill Aviation (550 Airway Boulevard). This privately-owned building is an FBO with offices, hangars, and an apron. It is used by various aviation uses, including charter and private aircraft uses.
- Commercial Building "Airport 1" (180-196 Airway Boulevard). This light-industrial multi-tenant facility does not provide direct runway access and contains one flight school and various non-aviation uses.
- Commercial Building "Airport 2" (160 Airway Boulevard). This building contains office uses that are currently occupied by a health services firm.

b. Employment. There are approximately 135 jobs at the Airport. The most significant centers of employment on the project site are the administrative and office space associated with the FBOs on the south side of the Airport (accounting for 31 percent of total jobs on the project site), non-aviation commercial uses (19 percent) and the FAA air traffic control tower and offices (16 percent). The remainder of the jobs at the Airport are distributed among the airport administration building, aircraft maintenance buildings, and other facilities. Refer to Table III-1 for additional detail.

c. Circulation. Motor vehicle access is primarily available along the perimeter of the Airport. Access to the terminal building, FAA air traffic control tower, and other key facilities on the north side of the site is via Airway Boulevard and Terminal Circle. The main Airport parking lot is located

north of Terminal Circle. Access to the hangars and other facilities on the south side of the Airport is via Kittyhawk Road and West Jack London Boulevard.

4. Land Use Designations

The following subsection provides a brief overview of land use designations within the project site. Chapter IV, Consistency With Plans and Policies, provides additional discussion of applicable land use regulations and the consistency of the proposed project with adopted plans and policies.

a. City of Livermore General Plan. The existing General Plan designation for the project site is Community Facilities – Airport (CF-AIR). The Community Facilities designation provides areas for public agencies and institutions, including City, County, State and federal government facilities, Livermore Valley Joint Unified School District property, and the Livermore Municipal Airport.

b. City of Livermore Zoning. The project site is currently zoned for the following uses: Education and Institution (E), which includes public and quasi-public uses; and Planned Development (PD), which is intended to allow for flexible development standards and development that is consistent with the underlying General Plan land use designation.

5. Proposed Development Projects

Livermore Air Center, LLC, a fixed base operator (FBO), was granted a license and lease agreement by City Council in June 2007. The FBO would be located on the north side of the Airport on an approximately 10-acre site and would include a main building with vehicle parking, maintenance facilities, hangars, and an above-ground storage facility, and various apron and transient parking areas. In addition, a license and lease agreement has been granted for development of a hangar facility on an approximately 9-acre site at the south side of the Airport. The hangar facility would include T-hangars and box hangars, access taxilanes, a taxiway, and a self-fueling station. These projects must receive site plan approval from the City prior to construction, and independent environmental review under CEQA separate from this EIR would be required. These projects were determined by FAA to be Categorically Excluded from review under the National Environmental Policy Act (NEPA) on May 28, 2008.[2] It should be noted that projects could occur regardless of implementation of the proposed project evaluated in this EIR, as they are allowed uses under the existing zoning regulations. Therefore, the FBO and hangar facility are analyzed in this EIR only inasmuch as they would contribute to total buildout of the site and cumulative environmental impacts.

B. PROJECT BACKGROUND

The purpose of the project is to revise the land use regulations on the site to be more consistent with the underlying General Plan designation of CF-AIR. The existing zoning regulations on the site are not specific to airport uses. The project is intended to better enable City staff to review development proposals on Airport land, and to ensure that these proposed developments would allow for the safe and efficient operation of the Airport. Because the 1975 Livermore Municipal Airport Master Plan (Master Plan) would not be updated or replaced (see below), all references to the Master Plan in the General Plan would need to be deleted as part of the project.

[2] Pomeroy, Douglas R, 2008. Letter from the Federal Aviation Administration to Leander Hauri, Airport Manager re. Livermore Municipal Airport FBO and Hangar Construction Categorical Exclusion Approval. May 28.

On October 28, 2008, the City released the first Notice of Preparation (NOP) for the EIR, which included notice of a scoping session on November 25, 2008 which was subsequently held on that day. An amended NOP was released on May 14, 2009. The amended NOP included additional information not included in the first NOP about amendments to the General Plan to remove references to the 1975 Master Plan. A second scoping meeting was held on May 28, 2009. Both NOPs and public and agency comments received in response to these NOPs are included in Appendix A.

The Master Plan was prepared to address "the short, intermediate, and long term periods of development for the airport." The main objective of the Master Plan is to provide guidelines for future development at the Airport to satisfy demand for aviation while ensuring that this development is protective of the environment and is consistent with community goals.

The Master Plan is based on socioeconomic and other data dating from the early- and mid-1970s. These data include population distribution and trends, employment and income information, and flight operations forecasts. Much of this baseline information is outdated, rendering the document of no use or efficacy as a future planning guide. In addition, this outdated document identifies impacts associated with Master Plan buildout only until 1995. The proposed rezoning would impose limits on Airport development that are more restrictive than those in the old, outdated Master Plan. Therefore, the Master Plan is no longer relevant, and would be rescinded as an action independent of the proposed project.[3]

C. AIRPORT OPERATIONS AND BASED AIRCRAFT

The following section includes a discussion of existing and forecast flight operations and existing and forecast based aircraft at the Airport. This discussion is based primarily on information provided by Coffman Associates, Inc., an airport consulting firm retained by the City to prepare aviation forecasts for the Airport. The forecast report prepared by Coffman Associates is included in Appendix B.

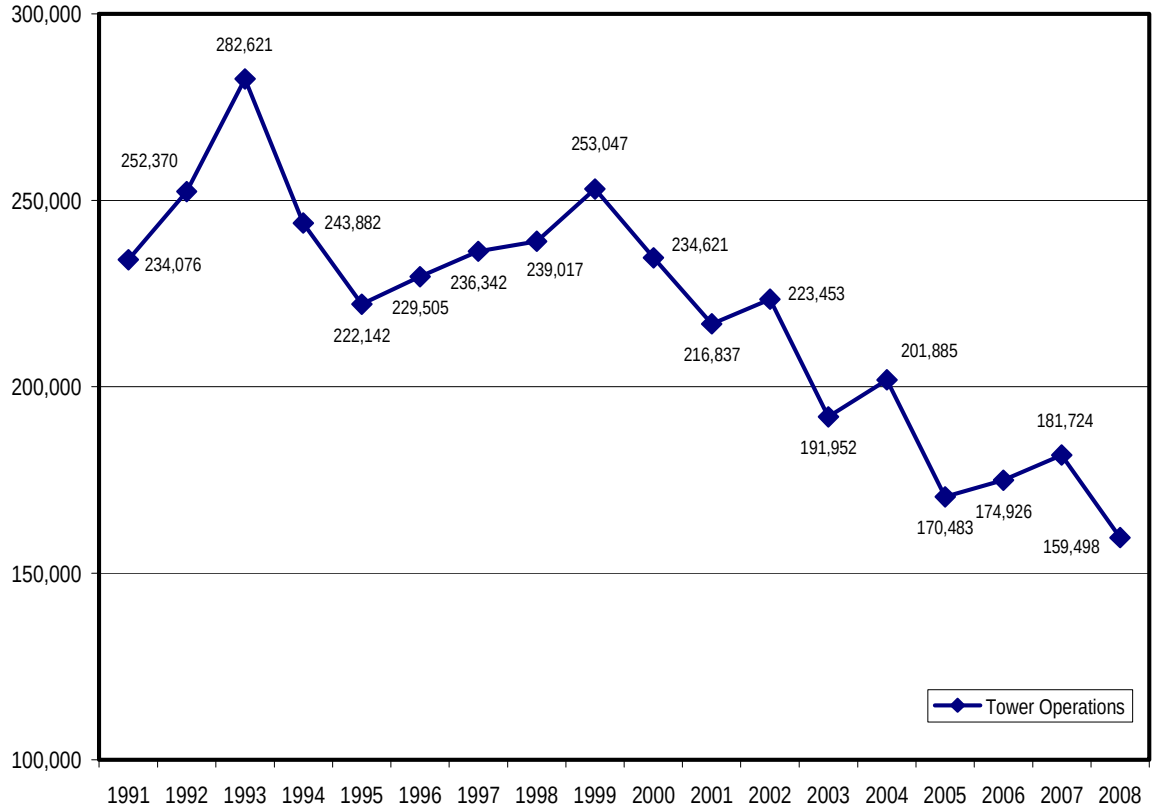
1. Existing and Forecast Flight Operations

As discussed above, the Airport has two parallel runways: 1) a 5,253-foot lighted main runway on the north and 2) a 2,700-foot unlighted training runway on the south. The lighted runway is equipped with precision instruments that allow for flight operations to continue when visibility is poor. In general, flight traffic patterns at the Airport are well-defined, although wind conditions can change the length and width of the traffic pattern area (because aircraft land and depart into the wind). At the Airport, winds are typically from the west. Therefore, most departures are to the west and arrivals are from the east. Flight operations at the Airport are conducted under the Federal Aviation Regulations (FAR) and are governed and enforced by the FAA. Since 1991, total aviation operations as counted at the Airport air traffic control tower (i.e., take-offs and landings) have fluctuated from a high of 282,621 in 1993 to a low of 159,498 in 2008 (see Chart 1).[4]

[3] An Airport Master Plan is an optional policy document under State and federal regulations, and is not legally required. Therefore, a new Master Plan would not be required to replace the existing one.

[4] FAA, 2009. Air Traffic Activity System.

Chart 1: Livermore Municipal Airport Total Aviation Operations



Source: FAA, 2009.

Coffman Associates, Inc. prepared "unconstrained" flight operations forecasts for Livermore Municipal Airport that were approved by FAA in the fall of 2008 (see Appendix B). Unconstrained forecasts are those that may reasonably be expected to occur at an airport over a specific period of time. While unconstrained forecasts provide an indication of the long-term growth potential at an airport, actual growth potential – which is affected by many influences at the local, regional, and national levels – may fluctuate above or below the unconstrained forecast levels. Refer to Table III-2a for a summary of existing and projected future operations. Any changes in flight operations over time would be independent of the proposed project because the land use regulations currently in place at the Airport (primarily the 1975 Master Plan, General Plan, and Zoning Code) would allow for the development of airport uses, such as hangars and FBO facilities, that would be similar to those that could be constructed after implementation of the proposed project.

In addition, as noted in the Coffman Associates report, "[a]viation forecasts are typically related to the population base, economic strength of the region, and the ability of the region to sustain a strong economic base over an extended period of time." Typically, airport facilities are planned based on the

anticipated demand associated with these factors.[5] Upon accepting federal grants to construct the Airport, the City assured the federal government under Title 49, United States Code, that it would agree to several grant assurances, including making the airport available to the public on reasonable terms without unjust discrimination to all types, kind and classes of aeronautical activities, including commercial aeronautical activities offering services to the public at the airport.[6] The assurances permit the Airport to "prohibit or limit any given type, kind or class of aeronautical use of the airport," but only "if such action is necessary for the safe operation of the airport or necessary to serve the civil aviation needs of the public." There is currently no safety issue or civil aviation need that would support local restriction of aeronautical activities at the Airport. The federal government could also permit local limitations on aeronautical activities through a federal procedure based on noise impacts. However, the City does not qualify for use of that procedure as its noise impacts do not exceed federal limitations. Therefore, the Airport is obligated to accommodate reasonable demand for aviation at the Airport. The Airport's federal grant assurances are included in Appendix E.

Based on the forecast, operations are expected to increase to 188,400 in 2013, 197,900 in 2018, and 220,100 in 2030.[7] The general aviation characteristics of airports are classified by the airport traffic control tower as either "itinerant" or "local." Itinerant operations are those performed by aircraft with a specific origin or destination away from the airport. A local operation is a take-off or landing performed by an aircraft that operates within sight of the airport, or which executes simulated approaches or "touch-and-go" operations at the airport. Generally, local operations are used for training purposes. In 2007/2008[8] approximately 76,210 (42 percent) of the operations at the Airport were itinerant and 105,047 (58 percent) were local. This composition of itinerant and local operations is expected to remain fairly constant through 2030. In 2030, Coffman Associates expects that approximately 90,430 (41 percent) of the operations at the Airport will be itinerant and 129,670 (59 percent) will be local. Table III-2a summarizes the number and composition of existing and future operations at the Airport.

2. Existing and Forecast Based Aircraft

Table III-2b provides a summary of existing and forecast based aircraft at the Airport. Based aircraft are operational aircraft based at an airport for the majority of a year. In 2007/2008 there were 600 based aircraft at Livermore Municipal Airport, with an increase of 33 aircraft since 1998. This increase represents an average growth rate of 0.6 percent between 1998 and 2008. After taking into account a variety of data (including FAA projections, the market share of County aircraft, and historical based aircraft rates), Coffman Associates forecast that 620 aircraft would be based at the Airport by 2013, 650 aircraft would be based at the Airport by 2018, and 720 aircraft would be based at the Airport by 2030.

[5] Coffman Associates, Inc., 2008. Unconstrained Forecasts, Airport Rezoning Project, Livermore Municipal Airport. October 10.

[6] Livermore, City of, 2009. Livermore Municipal Airport Website: www.ci.livermore.ca.us/airport/faqs.html. June 30.

[7] Coffman Associates, Inc., 2008. Unconstrained Forecasts, Airport Rezoning Project, Livermore Municipal Airport. October 10.

[8] 2007/2008 flight data shown in Table III-2 represent partial year operations as estimated by Coffman Associates and differ from the 2007 and 2008 data in Chart 1.

Table III-2a: Existing and Forecast Livermore Municipal Airport Flight Operations

Type of Operation	Base Year	Forecasts		
	2007/2008	2013	2018	2030
Itinerant[a]				
General Aviation	74,480	74,400	78,000	86,400
Air Taxi	1,500	2,100	2,600	3,800
Military	230	230	230	230
Total Itinerant	**76,210**	**76,730**	**80,830**	**90,430**
Local[b]				
General Aviation	104,977	111,600	117,000	129,600
Military	70	70	70	70
Total Local	**105,047**	**111,670**	**117,070**	**129,670**
Total Operations	**181,257**[c]	**188,400**	**197,900**	**220,100**

[a] "Itinerant" operations are those performed by aircraft with a specific origin or destination away from the airport.
[b] "Local" operations are take-offs or landings performed by aircraft that operate within sight of the airport, or which execute simulated approaches or "touch-and-go" operations at the airport.
[c] Partial-year operations as estimated by Coffman Associates.
Source: Coffman Associates, Inc., 2008.

Table III-2b: Existing and Forecast Livermore Municipal Airport Based Aircraft

Type of Aircraft	Base Year	Forecasts		
	2007/2008	2013	2018	2030
Single-Engine	552	564	579	620
Multi-Engine	39	43	53	73
Jets	6	9	13	20
Helicopters	3	4	5	7
Total Based Aircraft	**600**	**620**	**650**	**720**

Source: Coffman Associates, Inc., 2008.

The based aircraft fleet mix at the airport is currently dominated by single-engine aircraft. There are 552 single engine aircraft (92 percent of the total fleet mix), 39 multi-engine aircraft (6.5 percent), six jets (1 percent), and three helicopters (0.5 percent). Coffman Associates projects that while the number of single-engine aircraft will increase, their percentage in the total fleet mix will decrease, namely due to a slight increase in the percentage of multi-engine and jet aircraft. By 2030, Coffman Associates expects that there will be 620 single-engine aircraft (86 percent of the total fleet mix), 73 multi-engine aircraft (10.2 percent), 20 jets (2.8 percent), and seven helicopters (1 percent).

D. PROJECT OBJECTIVES

The proposed project would amend the General Plan to remove references to the outdated 1975 Airport Master Plan and would rezone a portion of the Airport to provide the City with an area occupied by aviation-oriented uses. The specific objectives of the proposed project are to:

- Establish a maximum development level for the Airport that is lower than that identified in the 1975 Airport Master Plan and is based on the 2008 Unconstrained Forecasts.

- Create a zoning district, consistent with the underlying General Plan land use designation, which specifically addresses the unique uses and development limitations for the Airport by identifying permitted and conditionally permitted uses.
- Provide standards for Airport operations and services that would allow for safe and efficient operation as required by federal and State airport design and safety criteria including height limitations, airspace obstructions or hazards, runway protection and instrument approach zones, required setbacks, building restriction lines, and parking requirements.
- Provide areas to accommodate the level of forecasted demand for hangars, fixed base operational facilities and opportunities for aeronautical activities and services as required by federal law and Tri-Valley and regional market demand.
- Establish procedures for City review and evaluation of development proposals that take into consideration both aviation needs and community concerns.
- Amend the General Plan to eliminate references to the rescinded 1975 Airport Master Plan.
- Preserve the current runway configuration to ensure the safe operation of all aircraft that utilize the runways.
- Provide opportunities for existing aeronautical facilities to utilize space more efficiently by optimizing leasehold configurations.
- Preserve the Airport's role as a key disaster relief air transportation hub for the Tri-Valley area.
- Preserve the Airport's role as a self-sufficient enterprise that provides economic benefits to the City, the Livermore Valley Joint School District, the County, including various County special districts, and the entire Tri-Valley economy, and further enhances the general economy by providing opportunities for aeronautical activities.

E. PROPOSED PROJECT

The proposed project would involve changes to City land use policies and regulations to guide future development at the Airport. The project includes two key components (General Plan Amendment and Rezoning), which are described below, along with other physical changes that could result from the proposed project.

1. General Plan Amendment

The General Plan would be amended to remove all references to the Master Plan, which would be rescinded, as described previously. The General Plan would also be amended to acknowledge the revised estimate of annual aircraft operations and the proposed number of stored/parked aircraft at the Airport (although only the FAA may regulate flight operations) based on the "unconstrained" forecasts prepared by Coffman Associates, Inc. (see Appendix B).

The proposed amendments to the General Plan are as follows. Added text is shown with <u>underlining</u>. Deleted text is shown with ~~strikeout~~.

Circulation Element

The following changes would be made to page 5-18 of the Circulation Element:

Air Transportation

The Livermore Municipal Airport (Airport) is the only airport in the Tri-Valley area and is the fourth busiest airport in the Bay Area. As such, the Airport provides an important service to both residents and industries that extend beyond the Tri-Valley area. The location and availability of services at the Airport has assisted in facilitating the economic growth of the Tri-Valley area. As the Tri-Valley continues to experience industrial and residential growth, the Airport will provide much needed services to support this growth and a strong local economy.

As a general aviation airport, most aircraft served by the Airport are small, privately-owned, single and twin-engine propeller, and turbo prop aircraft (e.g., Cessna 182~~500~~). In ~~2000~~2008, these smaller aircraft comprised approximately ninety ~~five~~ nine percent of all aircraft served by the Airport. The remaining ~~five~~ one-percent of aircraft being served by the Airport were small and medium sized corporate jets (e.g., Challenger 601, Lear ~~3~~25, Hawker 25~~MD 81~~, etc.) and helicopters. In ~~2000~~2008, the Airport experienced approximately ~~257,500~~159,500 total aircraft flights. The Airport does not ~~serve~~ provide commercial airline service ~~or flights~~.

The following changes would be made to page 5-30 of the Circulation Element:

Goal CIR-8: Support and protect safe and efficient aviation operations at the Municipal Airport.

Objective CIR-8.1: Ensure that aviation operations, uses, and development are protected from incompatible adjacent land uses, as well as meet the needs of the local and regional economy.

Policies:

P1: Future development and operations at the Municipal Airport shall be in conformance with an approved ~~master plan~~ Airport zoning district. The overall scale of operations at the Municipal Airport shall not exceed the thresholds listed below.

(a) Livermore Municipal Airport is a general aviation airport. Scheduled passenger service flights shall be prohibited.

~~*(b)* To the greatest extent feasible, jet flights shall be restricted to approximately five percent of the total annual aircraft operations.~~

(b) To the greatest extent feasible, annual aircraft operations ~~shall not exceed~~are forecasted for ~~370,000~~220,100 operations ~~in any given~~by year 2030.~~,~~ In the event that flight operations exceed forecasts, including itinerant and local operations, the City shall re-evaluate the environmental effects of increased operations.

(c) To the greatest extent feasible, the total number of based aircraft to be stored/parked at the Municipal Airport shall not exceed ~~900~~720 ~~in any given year~~, including hangar and apron space areas. In the event that demand for based

aircraft exceeds the storage supply, the City shall re-evaluate the environmental effects of allowing additional based aircraft.

(d) No more than 60 percent of the Airport area designated Community Facility-Airport (CF-AIR) shall be covered with impervious surfaces, including but not limited to, buildings, taxiways, runways, parking areas, fuel areas, and wash areas.

(e) Night-time flights between 10:00 p.m. and 6:00 a.m. shall be discouraged to the greatest extent feasible.

(f) Aircraft and airport operation noise levels shall be consistent with the thresholds established in the General Plan Noise Element.

P2: To protect the Municipal Airport from encroachment by incompatible uses, the City shall encourage development of property within the immediate vicinity of the Airport for light industrial and transportation uses to the extent that noise standards and flight clearance requirements are maintained, and environmental impacts are adequately mitigated.

P3: New residential land use designations or the intensification of existing residential land use designations shall be prohibited within the Airport Protection Area, as shown on Land Use Element Figure 3-5.

Action:

A1: Develop and periodically update an ~~master plan~~ Airport zoning district for the Airport to implement Policy CIR-8.1.P1.

Noise Element

Figure 9-1, "Existing Noise Contours," on page 9-21 of the Noise Element would be updated (per Figure V.D-2, Existing CNEL Noise Contours, in Section V.D, Noise, of this EIR).

Figure 9-2, "2025 Noise Contours," on page 9-25 of the Noise Element would be updated to include the 2030 Airport dBA line (per Figure V.D-5, 2030 CNEL Noise Contours, in Section V.D, Noise, of this EIR).

The following changes would be made to page 9-23 of the Noise Element:

Airport-Related Noise

The Livermore Municipal Airport is located in the northwest portion of the City and serves the City and Alameda County. The City of Livermore, in participation with surrounding cities, established an Airport Protection Area to keep surrounding land uses compatible with aviation activities. The City shall ~~has~~ adopt~~ed~~ an Airport zoning district ~~master plan~~ for aviation activities at the Airport in order to address the area's continuing population growth and demand for air transportation facilities. Anticipated noise contours in the vicinity of the Airport in the year 20~~2~~30 are shown in Figure 9-2.

Public Safety Element

The following changes would be made to page 10-29 of the Public Safety Element:

Goal PS-5: Minimize risks associated with aircraft operations at the Livermore Municipal Airport.

Objective PS-5.1: Regulate land use within the vicinity of the Livermore Municipal Airport.

Policy:

P1: All construction in Livermore shall be consistent with the required setbacks and height restrictions for the Airport Protection Area, as well as the ~~policies of a master plan~~ requirements of an Airport zoning district adopted to plan for future Airport operations.

2. Airport Use Rezoning

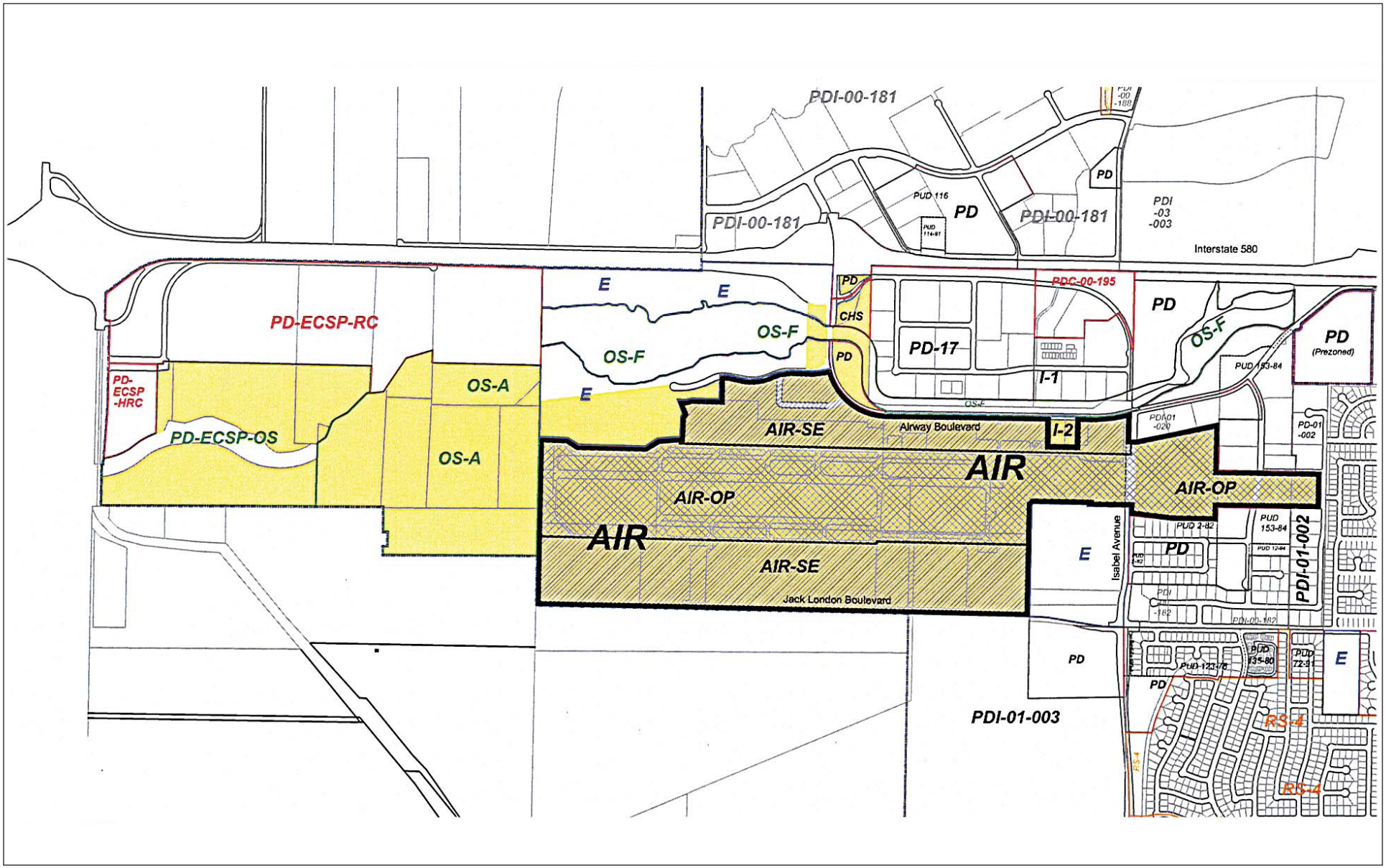
The entire project site would be rezoned from Education and Institution (E) and Planned Development (PD) to a new Airport (AIR) Zoning District. The purpose of the rezoning is to ensure that future development at the Airport is aviation-related and would allow for the safe and efficient operation of the airport. In addition, the rezoning would establish reasonable development projections for the project site in specific land use categories (see proposed ordinance, below, for detail). Based on these reasonable development projections, development totaling 1,418,680 square feet of interior building space would be expected in the project site. The AIR Zoning District would consist of two Subdistricts: 1) the Airport Operations (AIR-OP) Zoning Subdistrict and 2) the Airport Service (AIR-SE) Zoning Subdistrict. Refer to Figure III-3 for a map of the proposed rezoning.

a. AIR-OP Subdistrict. The AIR-OP Subdistrict would provide standards for Airport operations facilities and allow for the development of aviation land uses and related facilities that are necessary for continued operation of the Airport. Uses that would be permitted under the AIR-OP Subdistrict would include runways, taxiways, run-up aprons, airfield lighting, signage, and similar uses. Generally, these facilities are regulated by State and federal agencies, and not by local agencies.

Therefore, future development in the AIR-OP Subdistrict would be largely unaffected by the proposed rezoning.

Maximum building height in the AIR-OP Subdistrict would be as defined in FAA regulations. The relevant FAA regulations are primarily from 14 Code of Federal Regulations, Part 77. In summary, the height regulations change at various distances from the runway, the terminal obstacle clearance areas, and other airport operational areas. Building height is limited to 200 feet above ground level (or above the established airport elevation, whichever is higher), within 3 nautical miles of an airport. The relevant regulations can be found on the FAA website: www.access.gpo.gov/nara/cfr/waisidx_08/14cfr77_08.html.

b. AIR-SE Subdistrict. The AIR-SE Subdistrict would provide standards for Airport support facilities and would allow for the development of aviation-related land uses and associated facilities to support Airport operations. Uses that would be permitted by right under the AIR-SE Subdistrict include access taxilanes, aircraft hangars, aircraft manufacturing and research uses, aircraft sales,



LSA

N

NOT TO SCALE

AIRPORT/CITY OWNED PARCELS (643 ACRES)

AIR PROPOSED AIRPORT (AIR) ZONING DISTRICT

PROPOSED AIRPORT SERVICE (AIR-SE) ZONING SUBDISTRICT

PROPOSED AIRPORT OPERATIONS (AIR-OP) ZONING SUBDISTRICT

SOURCE: CITY OF LIVERMORE, 2009

I:\CLV0801 Livermore Airport\figures\Fig_III3.ai (6/17/09)

FIGURE III-3

Livermore Municipal Airport General Plan Amendment and Rezoning Project EIR

Proposed Rezoning

ancillary support services, and similar uses. One restaurant would be permitted in the Subdistrict if it is associated with Airport administrative offices or a fixed base operator. Special uses, such as an aviation museum, stand-alone restaurant, and a caretaker or security personnel residence would be permitted with a conditional use permit. Maximum building height in the AIR-SE Subdistrict would be as defined in FAA regulations and Section 3-05-270.C of the Zoning Code. Section 3-05-270.C of the Zoning Code restricts building height to 40 feet within 5,000 feet of any airport runway. Therefore, all buildings in the project site would be effectively limited to 40 feet.

The proposed amendments to the Zoning Code also contain parking requirements for uses in the AIR-SE Subdistrict. These requirements range from one space per 250 square feet of interior office, retail, and service uses to one space per 7,000 square feet of tiedown space. Signage within the project site would generally be regulated by existing provisions in the Zoning Code, although certain new restrictions would apply. For instance, "monument" signs at each entrance to the Airport would be limited to 32 feet of sign area and 8 feet in height.

c. Airport District Zoning Text. The AIR-SE Subdistrict would provide standards for Airport support facilities and would allow the City of Livermore Zoning Code to govern uses at the Airport. The new AIR Zoning District is reproduced below:

Chapter 2-71
AIR – Airport District

Sections:
2-71-010 Purpose.
2-71-020 Definitions.
2-71-030 AIR-OP (operations) subdistrict.
2-71-040 AIR-SE (service) subdistrict.
2-71-050 Uses permitted.
2-71-060 AIR-OP uses permitted.
2-71-070 AIR-SE uses permitted.
2-71-080 Accessory uses.
2-71-090 Conditional uses.
2-71-100 Development regulations.
2-71-110 Lot development regulations.
2-71-120 Other requirements.
2-71-130 Signs.
2-71-140 Landscaping.
2-71-150 Site plan approval.

2-71-010 Purpose:
The purpose of the Airport (AIR) district is to provide the City with a unique area occupied by aviation oriented uses. To encourage a functional and compatible association of uses in identifiable areas, the AIR district is divided into two subdistricts, the Airport-Operations subdistrict (AIR-OP) and the Airport-Service subdistrict (AIR-SE), as defined in the following sections.

2-71-020 Definition(s):
For the purposes of this chapter, the following definition(s) shall apply:

"Fixed Base Operator" (FBO) means a business operating at the Airport that provides aircraft services to the general public, including but not limited to: Aircraft sales, rental, maintenance, and repair; parking, tiedown, or

storage of aircraft; flight training; air taxi/charter operations; and specialty services such as instrument and avionics maintenance, painting, overhaul, aerial application, and aerial photography. A"Full Service" FBO is engaged in the retail sale of aviation fuels and provides full fuel and line services to all based and transient General Aviation aircraft.

"Air Cargo Operation" means an operation that involves the carriage of property under the appropriate Federal Aviation Regulation (FAR) and operates aircraft that are within the weight limitations established for the Airport

"Air Charter Operation" means an operation that involves on-demand, non-scheduled passenger services and operates under the appropriate FAR (14 CFR Part 135 for common carriage or 14 CFR Part 125 for private carriage) with aircraft that provide no more than 30 passenger seats and are within the weight limitations established for the Airport.

"Aircraft Maintenance" means the repair, adjustment or inspection of aircraft. Major repairs include major alterations to the airframe, power plant, propeller and accessories. Minor repairs include normal, routine annual inspection with attendant maintenance, repair, calibration or adjustment or repair of aircraft and their accessories.

"Aircraft Sales" means the sale of new or used aircraft through franchises or licensed dealership or distributorship (either on a retail or wholesale basis) of an aircraft manufacturer or otherwise; and provides such repair, services and parts as necessary to meet any guarantee or warranty on new or used aircraft sold by it.

"Apron" means those paved areas of the Airport within the AOA designated by the Airport for the loading and unloading of passengers, servicing, or parking of aircraft.

"Corporate Hangar" means an enclosed structure to hold corporate style aircraft in protective storage. Such hangars may include office space, rest room facilities as well as maintenance and parts storage areas.

"Minimum Standards for Commercial Aeronautical Activities" otherwise referred to as "Minimum Standards," means those qualifications, standards, and criteria set forth as the minimum requirements established as a condition for the right to engage in commercial aeronautical activities at the Airport, and as they may be amended from time to time.

"Run-up" means aircraft engine operation above normal idle power for purposes other than initiating taxi or takeoff.

"Specialized Aviation Service Operator" (SASO) means a commercial operator engaged in providing a single aeronautical service, or a combination of aeronautical services, including, but not limited to Aircraft Maintenance, avionics or instrument maintenance, Aircraft rental and/or flight training, Aircraft charter or Aircraft management, Aircraft sales, and/or Aircraft storage. A SASO is not permitted to engage in aeronautical activities involving the sale of aviation fuel.

2-71-030 AIR-OP (operations) subdistrict.
The purpose of this subdistrict is to provide standards for airport operation facilities. The AIR-OP subdistrict is intended to provide development standards and allow aviation land uses and related structures/facilities necessary for the safe operation of the Livermore Municipal Airport.

2-71-040 AIR-SE (service) subdistrict.
The purpose of this subdistrict is to provide standards for airport support facilities. The AIR-SE subdistrict is intended to provide development standards and allow aviation-related land uses and related structure/facilities necessary to adequately support the operation of the Livermore Municipal Airport.

2-71-050 Uses permitted.
The uses identified in LPZC Sections 2-71-060 and 2-71-070 are permitted, subject to approval of any prerequisite permits and conformance to all applicable regulations set forth in this chapter, in LPZC Part 3, and elsewhere in this code.

2-71-060 AIR-OP uses permitted.
Runways.
Taxiways.
Run-up aprons.
Lighting/signage for runway, taxiway, and apron operations as required by applicable federal, State, and County standards.
Service and emergency roads.
Any navigational antennas/facilities and meteorological equipment as required by applicable federal, State, and County standards.
Any uses consistent with Federal Aviation Administration (FAA) regulations and State of California airfield design guidelines including obstacle clearances.

2-71-070 AIR-SE uses permitted.
Access taxiways.
Taxilanes.
Aircraft tiedown and parking areas.
Aircraft hangars (T, box or corporate configuration).
Aircraft manufacturing and research (general aviation aircraft only).
Aircraft charter/rental.
Air rescue.
Aircraft sales, service, maintenance and parts.
Air cargo operations (single main gear aircraft up to 45,000 lbs., dual main gear aircraft up to 65,000 lbs.) in association with a fixed base operator.
Aerial photography/surveying.

K. Airport administrative offices.
Control tower, terminal, and related equipment/facilities.
Communication equipment/facilities necessary for airport operation.
Emergency facilities/equipment storage.
Medical transport operations.
Pilot supply sales.
Flight schools/training.
Specialized aviation service operator.
One restaurant, excluding drive-through restaurants, in association with airport administrative offices or a fixed base operator.
Car rental in association with a fixed base operator.
Other uses determined by the Zoning Administrator *and* Airport Manager to be consistent with LPZC Section 2-71-040 and similar to the permitted uses listed in this section.

2-71-080 Accessory Uses.
AIR-OP: None
AIR-SE: Signs. (see LPZC Section 2-71-130 below for sign regulations)

2-71-090 Conditional uses.
AIR-OP: None.

AIR-SE: The following uses are permitted subject to approval of a conditional use permit in addition to any other prerequisite permits and conformance to all applicable regulations set forth in this chapter and elsewhere in this code:
Aviation museums.
Caretakers or security personnel residence.
Stand alone restaurants, not including drive-through restaurants.
Stand alone car rental.
Structures in excess of 40-feet in height, if determined necessary to facilitate the storage of aircraft, in accordance with LPZC Section 3-05-270.C, Heights of Buildings and Structures, and FAA regulations.
Public and quasi-public uses.
Hazardous materials, consistent with LPZC Chapter 3-30.

2-71-100 Development requirements.
In addition to the site development requirements listed below, all development applications for the AIR district shall be accompanied with a written statement of authorization signed by the Airport Manager.

2-71-110 Lot development regulations.
Any site or property zoned AIR (Airport) may be developed or utilized in accordance with applicable regulations as established in this Chapter. Lots within the AIR district shall be developed in conformance with the regulations set forth below, plus any additional regulations imposed as a condition of approval of a conditional use permit. The Airport's Minimum Standards for Commercial Aeronautical Activities establish the minimum facility size required for such activities. Total development shall be limited to 1,418,680 square feet of building space.

Lot Width:
AIR-OP: None
AIR-SE: None

Setbacks:
AIR-OP: None, except where subject to FAA, State, and county regulations.
AIR-SE: Front/Frontage yards:
25-feet along major streets (see LPZC Section 2-71-140, Landscaping)
20-feet all non-major streets (see LPZC Section 2-71-140, Landscaping)
Yard areas fronting a public street in existence as of December 31, 2008, are considered conforming. All new development shall comply with the standards established in LPZC Sections 2-71-110.D.2.a and 2-71-110.d.2.b, above.
AIR-SE Rear/Side: None

Building Height:
AIR-OP: Subject to FAA regulations
AIR-SE: Subject to FAA regulations and LPZC Section 3-05-270.C.

Site Coverage:
AIR-OP: No maximum
AIR-SE: No maximum

Off-street parking:
AIR-OP: None required.
AIR-SE: Off street parking shall be provided as follows:
Hangar storage – One-half (1/2) space per one thousand five hundred (1,500) square feet.
Aircraft tie-downs – One (1) space per seven thousand (7,000) square feet of tie-down area.

Miscellaneous hangar activities, directly related to aviation uses, such as aircraft servicing – One (1) space per one thousand (1,000) square feet up to five thousand (5,000) square feet, and one-half (1/2) space per one thousand (1,000) square feet thereafter.
Commercial office, retail, and service uses related primarily to convenience needs of airport patrons and employees, whether conducted as primary or accessory uses – One (1) space per two hundred fifty (250) square feet.
Car rental – In addition to parking required for the commercial office, parking spaces sufficient to accommodate the rental fleet.
Restaurants – One (1) space per three (3) seats.
If a proposed use is not addressed in LPZC Chapter 3-20, parking shall be provided, at a minimum, to accommodate the estimated number of employees, customers, and visitors, as approved by planning staff.

2-71-120 Other requirements.
All development must meet Federal Aviation Administration (FAA) and State of California airfield design guidelines, including obstacle clearances.

2-71-130 Signs.
Except as specified herein, signs shall be consistent with LPZC Chapter 3-45, Signs. All signs shall be subject to review and approval by the City, except where explicitly identified below to be reviewed and approved by the Airport Manager.

All signs submitted for design review shall be administratively reviewed and authorized for design review processing by the Airport Manager for size, design, location, and illumination prior to submittal to the Community Development Department for formal review and approval. In accordance with LPZC Section 2-71-100, a written statement from the Airport Manager authorizing the submittal of the sign for formal design review shall accompany the application.

Only the following types of signs are permitted:

Monument. A monument sign that does not exceed 32 square-feet of sign area and eight-feet in height at each entrance to the Airport that has open access to the public. Entrances that do not have open access to the public shall be permitted one sign per entrance, consistent with the standards described in LPZC subsection 2-71-130.C (Directional Signs), below.

Wall/Awning. Fixed base operators (FBOs), as determined by the Airport Manager, are permitted one wall or awning sign, which may be electrical. For primary building frontage, the allowable sign area is one-square-foot for each lineal foot of the first 50-feet of building frontage, plus one square-foot for each two lineal feet of building frontage in excess of 50-feet, to a maximum of 150-square-feet per building. Wall signs oriented towards *and* parallel to the public right-of-way shall be subject to planning commission review and approval. Wall signs oriented towards the interior of the Airport property shall be administratively reviewed and approved.

Directional signs. Directional signs serving to identify the location of buildings, hangar spaces, facilities, etc., and *not* the locations of specific FBO operators, vendors, or tenants, shall be erected where they are most visible for visitors. Freestanding single-face and/or double-face directional signs are permitted as follows:
The location of signs shall be determined and administratively approved by the Airport Manager.
Maximum height shall not exceed five-feet, measured from grade to the top of the sign.
Maximum width shall not exceed three-feet.
Maximum letter height and sign copy shall be determined by the Airport Manager.

2-71-140 Landscaping.
Landscaping shall be regulated by the following requirements:

All required yard areas located adjacent to a public street, as listed in LPZC Section 2-71-110.D, shall be landscaped except for driveways and sidewalks that are found to be necessary for the efficient use of the site. A landscaped strip of land, at least 25-feet wide, shall be maintained along any property line where the AIR district abuts a major street. A landscape strip of land, at 20-feet wide shall be maintained along any property line where the AIR district abuts a non-major street.
Regional trail landscaping located on the same parcel may be included to meet the applicable landscaping requirement established in LPZC 2-71-140.B, above.
In the case of a parking lot being located between a building and the public street, the landscape strip adjacent to the street, required by LPZC subsection 2-71-140.A and 2-71-140.B, may be reduced by up to ten-feet provided that a landscape strip equal to the amount of reduction is added to a landscape planter adjacent to the street-side of the building.
All landscaping shall be carried out in accordance with a landscape plan that shall be submitted with the design review, site plan approval, and/or conditional use permit application and approved by the City, and shall be consistent with the City's Water Efficient Landscape Ordinance (LMC Chapter 13.25),
In any case where a building is visible from the public street, a five-foot landscape strip abutting the foundation shall be included, allowing for necessary entrances.

2-71-150 Development and design review.
Prior to development or expansion of any site, structure, or use, site plan approval (LPZC Chapter 4-10), conditional use permit approval (LPZC Chapter 4-20), or design review approval (LPZC Sections 5-05-110 through 5-05-190) shall be obtained and shall be subject to all applicable City codes, ordinances, and design guidelines.

All development, except for certain signs as specified in LPZC Section 2-71-130, shall be subject to LPZC Section 5-05-110 through 5-05-190, Design Review.

4. Development Potential

As stated previously, the proposed project does not include specific development projects at the Airport, but reasonable development projections would be established as part of the proposed AIR Zoning District. Refer to Table III-3 for a comparison of existing development on the project site to development that would be expected to occur under existing land use regulations and development that could be expected to occur as part of the project. Figure III-4 is a conceptual plan of development that could occur on the site as a result of the project. It is expected that buildout under the proposed General Plan amendment and AIR Zoning District could increase development on the site from 670,400 square feet of interior building space to approximately 1,418,680 square feet of interior building space (and representing a net increase of 748,280 square feet of interior building space).[9] Of the 1,418,680 square feet of total expected development on the site, only 36,170 square feet (approximately 2.5 percent of the total interior building space) would consist of office, conference room, or other commercial space. The majority of the new development (97.5 percent) would consist of hangar and aircraft maintenance space. Approximately 158 additional hangars could be constructed on the site as a result of project implementation. The development potential of the project site under the project would be reduced compared to existing zoning regulations and the 1975 Master Plan. Under No Project conditions (i.e., under current zoning regulations), the site could contain a total of 1,923,680 square feet of interior building space (see Table III-3).

[9] In the case of the Airport, "interior building space" and "building footprint" are effectively synonymous because Airport buildings are generally one story in height.

AIRPORT BUILDING LIST

NO.	DESCRIPTION
1	TERMINAL/ADMINISTRATION BUILDING
2	FAA AIR TRAFFIC CONTROL TOWER
3	SIERRA ACADEMY
4	AHART AVIATION
5	FUEL FARM
6	FBO HANGAR AND/OR OFFICE
7	T-HANGARS
8	CORPORATE HANGARS
9	FUEL ISLAND
10	POWER VAULT
11	HELICOPTER PARKING
12	NONAVIATION COMMERCIAL BUILDINGS
13	GOLF COURSE PRO SHOP & RESTAURANT
14	GOLF COURSE EQUIPMENT YARD
15	OFF-AIRPORT RESTAURANT
16	ATTITUDE AVIATION
17	REMOTE TRANSMITTER/RECEIVER ANTENNA
18	LOCALIZER ANTENNA
19	GLIDE SLOPE ANTENNA
20	RUNWAY APPROACH LIGHTS (MALSR)
21	VASI (V4L)
22	PAPI (P4R)
23	ASOS
24	LIGHTED WIND CONE & SEGMENTED CIRCLE
25	BARN/FARM BUILDING
26	ILS HOLD LINE
27	FIRE STATION
28	COMPASS ROSE
29	ROTATING BEACON
30	RUNWAY END INDICATOR LIGHTS (REILS)

AIRPORT DATA TABLE

	Existing	Future
Airport Elevation (MSL)	399.9'	No change
Airport Reference Point (LAT/LONG)	N 37°41'36.24" W 121°49'13.27"	No change
Mean Maximum Temperature *	89.5°F	No change
Combined Wind Coverage (10.5 Kts)	97.79%	No change
Magnetic Declination (08/20/2007) **	14°28'E Changing 0°5'W/Year	
Airport Reference Code (ARC)	B-II	No change
NPIAS Service Level	Reliever	No change
Taxiway Lighting	MITL	No change
Taxiway Marking	Centerline	No change
Airport and Terminal Navaids	Localizer (25R), Glideslope (25R), Rotating Beacon, OPS	No change

* Source: Western Region Climate Center (WRCC) Period from 1930-2005
** Source: U.S. National Geophysical Data Center (NGDC)

NON-STANDARD CONDITIONS

	Distance	Location	Existing	Future	Required	Disposition
1	Parallel Runway Separation	Runways 7L/R-25R/L	500 ft.	500 ft.	700 ft.	No change - operations not independent
2	Parallel Taxiway to Runway Distance	Taxiway A to Runway 7L-25R	250 ft.	250 ft.	300 ft.	No change - infrequent use by Design Group II airplanes (existing equals standard for Group I)
3	Hold Lines	North side of Runway 7L-25R	175 ft.	175 ft.	250 ft.	No change - location dictated by parallel taxiway location
4	Runway OFA Setback	Golf course fence at northwest corner of Runway 7L-25R	350 ft.	350 ft.	400 ft.	No change - fence not a significant factor
5	RPZ and Extended Runway OFA	Hangar east of Runway 25R approach and	350 ft.	450 ft.	-	Removal of building desirable, but not required by FAA standards
6	Approach Surface Penetration	Hangar on edge of Runway 25R Approach Zone	18:1	18:1	50:1	No change unless adverse affect on ILS documented
7	RSA Length	Approach end of Rwy 7L	540'	540'	600'	No change unless localizer is replaced or removed.

NOTES:
1. RUNWAY ELEVATIONS PER NOAA OBSTRUCTION SURVEY CONDUCTED APRIL, 2003. (NAVD 88)
2. BUILDING ELEVATIONS PER AERIAL PLANIMETRIC SURVEY, SPRING OF 2007. BUILDING AND FLOOD CONTROL LEVEE ELEVATIONS ADJUSTED FROM NGVD 27 TO NAVD 88 USING AN INCREASE OF 2.64'.
3. TOPOGRAPHIC CONTOURS SHOWN IN NGVD 27 DATUM.
4. ALL HYDROMODIFICATION BASINS (HMBs) TO DRAIN IN 48 HOURS OR LESS.

DATE: 8/20/07
ANNUAL RATE OF CHANGE: 0°5'W
SOURCE: NGDC

LEGEND

- Planned Facilities
- Future Structures
- Future Airfield Pavement
- Future Roads/Parking

LEGEND

	EXISTING	FUTURE	ULTIMATE
AIRPORT PROPERTY BOUNDARY			
FENCE	X		XX
RUNWAY PROTECTION ZONE			
BUILDINGS			
AIRFIELD PAVEMENT			
ROAD			
DRIVEWAY/GATE	G		G
CONTOURS			
ROFA/RPZ BOUNDARY			
ILS CRITICAL AREA			
LEASED PROPERTY			
FUTURE ISABEL AVE ROW-EASEMENT			

RUNWAY END COORDINATES

	Existing	Future
Runway 7L Lat./Long.	37°41'38.17"N 121°49'45.84"W	NO CHANGE
Runway 25R Lat./Long.	37°41'37.65"N 121°48'40.50"W	NO CHANGE
Runway 7R Lat./Long.	37°41'33.11"N 121°49'30.31"W	NO CHANGE
Runway 25L Lat./Long.	37°41'32.84"N 121°48'56.74"W	NO CHANGE

RUNWAY DATA TABLE

	Runway7L/25R(Ext/Fut)	Runway 7R/25L (Ext/Fut)
Approach Visibility Minimums	Visual (7L) > 3/4 mile (Fut) / 1/2 mile (25R)	Visual
FAR Part 77 Approach Slope (CAT A & B)	20:1 34:1(Fut) (7L) / 50:1 (25R)	20:1 (BOTH)
Runway Width & Length	5253' x 100'	2,699' x 75' (Ext)
Pavement Type	Asphalt	Asphalt
Pavement Design Strength (lbs.) - Ext / Fut		
Single Wheel Gear (SWG)	45,000	12,500
Dual Wheel Gear (DWG)	60,000	N/A
Dual Tandem Gear (DTG)	N/A	N/A
Runway Lighting	MIRL	NONE (Ext) / MIRL (Fut)
Runway Marking	Precision	Basic-Visual
Percent Gradient	0.51%	0.58%
Max. Grade Within Runway Length	0.65%	0.71%
Line of Sight Requirements Met	Yes	Yes
Percent Wind Coverage		
Visual Approach Aids	7L-PAPI(4 Box), REIL 25R - MALSR, REIL, VASI	7R - NONE 25L - PAPI (Fut)
Instrument Approach Aids	7L- GPS (Fut) / 25R- GS/LOC/GPS	None
Runway Airport Reference Code	B-II	B-I (Ext)
Critical Aircraft	Falcon 900B	Beech C99 (Ext)
Wingspan (ft)	63'5"	45'10" (Ext)
Approach Speed (Kts)	115	98 (Ext)
Max. T.O. Weight (Lbs)	45,500 lbs.	12,500 lbs.
Critical Aircraft >60K lbs Length of Haul	N/A	N/A
Runway Safety Area (RSA) Width	300' (Ext & Fut)	120' (Ext & Fut)
RSA Length Beyond Runway Ends	600' (Ext & Fut)	240' (Ext & Fut)
Runway Object Free Area (ROFA) Width	800' (Ext & Fut)	400' (Ext & Fut)
ROFA Length Beyond Runway Ends	600' (Ext & Fut)	240' (Ext & Fut)
Runway Obstacle Free Zone (OFZ) Width	400' (Ext & Fut)	400' (Ext & Fut)
OFZ Length Beyond Runway End	200' (Ext & Fut)	200' (Ext & Fut)
Runway Elevations		
Existing Runway End	7L - 372.0' / 25R - 399.9'	7R - 378.8' / 25L - 394.6'
Future Runway End	NO CHANGE	NO CHANGE
Existing Touchdown Zone	7L - 366.0' / 25R - 399.9'	
Future Touchdown Zone	NO CHANGE	

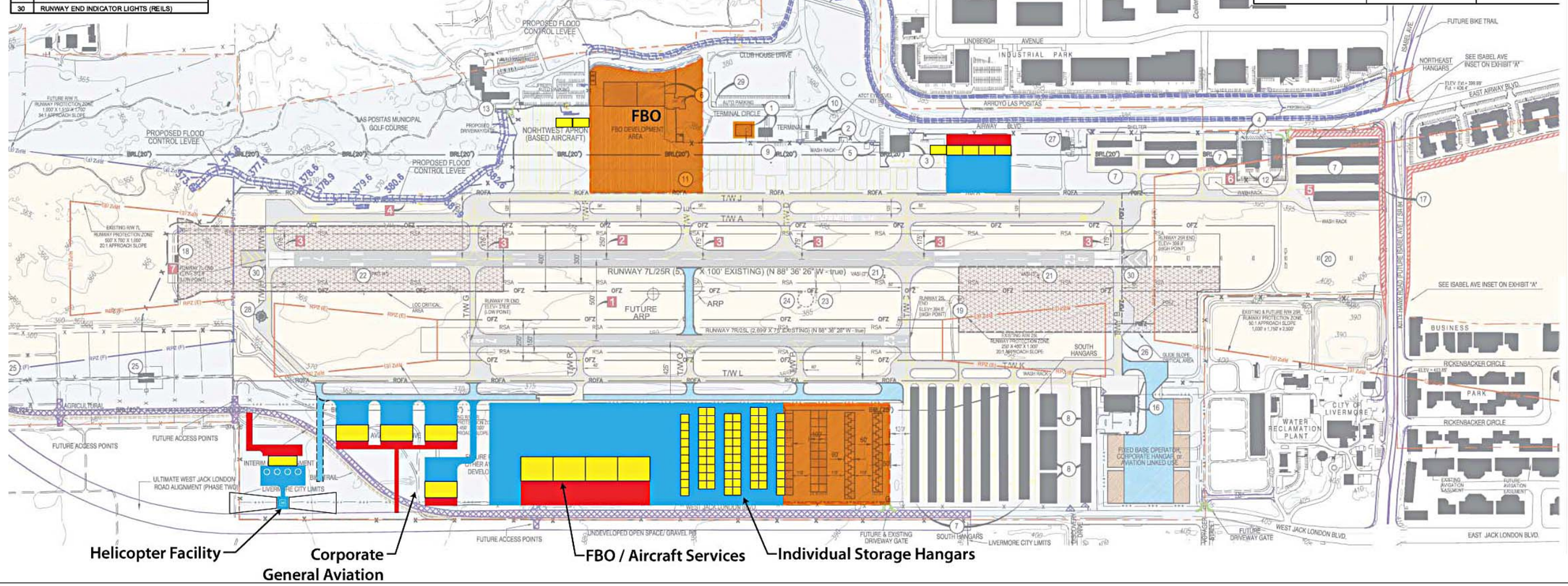


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FIGURE III-4

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Livermore Municipal Airport General Plan Amendment and Rezoning Project EIR
Expected Buildout Under Rezoning

SOURCE: COFFMAN ASSOCIATES
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Back of III-4

Table III-3: Development Associated with Existing Conditions, Buildout Under Existing Regulations, and the Proposed Project

Facility Type/Uses	Existing		Buildout Under Existing Regulations		Proposed Project	
	Square Feet	Jobs	Square Feet	Jobs	Square Feet	Jobs
Northside FBO Facilities[a]	12,420	14	137,360	59	117,360	51
Northside Corporate Hangars	0	0	30,000	2	20,000	1
Southside FBO Facilities[b]	20,560	42	380,560	147	140,560	98
Southside Corporate Hangars, City	20,100	1	20,100	1	20,100	1
Southside Corporate Hangars, Private	0	0	165,000	8	155,000	7
City Storage Hangars, North & South[c]	576,730	8	576,730	8	576,730	8
Southside Private Storage Hangars	0	0	564,500	0	324,500	0
City Power Vault & Generator Building	390	0	390	0	390	0
Fire Station No. 10	3,720	9	3,720	9	3,720	9
Airport Administration Building & Concessions[d]	2,560	14	11,400	24	11,400	24
FAA Air Traffic Control Tower & offices	1,500	21	1,500	21	1,500	21
Other Commercial (non-aviation)	32,420	26	32,420	26	32,420	26
Helicopter Facility with Offices on 2nd floor	0	0	0	0	15,000	16
TOTAL	**670,400**	**135**	**1,923,680**	**305**	**1,418,680**	**262**

Notes: FBO = Fixed Base Operator
[a] Includes buildout of existing/planned FBO leaseholds.
[b] Existing FBO facility is City-owned; project facilities are based on assumption of higher job/square footage rate.
[c] Includes hangar units rented by FBOs, some with office space.
[d] Existing building would be demolished if new facilities are constructed.
Source: City of Livermore, 2009.

The proposed project does not include changes to the existing runway environment, including the construction of new runways, or the extension of existing runways. Because no runways would be added to the site or lengthened as a result of the project, and the development potential of the site would be reduced compared to buildout under existing regulations, the project is not expected to increase flight operations beyond current forecasts. As stated previously, the FAA severely restricts City's ability to limit flight operations. Under federal law and the contractual grant assurances required by the FAA when the City receives federal funds for the Airport, the FAA places restrictions on the City with respect to controlling various types of aviation activities at the Airport (see Appendix E). The grant assurances specify:

> [The Airport] will make the airport available as an airport for public use on reasonable terms and without unjust discrimination to all types, kinds, and classes of aeronautical activities, including commercial aeronautical activities offering services to the public at the airport.[10]

Under these circumstances, the City is restricted from limiting flight operations without violating federal law and the Airport's federal grant assurances. The assurances permit the Airport to "prohibit or limit any given type, kind or class of aeronautical use of the airport," but only "if such action is necessary for the safe operation of the airport or necessary to serve the civil aviation needs of the public." There is currently no safety issue or civil aviation need that would support local restriction of aeronautical activities at the Airport. The federal government could also permit local limitations on aeronautical activities through a federal procedure based on noise impacts. However, the City does

[10] FAA, 2005. Assurances, Airport Sponsors. March.

not qualify for use of that procedure as its noise impacts do not exceed federal limitations. Therefore, the Airport is obliged to accommodate reasonable demand for aviation at the Airport. In addition, as noted in the Coffman Associates Unconstrained Forecasts report, aviation activity is typically related to broad socioeconomic trends (such as population growth and economic activity) and not local land use regulations.

5. Employment

There are currently 135 jobs on the project site. After project buildout, the number of on-site jobs would increase by 127 jobs to 262 jobs (an approximately 94 percent increase in jobs).

6. Subsequent Development

Under section 15168 of the *CEQA Guidelines*, this EIR is a Program EIR that evaluates the effects of changing land use regulations on the site, including changes in land uses and intensity, as described above. As specific development projects are proposed on the project site, the City will determine whether additional environmental review is required, pursuant to Public Resources Code section 21166 and *CEQA Guidelines* sections 15162 and 15168(c). The City would make this determination by completing an Initial Study checklist at the time the subsequent specific activities are proposed. As long as the specific activity or structure would not cause additional environmental effects beyond those evaluated in this Program EIR, or require additional mitigation measures, then the City may approve that activity, if otherwise permitted by law, as within the scope of the project covered by a Program EIR. In such a case, the City would not need to conduct any further environmental review to approve the activity. However, if a specific activity or structure would have significant adverse environmental effects that the program EIR did not examine (or would require new mitigation measures), then the City would require and review additional documentation for the proposed project and would determine whether supplemental review under CEQA, is required to evaluate the potential significant environmental effects of the specific projects.

F. USES OF THIS EIR

A number of permits and approvals, including the discretionary actions listed above, would be required as part of any individual development project approval. As lead agency for the proposed project, the City of Livermore would be responsible for the majority of approvals required for project implementation. Other agencies also may have some authority related to the project and its approvals. A list of the permits and approvals that may be required by the City and other agencies is provided in Table III-4. This EIR is intended to be used by the City and other agencies when deliberating on required permits and approvals.

Table III-4: Required Permits and Approvals

Lead Agency	Permit/Approval
City of Livermore	• Environmental Review • Action to Rescind Airport Master Plan • General Plan Amendment • Rezoning • Building Permits • Site Plan Approvals • Conditional Use Permits • Design Review
Responsible Agencies	
San Francisco Bay Regional Water Quality Control Board (RWQCB)	• National Pollutant Discharge Elimination System (NPDES) permit for stormwater discharge
Airport Land Use Commission (ALUC) of Alameda County	• Review of specific development projects

Source: LSA Associates, Inc., 2009.

IV. CONSISTENCY WITH PLANS AND POLICIES

This chapter of the EIR evaluates the consistency of the proposed project with adopted plans and regulatory policies. Specifically, this chapter addresses the project's relationship with the following policy documents (see Chapter VIII, Report Preparation, for full bibliographic citations for these documents):

A. City of Livermore General Plan (particularly the Land Use Element, the Circulation Element, the Noise Element, the Public Safety Element, and the Community Character Element)

B. Livermore Planning and Zoning Code

C. Master Plan for the Livermore Municipal Airport

D. Airport Land Use Commission (ALUC) Land Use Policy Plan

E. Caltrans Division of Aeronautics California Airport Land Use Planning Handbook

F. Federal Aviation Administration (FAA) Sponsor Assurances

The descriptive portion of each of the following sections summarizes the plans and policies as they relate to the proposed project. The analytical portion of each of these sections evaluates the consistency of the project with these plans and policies, and identifies policy inconsistencies and potential conflicts. Recommendations to eliminate potential inconsistencies are provided if warranted. Policy conflicts are not considered to have a significant effect on the environment, and are therefore differentiated from impacts described in other chapters of the EIR. To the extent that physical impacts may be associated with such policy conflicts, they are addressed in the appropriate technical sections within Chapter V, Setting, Impacts, and Mitigation Measures (e.g., Section V.E, Air Quality, or Section V.F, Noise). In addition, please see Chapter VI, Alternatives, for a comparison between buildout under the existing FAA-approved Airport Layout Plan and buildout under the proposed project.

A. CITY OF LIVERMORE GENERAL PLAN

This section describes relevant information and policies from the City of Livermore General Plan and discusses the proposed project's consistency with the goals, policies, and programs outlined therein. The City adopted the updated General Plan in February 2004 and has amended it several times since adoption, most recently in June 2009.

1. Description

The City of Livermore General Plan (General Plan) is a comprehensive plan for the growth and development of the City. The General Plan includes policies related to: land use; community character; circulation; housing; infrastructure and public services; open space and conservation; noise; public safety; economic development; and climate change. These topics are addressed within individual elements of the General Plan. The Land Use Element, Circulation Element, Noise Element,

Public Safety Element, and Community Character Element contain policies applicable to evaluation of the proposed project, as described below.

a. Land Use Element. The Land Use Element establishes a pattern for land use in Livermore and sets clear standards for the intensity of development for proposed land uses. The overall vision of the Land Use Element is to "plan for and shape the future physical development of Livermore and preserve and enhance Livermore's current quality of life, so that the City can remain a community with a mix of land uses providing varied job and housing opportunities while maintaining its surrounding agricultural open space."[1]

As shown in Figure IV-1, the General Plan land use designation for the project site is Community Facilities-Airport (CF-AIR). The Community Facilities designation provides land for public agencies and institutions to develop specific public uses such as schools, fire stations and, in the case of the Livermore Municipal Airport, a public airport. Land uses that border the project site have the following General Plan designations: Business and Commercial Park (BCP), Low Intensity Industrial (LII), and Parks, Trail Ways, Recreation Corridors, and Protected Areas (OSP) to the north; Urban Medium Residential (UM) and LII to the east; OSP/Sand and Gravel (OSP/S&G) and BCP to the south; and Limited Agriculture (LDAG) to the west.

As described in the Land Use Element, the City established an "Airport Protection Area" (APA) in 1991 in order to prevent incompatible, sensitive uses from being located near the Airport. As shown in Figure IV-2, the APA forms a rectangular boundary around the Airport, and includes the area located within 7,100 feet west of the western end of Airport runways, 5,000 feet north of the northern edge of Airport runways, 5,000 feet east of the eastern end of Airport runways, and 5,000 feet south of the southern edge of Airport runways. New residential development or the expansion of existing residential uses within the APA is prohibited.[2]

The Land Use Element includes the following goals, objectives, policies, and actions that relate to planning issues associated with the proposed project:

Goal LU-4: Ensure that new development mitigates significant environmental, design, and infrastructure impacts.

Objective LU-4.4: Protect the Municipal Airport from encroachment by incompatible uses.

Policies:

P1: The City shall encourage development of property within the immediate vicinity of the Airport for light industrial and transportation uses to the extent that noise standards and flight clearance requirements are maintained, and environmental impacts are adequately mitigated.

P2: New residential land use designations or the intensification of existing residential land use designations shall be prohibited within the Airport Protection Area (APA). The APA includes the area located within 7,100 feet west of the western end of runway 7L-25R, 5,000 feet north of the northern edge of runway 7L-25R, 5,000 feet east of the eastern end of runway 7L-25R, and 5,000 feet south of the southern edge of runway 7R-25L.

[1] Livermore, City of, 2004. *City of Livermore General Plan: Land Use Element*. Amended 2009. February 9.

[2] Ibid.

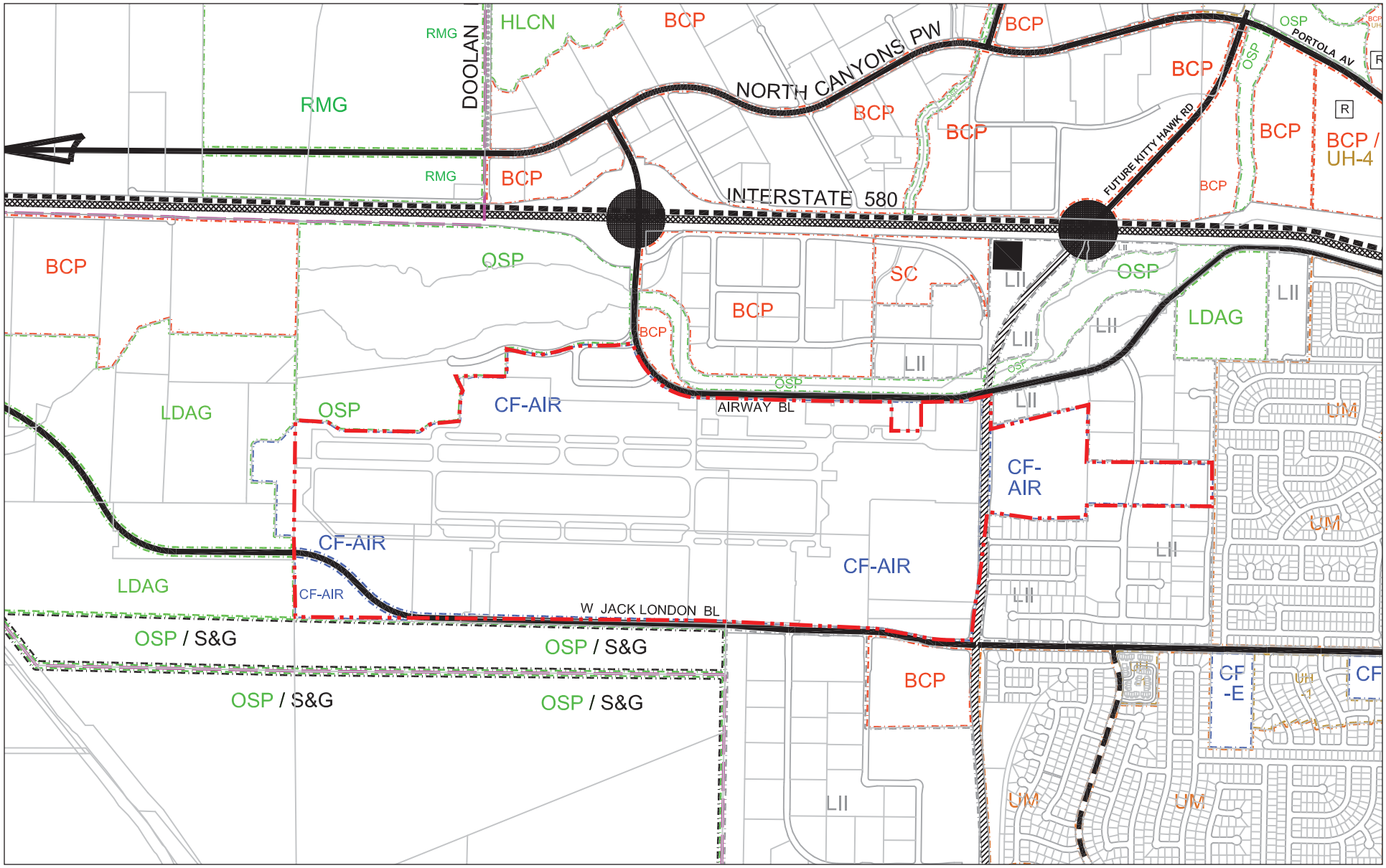

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FIGURE IV-1

Livermore Municipal Airport General Plan Amendment and Rezoning Project EIR

General Plan Land Use Map

SOURCE: CITY OF LIVERMORE; LSA ASSOCIATES, INC., 2009

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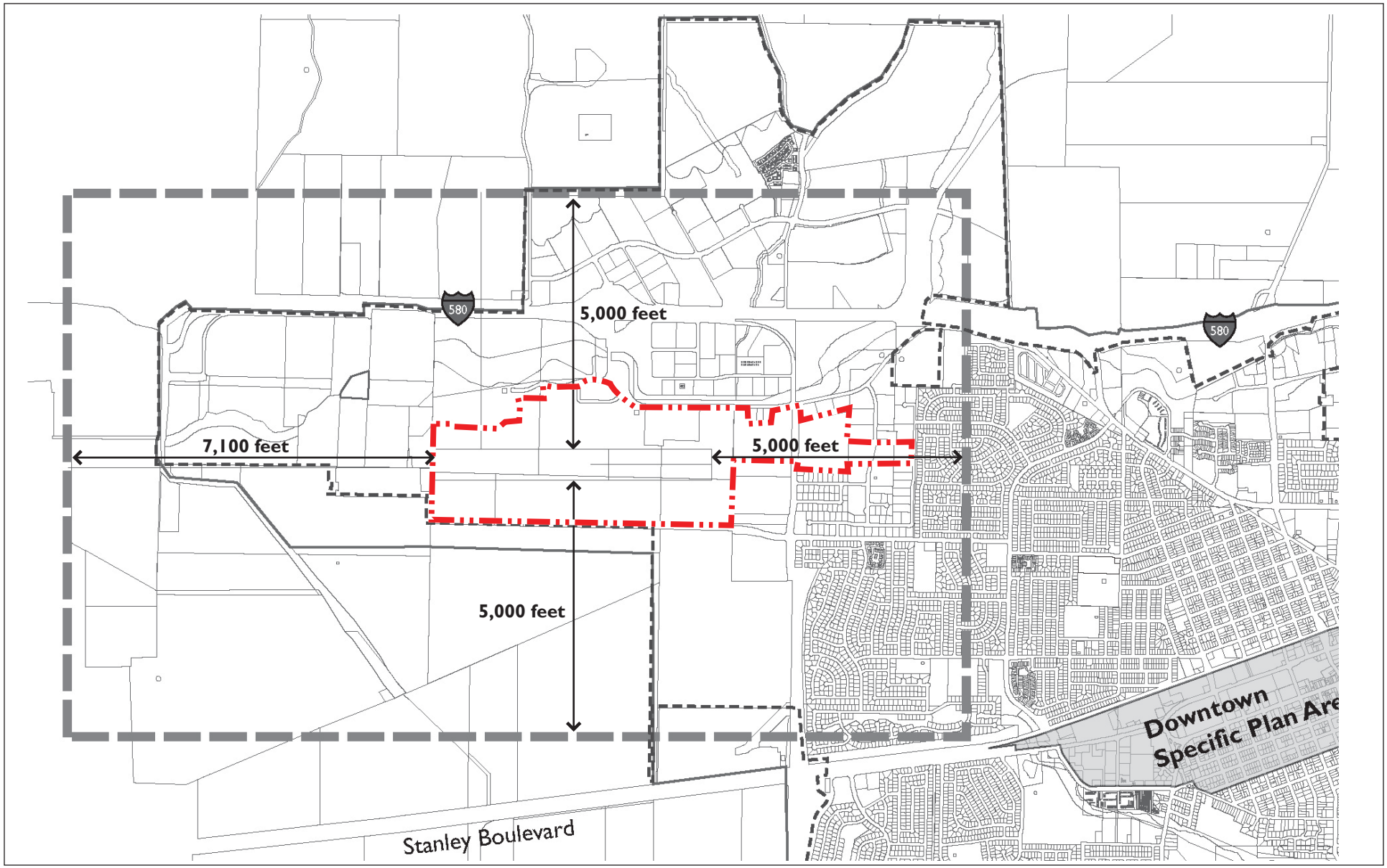

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FIGURE IV-2

Livermore Municipal Airport General Plan
Amendment and Rezoning Project EIR
Airport Protection Area

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PROJECT SITE

AIRPORT PROTECTION AREA (APA) BOUNDARY

SOURCE: LIVERMORE GENERAL PLAN, 2009; LSA ASSOCIATES, INC., 2009

I:\CLV0802 Livermore Airport\figures\Fig_IV2.ai (6/30/09)

P3: Development at the Airport shall be subject to Federal Aviation Administration, Airport Land Use Commission, and City building/structure height restrictions.

Action:

A1: Pursue the feasibility of acquiring urban development rights or fee title to property within the Airport flight approach areas west of the runways to the City limits to assure the most positive control over development within the "off-airport" flight approach areas.

Consistency: As previously described, the project site is designated as Community Facilities-Airport (CF-AIR) in the Land Use Element. Under the proposed project, the land use designation of the site would remain unchanged. As discussed in Chapter III, Project Description, the proposed project does not include specific development projects at the Airport. However, the changes in zoning that would occur as part of the project would allow additional development to be constructed on the site (see Table III-3). Development that would occur under the rezoning would be similar to existing development on the project site, and would not introduce new types of uses not already present on the site. All new uses on the site would be required to support Airport operations or services, thus allowing for the safe and efficient operation of the Airport in the future. Therefore, the proposed project would not result in conflicts with the site's General Plan land use designation.

Policies in the Land Use Element related to land use planning issues at the Airport are expressly aimed at protecting the Airport from encroachment of incompatible land uses; these policies – Goal LU-4, Objective LU-4.4, and Policies P1, P2, P3, and P4 – are intended to allow compatible uses within the APA (transportation uses, industrial uses, open space) and prohibit incompatible (residential) uses. The project, which would rezone the core 403 acres of the Airport, could result in the development of new Airport-related facilities on the site. However, the project would not result in new development in the critical runway protection area within and outside the project site, and would not result in the introduction of incompatible uses on or near the Airport. Therefore, the proposed project would be consistent with land use planning policies in the Land Use Element of the General Plan.

b. Circulation Element. The Circulation Element of the General Plan provides a policy framework for the regulation and development of the City's transportation systems. This Element aims to "balance the need to provide efficient ways to move people and goods from one place to another with the goals to revitalize the Downtown and to limit non-local cut-through traffic on City streets."[3] The Circulation Element identifies future circulation needs and provides policies to prioritize certain improvements to Livermore's transportation infrastructure in the City's Capital Improvement Program.

The Circulation Element notes that the Livermore Municipal Airport is the only airport in the Tri-Valley area, and that "as the Tri-Valley continues to experience industrial and residential growth, the Airport will provide much needed services to support this growth and a strong local economy."

The Circulation Element includes the following goals, objectives, policies, and actions that relate to planning issues associated with the proposed project:

[3] Livermore, City of, 2004. *City of Livermore General Plan: Circulation Element.* Amended 2009. February 9.

Goal CIR-8: Support and protect safe and efficient aviation operations at the Municipal Airport.

Objective CIR-8.1: Ensure that aviation operations, uses, and development are protected from incompatible adjacent land uses, as well as meet the needs of the local and regional economy.

Policies:

P1: Future development and operations at the Municipal Airport shall be in conformance with an approved master plan. The overall scale of operations at the Municipal Airport shall not exceed the thresholds listed below.

(a) Livermore Municipal Airport is a general aviation airport. Scheduled passenger service flights shall be prohibited.

(b) To the greatest extent feasible, jet flights shall be restricted to approximately 5 percent of the total annual aircraft operations.

(c) To the greatest extent feasible, annual aircraft operations shall not exceed 370,000 operations in any given year, including itinerant and local operations.

(d) To the greatest extent feasible, the total number of aircraft to be stored/parked at the Municipal Airport shall not exceed 900 in any given year, including hangar and apron space areas.

(e) No more than 60 percent of the Airport area designated Community Facility-Airport (CF-AIR) shall be covered with impervious surfaces, including but not limited to, buildings, taxiways, runways, parking areas, fuel areas, and wash areas.

(f) Night-time flights between 10:00 p.m. and 6:00 a.m. shall be discouraged to the greatest extent feasible.

(g) Aircraft and airport operation noise levels shall be consistent with the thresholds established in the General Plan Noise Element.

P2: To protect the Municipal Airport from encroachment by incompatible uses, the City shall encourage development of property within the immediate vicinity of the Airport for light industrial and transportation uses to the extent that noise standards and flight clearance requirements are maintained, and environmental impacts are adequately mitigated.

P3: New residential land use designations or the intensification of existing residential land use designations shall be prohibited within the Airport Protection Area.

Action:

A1: Develop and periodically update a master plan for the Airport to implement Policy CIR-8.1.P1.

Consistency: The proposed project includes amendments to policies in the Circulation Element. The project would remove references to the Master Plan for the Airport in Policy P1 and Action A1 (under Goal CIR-8, Objective CIR-8.14) and replace them with references to the proposed Airport (AIR) Zoning District. Other changes to these policies include: reducing the desired maximum number of annual operations and aircraft stored at the Airport, and requiring environmental review if these

thresholds are exceeded. As shown in Chapter III, Project Description, the amendments are as follows:

Goal CIR-8: Support and protect safe and efficient aviation operations at the Municipal Airport.

Objective CIR-8.1: Ensure that aviation operations, uses, and development are protected from incompatible adjacent land uses, as well as meet the needs of the local and regional economy.

Policies:

P1: Future development and operations at the Municipal Airport shall be in conformance with an approved ~~master plan~~ Airport zoning district. The overall scale of operations at the Municipal Airport shall not exceed the thresholds listed below.

(a) Livermore Municipal Airport is a general aviation airport. Scheduled passenger service flights shall be prohibited.

~~*(b)* To the greatest extent feasible, jet flights shall be restricted to approximately five percent of the total annual aircraft operations.~~

(b) To the greatest extent feasible, annual aircraft operations ~~shall not exceed~~are forecasted for ~~370,000~~220,100 operations ~~in any given~~by year 2030.~~,~~ In the event that flight operations exceed forecasts, including itinerant and local operations, the City shall re-evaluate the environmental effects of increased operations.

(c) To the greatest extent feasible, the total number of based aircraft to be stored/parked at the Municipal Airport shall not exceed ~~900~~720 ~~in any given year~~, including hangar and apron space areas. In the event that demand for based aircraft exceeds the storage supply, the City shall re-evaluate the environmental effects of allowing additional based aircraft.

(d) No more than 60 percent of the Airport area designated Community Facility-Airport (CF-AIR) shall be covered with impervious surfaces, including but not limited to, buildings, taxiways, runways, parking areas, fuel areas, and wash areas.

(e) Night-time flights between 10:00 p.m. and 6:00 a.m. shall be discouraged to the greatest extent feasible.

(f) Aircraft and airport operation noise levels shall be consistent with the thresholds established in the General Plan Noise Element.

P2: To protect the Municipal Airport from encroachment by incompatible uses, the City shall encourage development of property within the immediate vicinity of the Airport for light industrial and transportation uses to the extent that noise standards and flight clearance requirements are maintained, and environmental impacts are adequately mitigated.

P3: New residential land use designations or the intensification of existing residential land use designations shall be prohibited within the Airport Protection Area, as shown on Land Use Element Figure 3-5.

Action:

A1: Develop and periodically update an ~~master plan~~ Airport zoning district for the Airport to implement Policy CIR-8.1.P1.

In addition, the following changes would be made to page 5-18 of the Circulation Element:

Air Transportation

The Livermore Municipal Airport (Airport) is the only airport in the Tri-Valley area and is the fourth busiest airport in the Bay Area. As such, the Airport provides an important service to both residents and industries that extend beyond the Tri-Valley area. The location and availability of services at the Airport has assisted in facilitating the economic growth of the Tri-Valley area. As the Tri-Valley continues to experience industrial and residential growth, the Airport will provide much needed services to support this growth and a strong local economy.

As a general aviation airport, most aircraft served by the Airport are small, privately-owned, single and twin-engine propeller, and turbo prop aircraft (e.g., Cessna 182~~500~~). In ~~2000~~2008, these smaller aircraft comprised approximately ninety ~~five~~ nine percent of all aircraft served by the Airport. The remaining ~~five~~ one-percent of aircraft being served by the Airport were small and medium sized corporate jets (e.g., Challenger 601, Lear ~~3~~25, Hawker 25~~MD 81~~, etc.) and helicopters. In ~~2000~~2008, the Airport experienced approximately ~~257,500~~159,500 total aircraft flights. The Airport does not ~~serve~~ provide commercial airline service ~~or flights~~.

Other land use planning policies in the Circulation Element related to the Airport that would not be changed under the proposed project include policies intended to protect the Airport from the encroachment of incompatible land uses (e.g., Policies P1 and P2 under Goal CIR-8, Objective CIR-8.14). As previously noted, the project would result in development that would support Airport operations and services, and would not allow for new development on Airport lands outside of the project site. Therefore, the project would not result in the introduction of incompatible uses on or near the Airport. In addition, the proposed project would be consistent with policies P1 and P3 under Goal CIR-8, Objective CIR-8.14 in the Circulation Element of the General Plan.

c. Noise Element. The Noise Element of the General Plan identifies and appraises noise generation issues in the community in order to "minimize problems from intrusive sound and to ensure that new development does not expose people to unacceptable noise levels."[4] To meet these objectives, the Noise Element requires that new development be compatible with surrounding land uses. The Noise Element also provides baseline information on the existing noise environment in the City, including noise contours in the vicinity of the Airport for the year 2020. Finally, the Noise Element establishes land use compatibility standards and provides recommendations to reduce noise impacts to adjacent sensitive land uses.

The Noise Element includes the following goal, objective, and policy that relate to planning issues associated with the proposed project:

[4] Livermore, City of, 2004. *City of Livermore General Plan: Noise Element.* February 9.

Goal N-4: Minimize the exposure of community residents to excessive noise.

Objective N-1.1: Establish appropriate noise levels, design standards, and noise reduction techniques for all areas to minimize the adverse effects of noise.

Policy:

P1: The City shall emphasize noise considerations when making land use planning decisions.

Consistency: As described in Chapter III, Project Description, the proposed project would include the following changes to the Noise Element:

Figure 9-1, "Existing Noise Contours," on page 9-21 of the Noise Element would be updated (per Figure V.D-2, Existing CNEL Noise Contours, in Section V.D, Noise, of this EIR).

Figure 9-2, "2025 Noise Contours," on page 9-25 of the Noise Element would be updated to include the 2030 Airport dBA line (per Figure V.D-5, 2030 CNEL Noise Contours, in Section V.D, Noise, of this EIR).

The following changes would be made to page 9-23 of the Noise Element:

Airport-Related Noise

The Livermore Municipal Airport is located in the northwest portion of the City and serves the City and Alameda County. The City of Livermore, in participation with surrounding cities, established an Airport Protection Area to keep surrounding land uses compatible with aviation activities. The City shall ~~has~~ adopt~~ed~~ an Airport zoning district ~~master plan~~ for aviation activities at the Airport in order to address the area's continuing population growth and demand for air transportation facilities. Anticipated noise contours in the vicinity of the Airport in the year 20~~2~~30 are shown in Figure 9-2.

The proposed project would be compatible with policies in the Noise Element related to land use planning at the Airport; these policies – Goal N-4, Objective N-1.1, and Policy P1 – are intended to minimize exposure of sensitive receptors to excessive noise through considered land use planning. Please see Section V.D, Noise, for an analysis of existing and future noise conditions related to the proposed project.

d. Public Safety Element. The Public Safety Element of the General Plan addresses natural and created hazards in Livermore, and identifies ways to minimize risks associated with these hazards in the community. Natural hazards include: geologic hazards; flooding; and wildland fires. Created hazards include hazardous materials, issues related to Airport safety, and general emergency preparedness. Policies in the Public Safety Element are intended to help the City reduce risks associated with the above-mentioned hazards to an acceptable level.[5]

The Public Safety Element notes that the Federal Aviation Administration (FAA) is responsible for establishing land use standards at all airports in the United States, including minimum distances of ground clearance for take-off and landing. Minimum clearance at Livermore Municipal Airport is 800

[5] Livermore, City of, 2004. *City of Livermore General Plan: Public Safety Element*. Amended 2009. February 9.

feet wide along the full length of the runways, and 1,000 feet beyond the ends of the runways. The previously described Airport Protection Area (APA), which prohibits new residential development or the expansion of existing residential uses within its boundaries, provides further protection beyond the clearances required by the FAA; the APA extends 5,000 feet beyond the runways to the north, south, and east, and 7,100 feet beyond the runways to the west (the typical take-off direction).[6]

The Public Safety Element also notes that the Alameda County Airport Land Use Commission (ALUC), which incorporated the Airport's APA into the County Land Use Plan (CLUP), acts as an advisory board to assist the City in ensuring the compatibility of land uses in the vicinity of the Airport. The ALUC also reviews proposed development in surrounding jurisdictions to ensure consistency with the APA, general land use compatibility, and to minimize safety hazards associated with Airport operations.[7]

The Public Safety Element includes the following goal, objective, and policy that relate to planning issues associated with the proposed project:

> Goal PS-5: Minimize risks associated with aircraft operations at the Livermore Municipal Airport.
>
> > Objective PS-5.1: Regulate land use within the vicinity of the Livermore Municipal Airport.
> >
> > > Policy:
> > >
> > > P1: All construction in Livermore shall be consistent with the required setbacks and height restrictions for the Airport Protection Area, as well as the policies of a master plan adopted to plan for future Airport operations.

Consistency: As noted in Chapter III, Project Description, the reference to the Master Plan for the Airport in Policy P1 would be replaced with a reference to the proposed Airport (AIR) zoning district:

> Goal PS-5: Minimize risks associated with aircraft operations at the Livermore Municipal Airport.
>
> > Objective PS-5.1: Regulate land use within the vicinity of the Livermore Municipal Airport.
> >
> > > Policy:
> > >
> > > P1: All construction in Livermore shall be consistent with the required setbacks and height restrictions for the Airport Protection Area, as well as the ~~policies of a master plan~~ requirements of an Airport zoning district adopted to plan for future Airport operations.

Policies in the Public Safety Element related to land use planning around the Airport – Goal PS-5, Objectives PS-5.1, and Policy P1 – are intended to regulate land use in the vicinity of the Airport to reduce exposure to hazards and enforce required setbacks and height restrictions for development within the APA. The project would not change the boundaries of the APA. As previously discussed,

[6] Ibid.

[7] Ibid.

the project would not result in new development outside the project site, including on the critical runway protection areas. The project would not conflict with policies aimed at regulating non-Airport related development within the APA; the project would create a new Airport Zoning District to clarify the nature and extent of development at the Airport. Therefore, the proposed project would not conflict with policies related to the Airport in the Public Safety Element of the General Plan. Refer to Sections V.B, Hydrology and Water Quality, V.C, Geology, Soils, and Seismicity, and V.G, Hazards and Hazardous Materials, for a discussion of the project's potential impacts related to the hazards of flooding, earthquakes, and toxic materials, respectively.

e. Community Character Element. The Community Character Element of the City of Livermore General Plan addresses aesthetics-related policy concerns, including areas of historical and cultural value, scenic corridors, and open space preservation – with a focus on maintaining the unique visual features that convey a sense of place in the City. To achieve that objective, the Community Character Element "contains goals, objectives, policies, and actions that will guide private individuals and government officials in preserving and enhancing Livermore's character and unique physical identity." These policies range from the protection of water bodies and steep slopes to ensuring that urban design in the City is of high quality.

Goals, objectives, policies, and actions in the Community Character Element that are relevant to the proposed project and project site are listed in Table IV-1. The table also includes an evaluation of the consistency of the project with each applicable policy. The policy analysis for the Community Character Element is more detailed than that of the other elements evaluated in this chapter because of its high relevance to the project and the technical nature of the applicable policies.

A major policy emphasis of the Community Character Element is the protection of viewsheds around scenic routes. Please refer to Section V.K, Visual Resources, for a discussion of viewsheds and scenic views.

Consistency: The proposed project would be generally consistent with applicable policies related to visual resources in the Community Character Element of the General Plan (refer to Table IV-1). The project would not result in the removal or reconfiguration of important landscape elements identified in the Community Character Element, including steep slopes, creeks and streams, historic buildings, or significant vegetation. The project site, which is flat and developed with airport-related uses, does not contain any of these resources. In addition, the proposed AIR District includes regulations that would require landscaping to be planted in accordance with a landscape plan and signs to be limited in size and type. If a Conditional Use Permit is required, as part of the Site Plan Approval process, the design of specific development projects would be reviewed by the Airport Manager and City staff. (If a Conditional Use Permit is required, the Planning Commission would also review design issues.) These provisions would ensure that the design of specific development projects on the site meets the design standards identified in the Community Character Element. In addition, as discussed in more detail in Section V.K, Visual Resources, due to the height restrictions in the Zoning Code, no development on the project site would exceed 40 feet, and scenic views from I-580 would not be compromised.

Table IV-1: Community Character Element Policy Consistency

General Plan Goals, Objectives, Policies, Actions	Project Consistency
Goal CC-1: Preserve and enhance Livermore's natural setting.	Consistent. The project would not remove water courses, result in substantial grading, result in the construction of buildings that exceed the allowed I-580 scenic corridor view angle, or result in other physical changes that would compromise the City's landscape setting.
Objective CC-1.1: Use open space to protect and enhance local community character and identity, to preserve rural characteristics, and to provide an edge to urban growth.	Consistent. Although the proposed project could result in new development on the site, new buildings would be constructed in close proximity to existing Airport features and would not compromise the open space buffer to the northeast, south, and west of the Airport.
P6. The City shall maintain an area of non-urbanized land surrounding Livermore to serve as a buffer between communities. Uses that are considered compatible with this area include agriculture, grazing, open space, recreation, and reclaimed sand and gravel extraction.	Refer to Objective CC-1.1.
P9. Open space shall be used as a buffer between incompatible land uses within urban or essentially undeveloped areas.	Refer to Objective CC-1.1.
P12. The City shall preserve and enhance the following manmade amenities: (a) Vineyards, (b) Other Agriculture, (d) Scenic Highways, Roads, and Corridors, and (f) Community Entrance Points	Consistent. The project would not result in the construction of buildings that would exceed the allowed I-580 scenic corridor view angle, or compromise the setting of Isabel Avenue/Kitty Hawk Road or Jack London Boulevard (the other two designated scenic corridors in the vicinity of the project site). As part of project buildout, structures could be developed adjacent to Jack London Boulevard. However, these structures would be limited to 40 feet in height (thus minimizing potential view obstruction), and would be consistent in design to other existing Airport buildings. The project would not result in direct changes to agricultural land or vineyards. In addition, the project would retain the Airport as a place for aviation, preserving the site as a community entrance point.
Objective CC-1.3: Minimize obtrusive glare and wasted energy from excessive nighttime lighting and preserve views of the nighttime sky.	Consistent with Mitigation. Implementation of Mitigation Measure AES-1 would ensure that new electric lighting and building materials used on the site would not compromise nighttime views or result in excessive glare.
P1. The importance of views of the nighttime sky unimpaired by inappropriate intensities of light and glare shall be acknowledged as a significant scenic resource in Livermore.	Consistent. Refer to Objective CC-1.3.
Objective CC-2.2: Maintain high-quality design of all signage.	Consistent. The proposed AIR District would include several regulations restricting the size and character of new signage, including directional signs. In addition, except as specified in the AIR District, signs would also be required to comply with the provisions of the Chapter 3-45 of the Zoning Code, and signs would be reviewed by the Airport Manager and Community Development Department. These regulations would ensure that new signs are of high quality and would not compromise the visual character of the Airport.

Table IV-1 *Continued*

General Plan Goals, Objectives, Policies, Actions	Project Consistency
P1. On-premise signs shall be the minimum size, height, number and type necessary for identification. Their design, materials, color, texture and/or location shall relate to the type of activity to which they pertain and be compatible with the architectural character of the building it is associated with and the visual character of the surrounding area.	Consistent. Refer to Objective CC-2.2.
Objective CC-2.3: Maintain high-quality design of public facilities.	Consistent. The proposed AIR District would require all development projects to be subject to (as applicable) site plan approval, conditional use permit approval, or design review approval. These provisions would ensure that public facilities at the Airport are of high quality.
Goal CC-4: Protect and enhance public views within and from established scenic routes, including views of arroyos.	Consistent. Refer to CC-1.1, P12. No arroyos would be altered as part of the project.
Objective CC-4.1: Protect public views from scenic routes and corridors	Consistent. Refer to CC-1.1, P12.
P1. Development shall not be allowed to obscure, detract from, or negatively affect the quality of the views from designated scenic routes.	Consistent. Refer to CC-1.1, P12.
P2. The City shall maintain in open space that portion of the hills which is seen from the freeway and which is within the I-580 Scenic Corridor as shown in Figure 4-1. Any development within the I-580 Scenic Corridor is subject to the policies set forth under Goal CC 4 and the conditions set forth in *Section C, I-580 Scenic Corridor Implementation*.	Consistent. Refer to CC-1.1, P12.
P3. The City shall permit no development to wholly obstruct or significantly detract from views of any scenic area as viewed from a scenic route.	Consistent. Refer to CC-1.1, P12.
A1. Trees, shrubs, and other landscaping shall be planted along scenic roads in accordance with a landscape plan approved by the City.	Consistent. The proposed AIR District includes landscaping regulations that would require: yard areas (as specified in the Zoning Code); a 25-foot landscaped strip of land to be set aside along major streets and a 20-foot strip to be set aside along non-major streets; preparation of a landscape plan; and landscape strips abutting building foundations. These regulations would improve the visual quality of new structures on the project site and would minimize adverse changes to scenic corridors. In addition, FAA regulations would generally prohibit large masses of tall vegetation (of the kind that would block views) to be planted or maintained on the site.
Objective CC-4.6: Use landscaping to increase the scenic qualities of scenic routes.	Consistent. Refer to CC-4.1, A1.
P1. Landscaping should be designed and maintained in scenic route corridors to provide added visual interest, to frame scenic views, and to screen unsightly views.	Consistent. Refer to CC-4.1, A1.
Objective CC-4.8: Establish architectural and site design review for projects within scenic routes.	Consistent. Refer to Objective CC-2.3.
P1. Site planning, architectural, and landscape architectural design review shall be required so that development will be attractive from the highway and roads, and a harmonious relationship will exist among the various elements of proposed and existing developments and the visual qualities of the scenic route. Careful consideration shall be given to natural land contours and to appearances that will enhance scenic qualities from the scenic routes.	Consistent. Refer to Objective CC-2.3. Substantial grading would not occur as part of project-related development because the site is already flat.

Table IV-1 *Continued*

General Plan Goals, Objectives, Policies, Actions	Project Consistency
P3. Landscape and construction design should be in keeping with the Cityscape and natural skyline and reflect the density, movement, and activities of the population.	Consistent. Refer to Objective CC-2.3 and CC-4.1, A1. Proposed development would be limited to 40 feet in height and would be similar to existing Airport development. Therefore, the project would not compromise the character, skyline, or other visual features of the Airport.
P4. In all zoning districts where the allowable height limit exceeds 35 feet, each proposed structure over 35 feet, except utility poles and lines, should be reviewed to ensure that such structure will not conflict with any view from any scenic route.	Consistent. An analysis by Pacific Municipal Consultants in 2001 indicates that the I-580 scenic corridor 2.2 degree maximum view angle for the site would allow for maximum building heights on the site of between 78 and 162 feet. Because buildings on the site would be limited to 40 feet, they would not conflict with views from I-580. In addition, the 40-foot height limit would ensure that scenic views from Jack London Boulevard and Isabel Avenue/Kitty Hawk Road would not be substantially compromised.
P5. Utilize view angles established in Community Character Element Section IV.C (I-580 Scenic Corridor Implementation) to prohibit structures from extending above the applicable view surface established by the view angle.	Refer to CC-4.8, P4.
Objective CC-4.9: Apply the following criteria in the review of building and grading permits in developable areas.	Refer to CC-4.9, P3.
P3. The I-580 Scenic Corridor is defined as the area which is within 3,500 feet on each side of the centerline of I-580, and visible from the I-580 roadway. Development in the I-580 Scenic Corridor must preserve, to the largest degree feasible, the view of the ridgelines as seen from the I-580 Scenic Corridor roadway. To that end, no development, structures or man-made objects except plantings erected for landscaping purposes may obscure any portion of the ridgeline as seen from the I-580 Scenic Corridor roadway, except as provided in Community Character Element Section IV.C *(I-580 Scenic Corridor Implementation).* Landscaping, including trees, shall be planted in a manner such that when mature, it does not create a wall-like effect that substantially obscures views of the ridgeline.	Refer to CC-4.8, P4 and CC-4.1, A1.
Objective CC-4.12: Provide for normal uses of land and protect against unsightly features in scenic routes.	Consistent. The proposed project would allow for the development of normal airport-related uses on the site to ensure that future Airport operations are safe and efficient. Refer also to CC-4.8, P4 regarding scenic routes.
P1. In both urban and rural areas, normally permitted uses of land should be allowed in scenic routes, except that panoramic views and vistas should be preserved and enhanced through: (1) Supplementing zoning regulations with special height, area, and side yard regulations. (2) Providing architectural and site design review. (3) Prohibiting and removing billboards, signs not relevant to the main use of the property, obtrusive signs, automobile wrecking and junk yards, and similar unsightly development or use of land.	Consistent. The proposed AIR District supplements or utilizes the height, area, and yard restrictions in the Zoning Code to ensure the protection of the visual environment. In addition, site design review would be required for individual development projects, as applicable. Lastly, billboards, superfluous signs, and other unsightly visual elements would be effectively prohibited by the design restrictions (including regulations on sign size and type) incorporated into the proposed AIR District.
P2. Design and location of all signs should be regulated to prevent conglomerations of unsightly signs along roadsides.	Refer to CC-4.12, P1.
Objective CC-4.14: Control removal of vegetation in scenic routes.	Consistent. Vegetation is limited on the project site. Therefore, removal of vegetation from the site would not substantially compromise the visual character of the site as seen from viewpoints along scenic corridors.

Sources: City of Livermore General Plan Community and Character Element; LSA Associates, Inc., 2009.

B. LIVERMORE PLANNING AND ZONING CODE

This section describes the Livermore Planning and Zoning Code (Zoning Code) as well as the proposed project's consistency with applicable provisions of the Zoning Code.

1. Description

The Zoning Code implements the policies of the General Plan and other City plans, policies, and ordinances. The Zoning Code divides the City into districts, each of which is assigned different regulations. These regulations direct the construction, nature, and extent of building use.

As shown in Figure IV-3, the majority of the project site is zoned Education & Institutions (E), which provides areas for the development of educational institutions and associated uses. Permitted uses within the E district include educational institutions, laboratories, and recreational facilities. Other public and quasi-public uses are subject to a conditional use permit; such as the Municipal Airport. Requirements in the E district include the following:

- *Minimum district size:* 1 acre;
- *Minimum parcel size:* 1 acre, except as otherwise specified;
- *Maximum aggregate coverage:* 50 percent; and
- *Maximum height limit: 35 feet.*[8]

The portion of the project site east of Kitty Hawk Road, which is undeveloped for the purpose of flight safety (it is designated as the "Runway Protection Zone" in the Airport Layout Plan for the Airport[9]), is zoned Planned Development (PD). The purpose of the PD district is to offer flexibility in development. Areas that are zoned PD are subject to other applicable zoning regulations such as parking requirements and sign regulations.[10] Typically, customized development regulations – including those found in zoning regulations for other districts – are crafted when a project application is submitted.

2. Consistency

The project includes a proposed rezoning of the site from E and PD to the proposed AIR Zoning District. The text of the proposed AIR district is included in Chapter III, Project Description. The City proposes this rezoning to clarify the nature and extent of development at the Airport; the AIR district would provide broad development standards for a wide range of public facilities and uses, which would include the Airport. In addition, the new district would constrain development more than the existing 1975 Airport Master Plan and the current E and PD zoning districts, in an effort to address community concerns about the Airport. The proposed AIR district would serve as the guiding document for future land use decisions at the project site.

[8] Livermore, City of, 2009. *Livermore Planning and Zoning Code*. Website: www.codepublishing.com/ca/livermorehtml.html. Accessed June 22.

[9] Livermore, City of, 1975. *Master Plan; Livermore Municipal Airport*. December.

[10] Livermore, City of, 2009. op. cit.

C. MASTER PLAN – LIVERMORE MUNICIPAL AIRPORT

The following discussion provides a description of the Master Plan prepared for the Livermore Municipal Airport in 1975, as well as the proposed project's consistency with applicable goals of the Master Plan. As mentioned previously, the 1975 Master Plan is based upon outdated data with impacts projected out only until the year 1995, and is, therefore, no longer relevant. Moreover, the creation of a more restrictive AIR Zoning District (the proposed project) would be more effective than the Master Plan in allowing for continued development of aeronautical facilities while being sensitive to community concerns. The proposed rezoning would impose limits on Airport development that are more restrictive than those in the old, outdated Master Plan. Therefore, the Master Plan would be rescinded as an action independent of the proposed project.

1. Description

The 1975 Livermore Municipal Airport Master Plan (Master Plan) was prepared to address "the short, intermediate, and long term periods of development for the airport."[11] The Master Plan includes an inventory of existing facilities at the Airport, analysis of future demand for Airport facilities, capacity analysis, and facility requirements for future use.[12]

The main objective of the Master Plan is to "provide guide lines for future development [at the Airport], while being compatible with the environment and the goals of the community."[13] To achieve this objective, the Master Plan includes several recommendations, including: 1) increased coordination between the City of Livermore, the City of Pleasanton, and Alameda County; 2) acquisition of land to protect approach areas and control zones, and to develop new facilities on the south side of the Airport; 3) restrictions on residential development in the vicinity of the Airport; 4) establishment of maximum effective interior noise level criteria and a Noise Abatement Committee to address noise issues; 5) the construction of a parallel runway and extension of the existing runway; 6) the construction of additional parking aprons, tiedowns, and hangars; 7) the installation of an instrument landing system to increase Airport safety; and 8) the implementation of other measures related to the fiscal health of the Airport. Most of these objectives have already been effectively met as a result of past development activities at the Airport, the City's efforts at coordinating with surrounding jurisdictions on planning issues, and the establishment of noise standards by the City that are protective of human health. Because the Master Plan contains outdated information, it can no longer provide effective guidelines for future development.

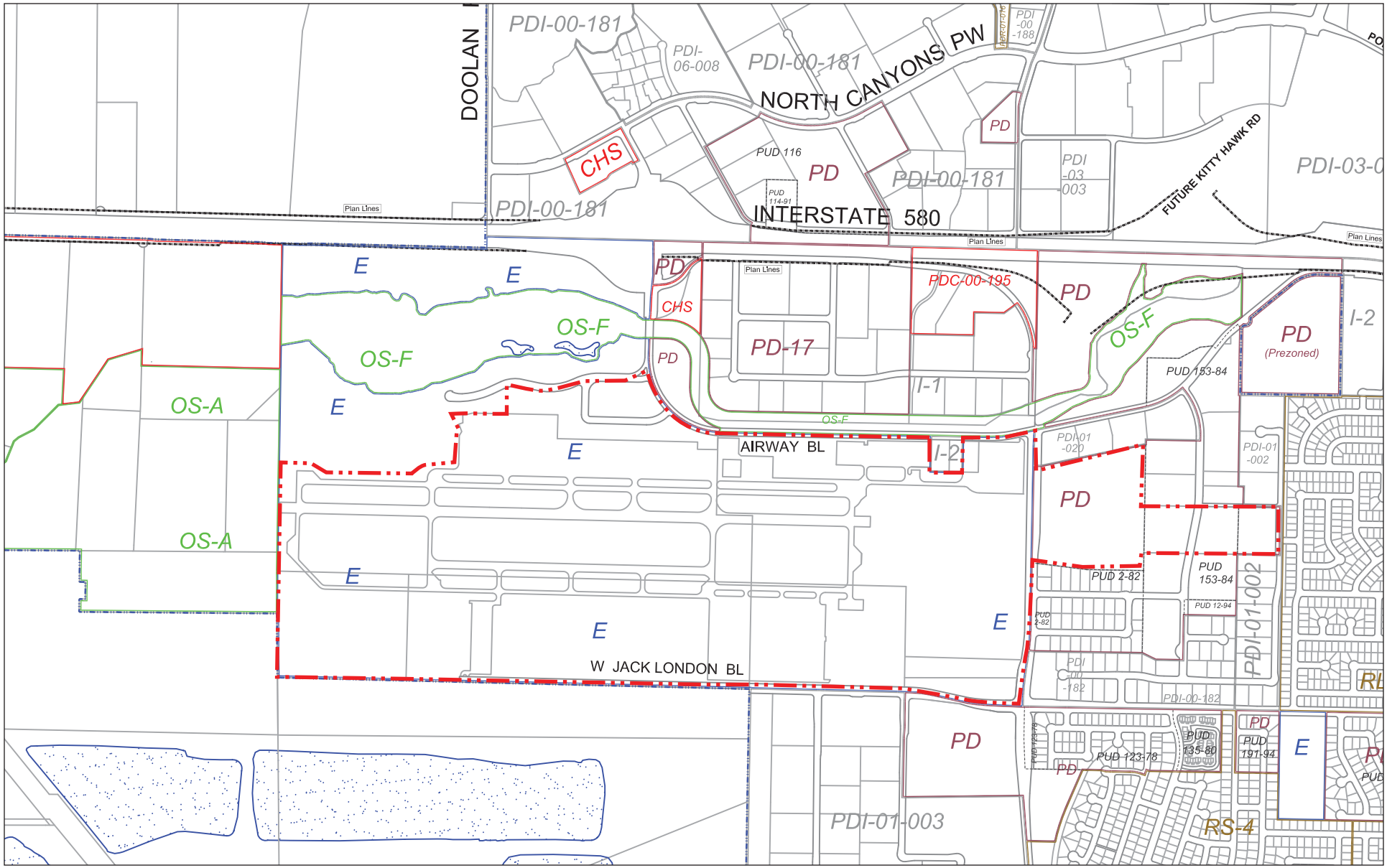
As noted in Chapter III, Project Description, the Master Plan is based on socioeconomic and other data dating from the early- and mid-1970s and contains forecasts to the year 1995. These data include population distribution and trends; employment and income information; and flight operations forecasts. All of this baseline information is outdated. In addition, the Master Plan identifies impacts associated with Master Plan buildout only until 1995, and forecasts that operations at the Airport would increase to 340,000 operations per year by 1995. The Master Plan concludes that the Airport, at that time, did not contain sufficient facilities to accommodate projected future aviation demand at the Airport.[14]

[11] Livermore, City of, 1975. op. cit.

[12] Ibid.

[13] Ibid.

[14] Ibid.



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FEET

PROJECT SITE

E EDUCATION & INSTITUTIONS

OS-F OPEN SPACE – FLOOD PLAIN

OS-A OPEN SPACE – AGRICULTURAL

PD PLANNED DEVELOPMENT

RS RESIDENTIAL

RL LOW DENSITY RESIDENTIAL

FIGURE IV-3

Livermore Municipal Airport General Plan Amendment and Rezoning Project EIR

Existing Zoning Districts Map

SOURCE: CITY OF LIVERMORE; LSA ASSOCIATES, INC., 2009

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2. Consistency

An Airport Master Plan is an optional policy document under State and federal regulations, and is not legally required. Therefore, when the existing Master Plan is rescinded, a new Master Plan would not be required to replace the old one. As part of the project, the General Plan would be amended to remove references to the Master Plan. General Plan policies in Policy P1 (under Goal CIR-8, Objective CIR-8.14) would also be amended to acknowledge the revised forecasts for annual aircraft operations and the proposed number of stored/parked aircraft at the Airport (although only the FAA may regulate flight operations). However, it should be noted that the project would be consistent with the primary goal of the 1975 Master Plan (and federal and FAA regulations), which is to allow for future development of the Airport in a way that is consistent with environmental and community objectives, and the need to satisfy expected growth in aviation demand.

CEQA defines a project as "an activity which may cause either a direct physical change in the environment, or a reasonably foreseeable indirect physical change in the environment, and which is any of the following: (a) An activity directly undertaken by any public agency. . . ." Rescinding the Master Plan will have no environmental impacts because the Master Plan is no longer a viable planning document. The Master Plan is irrelevant by virtue of its age and outdated information, and its rescission is an administrative housekeeping matter. Because the Master Plan is no longer a useful planning document, its rescission action is not a project under CEQA.

D. ALAMEDA COUNTY AIRPORT LAND USE POLICY PLAN

The following discussion provides a description of the Airport Land Use Commission (ALUC) of Alameda County's 1986 Alameda County Airport Land Use Policy Plan (Policy Plan), as well as the proposed project's consistency with applicable goals of the Policy Plan.

1. Description

The Alameda County Airport Land Use Commission (ALUC) was created in 1971 pursuant to State law in order to regulate land use planning at all airports within Alameda County, and ensure that new development within and around these airports does not result in land use incompatibilities or excessive noise and safety hazards. The Policy Plan provides the ALUC with a policy framework through which to evaluate proposed actions from local public agencies within and in the vicinity of local airports (including the granting of entitlements for public and private development projects); this framework is intended to help the ALUC determine whether a proposed action would be compatible with airport operations and surrounding development.[15] These policies and standards, which apply to all airports within the County (with modifications for local conditions), are divided into the following categories:

- *Safety Zones:* Safety zones restrict population density and development in the vicinity of airports. These zones establish planning boundaries and include policies that regulate new development within these zones, specifically focusing on allowed land uses and densities.
- *Height Referral Areas:* Height referral areas are intended to preserve airspace required for safe flight operations in the vicinity of the airport. Height referral areas establish planning boundaries

[15] Airport Land Use Commission of Alameda County, 1986. *Alameda County Airport Land Use Policy Plan.* Adopted July 16 (with subsequent amendments).

within which airspace is preserved, and include policies that restrict height on structures within the boundaries;

- *Hazard Prevention Zones:* Hazard prevention zones are intended to prevent hazards to safe flight operations, such as birds, electrical interference, glare, and smoke. Hazard prevention zones establish planning boundaries, and include policies which identify facilities that would be incompatible within these boundaries.
- *Noise Impact Zones:* Noise impact zones are intended to minimize noise impacts on areas in the vicinity of airports. Noise impact zones establish boundaries based on anticipated future noise levels, as well as relevant federal, State, and local policies related to airport noise. Noise impact zone policies include a variety of considerations related to the noise environment in the vicinity of an airport, including non-ALUC noise standards, the role of local jurisdictions in regulating the noise environment, and the role of the ALUC in evaluating noise impacts.
- *Exceptions to ALUC Land Use Policies:* The ALUC evaluates proposed exemptions on a case-by-case basis.[16]

The Policy Plan describes and provides maps for the safety zones, height referral area, and noise impact zones for the Livermore Municipal Airport. The document also includes background information about the Airport, and a description of the 1975 Master Plan. The contours that demarcate the noise impact zones included in the Policy Plan, which are based upon data included in the Master Plan from 1975 that projects only as far as 1995.[17]

2. Consistency

The proposed project does not identify or propose changes to the Airport's safety zones, height referral area, or noise impact zones identified in the Policy Plan. In this regard, the project would be consistent with the Policy Plan. The noise contours included in the Policy Plan were taken from the Master Plan, which contains data based upon outdated projections for Airport operations. Section V.F, Noise includes updated noise contours based on forecasted operations at the Airport (per the Coffman Associates, Inc. report in Appendix B of this EIR[18]) under the proposed rezoning, and discusses the resulting noise levels on surrounding areas. The same land use and noise compatibility standards included in the Policy Plan would apply to areas within these updated noise contours. The project would not result in new development outside the project site, which consists of the core 403 acres of the Airport; therefore, the project would not conflict with policies contained in the Policy Plan intended to restrict incompatible uses in the vicinity of the Airport. Thus, the proposed project would be consistent with the Policy Plan.

E. CALIFORNIA AIRPORT LAND USE PLANNING HANDBOOK

The following discussion provides a description of the California Department of Transportation (Caltrans) California Airport Land Use Planning Handbook (Handbook), as well as the proposed project's consistency with applicable goals of the Handbook.

[16] Ibid.

[17] Ibid.

[18] Coffman Associates, Inc., 2008. *"Unconstrained" Forecasts; Airport Rezoning Project, Livermore Municipal Airport*. October 10.

1. Description

Caltrans publishes the Handbook to support the State Aeronautics Act,[19] which establishes Statewide requirements for land use planning around airports. In essence, the Handbook functions as a guide for Airport Land Use Planning Commissions, including the ALUC of Alameda County, which reviews development at the Airport insofar as it relates to surrounding areas. The Handbook consists of two primary components: a section that discusses ALUC procedures and provides guidance for the preparation of land use policy plans; and a description of land use compatibility issues – particularly, noise and safety – related to land use planning around airports. The Handbook was first published in 1993, and was revised in 2002.[20]

2. Consistency

As previously noted, the Handbook serves primarily as a guide for ALUCs in the formulation of policies and the preparation of land use policy plans. The proposed project, which would rezone a portion of the Livermore Municipal Airport, is not itself directly subject to the recommendations contained at the Handbook, as they are intended to inform ALUC decision-making; the project is related to the Handbook's recommendations insofar as it is subject to policies contained in the Alameda County Airport Land Use Policy Plan, and to approval of the ALUC of Alameda County. (As previously noted, the project would be consistent with the Airport Land Use Policy Plan). The project's potential noise impacts are discussed in Section V.F, Noise, and potential safety impacts are discussed in Section V.G, Hazards and Hazardous Materials.

F. FEDERAL AVIATION ADMINISTRATION SPONSOR ASSURANCES

The following discussion provides a description of the FAA sponsor assurances required with the use of federal grant monies for the acquisition of land for the Airport, and the consistency of the project with these assurances. The grant assurances are included in Appendix E.

1. Description

The Livermore Municipal Airport was relocated to its current location in 1965 with the original acquisition of over 250 acres. Since that time, federal grants have been used to purchase additional lands surrounding the Airport to provide safety and approach zones and buffers for aviation activities. When a public agency accepts grant monies for the purposes of acquiring land for an airport, it must agree to adhere to specific assurances relating to use, operation, and maintenance of the airport. The assurances remain in effect throughout the useful life of the facilities developed while the airport is used as such. There is no limit on the duration of the assurances with respect to real property acquired with federal funds.

Assurances prohibit economic discrimination by the public agency, meaning that the public agency must make the airport available for public use on reasonable terms and without unjust discrimination to all types, kinds and classes of aeronautical activities, including commercial aeronautical activities

[19] State Aeronautics Act: California Public Utilities Code, Section 21670 et. seq.

[20] State of California Department of Transportation (Caltrans), 2002. Division of Aeronautics. *California Airport Land Use Planning Handbook*. January.

offering services to the public at the airport.[21] The assurances also address other functional considerations of the airport such as operation and maintenance of the airport, hazard removal and mitigation, compatible land use, and airport revenues.

2. Consistency

The proposed project limits, or constrains, future development at the Livermore Municipal Airport consistent with forecasted aeronautical operations. The proposed Airport zoning district includes uses reasonably anticipated at a public airport. This provision for future development at the Airport is consistent with the grant assurances regarding economic nondiscrimination. Although the proposed zoning district limits the amount of development that may occur in the foreseeable future, the development limits are consistent with forecasted operations approved by the FAA.

[21] Federal Aviation Administration, 2005. Airport Assurances. March.

A. LAND USE

This section describes existing land uses within and in the vicinity of the 403-acre portion of the Livermore Municipal Airport (Airport) that constitutes the project site, and evaluates potential land use impacts that could result from the proposed project. The project's consistency with plans and policies adopted for the purpose of environmental protection are discussed in Chapter IV, Consistency with Plans and Policies.

1. Setting

The following setting information provides an overview of the land uses within the project site and surrounding areas. The section begins with a discussion of the regional and local land use setting, and then provides more specific information about the project site and its vicinity. Land uses around the project site are identified in the aerial photo provided in Figure V.A-1. Photographs of the site and surrounding area are provided throughout this section to illustrate existing land uses in and around the site.

a. Regional Setting. The project site is located in Alameda County, within the City of Livermore (City), as shown in Figure III-1 in Chapter III, Project Description. Livermore is located approximately 20 miles southeast of the City of Oakland and approximately 25 miles northeast of the City of San Jose. The City is located in the Livermore-Amador Valley in eastern Alameda County and is bordered by the City of Pleasanton to the west and unincorporated Alameda County to the north, east, and south. The City of Dublin is located to the northwest (directly north of Pleasanton). Interstate 580 (I-580), which bisects Livermore from east to west, is the only major freeway that passes through the City.

b. Local Setting. The City's most defining natural features are the ridgelines that surround the Livermore-Amador Valley on all sides. A portion of Livermore's built environment consists of a central, historic downtown surrounded by residential development, most of which was constructed in the post-World War II period, starting in the 1950s. Livermore is also known for the Lawrence Livermore National Labs and Sandia Labs in the southeastern corner of the City and the vineyards in the South Livermore area. The edge of the City's developed urban edge contains a mix of newer residential development, light industrial and commercial development, and older ranches, pasture, and other cultivated lands.[1]

The Airport is located approximately 3 miles northwest of Downtown Livermore and approximately 2 miles east of the City of Pleasanton. The Airport is generally bound by Club House Drive and Airway Boulevard to the north; parcels bordering Rutan Drive and the Water Reclamation Plant to the east; the Water Reclamation Plant and Jack London Boulevard to the south; and agricultural lands and Las Positas Golf Course to the west. As shown in Figure V.A-1, 403 acres of the core area of the Airport would be rezoned under the proposed project; this area is considered the "project site" for the proposed project. The 240 acres of Airport land that is not contained within the project site primarily consists of open space west of the site, and also includes open space and commercial uses along Airway Boulevard north of the site.

[1] Livermore, City of, 2004. *City of Livermore 2003 General Plan*. February 9.

c. Existing Conditions and Land Uses on the Project Site. Existing development on the project site includes: two runways; 22 hangar buildings; 249 tiedown spaces for aircraft; helicopter parking; an air traffic control tower and offices; a terminal building; a fire station; and Ruby Hill Aviation, a private fixed-base operator (FBO). Paved surfaces on the site (runways, roads, and building footprints) are interspersed with flat, graded open space covered with mowed grassland. Square footages for existing uses on the site are provided in Table III-1. As shown in Figure IV.A-1, the parallel runways on the site run from east to west and divide the site into northern and southern portions. The above-mentioned tiedown spaces, the Airport terminal, helicopter parking, and Northeast Hangars are located north of the runways, while the South Hangars are located south of the runways.

Tiedown spaces at the Airport, looking east.

Existing hangars on the south side of the Airport.

As discussed in greater detail in Chapter IV, Consistency with Plans and Policies, the existing General Plan designation for the project site is Community Facilities-Airport (CF-AIR). The Community Facilities designation provides areas for public agencies and institutions, such as the Livermore Municipal Airport. The majority of the project site is zoned Education & Institutions (E), which provides areas for the development of educational institutions and associated uses. The undeveloped portion of the site east of Kitty Hawk Road is zoned Planned Development (PD), which allows for flexible design of development projects.

The City also established an "Airport Protection Area" (APA) in 1991 in order to prevent incompatible, sensitive uses from being located near the Airport. As shown in Figure IV-2 in Chapter IV, Consistency with Plans and Policies, the APA forms a rectangular boundary around the Airport, and includes the area located within 7,100 feet west of the western end of Airport runways, 5,000 feet north of the northern edge of Airport runways, 5,000 feet east of the eastern end of Airport runways, and 5,000 feet south of the southern edge of Airport runways. New residential development or the expansion of existing residential uses within the APA is prohibited.[2]

d. Land Uses in the Vicinity of the Project Site. The following section describes the land uses found in the vicinity of the project site, as shown in Figure V.A-1.

(1) Land Uses to the North. Land uses directly north of the site include a mix of low-intensity industrial and commercial buildings north and east of Airway Boulevard, and Las Positas

[2] Livermore, City of, 2004. *City of Livermore General Plan: Land Use Element*. Amended 2009. February 9.

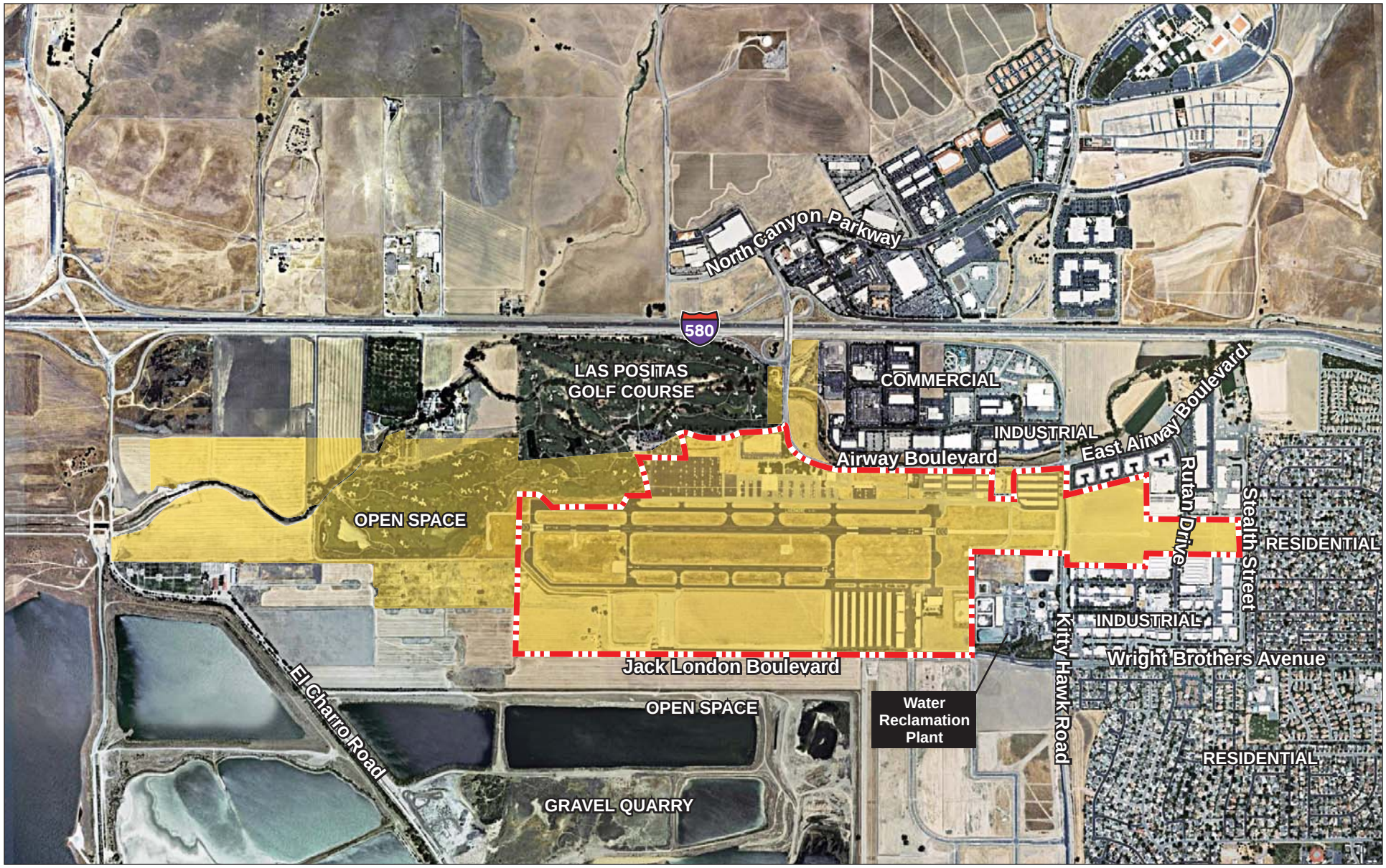

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FIGURE V.A-1

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0 600 1200

FEET

PROJECT SITE

AIRPORT/CITY OWNED PARCELS

Livermore Municipal Airport General Plan Amendment and Rezoning Project EIR

Surrounding Land Uses

SOURCE: GOOGLE EARTH; LSA ASSOCIATES, INC., 2009

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Back of Figure V.A-1

Golf Course to the west of Airport Boulevard and north of Club House Drive. I-580 lies further to the north of these uses.

Open space and distant ridgelines south of the Airport.

(2) Land Uses to the East. Land uses directly east of the site include a City-owned and -operated Water Reclamation Plant, low intensity industrial buildings, and neighborhoods of detached, single-family homes farther to the east and southeast

(3) Land Uses to the South. Jack London Boulevard borders the project site's southern edge. The area south of this roadway consists of graded, undeveloped land. Gravel quarries are located further to the south and west. Land to the south and southwest of the project site is located outside Livermore's jurisdictional boundaries, but it is within the City's Planning Area.

(4) Land Uses to the West. Land to the west of the project site consists of open space, including undeveloped, graded land owned by the Airport as well as portions of Las Positas Golf Course. Some open space to the west of the site is undeveloped because it is designated as a "Runway Protection Zone" on the Airport Layout Plan (see discussion in Chapter IV, Consistency with Plans and Policies).[3] Residential areas in Pleasanton lie further to the west.

2. Impacts and Mitigation Measures

The following section presents a discussion of the impacts related to land use that could result from implementation of the proposed project. The section begins with the criteria of significance, establishing the thresholds to determine whether an impact is significant. The latter part of this section presents the land use impacts that could result from the proposed project. Impacts are organized into separate categories based on their significance according to the criteria listed below: less-than-significant impacts, and significant impacts.

a. Criteria of Significance. The proposed project would have a significant impact if it would:

- Physically divide an established community;
- Introduce new land uses that would conflict with established uses within the vicinity of the project site;
- Alter the type or intensity of land use on a proposed site, causing it to be substantially incompatible with surrounding land uses or the overall character of surrounding neighborhoods; or
- Conflict with applicable land use plans or policies adopted by agencies with jurisdiction over the project.

[3] Livermore, City of, 2009. *Airport Layout Plan*.

b. Less-than-Significant Land Use Impacts. Less-than-significant impacts of the proposed project are discussed below. Potential conflicts of the proposed project with land use plans or policies and regulations are addressed in Chapter IV, Consistencies with Plans and Policies.

(1) Divide an Established Community. The physical division of an established community typically refers to the construction of a physical feature (such as an interstate highway or railroad tracks) or removal of a means of access (such as a local road or bridge) that would impair mobility within an existing community, or between a community and outlying areas. For example, the construction of an interstate highway through an existing community could constrain travel from one side of the community to another; similarly, such construction could also impair travel to areas outside of the community.

Under the proposed project, the project site would be rezoned from Education & Institutions (E) and Planned Development (PD) to a new Airport (AIR) Zoning District, which would encompass the entire project site. The AIR Zoning District would consist of two Zoning Subdistricts: 1) the Airport Operations (AIR-OP) Zoning Subdistrict and 2) the Airport Service (AIR-SE) Zoning Subdistrict (see Figure III-3). These districts are intended to clarify the nature and extent of development at the Airport. Future development on the project site that would occur within these Subdistricts would be located within the current boundaries of the project site, and would not impair mobility within or in the vicinity of the site. The purpose of the rezoning is to allow for continued operation of the site as an Airport. The project would not reconfigure existing patterns of land use or result in the introduction of new uses that would create community barriers. In addition, the project would preserve the existing runway environment; no runways would be constructed or elongated as part of the project. Therefore, the proposed project would not divide an established community.

(2) Land Use Conflicts. As described in the setting section, the project site is surrounded by a variety of land uses, including: low-density industrial uses, commercial uses, and open space to the north; low-density industrial and residential uses to the east; and open space to the south and west. Most of these surrounding uses are separated from the project site by major roadways, including Airway Boulevard to the north, Kitty Hawk Road to the east, and Jack London Boulevard to the south.

As noted in Chapter III, Project Description, the proposed project does not include specific development projects at the Airport. However, the changes in zoning that would occur as part of the project could allow new development to be constructed on the site. As shown in Figure III-4 and Table III-3 in the Project Description, facilities to support Airport operations within the new AIR-SE Subdistrict could be developed on the site as part of the project, including: a Fixed-Base Operation (FBO) and an expanded administrative building south of Club House Drive; and an FBO/hangar development, corporate hangar development, and helicopter facility south of the runways and north of Jack London Boulevard. Development that could occur under the rezoning would be similar to existing development on the project site, and would not introduce new uses not already present on the site. Although new development could increase intensity of use on the project site, and some new structures could be built on currently undeveloped areas of the site, this development would not conflict with surrounding land uses. The hangars, FBO, and helicopter facility that could be constructed in the southern portion of the site would not conflict with the undeveloped open space to the south of the site across Jack London Boulevard and open space to the west of the site, which is

undeveloped because it is designated as a "Runway Protection Zone" on the Airport Layout Plan.[4] In addition, the FBO in the northern portion of the site would not pose an inherent conflict with the Las Positas Golf Course to the north of Club House Drive. New development on the site would reinforce existing land use patterns on the site, which are characterized by Airport service facilities on the north and south sides of the site, and runways and taxiways in the central portion of the site. Furthermore, new facilities that could be developed under the rezoning would occur away from sensitive residential land uses east of the project site. The far eastern portion of the site, which is closest to residential uses, would be zoned AIR-OP and would be expected to remain largely unchanged as a result of the project. Therefore, the project would not result in land use conflicts. Potential conflicts related to air quality and noise are discussed in Sections V.E, Air Quality, and V.F, Noise, of this EIR.

(3) Conflict with Land Use Policies. The proposed project would be generally consistent with applicable land use plans and policies. Refer to Chapter IV, Consistency with Plans and Policies, for additional detail.

c. Significant Land Use Impacts. Implementation of the proposed project would not result in significant land use impacts.

[4] Livermore, City of, 2009. op cit.

B. TRANSPORTATION, CIRCULATION AND PARKING

This section, prepared by Fehr & Peers Associates, describes the existing transportation and circulation system in the vicinity of the project site, including roadway, bicycle, pedestrian, and transit systems, and provides an analysis of the potential impacts of the project on the transportation system. Please refer to Chapter III for a description of the project-related jobs and development assumptions on which this transportation analysis is based. Appendix C contains data and model outputs associated with this traffic analysis.

1. Setting

This section describes the methods used to conduct the transportation analysis, and discusses the existing transportation system in the vicinity of the project site (including regional and local roadway networks, bicycle and pedestrian facilities, and transit service). Existing roadway operations are also summarized.

a. Scope of Analysis. This analysis was conducted according to the requirements of the City of Livermore and the Alameda County Congestion Management Agency. The basis of analysis is peak hour level of service for key intersections in the area. The peak hours are defined as those between 7:00 a.m. and 9:00 a.m. and between 4:00 p.m. and 6:00 p.m. These peak hours are identified as the AM and PM peak hours, respectively.

This study evaluates impacts of the proposed project and cumulative projects on eight intersections that were determined to have the potential to be affected by the proposed project. The study facilities were identified by Fehr & Peers and reviewed by City staff. The study area is comprehensive; the impacts are well-contained within the study area and no impacts are anticipated beyond these borders (where the project's traffic contributions would be reduced). The eight study intersections are listed below and shown on Figure V.B-1.

1. Airway Boulevard (SR 84)/I-580 Westbound (WB) Ramps
2. Airway Boulevard (SR 84)/I-580 Eastbound (EB) Ramps/Kitty Hawk Road
3. Terminal Circle/Club House Drive
4. Airway Boulevard (SR 84)/Club House Drive
5. Airway Boulevard (SR 84)/Terminal Circle
6. Kitty Hawk Road/Airway Boulevard (SR 84)
7. Kitty Hawk Road (SR 84)-Isabel Avenue/West Jack London Boulevard
8. El Charro Road/West Jack London Boulevard-Stoneridge Drive (Future Intersection)

An assessment of potential project impacts on the Alameda County Congestion Management Agency Metropolitan Transportation System was also conducted.

The traffic analysis includes the following scenarios.

- **Scenario 1: Existing Conditions**. Existing conditions, as identified by empirical traffic data.
- **Scenario 2: Existing Conditions Plus No Project.** Existing conditions plus traffic increases that would result from development on the site consistent with current regulations, including the General Plan, Zoning Ordinance, and Airport Land Use Plan.
- **Scenario 3: Existing Conditions Plus Project**. Existing conditions plus traffic increases that would result from development on the site consistent with the proposed project.

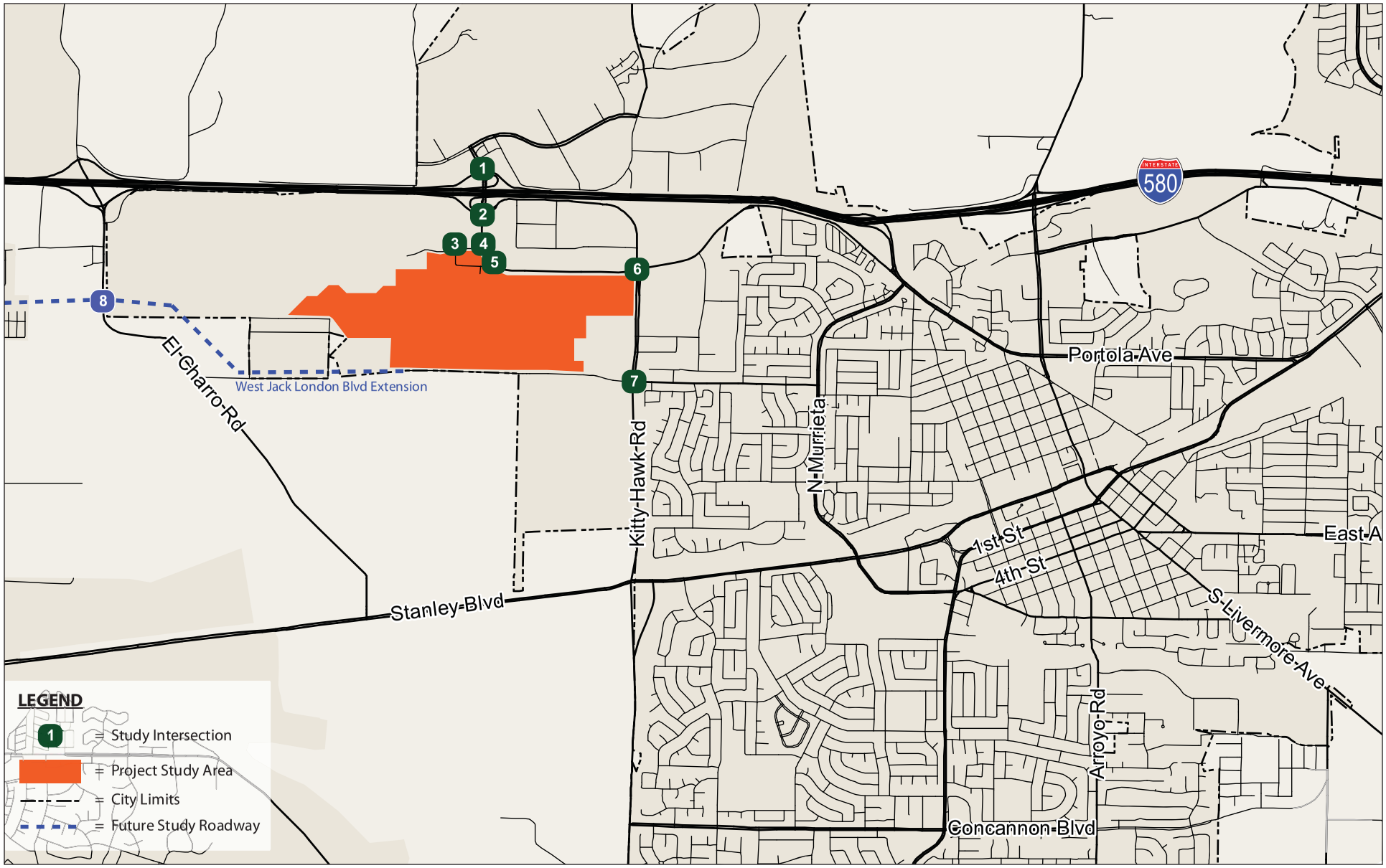

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FIGURE V.B-1

Livermore Municipal Airport General Plan
Amendment and Rezoning Project EIR
Study Area and Study Intersection Locations

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SOURCE: FEHR & PEERS, 2009

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- **Scenario 4: Cumulative Conditions Plus No Project**. Cumulative conditions, which reflect buildout of the General Plan, and growth in surrounding jurisdictions. These forecasts assume development on the site consistent with the General Plan, Zoning Ordinance, and Airport Land Use Plan.
- **Scenario 5: Cumulative Conditions Plus Project**. Cumulative conditions that reflect buildout of the General Plan, and growth in surrounding jurisdictions plus traffic changes that would result from development on the site consistent with the proposed project.

Planned roadway improvements that have a reasonable expectation of being constructed with buildout of the General Plan were included in the assessment of cumulative conditions. These improvements are discussed below in subsection 1. e. (2) Planned Roadway Improvements in the assessment of cumulative traffic conditions.

b. Methods. Evaluation of traffic conditions on local streets typically involves analysis of intersections. Intersection operations were evaluated with level of service calculations. Level of service (LOS) is a qualitative description of operations ranging from LOS A, where the roadway facility has excess capacity and vehicles experience little or no delay, to LOS F, where the volume of vehicles exceeds the capacity of the road, resulting in long queues and excessive delays. Typically, LOS E represents "at-capacity" conditions and LOS F represents "over-capacity" conditions. At signalized intersections operating at LOS F, drivers may have to wait multiple signal cycles before passing through an intersection.

(1) Signalized Intersections. The Transportation Research Board's 2000 *Highway Capacity Manual* (HCM) method from Chapter 16 bases signalized intersection operations on the average control delay experienced by motorists traveling through a signalized intersection. Control delay incorporates delay associated with deceleration, acceleration, stopping, and moving up in the queue. This method uses various intersection characteristics (such as traffic volumes, lane geometry, and signal phasing) to estimate the average control delay. Table V.B-1 summarizes the relationship between average delay per vehicle and LOS for signalized intersections according to the 2000 HCM. In the General Plan, Objective CIR-4.1, Policy 1 establishes that the lowest acceptable LOS at a signalized intersection is midlevel LOS D (an average total stop delay per vehicle of more than 45 seconds), except in the Downtown area and on specified intersections near freeway interchanges.

(2) Unsignalized Intersections. Traffic conditions at the unsignalized intersections (all-way stop-controlled and side-street stop-controlled intersections) were evaluated using the 2000 HCM method from Chapter 17. With this method, operations are defined by the average control delay per vehicle (measured in seconds) for each stop-controlled movement or movement that must yield the right-of-way. At four-way stop-controlled intersections, the control delay is calculated for the entire intersection and for each approach. The delays and corresponding LOS for the entire intersection are reported. At two-way stop-controlled intersections, the movement with the highest delay and LOS is reported. Table V.B-2 summarizes the relationship between delay and LOS for unsignalized intersections. Generally, the delay ranges for various LOS are lower at unsignalized intersections than at signalized intersections because drivers expect to have less delay at unsignalized intersections.

Table V.B-1: Signalized Intersection LOS Criteria

Level of Service	Description	Average Control Delay Per Vehicle (Seconds)
A	Operations with very low delay occurring with favorable progression and/or short cycle length.	≤ 10.0
B	Operations with low delay occurring with good progression and/or short cycle lengths.	> 10.0 to 20.0
C	Operations with average delays resulting from fair progression and/or longer cycle lengths. Individual cycle failures begin to appear.	> 20.0 to 35.0
D	Operations with longer delays due to a combination of unfavorable progression, long cycle lengths, or high V/C ratios. Many vehicles stop and individual cycle failures are noticeable.	> 35.0 to 55.0
E	Operations with high delay values indicating poor progression, long cycle lengths, and high V/C ratios. Individual cycle failures are frequent occurrences. This is considered to be the limit of acceptable delay.	> 55.0 to 80.0
F	Operation with delays unacceptable to most drivers occurring due to over-saturation, poor progression, or very long cycle lengths.	> 80.0

Source: Transportation Research Board, 2000. *Highway Capacity Manual – Special Report 209*.

Table V.B-2: Unsignalized LOS Criteria

Level of Service	Description	Average Control Delay Per Vehicle (Seconds)
A	Little or no traffic delays	≤ 10.0
B	Short traffic delays	> 10.0 to 15.0
C	Average traffic delays	> 15.0 to 25.0
D	Long traffic delays	> 25.0 to 35.0
E	Very long traffic delays	> 35.0 to 50.0
F	Extreme traffic delays with intersection capacity exceeded	> 50.0

Source: Transportation Research Board, 2000. *Highway Capacity Manual – Special Report 209*.

c. Existing Transportation Network. The following section describes the transportation system in and around the project site, including key facilities of the roadway, transit, pedestrian, and bicycle networks.

(1) Existing Roadway Network. The following section describes the existing roadway network around the project site as shown on Figure V.B-1. Regional access to the project site is provided by Interstate 580 (I-580) and State Route (SR) 84. Key City streets in the study area are Airway Boulevard, Kitty Hawk Road/Isabel Avenue, West Jack London Boulevard, El Charro Road, Terminal Circle, and Club House Drive.

- **I-580** is a freeway that runs in an east-west direction from Marin County on the west side of San Francisco Bay, through Oakland, Dublin, Pleasanton, and Livermore to Tracy and Interstate 5 (I-5) in the Central Valley via the Altamont Pass. In the vicinity of the project site, I-580 has full access interchanges at Airway Boulevard and Livermore Avenue, and a partial interchange at Portola Avenue. The on-ramps to westbound I-580 have ramp meters that are generally activated during the AM commute period; the eastbound on-ramps have meters that are generally activated during the PM commute period. Through Livermore, I-580 provides four travel lanes in each

direction. High occupancy vehicle lanes are currently under construction through the Tri-valley area.

- **Airway Boulevard (SR 84)** is a two-lane major arterial adjacent to the project site with bicycle lanes west of Kitty Hawk Road. Airway Boulevard varies between two and six lanes north of the project site. Airway Boulevard provides access between I-580, the Airport, and neighborhoods within Livermore.
- **Kitty Hawk Road/Isabel Avenue (SR 84)** varies between a two-lane and six-lane major arterial south of Airway Boulevard with bicycle lanes between Airway Boulevard and West Jack London Boulevard. North of Airway Boulevard, Kitty Hawk Road is a two-lane local street that provides access to the properties between I-580 and Airway Boulevard. South of West Jack London Boulevard, a multi-use path is provided east of the roadway. Kitty Hawk Road/Isabel Avenue provides access between Airway Boulevard, the Airport, neighborhoods within Livermore, and points south of Livermore.
- **West Jack London Boulevard** varies between a two-lane and four-lane major arterial adjacent to the project site, and contains bicycle lanes. West Jack London Boulevard provides access to the Airport and neighborhoods within Livermore.
- **El Charro Road** is a two-lane major rural roadway west of the project site. El Charro Road provides access between I-580, and quarry operations to the south. (North of I-580, access to development in the City of Dublin is provided by Fallon Road.)
- **Terminal Circle** is a two-lane local access road providing access to the main Airport terminal from Airway Boulevard (SR 84).
- **Club House Drive** is a two-lane local access road providing access to the main Airport terminal and the Las Positas Golf Course from Airway Boulevard (SR 84).

(2) Existing Pedestrian Facilities. Pedestrian facilities comprise sidewalks, crosswalks, wheelchair ramps, and pedestrian signals at intersections. Crosswalks and wheelchair ramps are provided along the east side of Airway Boulevard north of the I-580 Eastbound Ramps, along the west side of Airway Boulevard intermittently along Airport property, along the east side of Kitty Hawk Road between Airway Boulevard and West Jack London Boulevard, and along West Jack London Boulevard. Pedestrian signals are generally provided at signalized intersections in the study area. Crosswalks are provided on the north and east legs of the Airway Boulevard/Kitty Hawk Road intersection. Crosswalks are provided across some approaches to the unsignalized study intersections. No crosswalks are provided at these intersections to cross Airway Boulevard.

(3) Existing Bicycle Facilities. Bicycle facilities can be classified into several general types, including:

- **Class I Paths** – These facilities are located off-street and can serve both bicyclists and pedestrians. Recreational trails can be considered Class I facilities. Class I paths are typically 8 to 10 feet wide, excluding shoulders, and are generally paved.
- **Class II Bicycle Lanes –** These facilities provide a dedicated area for bicyclists within the paved street width through the use of striping and appropriate signage. These facilities are typically 4 to 6 feet wide.

- **Class III Bicycle Routes –** These facilities are found along streets that do not contain sufficient width for dedicated bicycle lanes. Class III facilities are designated as bicycle routes through the use of signage informing drivers to expect bicyclists.

In the project site vicinity, bicycle lanes are provided on Airway Boulevard (SR 84) west of Kitty Hawk Road, on Kitty Hawk Road (SR 84) between Airway Boulevard and West Jack London Boulevard, and on West Jack London Boulevard. Multi-use paths are provided on Kitty Hawk Road south of West Jack London Boulevard and on West Jack London Boulevard west of Kitty Hawk Road. The City of Livermore *Bikeways Map* (2008) shows both Class I and Class II facilities are planned on the future West Jack London Boulevard extension to El Charro Road, and Class II bicycle lanes are planned on the future Isabel Avenue extension to I-580.

(4) Existing Bus Transit Service. Local bus service in the area is provided by the Livermore Valley Transit Authority (LAVTA) which operates WHEELS service. WHEELS also provides local and express bus services in the communities of Pleasanton and Dublin.

WHEELS Transit Route 12 provides local and limited stop bus service between Downtown Livermore, Las Positas College, and the Dublin/Pleasanton BART Station via Kitty Hawk Road, Airway Boulevard, and I-580. As of July 2009, Route 12 buses operate at 15- to 60-minute headways from about 5:30 a.m. to 11:00 p.m. on weekdays. Route 12 buses operate on weekends at 1-hour headways from about 7:30 a.m. to 7:00 p.m. The closest stop to the project site is on Kitty Hawk Road near the Airway Boulevard (SR 84)/I-580 Eastbound Ramps/Kitty Hawk Road intersection. Daily ridership is about 740 riders on this route.

(5) Existing Rail Transit Service. There are two rail transit services in the area: the Altamont Commuter Express and Bay Area Rapid Transit (BART), which are described below.

Altamont Commuter Express (ACE). ACE provides passenger rail service from Stockton to San Jose via the Altamont Pass. Four morning and four evening trains provide connections to the stations in Livermore and Pleasanton. Livermore has two ACE stations: Vasco Road near Brisa Street, and Railroad Avenue at the Downtown Transit Center, both of which are served by WHEELS buses.

Bay Area Rapid Transit (BART). BART provides regional transit service to Alameda, San Francisco, Contra Costa, and San Mateo counties. Weekday service begins at 4:00 a.m., while Saturday and Sunday service begins at 6:00 a.m. and 8:00 a.m., respectively. Trains typically run every 15 minutes, except Saturdays before 7:00 p.m., when trains run every 20 minutes. The Dublin/Pleasanton station is currently the end station on the Dublin/Pleasanton-San Francisco Airport/Millbrae line. Therefore, there is no BART station in Livermore. However, BART is currently considering alternative alignments to extend service to Livermore and provide a convenient connection to ACE.

d. Existing Conditions Intersection Analysis. Intersection turning movement counts were collected at the existing study intersections during the morning (AM) and evening (PM) peak hours (7:00 to 9:00 a.m. and 4:00 to 6:00 p.m.) in 2008 and 2009. The counts were conducted on weekdays when local area schools were in normal session. Intersection lane configurations and traffic control devices (traffic signals or stop signs) were also observed during field visits. The AM and PM peak-hour intersection turning movement volumes, lane configurations, and traffic control devices are presented on Figure V.B-2. Existing peak period traffic counts are provided in Appendix C.

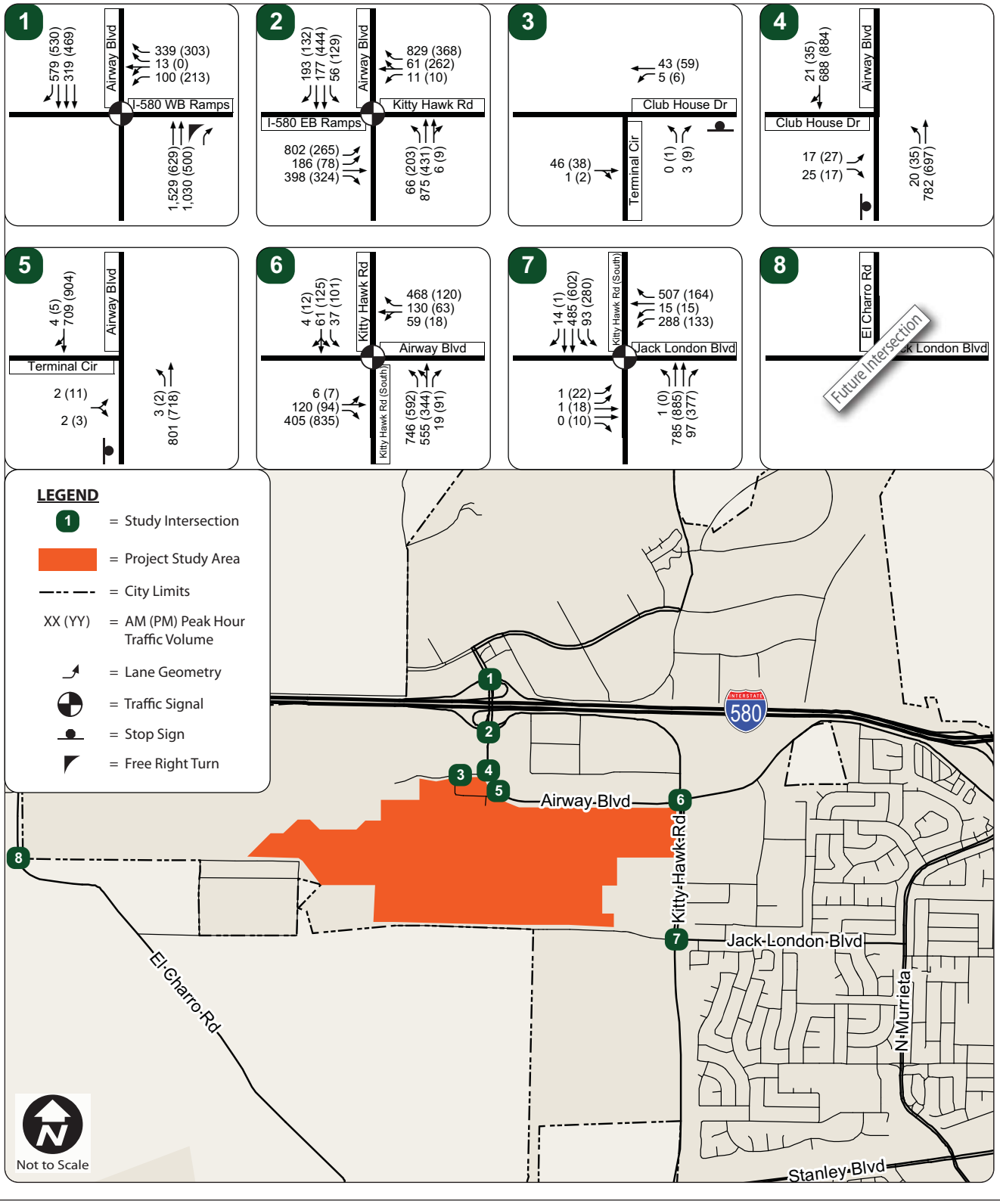

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FIGURE V.B-2

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Livermore Municipal Airport General Plan Amendment and Rezoning Project EIR

Existing Peak Hour Traffic Volumes and Lane Configurations Plus Traffic Control

SOURCE: FEHR & PEERS, 2009

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The intersection LOS analysis results for isolated intersections are presented in Table V.B-3. The LOS results presented in Table V.B-3 show that all of the isolated intersections generally operate at an acceptable LOS[1]. The Airway Boulevard (SR 84)/I-580 EB Ramps/Kitty Hawk Road operates at LOS E during the AM peak hour. While mid-LOS D (delay of 45 seconds or less) is desirable, LOS E is permitted at this intersection.

Table V.B-3: Existing Intersection Levels of Service (LOS) Based on HCM Methodology for Isolated Intersections

Intersection	LOS Target	Control	AM Peak Hour		PM Peak Hour	
			Delay[a]	LOS	Delay[a]	LOS
1. Airway Boulevard (SR 84)/I-580 WB Ramps	LOS E	Signalized	8[b]	A	5	A
2. Airway Boulevard (SR 84)/I-580 EB Ramps/Kitty Hawk Road	LOS E	Signalized	60	E	29	C
3. Terminal Circle/Club House Drive	None	Side-Street Stop[c]	1 (9)	A (A)	1 (9)	A (A)
4. Airway Boulevard (SR 84)/Club House Drive	None	Side-Street Stop[c]	1 (17)	A (C)	1 (22)	A (C)
5. Airway Boulevard (SR 84)/Terminal Circle	None	Side-Street Stop[c]	0 (17)	A (C)	0 (21)	A (C)
6. Kitty Hawk Road (SR 84)/Airway Boulevard	None	Signalized	32	C	24	C
7. Kitty Hawk Road (SR 84)-Isabel Avenue/West Jack London Boulevard	None	Signalized	17	B	16	B
8. El Charro Road/West Jack London Boulevard-Stoneridge Drive[d]	LOS D	Signalized	N/A – Future Study Intersection			

[a] Weighted average delay for all movements in seconds per vehicle rounded to the nearest second.
[b] Delay for movements onto the freeway are significantly worse than shown in this table due to ramp metering. Observed delay for vehicles entering the freeway during the morning peak hour was approximately 10 minutes. However, intersection operations were not affected by vehicle queues from the ramp meter.
[c] Side-Street Stop Delay and LOS shown correspond to the intersection average delay/LOS. The information provided in parenthesis "( )" is the worst movement delay/LOS.
[d] Future study intersection located in Pleasanton.
BOLD indicates unacceptable LOS.
Source: Fehr & Peers, 2009.

Field observations indicate that ramp metering, which was recently implemented to meter the flow of traffic on I-580 during peak hours, does result in significant delay for vehicles entering the state highway system. However, ramp meter operations were not observed to impede the normal flow of traffic on Airway Boulevard through the interchange area.

e. Cumulative Conditions With No Project Analysis. Cumulative Conditions (2030) include existing traffic plus traffic generated by the buildout of the Livermore General Plan, which includes development on the project site consistent with current regulations (including the General Plan, Zoning Ordinance, and Airport Land Use Plan) as forecast with the Livermore Travel Demand Model.

[1] General Plan Objective CIR-4.1, Policy 1, establishes that the lowest acceptable LOS at a signalized intersection is midlevel LOS D (delay per vehicle greater than 45 seconds), except in the Downtown area and at specified intersections near freeway interchanges. In addition, Objective CIR-4.1, Policy 3, allows for LOS E at identified signalized intersections located near freeway interchanges. A list of intersections where level of service in excess of mid-LOS D is considered acceptable is presented in Section 1.f.(3) of this section.

(1) Traffic Volumes. The traffic forecasts used in this analysis were developed using the Livermore Traffic Model. The traffic model was updated, calibrated, and validated to industry standards in 2008. The 2030 model generates trips from the Bay Area region outside of the Tri-Valley based on socioeconomic data consistent with ABAG's *Projections 2005* for 2030. For the cities of Dublin and Pleasanton, the model uses land use data consistent with each City's General Plan. For the City of Livermore, the City maintains a land use database encompassing buildout of the General Plan.

The traffic model was used to develop traffic growth increments which were applied to the existing volumes to estimate 2030 intersection volumes. The amount of incremental traffic growth between the base year and future cumulative year was estimated at each of the study intersections. This growth was applied to the existing intersection turning movement volumes to estimate intersection volumes for 2030.

Future (Year 2030) traffic forecasts were developed using the Livermore Traffic Model. The future (Year 2030) without project intersection volumes are illustrated on Figure V.B-3.

(2) Planned Roadway Improvements. The *2005 Regional Transportation Plan* for the San Francisco Bay Area specifies improvements to the regional transportation system and identifies funding for these improvements. "Committed" projects are improvements that are fully funded and are assumed to be constructed by 2030. Committed projects in Livermore include high occupancy vehicle (HOV) and auxiliary lanes on I-580 between Tassajara Road and Greenville Road, and I-580 interchange improvements at Isabel Avenue, First Street, Vasco Road, El Charro Road, and Greenville Road.

Several major roadway improvements are also planned in the City that may cause traffic patterns to change by creating new connections or increasing roadway capacity. These improvements are summarized in Table V.B-4. Funding for these improvements will be provided through a combination of local and regional sources.

The City has a Traffic Impact Fee (TIF) program in place to charge new development the cost of transportation improvements listed in Table V.B-4. Development that occurs under the proposed project would be responsible for paying its fair share toward these improvements to ensure identified improvements will be constructed as development occurs. In addition to roadway improvements, intersection improvements that include signalization or additional through or turn lanes have been assumed, consistent with expectations for roadway capacity. The assumed lane configurations in year 2030 at the study intersections are also shown on Figure V.B-3.

(3) Planned Bicycle Improvements. In addition to the roadway and intersection improvements, the City of Livermore has a Bikeways and Trails Master Plan which provides for a comprehensive bikeway and trail system. Bicycle lanes are proposed on Isabel Avenue, north of East Airway Boulevard. Bicycle lanes are also proposed on the West Jack London Road extension. In addition, a multi-purpose trail is proposed between Isabel Avenue and El Charro Road.

(4) Future (Year 2030) Conditions No Project Intersection Analysis. Levels of service were calculated for the study intersections using future lane configurations and the 2030 No Project traffic volumes shown on Figure IV.D-3. Table V.B-5 presents the LOS results for the study intersections. The results indicate that the added demand due to future growth under current regulations will result in two study intersections operating below General Plan targets. The Kitty Hawk Road/Airway Boulevard (SR 84) intersection is projected to operate at a high LOS D during

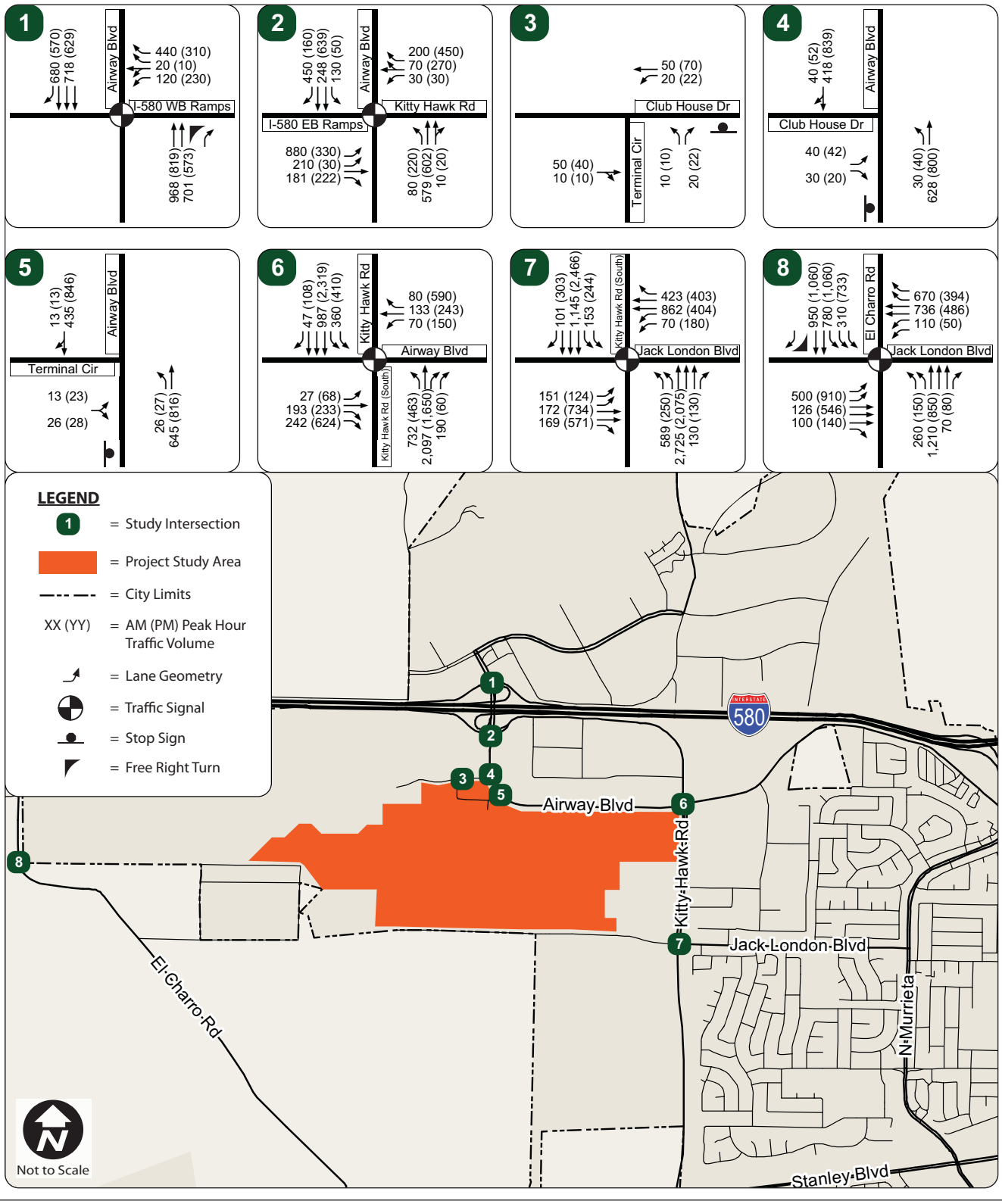

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FIGURE V.B-3

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NOT TO SCALE

Livermore Municipal Airport General Plan Amendment and Rezoning Project EIR

Cumulative Conditions (Including No Project) Peak Hour Traffic Volumes, and Lane Configurations, and Traffic Control

SOURCE: FEHR & PEERS, 2009

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Table V.B-4: Future (2030) Major Roadway Improvements Assumed with General Plan Buildout

Roadway	Location/Segment	Future Lane Configuration
Greenville Road	Northfront to National	6 lanes
Greenville Road	National to Patterson Pass	4 lanes
Holmes Street	Wetmore to Alden	4 lanes
Isabel Avenue	Portola to Stanley	6 lanes
Isabel Avenue	Stanley to Vallecitos	4 lanes
Jack London Boulevard	Isabel to El Charro	4 lanes
Las Positas Road	N. Livermore to Vasco	4 lanes
Las Colinas Road	Las Positas to Redwood	2 lanes
North Canyons Pkwy.-Dublin Blvd.	Doolan Canyon to Fallon	4 lanes
North Canyons Parkway	Airway to Collier Canyon	6 lanes
Portola Avenue	Isabel to I-580	4 lanes
Portola Avenue	Collier Canyon to Isabel	6 lanes
Scenic Avenue	East End to Laughlin	2 lanes
Stanley Boulevard	Western City limits to Murrieta	6 lanes
Vallecitos Road	Isabel to west of Ruby Hills-Pigeon Pass	4 lanes
Vasco Road	Patterson Pass to Las Positas; I-580 to Scenic	6 lanes
Vasco Road	Las Positas to I-580	8 lanes

Source: Livermore, City of, 2009. General Plan Circulation Element.

the PM peak hour. The Kitty Hawk Road (SR 84)-Isabel Avenue/West Jack London Boulevard intersection is projected to operate at LOS E with 60 seconds of delay in the AM peak hour. These poor operations would occur with construction of all feasible transportation improvements at the intersections; however, the General Plan has exempted these intersections from the level of service policy.

Construction of the Isabel Avenue interchange with I-580 is projected to improve operations of the Airway Boulevard (SR 84)/I-580 interchange, over the existing condition, as some traffic is projected to divert to the new interchange. The Isabel Avenue/I-580 interchange has been designed to accommodate traffic from the Livermore Airport assuming that development on the site is consistent with current regulations. Because development under the project would be reduced compared to development under existing regulations, no further analysis is needed of the potential impacts of the project at this interchange.

f. Regulatory Setting. Applicable State, County, and City transportation/traffic plans and regulations that apply to the project site are summarized below. Streets around the project site are generally under the jurisdictions of the City of Livermore, except State highways that are under Caltrans' jurisdiction.

Table V.B-5: Cumulative Conditions With No Project Intersection Levels of Service

Intersection	LOS Target	Control	AM Peak Hour		PM Peak Hour	
			Delay[a]	LOS	Delay[a]	LOS
1. Airway Boulevard/I-580 WB Ramps	LOS E	Signalized	9	A	5	A
2. Airway Boulevard/I-580 EB Ramps/Kitty Hawk Road	LOS E	Signalized	37	D	33	C
3. Terminal Circle/Club House Drive[b]	None	Side-Street Stop	3 (9)	A (A)	3 (9)	A (A)
4. Airway Boulevard Club House Drive[b]	None	Side-Street Stop	1 (15)	A (B)	1 (25)	A (C)
5. Airway Boulevard)/Terminal Circle[b]	None	Side-Street Stop	1 (14)	A (B)	1 (22)	A (C)
6. Kitty Hawk Road/Airway Boulevard (SR 84)	None	Signalized	36	D	46	E
7. Kitty Hawk Road (SR 84)-Isabel Avenue/West Jack London Boulevard	None	Signalized	60	E	50	D
8. El Charro Road/West Jack London Boulevard-Stoneridge Drive[c]	LOS D	Signalized	35	C	42	D

[a] Weighted average delay for all movements in seconds per vehicle rounded to the nearest second.
[b] Side-Street Stop Delay and LOS shown correspond to the intersection average delay/LOS. The information provided in parenthesis "( )" is the worst movement delay/LOS.
[c] Future study intersection located in Pleasanton.
Locations that exceed established thresholds indicated in **bold**.
Source: Fehr & Peers, 2009.

(1) State Regulations. Caltrans is responsible for planning, designing, constructing, and maintaining all interstate freeways and State routes. I-580 and SR 84 in the vicinity of the project site are under Caltrans' jurisdiction. Caltrans requirements for traffic analyses are described in the *Guide for the Preparation of Traffic Impact Studies* (Caltrans 2001), which covers the information needed for Caltrans to review the impacts on State highway facilities, including freeway segments, on- and off-ramps, and signalized intersections.

(2) Regional Transportation Agencies and Plans. Regional transportation agencies and plans are described below. Specific transportation projects listed below may be delayed due to funding shortfalls as a result of the current economic downturn, but are unlikely to be cancelled due to the duration of funding mechanisms (over 10 years in certain cases). The projects listed below for the Alameda County Transportation Authority and Tri-Valley Transportation Council are included in the current budgets for these agencies.

Metropolitan Transportation Commission (MTC). The MTC regional organization is responsible for prioritizing transportation projects in a Regional Transportation Improvement Program (RTIP) for federal and State funding. The process is based on evaluating each project for need, feasibility, and adherence to federal transportation policies and to the Alameda County Congestion Management Program (CMP). The CMP requires each jurisdiction to identify existing and future transportation facilities that would operate below an acceptable service level and provide mitigation where future growth would degrade that service level on the Metropolitan Transportation System (MTS) roadways and transit systems. Designated MTS roadways in the vicinity include I-580, SR 84, and Stanley Boulevard.

Alameda County Transportation Authority (ACTA). The ACTA was created to administer Measure B, Alameda County's half-cent transportation sales tax, approved by voters in 1986. Voters

reauthorized the half-cent sales tax in November 2000, and the Alameda County Transportation Improvement Authority (ACTIA) was created to deliver the new projects and programs while ACTA finalizes the projects promised to the voters in 1986.

Approximately 60 percent of the ACTIA Measure B net sales tax funds are allocated to local jurisdictions (cities, the County, transit agencies, and paratransit providers in Alameda County). The remaining 40 percent of the funds are used to leverage additional funding for a variety of projects, including the addition of auxiliary lanes on I-580 and the construction of the Isabel Avenue–SR 84/I-580 interchange.

The ACTA Expenditure Plan lists the projects and programs approved in 1986 over the life of the plan and describes the projects and programs for the next 20 years provided by the reauthorization of Measure B. The ACTIA Strategic Plan is a document that is updated every year to provide additional detail on the Strategic Plan elements and to allocate funds to Measure B programs and projects. Funds for programs are estimated for the fiscal year in the Strategic Plan and allocations to capital projects are considered for the fiscal year to ensure that funds will be available when they are needed. Funding availability at both the State and federal levels affects capital project implementation.

Tri-Valley Transportation Council (TVTC). The TVTC was created after passage of the Measure C initiative to address area-wide transportation issues in locations straddling the two counties of Alameda and Contra Costa, which include the cities of Livermore, Dublin, Pleasanton, Danville, and San Ramon, as well as some unincorporated areas of each county. TVTC produced the *1995 Tri-Valley Transportation Plan/Action Plan for Routes of Regional Significance*, which identifies transportation service objectives and funding priorities for designated roadways.

The Action Plan establishes shared traffic service objectives and presents a list of 11 high-priority transportation improvement projects to ease regional traffic congestion. The Tri-Valley Transportation Development (TVTD) fee on new developments will partially fund the improvements. It is expected that the remainder of the funding will come from other local, State, and federal funding sources. This fee, which was adopted by the seven TVTC jurisdictions in 1998, and amended through June 2006, applies to all developments in the Tri-Valley. The fee is applied and collected by all of the TVTC jurisdictions, including the City of Livermore. The high-priority transportation projects identified in the Action Plan are expected to occur regardless of the current economic downturn (although certain projects could be delayed for 2-3 years).

(3) Local Regulations. The Livermore General Plan was adopted in 2004, with subsequent amendments. The Circulation Element provides the policy framework for the regulation and development of transportation systems, balancing demands for moving people and goods through the City while revitalizing the Downtown and limiting non-local, cut-through traffic on the roadway network. The General Plan contains goals and specific recommendations for facilitating traffic circulation, maintaining an acceptable level of service at signalized intersections, instituting traffic demand and parking management programs, and improving transit service and facilities for non-motorized transportation. Specific policies relevant to the proposed project are discussed under "Criteria of Significance" below.

In the General Plan, Objective CIR-4.1, Policy 1, establishes that the lowest acceptable LOS at a signalized intersection is midlevel LOS D (delay per vehicle greater than 45 seconds), except in the Downtown area and on specified intersections near freeway interchanges. Additionally, Objective

CIR-4.1, Policy 3, allows for LOS E at identified signalized intersections located near freeway interchanges, including:

1. Airway Boulevard/North Canyons Parkway
2. Airway Boulevard/I-580 Westbound Ramps
3. Airway Boulevard/I-580 Eastbound Ramp-Kitty Hawk Road
4. Isabel Avenue/Portola Avenue
5. Isabel Avenue/I-580 Westbound Ramps
6. Isabel Avenue/I-580 Eastbound Ramps
7. Isabel Avenue/Airway Boulevard
8. North Livermore Avenue/I-580 Westbound Ramps
9. North Livermore Avenue/I-580 Eastbound Ramps
10. North Livermore Avenue/Arroyo Plaza
11. North Livermore Avenue/Las Positas Road
12. Springtown Boulevard/Bluebell Drive
13. Springtown Boulevard/I-580 Westbound Ramps
14. First Street/I-580 Eastbound Ramps
15. First Street/Southfront Road
16. First Street/Las Positas Road
17. Vasco Road/Northfront Road
18. Vasco Road/I-580 Westbound Ramps
19. Vasco Road/I-580 Eastbound Ramps
20. Vasco Road/Preston Avenue
21. Vasco Road/Industrial Drive
22. Greenville Road/Northfront Road-Altamont Pass Road
23. Greenville Road/I-580 Westbound Ramps
24. Greenville Road/I-580 Eastbound Ramps
25. Greenville Road/Southfront Road
26. Northfront Road/I-580 Westbound Ramps, (until I-580/Greenville Interchange Reconstruction Project is completed)
27. Southfront Road/I-580 Eastbound Ramps, (until I-580/Greenville Interchange Reconstruction Project is completed)

The General Plan also accepts the need to balance competing objectives, as stated in Objective CIR-4.1, Policy 4, and some signalized intersections may exceed the established LOS standard due to right-of-way constraints and regional roadway network needs, including:

28. First Street/N. Mines Road
29. Isabel Avenue/Airway Boulevard
30. Isabel Avenue/Jack London Boulevard
31. Vasco Road/Northfront Road

32. Vasco Road/I-580 Eastbound Ramps
33. Concannon Boulevard/S. Livermore Avenue
34. Holmes Street/Fourth Street
35. Stanley Boulevard/Murrieta Boulevard

The City does not have an adopted LOS standard for unsignalized intersections.

The City adopted a Traffic Impact Fee (TIF) program in 1988 and updated it most recently in 2004 to charge the sponsors of new development projects a portion of the cost of transportation improvements identified in the General Plan to mitigate the impacts of new development. The Livermore TIF fee on new developments will, along with the contribution of identified outside funding sources such as Measure B and federal earmarks, fully fund the improvements identified in Table V.B-4. This fee applies to all new developments projects in the City.

2. Impacts and Mitigation Measures

The following section presents a discussion of the impacts related to transportation, circulation and parking that could result from implementation of the proposed project. The section begins with the criteria of significance, establishing the thresholds to determine whether an impact is significant. The latter part of this section presents the transportation, circulation and parking impacts that could result from the proposed project. Impacts are organized into separate categories based on their significance according to the criteria listed below: less-than-significant impacts, and significant impacts.

a. Criteria of Significance. The following criteria of significance are derived from the *CEQA Guidelines*, and the guidelines of ACCMA, the CMP, and the City.

The project would have a significant transportation, circulation, or parking impact if it would:

- Cause an intersection to operate below its target LOS, as defined by the City's General Plan policies:
    - At a signalized study intersection, the project would cause the level of service to degrade below mid-level D (45 seconds of average control delay per vehicle), except in the Downtown area, near freeway interchanges, or at other select locations exempt by General Plan policy.
    - At a signalized study intersection where the level of service is below mid-level D, the project would cause the total intersection average vehicle delay to increase by one (1) or more seconds.
    - At selected intersections near freeway interchanges the project would cause the level of service to degrade below LOS E. There are 27 such intersections, and they are identified in the City General Plan.
    - At selected intersections near freeway interchanges (see intersections 1 through 27 above) where the LOS is below E, the project would cause the total intersection average vehicle delay to increase by one (1) or more seconds.
    - At eight intersections (see intersections 28 through 35 above) located at I-580 ramps and along east/west major streets carrying a high percentage of regional cut-through traffic, the established LOS target may be exceeded.

Downtown intersections are exempt from LOS targets; however, feasible improvements, such as additional turn lanes, that balance Downtown development and pedestrian goals with the need to access Downtown and facilitate vehicle traffic flow should be considered at locations exceeding LOS targets.

- Cause a mainline or ramp junction defined in the Alameda County Congestion Management Program to deteriorate from LOS E or better to LOS F, or increase the v/c ratio on a mainline segment already operating at LOS F by more than 3 percent.
- Cause a roadway segment on the Metropolitan Transportation System to operate at LOS F or increase the volume-to-capacity (v/c) ratio by more than 3 percent for a segment that would operate at LOS F without the project.
- Generates transit ridership that, when added to existing or future ridership, exceeds available or planned system capacity.
- Hinders or eliminates an existing designated bikeway, or interferes with implementation of a proposed bikeway.
- Results in unsafe conditions for bicyclists, including unsafe increase in bicycle/pedestrian or bicycle/motor vehicle conflicts.
- Results in unsafe conditions for pedestrians, including an unsafe increase in pedestrian/bicycle or pedestrian/motor vehicle conflicts.
- Causes normal operations of automobile and truck access to adversely impact the adjacent streets or sidewalks.
- Provides inadequate sight distance at a project driveway.
- Provides an inadequate parking supply.

b. Impacts Analysis. Potential impacts of the project associated with traffic and circulation an ACCMA roadway analysis, alternative transportation modes (bicycle, pedestrian, transit), parking, on-site circulation, emergency access, and project construction are discussed in the following section.

(1) Traffic Impact Analysis. The following discussion describes impacts related to transportation and circulation associated with implementation of the proposed project. This analysis also considers effects on the transportation network that would result from development on the project site under the No Project Conditions per current regulations (including the existing General Plan, Zoning Ordinance, and Airport Land Use Plan).

Project Trip Estimates. Traffic projections for the proposed project were estimated using a three-step process: (1) trip generation, (2) trip distribution, and (3) trip assignment. In the first step, the amount of traffic added to the surrounding roadway system by the proposed project is estimated. In the second step, the general directions of approach and departure are determined. In the third step, the trips are assigned to specific street segments and intersection turning movements.

Trip Generation. Please refer to Chapter III, Project Description, for a discussion of the project assumptions that were used to identify the trip generation of the project. The Airport currently employs approximately 135 people. Without the proposed project (i.e., under No Project conditions), the development allowed on the site under current regulations (including the existing General Plan, Zoning Ordinance, and Airport Land Use Plan) would increase airport employment to approximately 305 people (an increase of 170 employees over current conditions). Development allowed under the

proposed project would allow for employment to increase to 262 jobs (an increase of 127 employees, but a decrease of 43 employees over what current regulations allow).

To estimate the amount of traffic that could be generated by the proposed project, trip generation rates presented in the Institute of Transportation Engineers' (ITE) Trip Generation, 8th Edition were reviewed. The ITE land use category most similar to the uses that would be developed as part of the project is "General Aviation Airport" (Land Use Code 022), which includes airports primarily used by small private and corporate aircraft, similar to the Livermore Municipal Airport. The number of employees associated with project implementation was used as the independent variable to estimate vehicular trips, as the trip generation rates from the surveyed facilities is based on employment.

Table V.B-6 presents the trip generation estimates for existing development, development currently permitted on the site under existing regulations, and the proposed project. Under current regulations, vehicle trips to/from the project site could increase by 2,420 trips per day, including 219 morning and 248 evening peak hour trips, compared to existing conditions. Under the proposed project, trip generation increases would be less; the project would generate approximately 1,810 daily, 163 morning, and 186 evening peak hour trips, compared to existing conditions. The trip generation estimates also include vehicle trips from visitors and potential deliveries to the airport

Table V.B-6: Trip Generation Estimates

Land Use	Employees		Daily Trips	AM Peak Hour Trips			PM Peak Hour Trips		
				In	Out	Total	In	Out	Total
Existing Airport	135		1,920	88	87	175	108	89	197
No Project – Buildout	305		4,340	197	197	394	245	200	445
Net New Trips over Existing Conditions[b]			*2,420*	*109*	*110*	*219*	*137*	*111*	*248*
Project – Buildout	262		3,730	169	169	338	211	172	383
Net New Trips over Existing Condition [b]			1,810	81	82	163	103	83	186
Net New Project Trips[c]			***- 610***	***- 28***	***- 28***	***- 56***	***- 34***	***- 28***	***- 62***

[a] The vehicle trip generation estimates for the existing site are provided for comparison purposes only and are based on ITE rates, not on field observations.
[b] "Net New Trips over Existing Conditions" are the total project trips minus the trips estimated for the existing project site.
[c] "Net New Project Trips" are the total project trips minus the trips estimated for the No Project – Buildout scenario.
Source: Fehr & Peers, 2009.

*Trip Distribution***.** Trip distribution refers to the directions that the trips generated by the project would use to approach and depart the site, and the percentage of traffic using each direction. Vehicle trip distribution for the added project trips was determined through a review of existing vehicle turning movement volumes and a City of Livermore Travel Demand Model select zone analysis for the project site. Figure V.B-4 presents the trip distribution for the near-term condition and Figure V.B-5 presents the trip distribution for the cumulative condition. Planned roadway changes and land use development planned for the cumulative (Year 2030) condition are expected to alter travel patterns in the area, and so separate distribution patterns are used for near-term and cumulative conditions. Project trips are assigned through the study intersections based on the distribution percentages.

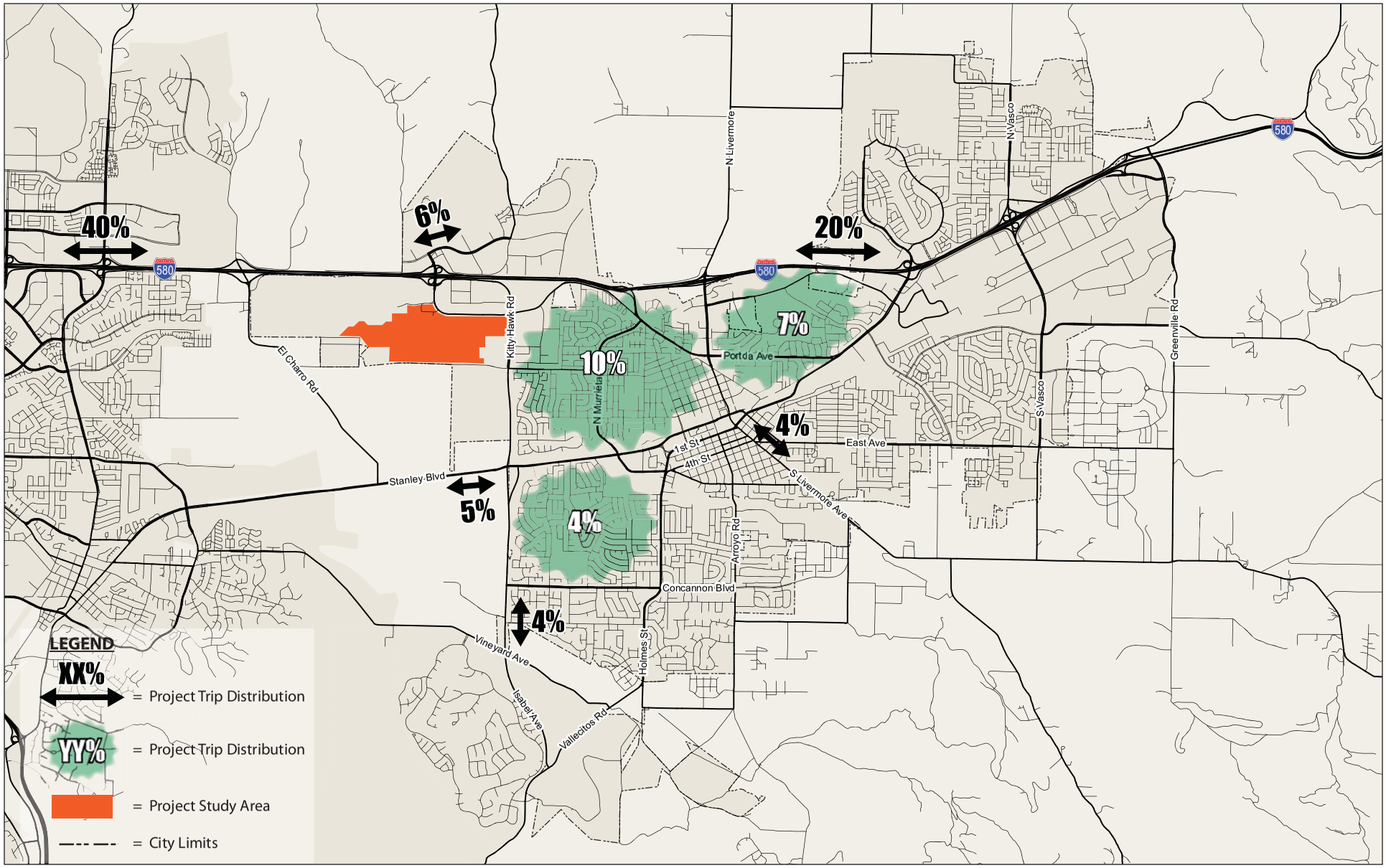

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FIGURE V.B-4

Livermore Municipal Airport General Plan
Amendment and Rezoning Project EIR
Existing Conditions Plus
Project Trip Distribution Percentages

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NOT TO SCALE

SOURCE: FEHR & PEERS, 2009

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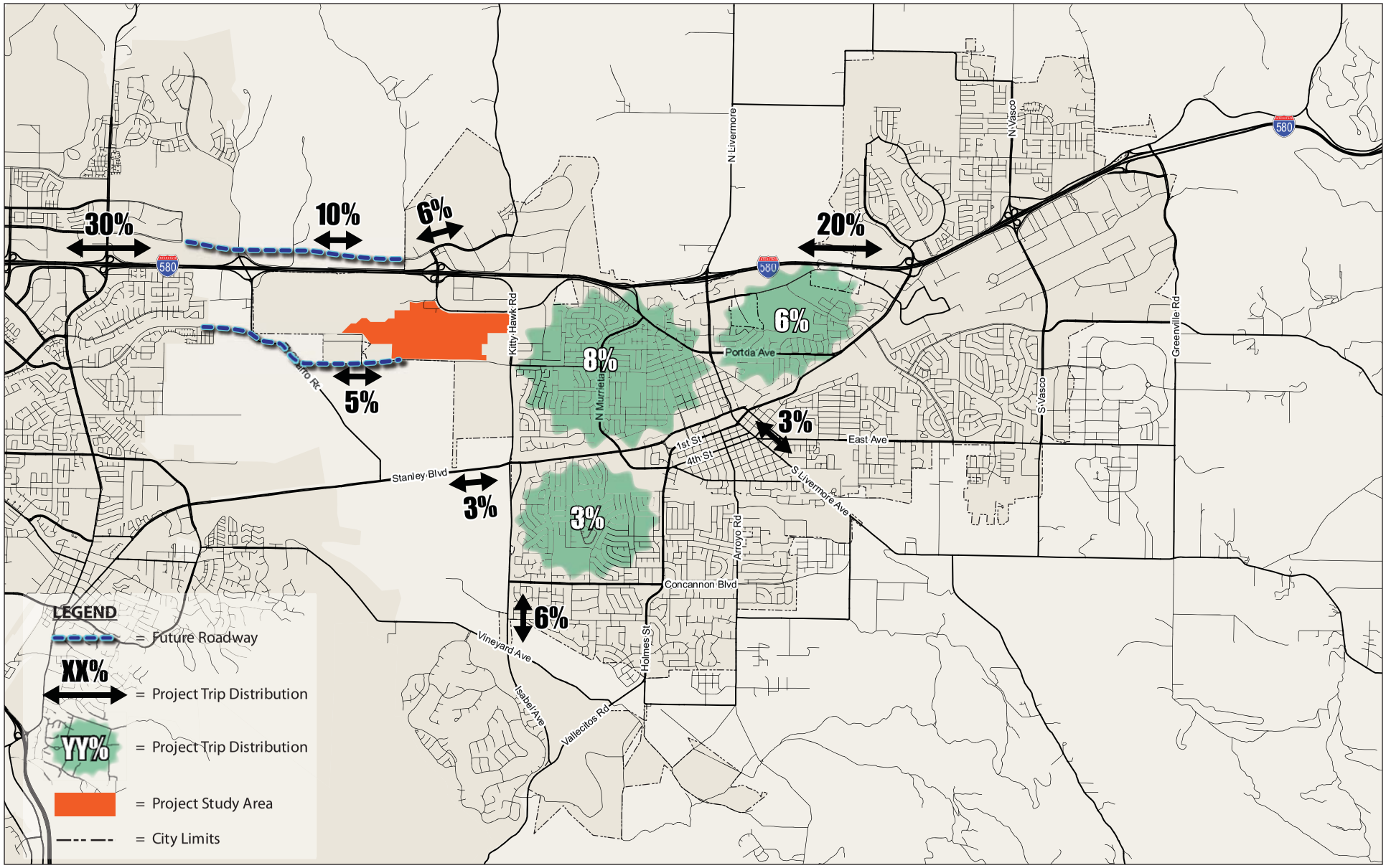

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FIGURE V.B-5

Livermore Municipal Airport General Plan
Amendment and Rezoning Project EIR
Cumulative Conditions Plus
Project Trip Distribution Percentages

NOT TO SCALE

SOURCE: FEHR & PEERS, 2009

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Trip Assignment. Trips generated by the project were assigned to the roadway system based on the trip distribution pattern shown on Figures V.D-4 and V.D-5. The assignment of traffic to the study intersections under existing roadway conditions is shown on Figure V.B-6 for buildout under No Project Conditions and on Figure V.B-7 for buildout with the project. The assignment of traffic to the study intersections under cumulative roadway conditions is shown on Figure V.B-8 for buildout under the No Project Condition and Figure V.B-9 for buildout with the project.

Existing Conditions Plus No Project. To determine the intersection service levels with buildout of the site under the No Project, the trips associated with buildout of the site under existing regulations were added to existing traffic volumes. The resulting volumes shown on Figure V.B-10 and existing lane configurations and traffic control were used in the LOS calculations to determine intersection operations for the Existing Conditions Plus No Project scenario. The results are summarized in Table V.B-8 along with existing conditions for the purpose of comparison. With development at the project site consistent with current regulations, the study intersections would continue to operate at acceptable service levels in the existing condition.

Downtown intersections are exempt from LOS standards per the City General Plan. Through the General Plan process, the City determined that it is not feasible to provide enough lane capacity to achieve LOS D because the Downtown Specific Plan goals and objectives, environmental constraints, right-of-way constraints, or cut-through traffic volumes would prevent the implementation of improvements to achieve LOS D or better. It is not expected that the proposed project would add additional traffic to the Downtown intersections, based on the location of the Airport on the western edge of the City and the distribution of project-related trips.

Existing Conditions Plus Project. To determine the intersection service levels with buildout of the site under the project, the assigned project trips were added to the existing traffic volumes. The resulting volumes shown on Figure V.B-11 and existing lane configurations and traffic control at the study intersections were used in the LOS calculations to determine intersection operations for the Existing Conditions Plus Project scenario. Existing plus project conditions are summarized in Table V.B-7 along with the existing conditions for the purpose of comparison.

With buildout under the project, the signalized study intersections would continue to operate at acceptable service levels in the existing condition. Although there is no level of service standard for unsignalized intersections, all unsignalized study intersections are also projected to operate with minimal delay for vehicles turning from side streets, and no improvements are recommended.

Cumulative Conditions Plus Project. To determine cumulative service levels with development on the site consistent with the proposed project, the trips associated with development on the site under the No Project Condition were subtracted from the traffic forecasts shown on Figure V.B-3. Project trips were then added to the resulting traffic volumes to develop Cumulative Conditions Plus Project traffic forecasts. The resulting volumes and the lane configurations shown on Figure V.B-12 were used in the LOS calculations to determine intersection operations for the Cumulative Conditions Plus Project scenario, as summarized in Table V.B-8 along with the Cumulative Conditions plus No Project scenario for comparison.

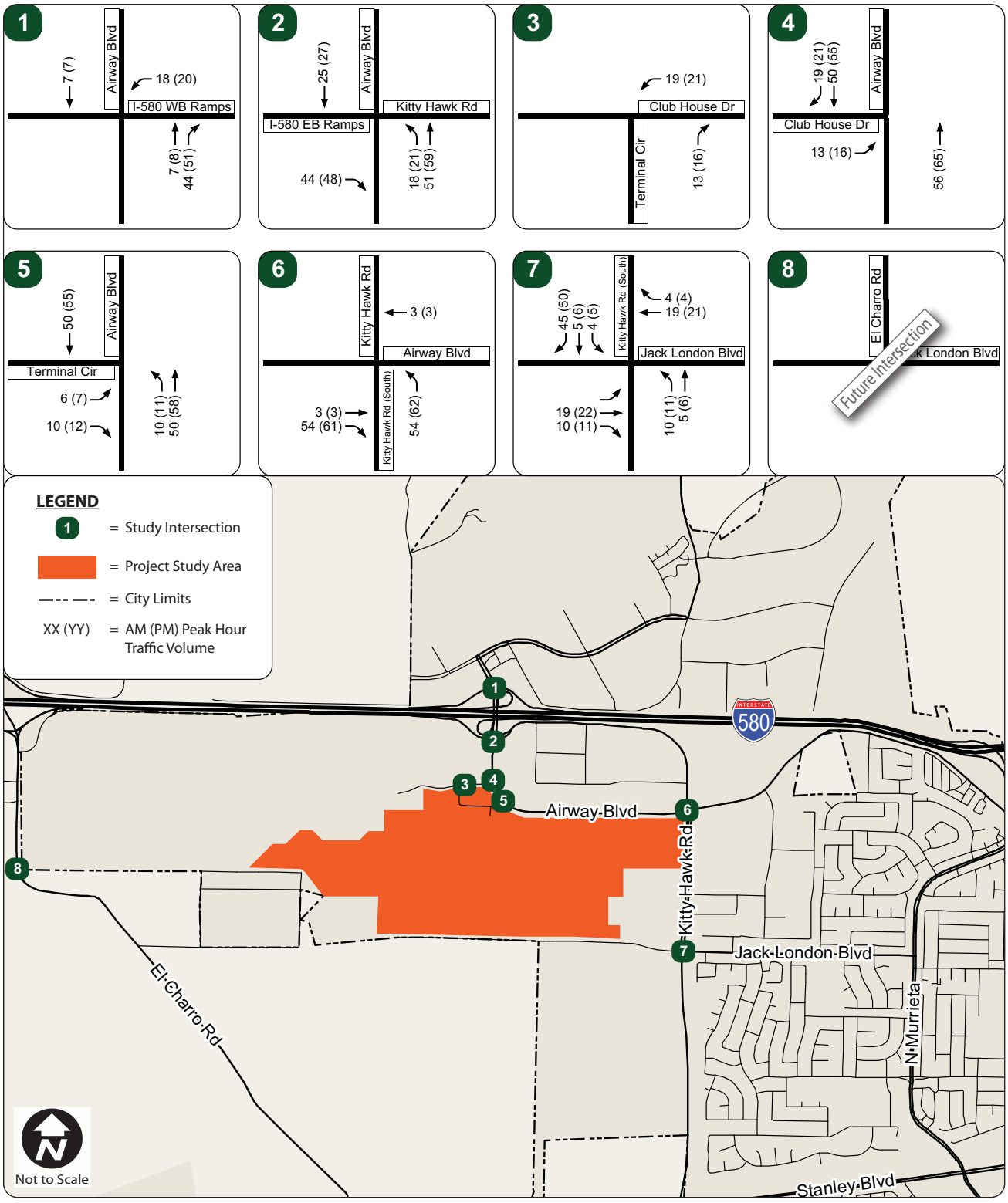

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FIGURE V.B-6

NOT TO SCALE

Livermore Municipal Airport General Plan Amendment and Rezoning Project EIR

No Project Trip Assignment

Existing Conditions

SOURCE: FEHR & PEERS, 2009

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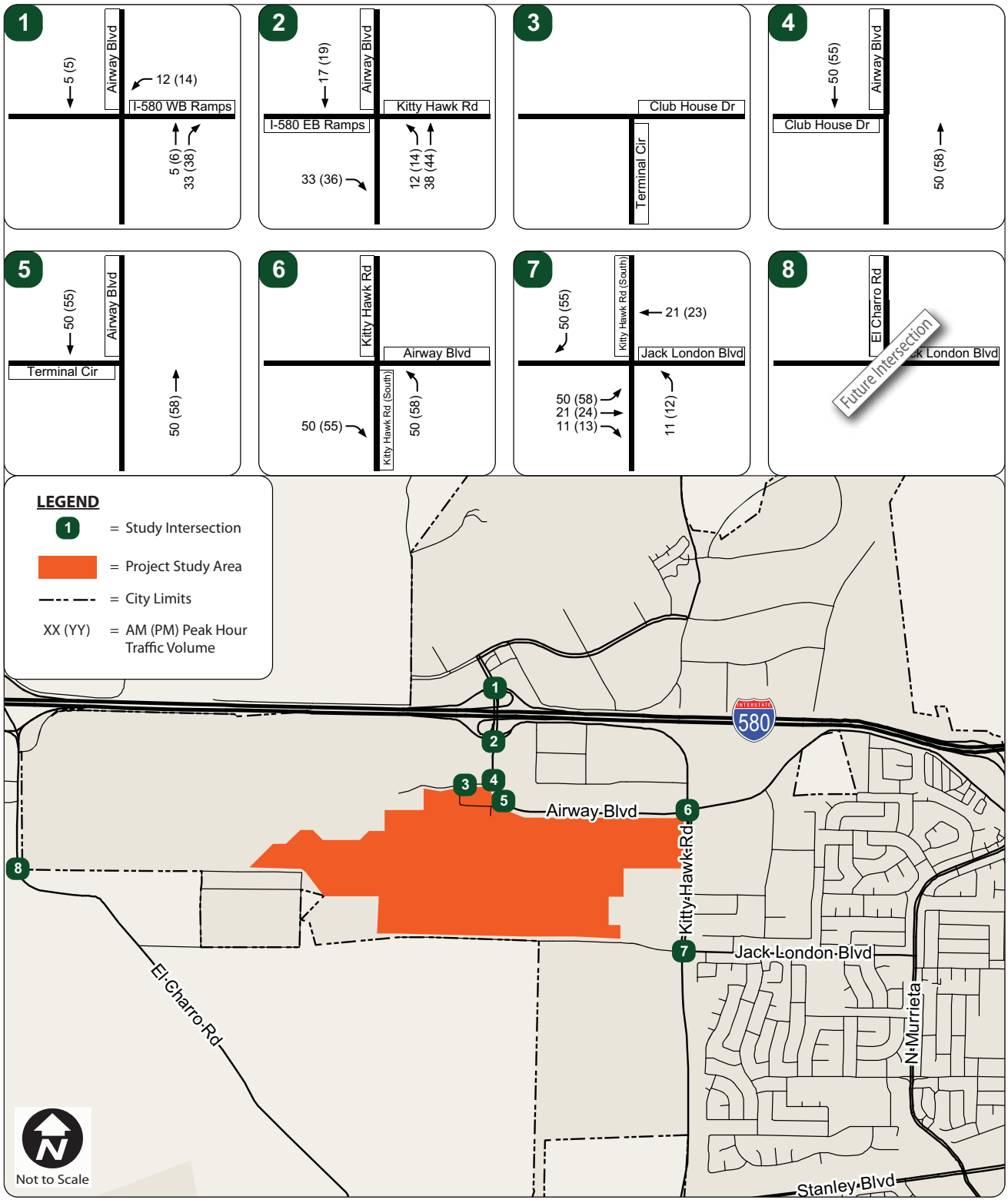

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FIGURE V.B-7

NOT TO SCALE

Livermore Municipal Airport General Plan Amendment and Rezoning Project EIR

Proposed Project Trip Assignment
Existing Conditions

SOURCE: FEHR & PEERS, 2009

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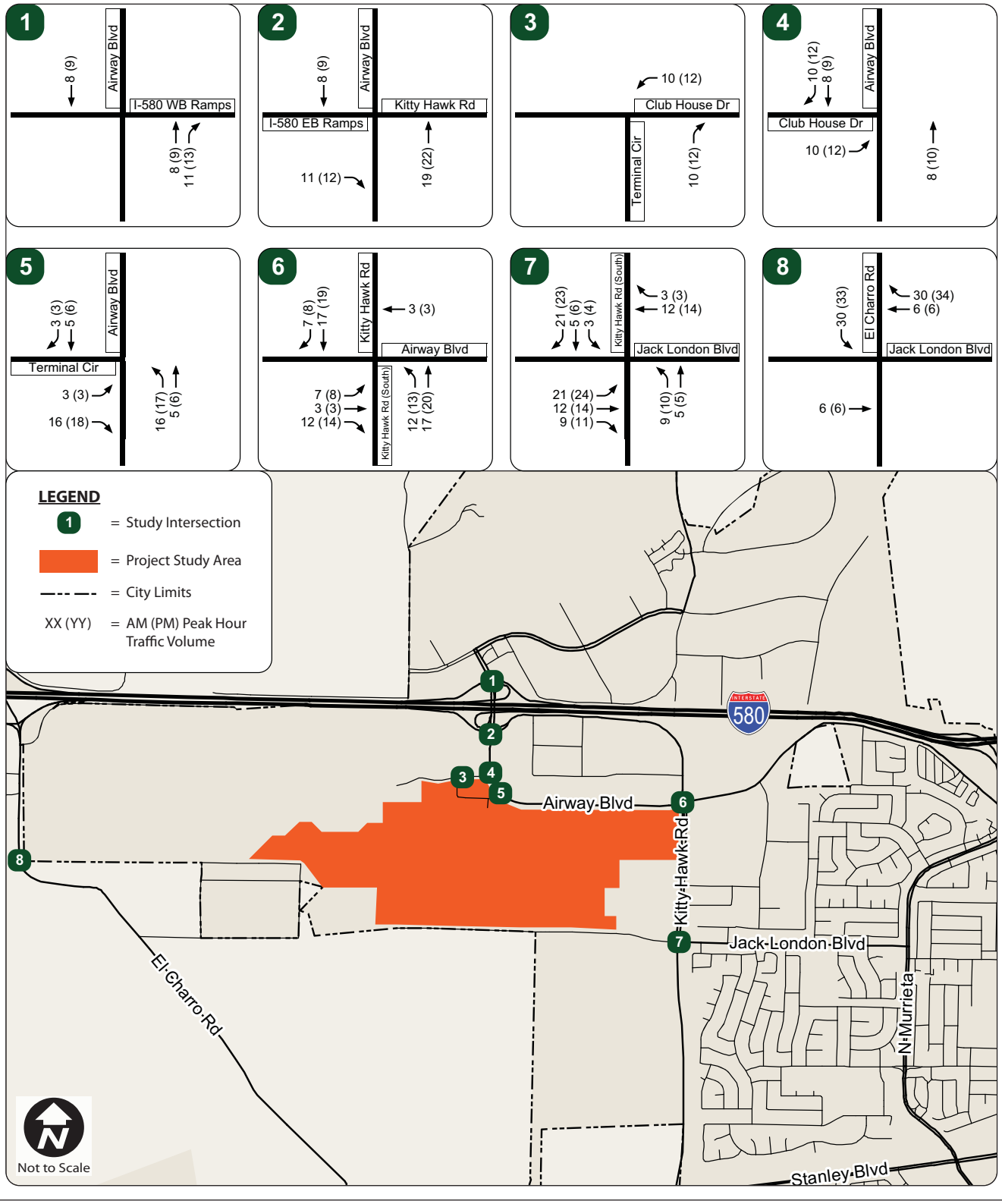

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FIGURE V.B-8

NOT TO SCALE

Livermore Municipal Airport General Plan Amendment and Rezoning Project EIR

No Project Trip Assignment

Cumulative Conditions

SOURCE: FEHR & PEERS, 2009

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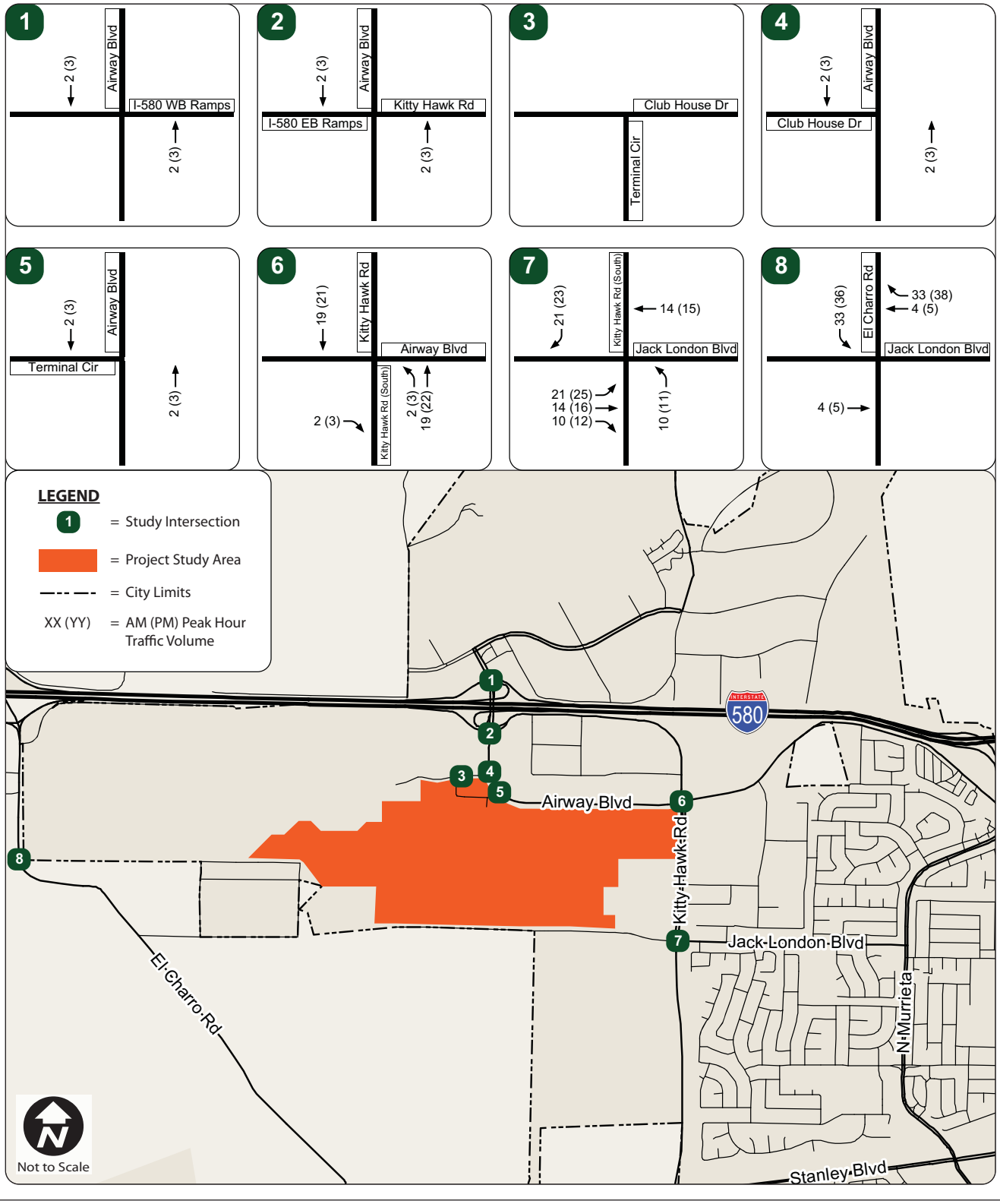

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FIGURE V.B-9

NOT TO SCALE

Livermore Municipal Airport General Plan Amendment and Rezoning Project EIR

Proposed Project Trip Assignment
Cumulative Conditions

SOURCE: FEHR & PEERS, 2009

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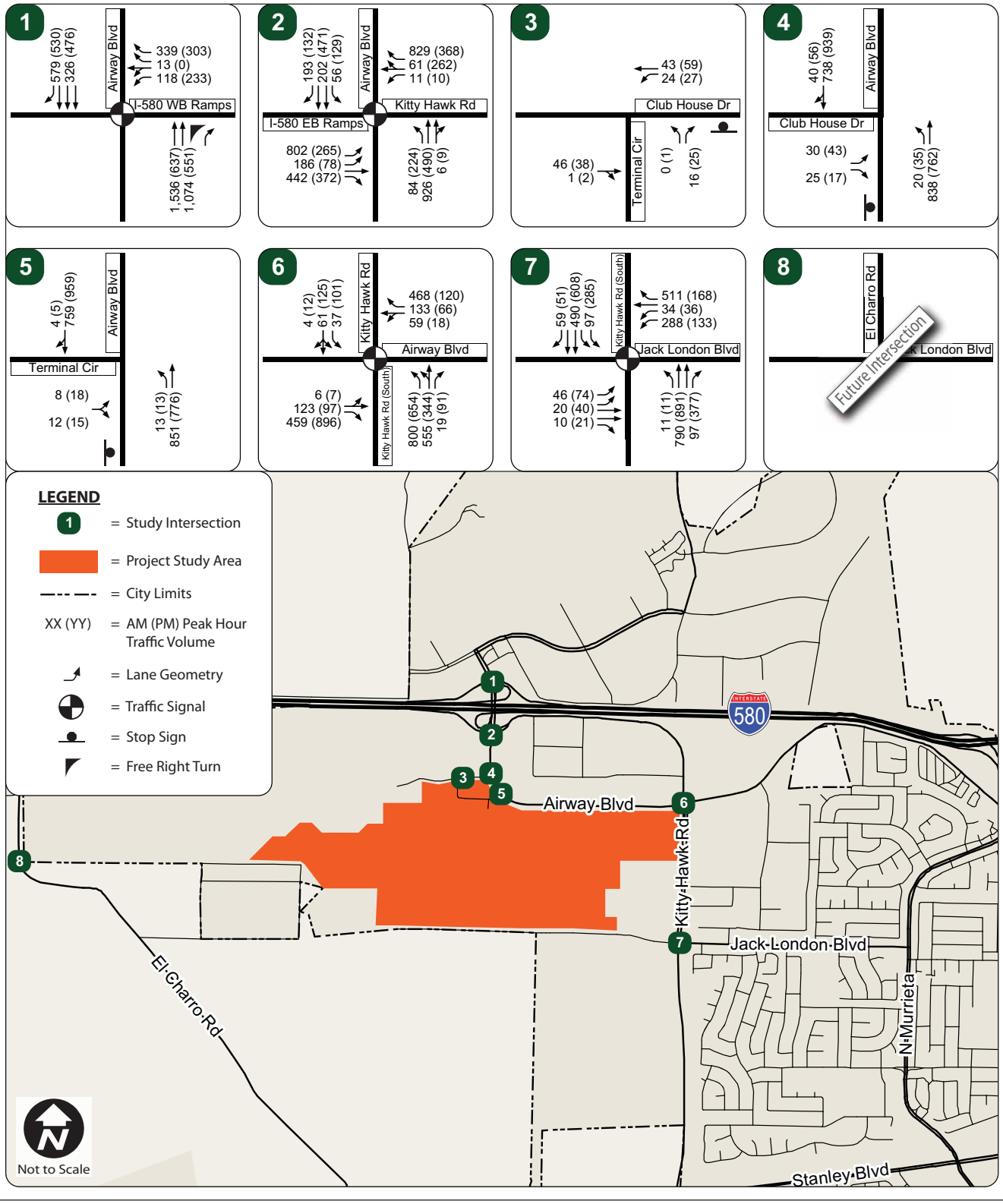

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FIGURE V.B-10

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Livermore Municipal Airport General Plan Amendment and Rezoning Project EIR

Existing Plus No Project Peak Hour Intersection Traffic Volumes, and Lane Configurations, and Traffic Control

SOURCE: FEHR & PEERS, 2009

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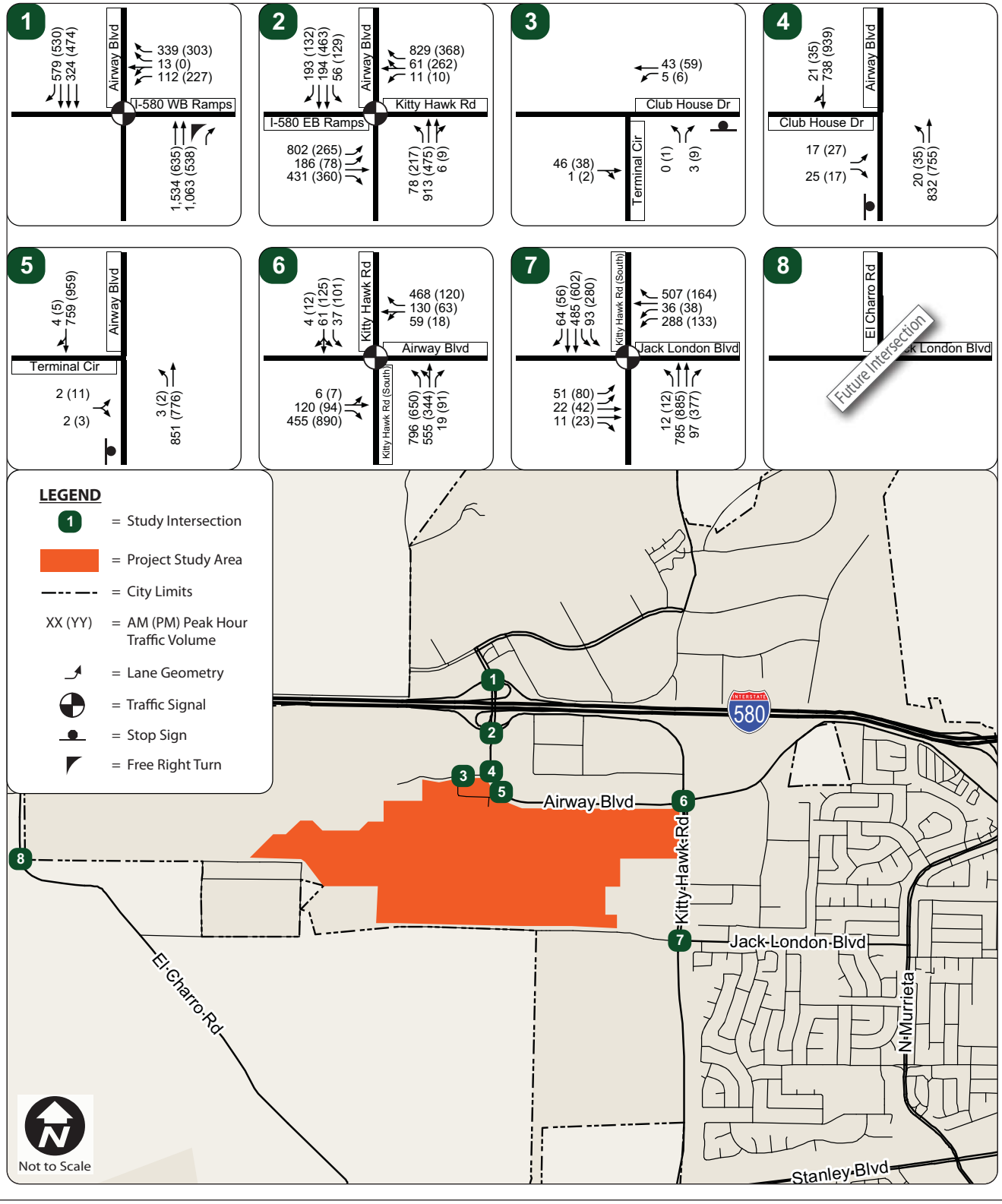

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FIGURE V.B-11

NOT TO SCALE

Livermore Municipal Airport General Plan Amendment and Rezoning Project EIR

Existing Plus Proposed Project Peak Hour Intersection Volumes, and Lane Configurations, and Traffic Control

SOURCE: FEHR & PEERS, 2009

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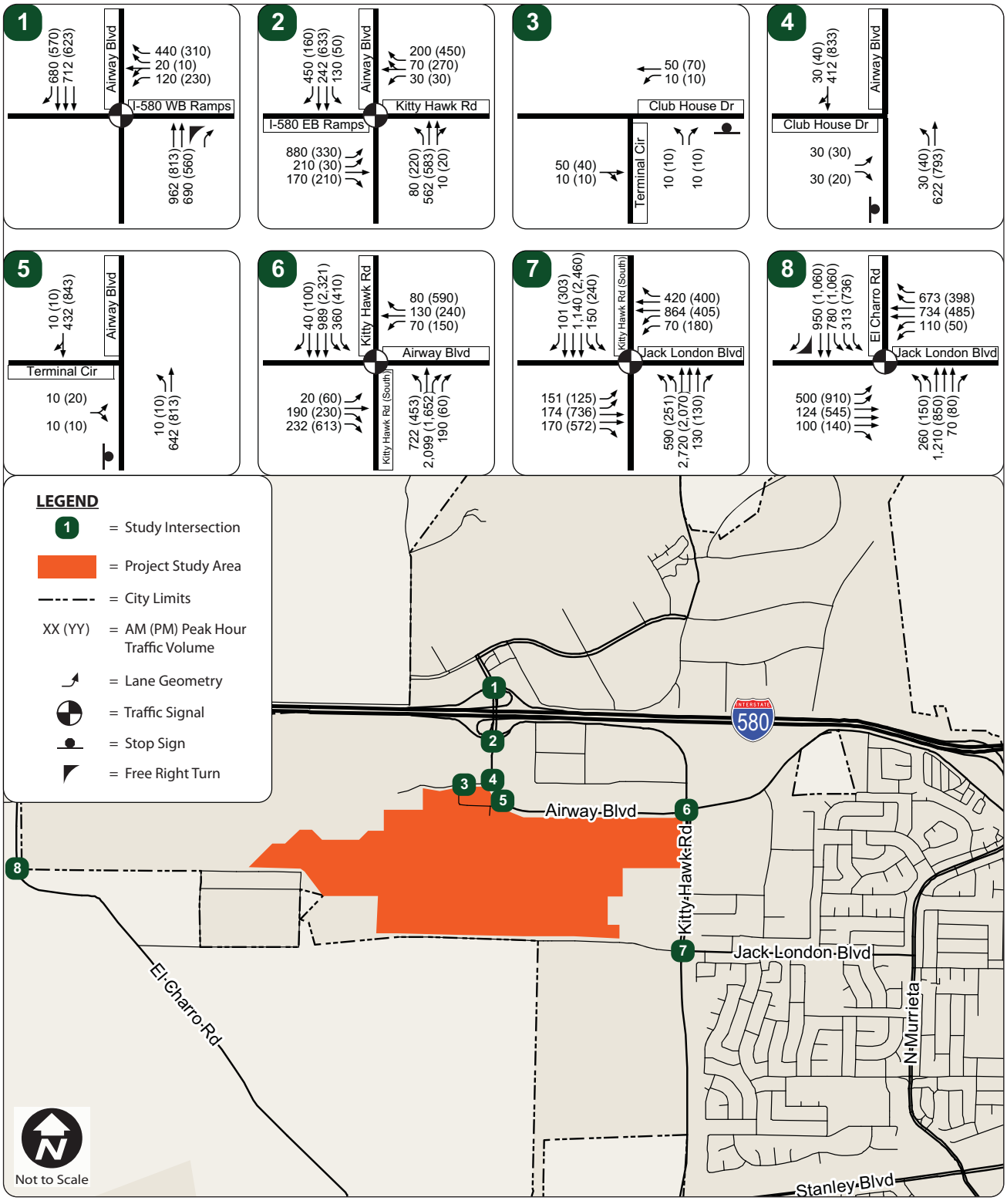

LSA

FIGURE V.B-12

Livermore Municipal Airport General Plan Amendment and Rezoning Project EIR

Cumulative Plus Project Peak Hour Intersection Volumes, and Lane Configurations, and Traffic Control

NOT TO SCALE

SOURCE: FEHR & PEERS, 2009

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Table V.B-7: Existing Conditions Intersection Levels of Service Under No Project and With Proposed Project Traffic

Intersection	LOS Target	Control	Peak Period	Existing		Existing Plus No Project		Existing Plus Proposed Project	
				Delay[a]	LOS[b]	Delay[a]	LOS[b]	Delay[a]	LOS[b]
1. Airway Boulevard (SR 84)/I-580 WB Ramps	LOS E	Signalized	AM PM	8 5	A A	8 5	A A	8 5	A A
2. Airway Boulevard (SR 84)/I-580 EB Ramps/ Kitty Hawk Road	LOS E	Signalized	AM PM	60 29	E C	60 30	E C	60 30	E C
3. Terminal Circle/Club House Drive	None	Side-Street Stop[c]	AM PM	1 (9) 1 (9)	A (A) A (A)	2 (9) 3 (9)	A (A) A (A)	1 (9) 1 (9)	A (A) A (A)
4. Airway Boulevard (SR 84)/Club House Drive	None	Side-Street Stop[c]	AM PM	1 (17) 1 (22)	A (C) A (C)	1 (20) 1 (26)	A (C) A (D)	1 (18) 1 (23)	A (C) A (D)
5. Airway Boulevard (SR 84)/Terminal Circle	None	Side-Street Stop[c]	AM PM	0 (17) 0 (21)	A (C) A (C)	0 (18) 1 (24)	A (C) A (C)	0 (18) 0 (23)	A (C) A (C)
6. Kitty Hawk Road/Airway Boulevard (SR 84)	None	Signalized	AM PM	32 24	C C	36 27	D C	35 26	C C
7. Kitty Hawk Road (SR 84)-Isabel Avenue/ West Jack London Boulevard	None	Signalized	AM PM	17 16	B B	19 20	B B	19 20	B B

[a] Weighted average delay for all critical movements in seconds per vehicle rounded to the nearest second.
[b] LOS = Level of service per the 2000 *Highway Capacity Manual*.
[c] Side-Street Stop Delay and LOS shown correspond to the intersection average delay/LOS. The information provided in parenthesis "( )" is the worst movement delay/LOS.
Source: Fehr & Peers, 2009.

Table V.B-8 Cumulative Conditions Intersection Levels of Service

Intersection	LOS Target	Control	Peak Hour	Cumulative Plus No Project		Cumulative With Proposed Project	
				Delay[a]	LOS[b]	Delay[a]	LOS[b]
1. Airway Boulevard/I-580 WB Ramps	LOS E	Signalized	AM PM	9 5	A A	9 5	A A
2. Airway Boulevard/I-580 EB Ramps/Kitty Hawk Road	LOS E	Signalized	AM PM	37 33	D C	37 33	D C
3. Terminal Circle/Club House Drive	None	Side-Street Stop[c]	AM PM	3 (9) 3 (9)	A (A) A (A)	2 (9) 2 (9)	A (A) A (A)
4. Airway Boulevard /Club House Drive	None	Side-Street Stop[c]	AM PM	1 (15) 1 (25)	A (B) A (C)	1 (14) 1 (22)	A (B) A (C)
5. Airway Boulevard /Terminal Circle	None	Side-Street Stop[c]	AM PM	1 (14) 1 (22)	A (B) A (C)	0 (14) 0 (22)	A (B) A (C)
6. Kitty Hawk Road (SR 84)/Airway Boulevard)	None	Signalized	AM PM	36 46	D D	36 45	D D
7. Kitty Hawk Road (SR 84)-Isabel Avenue/West Jack London Boulevard	None	Signalized	AM PM	60 50	E D	59 50	E D
8. El Charro Road/West Jack London Boulevard-Stoneridge Drive[d]	LOS D	Signalized	AM PM	35 42	C D	35 42	C D

[a] Weighted average delay for all critical movements in seconds per vehicle rounded to the nearest second.
[b] LOS = Level of service per the 2000 *Highway Capacity Manual*.
[c] Side-Street Stop Delay and LOS shown correspond to the intersection average delay/LOS. The information provided in parenthesis "( )" is the worst movement delay/LOS.
[d] Future study intersection located in Pleasanton.
Source: Fehr & Peers, 2009.

With development at the project site under the proposed project, operations at the Kitty Hawk Road (SR 84)/Airway Boulevard) intersection would improve from an unacceptable LOS (high LOS D) to acceptable LOS (low LOS D), as development of the proposed project would generate less traffic than development under current regulations.

The Kitty Hawk Road (SR 84)-Isabel Avenue/West Jack London Boulevard intersection would continue to operate at LOS E with the project, although operations would improve as compared to development under current regulations. As this intersection is exempt from the LOS policy, no additional feasible improvements have been identified. Therefore, impacts to the intersection would be less than significant. The remaining signalized study intersections would operate within the allowable level of service standard.

Although there is no level of service standard for unsignalized intersections, all unsignalized study intersections are projected to operate with minimal delay for vehicles turning from side streets and no improvements are recommended. Therefore, development of the proposed project would not result in unacceptable operations at any of the study intersections.

(2) Alameda County Congestion Management Agency (ACCMA) Metropolitan Transportation System (MTS) Roadway Analysis. This section discusses the ACCMA roadway analysis, which considers the impact of the project on freeways, major arterials, and other major roadways as designated by the ACCMA. Main items of discussion include the geographic scope of the ACCMA roadway analysis, the analysis method, and the results for 2015 and 2035.

ACCMA Roadway Analysis Study Area. The following freeway and surface street segments in Livermore were included in this analysis:

- I-580 (three segments)
- SR 84 (five segments)
- Stanley Boulevard (two segments)

Traffic Forecasts. The ACCMA model was used to forecast 2015 and 2035 traffic volumes on the MTS roadway system. The forecasts for the MTS system differ from the intersection forecasts previously discussed in the following ways:

- The land use data sets used for the intersection forecasts and the MTS forecasts are different for areas outside Livermore (the City of Livermore provided land use inputs for the City) and are consistent with Association of Bay Area Governments (ABAG) population and employment projections.
- The MTS roadway analysis reports the outputs of the ACCMA model directly on a roadway segment level.

The results of the ACCMA model were used to forecast the "No Development" condition for 2015 and 2035, as trips from uses allowed on the site under current regulations were not accounted for in the model. Project trips were distributed to the MTS roadway segments (including both freeways and surface streets) identified above using the project trip distribution presented previously for the increment of traffic growth projected for the site not accounted for in the ACCMA model. The distribution of project trips onto the MTS segments results in the project scenario volumes for 2015 and 2035.

Analysis Method. Operations of the MTS freeway and surface street segments were assessed based on volume-to-capacity (V/C) ratios based on the per lane capacities provided in the model. Roadway segments with a V/C ratio greater than 1.0 are assigned LOS F.

According to the significance criteria presented previously, the addition of project traffic would cause a significant impact on an MTS roadway segment if:

- The addition of project traffic causes a segment's operation to degrade to LOS F.
- The addition of project trips causes the V/C ratio to increase by more than 0.03 on a segment that already operates at LOS F without the project traffic.

Analysis Results. The MTS AM and PM peak hour roadway segment analysis under 2015 and 2035 conditions is summarized in Appendix C. Results of the analysis indicate that development on the site consistent with current regulations would not result in deficient operations on the MTS system, nor would development consistent with No Project Conditions worsen already deficient operations on any of the study segments by increasing the V/C ratio by more than 0.03. As the proposed project would generate less traffic than development under current regulations, and there are no impacts under the No Project scenario, the project impact to the MTS system also would be considered less-than-significant.

(3) Bicycle Facilities Impacts. The project would not alter any existing bicycle facilities in the area, nor would development of the proposed project preclude implementation of the City's Bicycle Plan. Therefore, impacts to the bicycle network would be less than significant.

(4) Pedestrian Facilities Impacts. In general, the proposed project would not alter the pedestrian network surrounding the project site. Sidewalks would be constructed on West Jack London Boulevard as part of roadway extension activities to provide access to the southern portion of the Airport. Therefore, impacts of the project on the pedestrian network would be less than significant.

(5) Transit Facilities Impacts. As discussed, LAVTA provides transit service in the vicinity of the project site. It is not expected that the project would substantially increase transit demand in the area (because almost all Airport-related trips are by private vehicle). In addition, new development activities on the project site that would occur as part of the project would not preclude the alteration of transit facilities in the area. Therefore, impacts to the transit network of the project would be less than significant.

(6) Parking Impacts. Additional vehicle parking would be provided as specific development projects are constructed on the site. The proposed amendments to the Zoning Code contain parking requirements for uses in the AIR-SE Subdistrict. These requirements range from one space per 250 square feet of interior office, retail, and service uses to one space per 7,000 square feet of tiedown space. Compliance with these requirements would ensure that adequate parking would be provided on the site such that no physical environmental impacts would result.

(7) On-Site Circulation System Design Impacts. As part of anticipated project development, specific projects would be constructed on both the north and south sides of the project site, including along Jack London Boulevard. As detailed site plans have not been prepared for these projects, a detailed assessment of the on-site circulation system cannot be performed. The City would

conduct a detailed review of specific development projects (including associated circulation plans) as they are proposed. Issues that should be considered in the development of the final plans include driveway spacing (which should be designed in accordance with City standards), throat depths (which should be sufficient to accommodate projected vehicle queues), and the location/design of internal intersections.

(8) Emergency Access and Air Traffic Patterns Impacts. Emergency vehicles would be able to use the roadways surrounding the project site after project implementation. No modifications to public roadways are anticipated as part of the proposed project. Therefore, the project would not result in emergency vehicle access impacts.

Because no changes to the runway environment are included as part of the project, the project would not change air traffic patterns. In addition, no buildings or features would be constructed on-site that would interfere with typical flight operations. Therefore, the impacts to emergency access and air traffic patterns would be less than significant.

(9) Project Construction. Construction of specific development projects could affect off-site circulation due to increased truck traffic to and from the site. Construction could also disrupt on-site circulation due to the potential closure of roadways/drive aisles during construction. The City would require the preparation of a construction management plan during the permitting process for any development on the site. The construction management plan would specify measures that would reduce impacts to motor vehicle, bicycle, pedestrian, and transit circulation. With the preparation of the required construction management plan, the construction impact would be less than significant.

C. AIR QUALITY AND GLOBAL CLIMATE CHANGE

This section has been prepared using methodologies and assumptions recommended in the air quality impact assessment guidelines of the Bay Area Air Quality Management District (BAAQMD).[1] In keeping with these guidelines, this section describes existing air quality, impacts of future traffic on local carbon monoxide levels, and impacts of aircraft operations and project-related development on regional air quality. This section also includes an evaluation of the effects of the proposed project on the cumulative impact of global climate change. Mitigation measures to reduce or eliminate potentially significant air quality impacts are identified, where appropriate. Air quality modeling results are included in Appendix D.

1. Setting

The following discussion provides an overview of existing air quality conditions in the region and the Livermore area. Ambient standards and the regulatory framework related to air quality are summarized. Climate, air quality conditions, and typical air pollutant types and sources are also described.

a. Air Quality Standards, Regulatory Framework and Attainment Status. Air quality standards, the regulatory framework, and State and federal air quality attainment status are discussed below.

(1) Air Quality Standards. Both the State and federal governments have established health-based Ambient Air Quality Standards for six air pollutants: carbon monoxide (CO), ozone (O_3), nitrogen dioxide (NO_2), sulfur dioxide (SO_2), lead (Pb), and suspended particulate matter (PM). In addition, the State has set standards for sulfates, hydrogen sulfide, vinyl chloride and visibility-reducing particles. These standards are designed to protect the health and welfare of the populace with a reasonable margin of safety.

In addition to primary and secondary Ambient Air Quality Standards, the State of California has established a set of episode criteria for O_3, CO, NO_2, SO_2, and PM. These criteria refer to periods of short-term exposure to air pollutants that actually threaten public health. Health effects are progressively more severe as pollutant levels increase from Stage One to Stage Three.

California Ambient Air Quality Standards (CAAQS) and National Ambient Air Quality Standards (NAAQS) for the criteria air pollutants are listed in Table V.C-1. Health effects of these criteria pollutants are described in Table V.C-2.

(2) Regulatory Framework – Air Pollution. The BAAQMD is primarily responsible for regulating air pollution emissions from stationary sources (e.g., factories) and indirect sources (e.g., traffic associated with new development), as well as for monitoring ambient pollutant concentrations. The BAAQMD's jurisdiction encompasses seven counties – Alameda, Contra Costa, Marin, San Francisco, San Mateo, Santa Clara and Napa – and portions of Solano and Sonoma counties. The California Air Resources Board (ARB) and the U.S. Environmental Protection Agency (EPA) regulate direct emissions from motor vehicles.

[1] Bay Area Air Quality Management District, 1999. *BAAQMD CEQA Guidelines.*

Table V.C-1: Federal and State Ambient Air Quality Standards

Pollutant	Averaging Time	California Standards [a]		Federal Standards [b]		
		Concentration [c]	Method [d]	Primary [c,e]	Secondary [c,f]	Method [g]
Ozone (O_3)	1-Hour	0.09 ppm (180 $\mu g/m^3$)	Ultraviolet Photometry	No federal standard	Same as Primary Standard	Ultraviolet Photometry
	8-Hour	0.07 ppm (137 $\mu g/m^3$)		0.075 ppm (147 $\mu g/m^3$)		
Respirable Particulate Matter (PM_{10})	24-Hour	50 $\mu g/m^3$	Gravimetric or Beta Attenuation	150 $\mu g/m^3$	Same as Primary Standard	Inertial Separation and Gravimetric Analysis
	Annual Arithmetic Mean	20 $\mu g/m^3$		–		
Fine Particulate Matter ($PM_{2.5}$)	24-Hour	No Separate State Standard		35 $\mu g/m^3$	Same as Primary Standard	Inertial Separation and Gravimetric Analysis
	Annual Arithmetic Mean	12 $\mu g/m^3$	Gravimetric or Beta Attenuation	15 $\mu g/m^3$		
Carbon Monoxide (CO)	8-Hour	9.0 ppm (10 mg/m^3)	Non-Dispersive Infrared Photometry (NDIR)	9 ppm (10 mg/m^3)	None	Non-Dispersive Infrared Photometry (NDIR)
	1-Hour	20 ppm (23 mg/m^3)		35 ppm (40 mg/m^3)		
	8-Hour (Lake Tahoe)	6 ppm (7 mg/m^3)		–		
Nitrogen Dioxide (NO_2)	Annual Arithmetic Mean	0.03 ppm (56 $\mu g/m^3$)	Gas Phase Chemiluminescence	0.053 ppm (100 $\mu g/m^3$)	Same as Primary Standard	Gas Phase Chemiluminescence
	1-Hour	0.18 ppm (338 $\mu g/m^3$)		–		
	24-Hour	0.04 ppm (105 $\mu g/m^3$)		0.14 ppm (365 $\mu g/m^3$)		
Lead [h]	30-day average	1.5 $\mu g/m^3$	Atomic Absorption	–	–	–
	Calendar Quarter	–		1.5 $\mu g/m^3$	Same as Primary Standard	High-Volume Sampler and Atomic Absorption
	Rolling 3-Month Average [i]	–		0.15 $\mu g/m^3$		
Sulfur Dioxide (SO_2)	Annual Arithmetic Mean	–	Ultraviolet Fluorescence	0.030 ppm (80 $\mu g/m^3$)	–	Spectrophotometry (Pararosaniline Method)
	24-Hour	0.04 ppm (105 $\mu g/m^3$)		0.14 ppm (365 $\mu g/m^3$)	–	
	3-Hour	–		–	0.5 ppm (1300 $\mu g/m^3$)	
	1-Hour	0.25 ppm (655 $\mu g/m^3$)		–	–	
Visibility-Reducing Particles	8-Hour	Extinction coefficient of 0.23 per kilometer - visibility of 10 miles or more (0.07–30 miles or more for Lake Tahoe) due to particles when relative humidity is less than 70 percent. Method: Beta Attenuation and Transmittance through Filter Tape.		**No Federal Standards**		
Sulfates	24-Hour	25 $\mu g/m^3$	Ion Chromatography			
Hydrogen Sulfide	1-Hour	0.03 ppm (42 $\mu g/m^3$)	Ultraviolet Fluorescence			
Vinyl Chloride [h]	24-Hour	0.01 ppm (26 $\mu g/m^3$)	Gas Chromatography			

ppm = parts per million
mg/m^3 = milligrams per cubic meter
$\mu g/m^3$ = micrograms per cubic meter

Notes continued on following page.

[a] California standards for ozone, CO (except Lake Tahoe), sulfur dioxide (1- and 24- hour), nitrogen dioxide, suspended particulate matter—PM_{10}, $PM_{2.5}$, and visibility-reducing particles, are values that are not to be exceeded. All others are not to be equaled or exceeded. California ambient air quality standards are listed in the Table of Standards in Section 70200 of Title 17 of the California Code of Regulations.

[b] National standards (other than ozone, particulate matter, and those based on annual averages or annual arithmetic mean) are not to be exceeded more than once a year. The ozone standard is attained when the fourth highest 8-hour concentration in a year, averaged over 3 years, is equal to or less than the standard. For PM_{10}, the 24-hour standard is attained when the expected number of days per calendar year with a 24-hour average concentration above 150 microgram (µg)/cubic meter (m^3) is equal to or less than 1. For $PM_{2.5}$, the 24 hour standard is attained when 98 percent of the daily concentrations, averaged over 3 years, are equal to or less than the standard. Refer to the U.S. EPA website (http://www.epa.gov/) for further clarification and current federal policies.

[c] Concentration expressed first in units in which it was promulgated. Equivalent units given in parentheses are based upon a reference temperature of 25°C and a reference pressure of 760 torr. Most measurements of air quality are to be corrected to a reference temperature of 25°C and a reference pressure of 760 torr; parts per million (ppm) in this table refers to ppm by volume, or micromoles of pollutant per mole of gas.

[d] Any equivalent procedure which can be shown to the satisfaction of the ARB to give equivalent results at or near the level of the air quality standard may be used.

[e] National Primary Standards: The levels of air quality necessary, with an adequate margin of safety, to protect the public health.

[f] National Secondary Standards: The levels of air quality necessary to protect the public welfare from any known or anticipated adverse effects of a pollutant.

[g] Reference method as described by the EPA. An "equivalent method" of measurement may be used but must have a "consistent relationship to the reference method" and must be approved by the EPA.

[h] The ARB has identified lead and vinyl chloride as 'toxic air contaminants' with no threshold level of exposure for adverse health effects determined. These actions allow for the implementation of control measures at levels below the ambient concentrations specified for these pollutants.

[i] National lead standard, rolling 3-month average: final rule signed October 15, 2008.

Source: ARB, 2008.

Table V.C-2: Health Effects of Air Pollutants

Pollutant	Health Effects	Examples of Sources
Suspended Particulate Matter ($PM_{2.5}$ and PM_{10})	• Reduced lung function • Aggravation of the effects of gaseous pollutants • Aggravation of respiratory and cardio respiratory diseases • Increased cough and chest discomfort • Soiling • Reduced visibility	• Stationary combustion of solid fuels • Construction activities • Industrial processes • Atmospheric chemical reactions
Ozone (O_3)	• Breathing difficulties • Lung damage	• Formed by chemical reactions of air pollutants in the presence of sunlight; common sources are motor vehicles, industries, and consumer products
Carbon Monoxide (CO)	• Chest pain in heart patients • Headaches, nausea • Reduced mental alertness • Death at very high levels	• Any source that burns fuel such as cars, trucks, construction and farming equipment, and residential heaters and stoves
Lead (Pb)	• Organ damage • Neurological and reproductive disorders • High blood pressure	• Metals processing • Fuel combustion • Waste disposal
Nitrogen Dioxide (NO_2)	• Lung damage	• See CO sources
Toxic Air Contaminants	• Cancer • Chronic eye, lung, or skin irritation • Neurological and reproductive disorders	• Cars and trucks, especially diesels • Industrial sources such as chrome platers • Neighborhood businesses such as dry cleaners and service stations • Building materials and products

Source: ARB and EPA, 2005.

Federal Clean Air Act. The Federal 1970 Clean Air Act authorized the establishment of national health-based air quality standards and also set deadlines for their attainment. The Federal Clean Air Act Amendments of 1990 changed deadlines for attaining NAAQS as well as the remedial actions required of areas of the nation that exceed the standards. Under the Clean Air Act, State and local agencies in areas that exceed the NAAQS are required to develop State Implementation Plans (SIPs) to show how they will achieve the NAAQS for O_3 by specific dates. The Clean Air Act requires that projects receiving federal funds demonstrate conformity to the approved SIP and local air quality attainment plan for the region. Conformity with the SIP requirements would satisfy the Clean Air Act requirements.

California Clean Air Act. The California Clean Air Act, which was signed into law in 1988, requires that all air districts in the State endeavor to achieve and maintain CAAQS for O_3, CO, SO_2 and NO_2 by the earliest practical date. Plans for attaining CAAQS were submitted to the California Air Resource Board by June 30 1991, 1994, 1997, 2000 and 2005. The California Clean Air Act provides districts with new authority to regulate indirect sources and mandates that air quality districts focus particular attention on reducing emissions from transportation and area-wide emission sources. Each district plan must achieve a 5 percent annual reduction, averaged over consecutive 3-year periods, in district-wide emissions of each nonattainment pollutant or its precursors. Additional physical or economic development within the region would tend to impede the emissions reduction goals of the California Clean Air Act.

Bay Area Clean Air Plan. BAAQMD, along with the other regional agencies (i.e., Association of Bay Area Governments and the Metropolitan Transportation Commission), has prepared an Ozone Attainment Plan to address the 1-hour NAAQS for ozone. Although the EPA revoked the 1-hour NAAQS, commitments made in the Ozone Attainment Plan, along with emissions budgets, remain valid until the region develops an attainment demonstration/maintenance plan for the 8-hour NAAQS for ozone. The region will be required to submit a maintenance plan and demonstration of attainment with a request for redesignation to EPA when the 8-hour ozone NAAQS is met. A Carbon Monoxide Maintenance Plan was approved in 1998 by EPA, which demonstrated how NAAQS for the CO standard would be maintained.

Air quality plans addressing the California Clean Air Act (see discussion above) are developed every 3 years. The plans are meant to demonstrate progress toward meeting the more stringent 1-hour ozone CAAQS. The latest plan, which was adopted in January 2006, is called the *Bay Area 2005 Ozone Strategy*. This plan includes a comprehensive strategy to reduce emissions from stationary, area, and mobile sources. The plan indicates how the region would make progress toward attaining the stricter State air quality standards, as mandated by the California Clean Air Act. The plan is designed to achieve a region-wide reduction of ozone precursor pollutants through the expeditious implementation of all feasible measures. The plan proposes expanded implementation of transportation control measures (TCMs) and programs such as Spare the Air.

The clean air planning efforts for ozone will also reduce particulate matter (PM_{10} and $PM_{2.5}$), since a substantial amount of this air pollutant comes from combustion emissions such as vehicle exhaust. BAAQMD adopts and enforces rules to reduce particulate matter emissions and develops public outreach programs to educate the public to reduce PM_{10} and $PM_{2.5}$ emissions. Senate Bill (SB) 656 requires further action by ARB and air districts to reduce public exposure to PM_{10} and $PM_{2.5}$. Efforts identified by BAAQMD in response to SB 656 are primarily targeted reductions in wood smoke

emissions and adoption of new rules to further reduce nitrogen oxides (NO_x) and particulate matter from internal combustion engines and reduce particulate matter from commercial charbroiling activities. NO_x emissions contribute to ammonium nitrate formation that resides in the atmosphere as particulate matter, so a reduction in NO_x emissions would also reduce $PM_{2.5}$ levels. The Bay Area experiences the highest PM_{10} and $PM_{2.5}$ concentrations in the winter when wood smoke and ammonium nitrate contributions to particulate matter are highest.

The BAAQMD has begun preparation of the 2009 Bay Area Clean Air Plan. The 2009 plan will update the 2005 Ozone Strategy in accordance with requirements of the Clean Air Act and will establish emission control measures to be adopted or implemented between 2009 and 2012.

(3) Attainment Status Designations. The ARB is required to designate areas of the State as attainment, nonattainment or unclassified for any State standard. An "attainment" designation for an area signifies that pollutant concentrations did not violate the standard for that pollutant in that area. A "nonattainment" designation indicates that a pollutant concentration violated the standard at least once, excluding those occasions when a violation was caused by an exceptional event, as defined in the criteria. An "unclassified" designation signifies that data do not support either an attainment or nonattainment status. The California Clear Air Act divides districts into moderate, serious and severe air pollution categories, with increasingly stringent control requirements mandated for each category.

The U.S. EPA designates each area for O_3, CO, and NO_2 as either "does not meet the primary standards," or "cannot be classified" or "better than national standards." For SO_2, each area is designated as "does not meet the primary standards," "does not meet the secondary standards," "cannot be classified" or "better than national standards." In 1991, new nonattainment designations were assigned to areas that had previously been classified as Group I, II, or III for PM_{10} based on the likelihood that they would violate national PM_{10} standards. All other areas are designated "unclassified."

Table V.C-3 provides a summary of the attainment status for the San Francisco Bay Area with respect to national and State ambient air quality standards.

(4) Regulatory Framework – Global Climate Change. There is a general scientific consensus that global climate change is occurring, caused in whole or in part by increased emissions of greenhouse gases (GHGs)[2] that keep the Earth's surface warm by trapping heat in the Earth's atmosphere. The term "global climate change" is often used interchangeably with the term "global warming," but "global climate change" is preferred to "global warming" because it helps convey that there are other changes in addition to rising temperatures. While many studies show evidence of warming over the last century and predict future global warming, the causes of such warming and its potential effects are far less certain. In its "natural" condition, the greenhouse effect[3] is responsible for maintaining a habitable climate on Earth, but human activity has caused increased concentrations of greenhouse gases in the atmosphere, thereby contributing to an increase in global temperatures.

[2]Among the prominent GHGs contributing to the greenhouse effect are carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), and sulfur hexafluoride (SF_6).

[3]The temperature on earth is regulated by a system commonly known as the "greenhouse effect." Just as the glass in a greenhouse captures heat from sunlight and limits the amount of heat that escapes, greenhouse gases like carbon dioxide, methane, and nitrous oxide in the atmosphere keep the earth at a relatively even temperature. Without the greenhouse effect, the earth would be a frozen globe; thus, although an excess of greenhouse gas results in global warming, the *naturally occurring* greenhouse effect is necessary to keep our planet at a comfortable temperature.

Table V.C-3: Bay Area Attainment Status

Pollutant	Averaging Time	California Standards [a]		National Standards [b]	
		Concentration	Attainment Status	Concentration	Attainment Status
Carbon Monoxide (CO)	8-Hour	9.0 ppm (10 mg/m^3)	Attainment	9 ppm (10 mg/m^3)	Attainment [c]
	1-Hour	20 ppm (23 mg/m^3)	Attainment	35 ppm (40 mg/m^3)	Attainment
Nitrogen Dioxide (NO_2)	Annual Mean	Not Applicable	Not Applicable	0.053 ppm (100 μg/m^3)	Attainment
	1-Hour	0.18 ppm (339 μg/m^3)	Attainment	Not Applicable	Not Applicable
Ozone (O_3)	8-Hour	0.07 ppm (137 μg/m^3)	Nonattainment	0.075 ppm (147 μg/m^3)	Nonattainment [d]
	1-Hour	0.09 ppm (180 μg/m^3)	Nonattainment	Not Applicable	Not Applicable
Particulate Matter (PM_{10})	Annual Mean	20 μg/m^3	Nonattainment	Not Applicable	Not Applicable
	24-Hour	50 μg/m^3	Nonattainment	150 μg/m^3	Unclassified
Fine Particulate Matter ($PM_{2.5}$)	Annual Mean	12 μg/m^3	Nonattainment	15 μg/m^3	Attainment
	24-Hour	Not Applicable	Not Applicable	35 μg/m^3	Nonattainment [e]
Lead (pb)	30-Day Average	1.5 μg/m	Attainment	Not Applicable	Not Applicable
	Calendar Quarter	Not Applicable	Not Applicable	1.5 μg/m^3	Attainment
	Rolling 3-Month Average	Not Applicable	Not Applicable	0.15 μg/m^3	Unclassified
Sulfur Dioxide (SO_2)	Annual Mean	Not Applicable	Not Applicable	0.03 ppm (80 μg/m^3)	Attainment
	24-Hour	0.04 ppm (105 μg/m^3)	Attainment	0.14 ppm (365 μg/m^3)	Attainment
	1-Hour	0.25 ppm (655 μg/m^3)	Attainment	Not Applicable	Not Applicable

[a] California standards for O_3, CO (except Lake Tahoe), SO_2 (1-hour and 24-hour), NO_2 and PM_{10} are values that are not to be exceeded. If the standard is for a 1-hour, 8-hour, or 24-hour average, then some measurements may be excluded. In particular, measurements are excluded that ARB determines would occur less than once per year on the average.

[b] National standards other than for 0_3 and those based on annual averages or annual arithmetic means are not to be exceeded more than once a year. For example, the 0_3 standard is attained if, during the most recent 3- year period, the average number of days per year with maximum hourly concentrations above the standard is equal to or less than 1.

[c] In April 1998, the Bay Area was redesignated to Attainment for the national 8-hour CO standard.

[d] In June 2004, the Bay Area was designated as a marginal nonattainment area of the national 8-hour ozone standard. U.S. EPA lowered the national 8-hour ozone standard from 0.80 to 0.75 PPM (ie.e. 75 ppb) effective May 27, 2008. EPA will issue final designations based upon the new 0.75 ppm ozone standard by March 2010.

[e] U.S EPA lowered the 24-hour $PM_{2.5}$ standard from 65 µg/m3 to 35 µg/m3 in 2006. EPA issued attainment status designations for the 35 µg/m3 standard on December 22, 2008. EPA has designated the Bay Area as nonattainment for the 35 µg/m3 $PM_{2.5}$ standard. The EPA designation will be effective 90 days after publication of the regulation in the Federal Register. President Obama has ordered a freeze on all pending federal rules; therefore, the effective date of the designation is unknown at this time.

Lead (Pb) is not listed in the above table because it has been in attainment since the 1980s.

ppm = parts per million
mg/m^3 = milligrams per cubic meter
μg/m^3 = micrograms per cubic meter

Source: BAAQMD, Bay Area Attainment Status, 2009.

GHGs are global pollutants, unlike criteria air pollutants and toxic air contaminants, which are pollutants of regional and local concern, respectively. California's major initiatives for reducing GHG emissions are outlined in Assembly Bill 32 (AB 32), the "Global Warming Solutions Act," passed by the California State legislature on August 31, 2006, Executive Order S-3-05, and AB 1493, which requires the California Air Resources Board (ARB) to set GHG emission standards for passenger vehicles and light duty trucks. These efforts aim to reduce GHG emissions to 1990 levels by 2020, a reduction of approximately 25 percent, and then an 80 percent reduction below 1990 levels by 2050.

Some of the potential effects of global climate change in California include a reduction of the Sierra snow pack, threats to water supplies, sea level rise, more extremely hot days per year, more high ozone days, more large forest fires, and more drought years. In addition to these effects, there are many secondary effects that are projected to result from global climate change, including impacts to agriculture, changes in disease vectors, and changes in habitat and biodiversity. While the possible outcomes and the feedback mechanisms involved are not fully understood, and much research remains to be done, the potential for substantial environmental, social, and economic consequences over the long term may be great.

(5) Relevant General Plan Policies. The following policy from the Open Space and Conservation Element of the City of Livermore General Plan that specifically addresses air quality is applicable to the proposed project. The Climate Change Element of the General Plan is also discussed.

- *OSC-6.k1.P1*: The City shall require project developers to develop and implement a construction-period air pollution control plan, consistent with dust and emission-abatement actions outlined in the CEQA handbook of the Bay Area Air Quality Management District.

The City of Livermore recently adopted a Climate Change Element of their General Plan to support AB 32 and the City's efforts to reduce GHG emissions. Many of the existing General Plan policies related to land use, circulation, water efficiency, waste reduction, energy use and open space promote reductions in greenhouse gas emissions. The Climate Change Element provides an expansion on these existing policies to further reduce GHG emissions. Policies that are applicable to the Livermore Airport project include the following:

- *CLI-1.3.P.10*: Limit idling of municipal, community and/or commercial vehicles for new development through the CEQA process. Support CARB anti-idling requirements and provide signage in key areas where idling that is not consistent with CARB requirements might occur.
- *CLI-1.3.P.13*: Work with county, regional, and state governments to account for greenhouse gas emissions in evaluations of land use and regional transportation infrastructure investments.

The Climate Change Element also includes a Livermore Community Emissions Inventory which includes GHG emissions from fuel burned for mobile transportation; residential, commercial, and industrial use of electricity and natural gas; and from the landfilling of solid waste. Vehicles on roads and State highways in Livermore total 63 percent of all GHG emissions and represent the largest source of Livermore's community emissions.

b. Existing Climate and Air Quality. The following section provides a discussion of the regional air quality, and local climate and air quality in the Livermore Valley, and air pollution climatology.

(1) Regional Air Quality. The City of Livermore (City) is located in the San Francisco Bay Area, a large shallow air basin ringed by hills that taper into a number of sheltered valleys around the perimeter of the basin. Two primary atmospheric outlets exist. One is through the strait known as the Golden Gate, a direct outlet to the Pacific Ocean. The second extends to the northeast, along the west delta region of the Sacramento and San Joaquin Rivers.

The City is within the jurisdiction of the BAAQMD, which regulates air quality in the San Francisco Bay Area. Air quality conditions in the San Francisco Bay Area have improved significantly since the BAAQMD was created in 1955. Ambient concentrations of air pollutants and the number of days during which the region exceeds air quality standards have fallen dramatically. However, the region has not yet attained the State 1-hour ozone standard, and also must reduce pollution transported to downwind regions as required by the California Clean Air Act. Therefore, the region must continue its long-term progress in reducing ozone levels by reducing emissions of pollutants that form ozone. Exceedances of air quality standards in the Livermore area occur primarily during meteorological conditions conducive to high pollution levels, such as cold, windless winter nights or hot, sunny summer afternoons.

Levels of PM_{10} in the Bay Area currently exceed State standards and, therefore, the area is considered a nonattainment area for this pollutant relative to the State standards. The Bay Area is an unclassified area for the federal PM_{10} standard. The State and federal CO standards have not been exceeded at any of the region's monitoring stations since 1991. The Bay Area is currently considered a maintenance area for State and federal CO standards.

(2) Local Climate and Air Quality. Air quality is a function of both local climate and local sources of air pollution. Air quality is the balance of the natural dispersal capacity of the atmosphere and emissions of air pollutants from human uses of the environment. The City is located in the Livermore Valley. The Livermore Valley is a sheltered inland valley near the eastern border of the Bay Area. The western side of the valley is bordered by 1,000- to 1,500-foot hills with two gaps connecting the Valley to the central Bay Area: Hayward Pass and Niles Canyon. The eastern side of the Valley also is bordered by 1,000- to 1,500-foot hills with one major passage to the San Joaquin Valley called the Altamont Pass and several secondary passages. To the north lie the Black Hills and Mount Diablo. A northwest to southeast channel connects the Diablo Valley to the Livermore Valley. The south side of the Livermore Valley is bordered by mountains approximately 3,000 to 3,500 feet high.

During the summer months, when there is a strong inversion with a low ceiling, air movement is weak and pollutants become trapped and concentrated. Maximum summer temperatures in the Livermore Valley range from the high 80s to the low 90s, with extremes above 100. At other times in the summer, a strong Pacific high pressure cell from the west coupled with hot inland temperatures causes a strong onshore pressure gradient that produces a strong, afternoon wind. With a weak temperature inversion, air moves over the hills with ease, dispersing pollutants. In the winter, with the exception of an occasional storm moving through the area, air movement is dictated by local conditions. At night and early morning, especially under clear, calm, and cold conditions, gravity drives cold air downward. The cold air drains off the hills and moves into the gaps and passes. On the eastern side of the valley, the prevailing winds blow from the north, the northeast, and the east out of the Altamont Pass. Winds are light during the late night and early morning hours. Winter daytime winds sometimes flow from the south through the Altamont Pass to the San Joaquin Valley. Average winter

maximum temperatures range from the high 50s to the low 60s, while minimum temperatures are from the mid to high 30s, with extremes in the high teens and low 20s.

Air pollution potential is high in the Livermore Valley, especially for photochemical pollutants in the summer and fall. High temperatures increase the potential for ozone buildup. The Valley not only traps locally-generated pollutants but can be the receptor of ozone and ozone precursors from San Francisco, Alameda, Contra Costa, and Santa Clara counties. On northeasterly wind flow days, most common in the early fall, ozone may be also be carried west from the San Joaquin Valley to the Livermore Valley.

During the winter, the sheltering effect of the Valley, its distance from moderating waterbodies, and the presence of a strong high pressure system contribute to the development of strong, surface-based temperature inversions. Pollutants such as CO and particulate matter, generated by motor vehicles, fireplaces and agricultural burning, can become concentrated. Air pollution problems could intensify because of population growth and increased commuting to and through the subregion.[4]

Pollutant monitoring results for the years 2006 to 2008 at the Livermore ambient air quality monitoring station indicate that air quality in the project area has generally been moderate. Table V.C-4 summarizes the last three years of published data from this monitoring station. As indicated, three exceedances of the State PM_{10} standard in 2006 were recorded, two exceedances in 2007 were recorded and no violation of the federal PM_{10} standard was recorded. The federal $PM_{2.5}$ 98^{th} percentile standard was exceeded in 2006 and 2007. Federal and State ozone standards have been exceeded every year. CO, NO_2 and SO_2 standards were not exceeded in the project area during the 3-year period.

(3) Air Pollution Climatology. The amount of a given air pollutant in the atmosphere is determined by the amount of pollutant released and the atmosphere's ability to transport and/or dilute that pollutant. The major determinants of transport and dilution are wind, atmospheric stability, terrain and, for photochemical pollutants, sunshine.

c. Air Quality Issues. Four key air quality issues – aircraft and vehicle emissions, fugitive dust, odors, and construction equipment exhaust – are described below.

(1) Aircraft and Vehicle Emissions. Long-term air emission impacts are those associated with changes in aircraft operations and automobile travel within the City. Ground mobile source emissions would result from vehicle trips associated with increased vehicular travel. As is true throughout much of the U.S., motor vehicle use and Airport operations are projected to increase substantially in the region. The BAAQMD, local jurisdictions, and other agencies responsible for protecting public health and welfare will continue to seek ways of minimizing the air quality impacts of growth and development in order to avoid further exceedances of air quality standards.

[4] Bay Area Air Quality Management District, 1999. *BAAQMD CEQA Guidelines.*

Table V.C-4: Ambient Air Quality at the Rincon Avenue, Livermore Monitoring Station

Pollutant	Standard	2006	2007	2008
Carbon Monoxide (CO)				
Maximum 1 hour concentration (ppm)		3.3	3.3	2.2
Number of days exceeded:	State: > 20 ppm	0	0	0
	Federal: > 35 ppm	0	0	0
Maximum 8 hour concentration (ppm)		1.79	1.83	1.43
Number of days exceeded:	State: > 9 ppm	0	0	0
	Federal: > 9 ppm	0	0	0
Ozone (O_3)				
Maximum 1 hour concentration (ppm)		0.127	0.120	0.141
Number of days exceeded:	State: > 0.09 ppm	13	2	5
Maximum 8 hour concentration (ppm)		0.101	0.091	0.110
Number of days exceeded:	State: > 0.07 ppm	15	3	8
	Federal: > 0.075 ppm	10	2	6
Coarse Particulates (PM_{10})				
Maximum 24 hour concentration ($\mu g/m^3$)		69.2	74.8	46.8
Number of days exceeded:	State: > 50 $\mu g/m^3$	3	2	0
	Federal: > 150 $\mu g/m^3$	0	0	0
Annual arithmetic average concentration ($\mu g/m^3$)		21.8	19.8	ND
Exceeded for the year:	State: > 20 $\mu g/m^3$	Yes	No	No
Fine Particulates ($PM_{2.5}$)				
24-Hr Standard 98th Percentile ($\mu g/m^3$)		36.6	39.2	31.6
Exceeded for the year:	Federal: > 35 $\mu g/m^3$	Yes	Yes	No
Annual arithmetic average concentration ($\mu g/m^3$)		11.1	9.0	10.1
Exceeded for the year:	State: > 12 $\mu g/m^3$	No	No	No
	Federal: > 15 $\mu g/m^3$	No	No	No
Nitrogen Dioxide (NO_2)				
Maximum 1 hour concentration (ppm)		0.064	0.052	0.056
Number of days exceeded:	State: > 0.18 ppm	0	0	0
Annual arithmetic average concentration (ppm)		0.014	0.013	0.011
Exceeded for the year:	State: > 0.030 ppm	No	No	No
	Federal: > 0.053 ppm	No	No	No
Sulfur Dioxide (SO_2)[a]				
Maximum 1 hour concentration (ppm)		0.017	0.018	0.012
Number of days exceeded:	State: > 0.25 ppm	0	0	0
Maximum 3 hour concentration (ppm)		0.011	0.013	0.009
Number of days exceeded:	Federal: > 0.5 ppm	0	0	0
Maximum 24 hour concentration (ppm)		0.007	0.005	0.004
Number of days exceeded:	State: > 0.04 ppm	0	0	0
	Federal: > 0.14 ppm	0	0	0
Annual arithmetic average concentration (ppm)		0.002	0.002	0.002
Exceeded for the year:	Federal: > 0.030 ppm	No	No	No

ppm = parts per million
$\mu g/m^3$ = micrograms per cubic meter
ND = No data. There was insufficient (or no) data to determine the value.
[a] 5551 Bethel Island Road, Bethel Island, CA was the closest monitoring station with SO_2 data.
Source: ARB and EPA, 2009.

(2) Fugitive Dust. Fugitive dust emissions are generally associated with demolition, land clearing, exposure of soils to the air, and cut and fill operations. Dust generated during construction varies substantially on a project-by-project basis, depending on the level of activity, the specific operations and weather conditions.

The U.S. EPA has developed an approximate emission factor for construction-related emissions of total suspended particulate of 1.2 tons per acre per month of activity. This factor assumes a moderate activity level, moderate silt content in soils being disturbed and a semi-arid climate. The California Air Resources Board estimates that 64 percent of construction-related total suspended particulate emissions is PM_{10}. Therefore, the emission factors for uncontrolled construction-related PM_{10} emissions are:

- 0.77 tons per acre per month of PM_{10}; or
- 51 pounds per acre per day of PM_{10}.

However, construction emissions can vary greatly depending on the level of activity, the specific operations taking place, the equipment being operated, local soils, weather conditions, and other factors. There are a number of feasible control measures that can be reasonably implemented to significantly reduce PM_{10} emissions from construction.

(3) Odors. Odors are also an important element of local air quality conditions. Specific activities associated with different land uses can raise concerns on the part of nearby neighbors. Major sources of odors include restaurants, manufacturing plants, and agricultural operations. While sources that generate objectionable odors must comply with air quality regulations, the public's sensitivity to locally-produced odors often exceeds regulatory thresholds.

(4) Construction Equipment Exhaust. Construction activities cause combustion emissions from utility engines, heavy-duty construction vehicles, equipment hauling materials to and from construction sites and motor vehicles transporting construction crews. Exhaust emissions from construction activities vary daily as construction activity levels change. The use of construction equipment results in localized exhaust emissions.

2. Impacts and Mitigation Measures

The following section presents a discussion of the impacts related to air quality and global climate change that could result from implementation of the proposed project. The section begins with the criteria of significance, establishing the thresholds to determine whether an impact is significant. The latter part of this section presents the air quality and global climate change impacts that could result from the proposed project. Impacts are organized into separate categories based on their significance according to the criteria listed below: less-than-significant impacts, and significant impacts.

a. Criteria of Significance. The project would result in a significant adverse impact on air quality if it would result in an exceedance of the following criteria:

- Violate any ambient air quality standard or contribute substantially to an existing or projected air quality violation;
- Violate the District's air quality standards or contribute substantially to an existing or projected air quality violation by:

  - Contributing to CO concentrations exceeding the State ambient air quality standards of 9 ppm averaged over 8 hours and 20 ppm for 1 hour; or
  - Generating criteria air pollutant emissions of reactive organic gases (ROG)[5], NO_x, or PM_{10} in excess of 15 tons per year, or 80 pounds per day;
- Frequently expose members of the public to objectionable odors;
- Conflict with or obstruct implementation of an applicable air quality plan;
- Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is in non-attainment under an applicable federal or State ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors);
- Expose sensitive receptors (including residential areas) or the general public to toxic air contaminants in excess of the following thresholds:
  - Probability of contracting cancer for the Maximally Exposed Individual (MEI) exceeds 10 in one million; or
  - Ground-level concentrations of non-carcinogenic toxic air contaminants would result in a Hazard Index greater than 1 for the MEI;
- Result in a cumulative air quality impact. Projects that would individually have a significant air quality impact due to project operations would also result in a cumulative air quality impact. For projects that do not individually have significant operational air quality impacts, a cumulative impact would result if the project would cause the City's General Plan to conflict with the Clean Air Plan (CAP) or, if the City's General Plan is already inconsistent with the Clean Air Plan and the project would combine with other reasonably foreseeable future projects to either: 1) exceed the BAAQMD individual operational thresholds of significance, or 2) exceed the CAP population and vehicle miles traveled (VMT) assumptions for growth in the City or County.

It should be noted that the emission thresholds were established based on the attainment status of the air basin in regard to air quality standards for specific criteria pollutants. Because the concentration standards were set at a level that protects public health with an adequate margin of safety, these emission thresholds are regarded as conservative and would overstate an individual project's contribution to health risks.

Given the broad scope of global climate change, the challenge under CEQA is for a Lead Agency to scale the issue down to the level of a CEQA document for a specific project in a way that is meaningful to the decision-making process. Climate change is a global environmental problem in which: (a) any given development project contributes only a small portion of any net increase in GHGs and (b) global growth is continuing to contribute large amounts of GHGs across the world. One individual project would not result in a measurable impact on global climate change. Although regulatory agencies at the State and regional levels are in the process of developing thresholds and methodologies to assess global climate change and greenhouse gas emissions, neither CEQA nor the *CEQA Guidelines* currently mentions or provides any methodology for analysis of greenhouse gases, nor do they provide any significance thresholds. However, proposed amendments to the *CEQA Guidelines* released by the Office of Planning and Research (OPR) in April 2009 include the

[5] Reactive organic gases (ROG) are organic chemical compounds that easily vaporize and that contribute to the formation of smog.

following direction regarding determining significant impacts from GHG emissions (Section 15064.4):

> (a) The determination of the significance of greenhouse gas emissions calls for a careful judgment by the lead agency consistent with the provisions in Section 15064. A lead agency should make a good-faith effort, based on available information, to describe, calculate or estimate the amount of greenhouse gas emissions resulting from a project. A lead agency shall have discretion to determine, in the context of a particular project, whether to:
>
> (1) Use a model or methodology to quantify greenhouse gas emissions resulting from a project, and which model or methodology to use. The lead agency has discretion to select the model it considers most appropriate provided it supports its decision with substantial evidence. The lead agency should explain the limitations of the particular model or methodology selected for use; or
> (2) Rely on a qualitative analysis or performance based standards.
>
> (b) A lead agency may consider the following when assessing the significance of impacts from greenhouse gas emissions on the environment:
>
> (1) The extent to which the project may increase or reduce greenhouse gas emissions as compared to the existing environmental setting;
> (2) Whether the project emissions exceed a threshold of significance that the lead agency determines applies to the project; and
> (3) The extent to which the project complies with regulations or requirements adopted to implement a statewide, regional, or local plan for the reduction or mitigation of greenhouse gas emissions. Such regulations or requirements must be adopted by the relevant public agency through a public review process and must include specific requirements that reduce or mitigate the project's incremental contribution of greenhouse gas emissions. If there is substantial evidence that the possible effects of a particular project are still cumulatively considerable notwithstanding compliance with the adopted regulations or requirements, an EIR must be prepared for the project.

CEQA Guidelines Section 15064(b) provides that the "determination of whether a project may have a significant effect on the environment calls for careful judgment on the part of the public agency involved, based to the extent possible on scientific and factual data," and further, states that an "ironclad definition of significant effect is not always possible because the significance of an activity may vary with the setting."

To date, no statewide quantitative GHG emission thresholds or similar criteria have been adopted to evaluate the cumulative impact of a single project on global climate change. In the absence of quantitative greenhouse gas emissions thresholds, consistency with adopted programs and policies is used by many jurisdictions to evaluate the significance of cumulative impacts. The California Air Pollution Control Officers Association (CAPCOA) published a White Paper in January 2008 that explored several options for setting numeric, non-zero thresholds. The White Paper acknowledges medium to high uncertainty as to each potential numeric threshold. Based on the discussion above,

none of the potential numeric thresholds would be appropriate for application to the proposed project. Thus, for the purposes of analyzing this project, and consistent with OPR's recently proposed amendments to the *CEQA Guidelines*, the potential climate change impacts of the project will be analyzed qualitatively without setting a specific quantitative threshold.

b. Less-Than-Significant Air Quality Impacts. Several less-than-significant air quality impacts are discussed below.

(1) Regional Plan Consistency. The Bay Area 2005 Ozone Attainment Plan discussed above is the relevant regional air quality plan. The BAAQMD uses the CAP to evaluate a project's potential cumulative air quality impacts. The BAAQMD CEQA Guidelines state that "for any project that does not individually have significant operational air quality impacts, the determination of significant cumulative impacts should be based on an evaluation of the consistency of the project with the local general plan and the general plan with the regional air quality plan." The BAAQMD CEQA Guidelines present the following elements for evaluation of consistency between the General Plan and the CAP: General Plan population projections are consistent with CAP and ABAG projections; rate of increase in vehicle miles traveled (VMT) does not exceed rate of increase in population; General Plan implements CAP transportation control measures; and General Plan provides buffer zones around sources of odors, toxics and accidental releases.

The proposed project would not cause the rate of VMT to exceed the rate of increase in population. The proposed project does not include residential land uses and therefore, would not directly increase the City's population. The General Plan would be amended under the proposed project to remove references to the 1975 Airport Master Plan. The amendment would also reduce the desired maximum number of annual aircraft operations and the number of stored/parked aircraft at the Airport. The proposed project also includes zoning changes, which would not require any amendments to the City's General Plan land use designations. In addition, the development potential of the site would be reduced under the project compared to under existing conditions. The AIR Zoning District proposed as part of the project would limit development on the site to Airport-related uses. Under existing regulations, non-Airport uses could be developed on the site (and the intensity of these uses would be higher). Refer to Chapter III, Project Description, for additional detail. As a result, the proposed project would not conflict with the 2005 Ozone Strategy and would not delay the Plan's attainment goals for the Basin.

(2) Odor Impacts. No new stationary odor sources are expected to be developed at the Airport as a result of the proposed project. New uses at the site that could be developed as part of the project would be similar to existing uses – such as FBOs and hangars – that do not emit offensive odors. Mobile sources, including both aircraft and ground vehicles, are not considered sources of odor impacts, due primarily to the fact that they are not stationary long enough for potential odors to accumulate in significant concentrations. Therefore, odor-related impacts would be less than significant.

(3) Toxic Air Contaminants. While aircraft and gasoline-powered ground vehicles emit low levels of toxic air contaminants (TAC), the primary source of concern for TAC is diesel particulate matter (DPM) from diesel-powered vehicles. There are no diesel-powered aircraft and only a few diesel-powered ground vehicles operating in support of Airport operations. The proposed project is not expected to result in any significant change in the use of diesel-powered vehicles. The

implementation of the proposed project would not result in any new sources of TAC. The project would also not locate new sensitive receptors adjacent to any source of TAC. Therefore, the project would not have the potential to expose sensitive receptors or the general public to substantial levels of TAC and would have a less-than-significant impact related to TAC.

(4) Long-Term Air Emissions. The proposed project would revise the land use regulations associated with the Airport to ensure that any future development would be Airport-related and would allow for the safe and efficient operation of the Airport in the future. One of the objectives of the project is to restrict development at the Airport and preserve the current runway environment. It is expected that buildout under the proposed land use regulations would increase development on the site, however the development potential of the project site under the project would be reduced compared to existing zoning regulations. Long term emissions are not expected to be from new types of sources, but rather from additional Airport usage. These additional emissions would derive from both direct and indirect sources. Direct emissions are generated by on-site combustion for heating building interiors and water and other minor sources. Most emissions would be indirect (i.e., related to auto and truck traffic generated by project land uses or airplane operations). As discussed in Chapter III, Project Description, flight operations at the Airport are independent of the proposed project because the land use regulations currently in place at the Airport (primarily the 1975 Airport Master Plan, General Plan, and Zoning Code) would allow for the development of Airport uses, such as hangars and FBO facilities, that would be similar to those constructed under the proposed project, and aviation demand is driven primarily by macro-level economic and demographic trends.[6]

The Federal Aviation Administration (FAA) emissions model Emissions and Dispersion Modeling System (EDMS), version 5.1, was used to calculate emissions from the aircraft using the Airport and related support equipment. The ARB Urban Emission model URBEMIS 2007, version 9.2.4, was used to calculate emissions from all trips to or from the Airport. Two scenarios were analyzed: 1) the existing emissions, assuming a year 2009 vehicle mix (i.e., a standard vehicle fleet mix relative to year 2009) and 2) a future buildout scenario assuming a year 2030 vehicle mix.

Daily emissions generated for existing Airport operations are shown in Table V.C-5. Pollutants shown include ROG and NO_x (two precursors of ozone), and PM_{10}. As shown, existing emissions associated with the Airport are below the BAAQMD thresholds of significance. Table V.C-6 shows the daily emissions for the expected level of Airport operations in 2030 and the associated stationary and mobile source emissions. Both the EDMS and URBEMIS models incorporate future emissions reductions from planned regulated emission control improvements. This is demonstrated in Table V.C-6; as Airport operations expand under future year conditions, total emission estimates are lower than those under existing conditions shown in Table V.C-5. As indicated in the modeling results,

Table V.C-5: Existing Regional Airport Emissions

Source	Emissions (Pounds/Day)		
	ROG	NO_x	PM_{10}
Stationary Sources	0.12	0.02	0.01
Mobile Sources	17	29	25
Aircraft	24	17	0.54
GSE	1.5	4.3	0.097
APUs	0.103	1.03	0.15
Total Existing Emissions	**43**	**51**	**26**
BAAQMD Thresholds	**80**	**80**	**80**
Significant?	No	No	No

Notes: GSE = Ground Service Equipment APUs = Auxiliary Power Units.
Source: LSA Associates, Inc., 2009.

[6] Coffman Associates, Inc., 2008. *"Unconstrained" Forecasts; Airport Rezoning Project, Livermore Municipal Airport*. October 10.

under future buildout conditions, Airport operations are expected to result in emissions well below the BAAQMD thresholds of significance.

Table V.C-6: Future Regional Airport Emissions

Source	Emissions (Pounds/Day)		
	ROG	NO_x	PM_{10}
Stationary Sources	0.12	0.02	0.01
Mobile Sources	9.3	11	47
Aircraft	24	17	0.47
GSE	0.23	0.53	0.04
APUs	0.11	1.08	0.16
Total Future Emissions	**34**	**30**	**48**
BAAQMD Thresholds	**80**	**80**	**80**
Significant?	No	No	No

Notes: GSE = Ground Service Equipment APUs = Auxiliary Power Units.
Source: LSA Associates, Inc., 2009.

(5) Operational Emissions – CO Analysis. Vehicular traffic emits carbon monoxide (CO) into the air along roadway segments and near intersections. As previously described, because CO does not readily disperse, areas of vehicle congestion can create pockets of high CO concentrations, called "hot spots." Typically, high CO concentrations are associated with roadways or intersections operating at deficient levels of service (LOS) or with extremely high traffic volumes. As shown in Table V.C-4, the existing 8-hour CO concentration is 3.3 ppm, which is well below the State standard of 20 ppm. The existing 1-hour CO concentration is 1.9 ppm, which is also well below the State standard of 9 ppm. As discussed in Chapter V.D, Transportation, Circulation and Parking, development associated with buildout of the project site is not expected to generate a substantial amount of traffic that would lead to a significant reduction in the operation of high volume intersections. Therefore, the proposed project would not cause intersections in the vicinity of the project site to exceed State or federal standards for CO.

(6) Cumulative Emissions. The proposed project is located in a federal and State non-attainment area for 1-hour ozone emissions and in a State non-attainment area for PM_{10}. The BAAQMD CEQA Guidelines state that a project would result in significant emissions (on both the project and cumulative scales) of criteria pollutants if the project results in the emission of more than 80 pounds per day of ROG, NO_x, or PM_{10}. Emissions associated with buildout of the proposed project would not exceed the BAAQMD's emission thresholds. Therefore, implementation of the proposed project would not result in a substantial cumulative air quality impact.

In addition, the land uses associated with the proposed project are consistent with the City's General Plan[7] and General Plan EIR,[8] which contain an analysis of cumulative air quality impacts associated with development under the General Plan (including buildout of Airport lands according to existing development regulations). As described above, implementation of the project would not significantly increase cumulative air pollutant levels and would not result in a substantial cumulative increase in levels of any criteria pollutant.

(7) Greenhouse Gas Emissions. GHG emission estimates related to the proposed project are discussed below and are provided for informational purposes. Bearing in mind that CEQA does not require "perfection" but instead "adequacy, completeness, and a good faith effort at full disclosure," this analysis is based on methodologies and information available to the City at the time this document was prepared. Based on the City of Livermore's General Plan Climate Change Element, Livermore emitted approximately 692,000 metric tons of CO_2e in the year 2005, with transportation sources accounting for 63 percent of those emissions. CO_2 is the primary GHG emission associated with Airport operations. For purposes of this analysis, CO_2 emissions were

[7] Livermore, City of, 2004. *City of Livermore 2003 General Plan*. February 9.

[8] Livermore, City of, 2003. *Livermore Draft General Plan and Downtown Specific Plan EIR*. June.

estimated for existing Airport operations as well as future year Airport operations under buildout conditions. As shown in Table V.C-7, the existing Airport is estimated to emit 1,148 metric tons of CO_2 per year, while future Airport operations would emit 1,072 metric tons of CO_2 per year. These emissions estimates take into account aviation operations and ground vehicle traffic.

Table V. C-7: Estimated CO_2 Emissions for Airport Operations

Source	CO_2 emissions (metric tons per year)
Existing Airport Operations	1,148
Future Airport Operations	1,072

Source: LSA Associates, Inc., 2009.

This analysis quantifies only the CO_2 emissions of project-related development. CO_2 emissions would represent the majority of GHG emissions related to the project and were approximately 84 percent of California's overall GHG emissions in 2004.[9] The percentage of other greenhouse gases, including methane (CH_4) and nitrous oxide (N_2O), emitted by project-related development would be expected to be relatively consistent with the overall statewide percentage of GHG emissions, particularly with respect to fossil fuel combustion. Project-related development is not anticipated to release other greenhouse gases subject to AB 32, including hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), and sulfur hexafluoride (SF_6). Therefore, the CO_2 emissions shown in Table V.C-7 are representative of the overall greenhouse gas emissions that would be emitted by the project, and the identification of these emissions is adequate to identify the significant effects of project-related development on global climate change.

As previously stated, there are currently no adopted *CEQA Guidelines* for thresholds to use in assessing the impact of greenhouse gas emissions. The following considerations were developed for the proposed project from a review of the draft amendments to the *CEQA Guidelines*, recent publications, and actions from ARB that address how the State plans to achieve goals of reducing greenhouse gases. These considerations are: (1) Would the project be consistent with the Climate Change Element of the City of Livermore's General Plan, (2) Would the project have the potential to conflict with the 44 early action strategies identified by the ARB, or (3) Would the project conflict with the State goal of reducing GHG emissions in California to 1990 levels by 2020 as set forth by the timetable established in AB 32, Global Warming Solutions Act of 2006.

These considerations are used to evaluate whether the project would conflict with the local and State goals for reducing greenhouse gas emissions. If a project does not conflict with strategies identified in (1) through (3) above, it could reasonably follow that the project would not result in a significant contribution to the cumulative impact of global climate change.

Criterion 1: Be consistent with the Climate Change Element of the City of Livermore's General Plan. The City of Livermore's Climate Change Element lists goals, objectives, policies, and actions that would reduce greenhouse gas emissions associated with current and future development. The Climate Change Element provides polices to support AB 32 and the City's on-going efforts to reduce GHG emissions. An EIR was prepared for the Climate Change Element and was certified in March, 2009. A key goal in the Climate Change Element is to reduce GHG emissions under the control of the City to a level 15 percent less than 2008 levels. In order to achieve this goal, the City will adopt a Climate

[9] California Energy Commission (CEC), 2006. Inventory of California Greenhouse Gas Emissions and Sinks: 1990 to 2004 - Final Staff Report, publication # CEC-600-2006-013-SF, Sacramento, CA, December.

Action Plan (CAP) by 2011. Until the CAP has been completed, developers of new commercial/industrial projects greater than 50,000 square feet are encouraged to implement a number of best management practices, including:

- Construct energy-efficient buildings in compliance with the Livermore Green Building Ordinance;
- Use energy-efficient appliances that meet Energy Star standards;
- Incorporate solar roofs into commercial development. Residential development should be "solar-ready" by including proper solar orientation (south-facing roof areas should be sloped at 20° to 55° from the horizontal), clear access on the south-sloped roof (no chimneys, heating vents, plumbing vents, etc.), electrical conduits installed for solar electric system wiring, plumbing installed for a solar hot water system, and space provided for a solar hot water storage tank;
- Incorporate transit and bicycle/pedestrian connections into the project;
- For commercial/industrial projects, prepare and implement a voluntary Trip Reduction Plan (TRP) consisting of, at a minimum, marketing of commute alternatives, ride-matching assistance, and transit information. Suggest TRP targets to reduce vehicle trips per employee that result in a reduction of 15 percent within 5 years and 25 percent within 10 years compared to business as usual;
- Incorporate priority facilities for alternative-fueled and carpool vehicles, such as priority parking and recharging facilities;
- In compliance with the Construction and Demolition Ordinance, recycle construction materials and divert construction waste from disposal as feasible;
- Include recycling facilities to provide for commercial and/or community recycling of plastic, paper, green waste, and food waste;
- Incorporate "heat island" treatments including cool roofs, cool pavements, and strategically placed shade trees; and
- Use landscaping that meets the City's Water Efficient Landscape Ordinance.

The proposed project would involve changes to City land use policies and regulations to guide future development at the Airport. The proposed project would rezone a portion of the Airport to provide the City with an area occupied by aviation-oriented uses. The project would provide standards for Airport operations and services facilities and make the zoning designation at the Airport more consistent with the underlying General Plan land use designation.

The proposed project does not include specific development projects at the Airport. Specific development projects would undergo additional environmental review and would be encouraged to comply with the best management practices stated above. The Climate Change Element lists a number of objectives and policies that relate to greenhouse gas emissions from land use, transportation, water efficiency, energy, and waste reduction. The proposed project would not conflict with the City's policies and programs that support higher density development or measures that encourage alternative modes of transportation because the project would allow for continued development of a site that is already largely urbanized. The project also would not conflict with the City's water conservation, energy, or waste reduction policies because it would not require large inputs of water or energy compared to existing conditions, or result in substantial waste generation

(refer to Section V.H, Public Services and Utilities and Chapter VII, CEQA-Required Assessment Conclusions for additional detail). Therefore, the proposed project would be consistent with the City of Livermore's Climate Change Element.

Criterion 2: Potential conflicts with the 44 early action strategies identified by the ARB. In addition to reducing GHG emissions to 1990 levels by 2020, AB 32 directed ARB to identify a list of "discrete early action GHG reduction measures" that can be adopted and made enforceable by January 1, 2010. In June 2007 ARB approved a list of 37 early action measures, including three discrete early action measures (Low Carbon Fuel Standard, Restrictions on High Global Warming Potential Refrigerants, and Landfill Methane Capture). Discrete early action measures are measures that are required to be adopted as regulations and made effective no later than January 1, 2010, the date established by Health and Safety Code (HSC) Section 38560.5. The ARB adopted additional early action measures in October 2007 that tripled the number of discrete early action measures.

The ARB's focus in identifying the 44 early action items was to recommend measures that ARB staff's evaluation concluded were "expected to yield significant GHG emission reductions, are likely to be cost-effective and technologically feasible." The combination of early action measures is estimated to reduce State-wide GHG emissions by nearly 16 million metric tons (MMT). Accordingly, the 44 early action items focus on industrial production processes, agriculture, and transportation sectors. Early action items associated with industrial production and agriculture do not apply to the proposed project. The transportation sector early action items such as truck efficiency, low carbon fuel standard, proper tire inflation, truck stop electrification and strengthening light duty vehicle standards are also not specifically applicable to the proposed project. The early action strategies do not directly apply to aircraft operations or emissions. Federal law preempts California from setting emission standards for aircraft; however, the ARB is working to reduce impacts from on- and off-road mobile sources of GHG emissions, such as those from ground support operations at Airports.

Several emission reduction programs targeting in-use fleets, including Airport Ground Service Equipment (GSE), will be implemented by the ARB. Those measures include the air toxic control measure for portable engines, new emission standards and fleet requirements for forklifts and other industrial equipment, and in-use requirements for off-road diesel vehicles. Equipment associated with the Airport would meet ARB regulations and would not conflict with the early action measures.

Criterion 3: Conflict with the State goal of reducing GHG emissions in California to 1990 levels by 2020 as set forth by the timetable established in AB 32, Global Warming Solutions Act of 2006. On December 11, 2008, ARB adopted the AB 32 Scoping Plan that contains the main strategies California will use to reduce the greenhouse gases that cause climate change. The adopted Scoping Plan includes proposed GHG reductions from direct regulations, alternative compliance mechanisms, monetary and non-monetary incentives, voluntary actions, and market-based mechanisms such as cap-and-trade systems.

The EPA has the authority to regulate emissions from aircraft and have implemented limited controls for carbon monoxide and NO_x. However, there are currently no greenhouse gas emissions controls on aircraft. The proposed project would not conflict with the State goal of reducing GHG emissions and would not conflict with the AB 32 Scoping Plan. Therefore, the proposed project would not make a significant contribution to global climate change.

c. Significant Air Quality Impacts. The following significant air quality impact related to construction period emissions would result from implementation of the project.

Impact AIR-1: Demolition and construction period activities associated with specific development projects could generate significant dust, exhaust, and organic emissions. (S)

Future development activities that could result from project implementation would require excavation, demolition, and grading. The excavation and grading of soil are construction activities with a high potential for creating air pollutants. In addition to the dust created during demolition and excavation, substantial dust emissions could be created as debris and soil are loaded into trucks for disposal.

After removal of any demolished structures, construction dust would also continue to affect local air quality during construction of the project. Construction activities would also generate exhaust emissions from vehicles/equipment and fugitive particulate matter emissions that would also affect local air quality.

Construction activities are also a source of organic gas emissions. Solvents in adhesives, non-water-base paints, thinners, some insulating materials and caulking materials would evaporate into the atmosphere and would participate in the photochemical reaction that creates urban ozone. Asphalt used in paving is also a source of organic gases for a short time after its application.

The effects of construction activities would be increased dustfall and locally elevated levels of PM_{10} downwind of construction activity. Construction dust would be generated at levels that would create an annoyance to nearby properties. Implementation of the following mitigation measure would reduce this impact to a less-than-significant level:

> Mitigation Measure AIR-1: Consistent with guidance from the BAAQMD, the following actions shall be required of construction contracts and specifications for any construction operations on the project site. The sponsors of specific development projects shall develop and implement a construction-period air pollution control plan, consistent with dust and emission-abatement actions outlined in the BAAQMD CEQA handbook. The air pollution control plan shall include the following elements:
>
> *Demolition.* The following controls shall be implemented during demolition activities (including removal of pavement):
>
> - Water during demolition work, including the break-up of pavement and infrastructure, to control dust generation;
> - Cover all trucks hauling demolition debris from the site; and
> - Use dust-proof chutes to load debris into trucks whenever feasible.
>
> *Construction.* The following controls shall be implemented at all construction sites:
>
> - Water all active construction areas at least twice daily and more often during windy periods; active areas adjacent to existing land uses shall be kept damp at all times, or shall be treated with non-toxic stabilizers to control dust;

- Cover all trucks hauling soil, sand, and other loose materials;
- Pave, apply water three times daily, or apply (non-toxic) soil stabilizers on all unpaved access roads, parking areas, and staging areas at construction sites;
- Sweep daily (with water sweepers) all paved access roads, parking areas, and staging areas at construction sites; water sweepers shall vacuum up excess water to avoid runoff-related impacts to water quality;
- Sweep streets daily (with water sweepers) if visible soil material is carried onto adjacent public streets;
- Apply non-toxic soil stabilizers to inactive construction areas;
- Enclose, cover, water twice daily, or apply non-toxic soil binders to exposed stockpiles (dirt, sand, etc.);
- Limit traffic speeds on unpaved roads to 15 mph;
- Install sandbags or other erosion control measures to prevent silt runoff to public roadways;
- Replant vegetation in disturbed areas as quickly as possible;
- Install baserock at entryways for all exiting trucks, and wash off the tires or tracks of all trucks and equipment in designated areas before leaving the site; and
- Suspend excavation and grading activity when winds (instantaneous gusts) exceed 25 mph. (LTS)

D. NOISE

This section describes existing noise conditions in the vicinity of the project site and Livermore Municipal Airport, describes criteria for determining the significance of noise impacts, and estimates the likely noise levels that would result from construction activities, vehicular traffic, aircraft, and other noise sources. Where appropriate, mitigation measures are recommended to reduce project-related noise impacts to a less-than-significant level.

1. Setting

This setting section begins with an introduction to several key concepts and terms that are used in evaluating noise. It then explains the various agencies that regulate the noise environment in the City of Livermore and summarizes key standards that are applicable to the proposed project. This setting section concludes with a description of current noise sources that affect the project site and the noise conditions that are experienced in the project site vicinity.

a. Characteristics of Sound. Noise is generally defined as unwanted sound. Noise consists of any sound that may produce physiological or psychological damage and/or interfere with communication, work, rest, recreation, and sleep.

To the human ear, sound has two significant characteristics: *pitch* and *loudness*. Pitch is the number of complete vibrations or cycles per second of a wave that results in the range of tone from high to low. Loudness is the strength of a sound that describes a noisy or quiet environment, and it is measured by the amplitude of the sound wave. Loudness is determined by the intensity of the sound waves combined with the reception characteristics of the human ear. Sound intensity refers to how hard the sound wave strikes an object, which in turn produces the sound's effect. This characteristic of sound can be precisely measured with instruments. The analysis of a project defines the noise environment of the project area in terms of sound intensity and its effects on adjacent sensitive land uses.

(1) Measurement of Sound. Sound intensity is measured through the A-weighted scale to correct for the relative frequency response of the human ear. That is, an A-weighted noise level de-emphasizes low and very high frequencies of sound similar to the human ear's de-emphasis of these frequencies. Unlike linear units such as inches or pounds, decibels are measured on a logarithmic scale, representing points on a sharply rising curve. Table V.D-1 contains a list of typical acoustical terms and definitions.

A decibel (dB) is a unit of measurement which indicates the relative intensity of a sound. The 0 point on the dB scale is based on the lowest sound level that the healthy, unimpaired human ear can detect. Changes of 3 dB or less are only perceptible in laboratory environments. Audible increases in noise levels generally refer to a change of 3 dB or more, as this level has been found to be barely perceptible to the human ear in outdoor environments. Sound levels in dB are calculated on a logarithmic basis. An increase of 10 dB represents a 10-fold increase in acoustic energy, while 20 dB is 100 times more intense, 30 dB is 1,000 times more intense. Each 10-dB increase in sound level is perceived as approximately a doubling of loudness.

Table V.D-1: Definitions of Acoustical Terms

Term	Definitions
Decibel, dB	A unit of measurement that denotes the ratio between two quantities proportional to power; the number of decibels is 10 times the logarithm (to the base 10) of this ratio.
Frequency, Hz	Of a function periodic in time, the number of times that the quantity repeats itself in one second (i.e., number of cycles per second).
A-Weighted Sound Level, dBA	The sound level obtained by use of A-weighting. The A-weighting filter de-emphasizes the very low and very high frequency components of the sound in a manner similar to the frequency response of the human ear and correlates well with subjective reactions to noise. All sound levels in this report are A-weighted, unless reported otherwise.
L_{01}, L_{10}, L_{50}, L_{90}	The fast A-weighted noise levels equaled or exceeded by a fluctuating sound level for 1 percent, 10 percent, 50 percent, and 90 percent of a stated time period.
Equivalent Continuous Noise Level, L_{eq}	The level of a steady sound that, in a stated time period and at a stated location, has the same A-weighted sound energy as the time-varying sound.
Community Noise Equivalent Level, CNEL	The 24-hour A-weighted average sound level from midnight to midnight, obtained after the addition of 5 decibels to sound levels occurring in the evening from 7:00 p.m. to 10:00 p.m. and after the addition of 10 decibels to sound levels occurring in the night between 10:00 p.m. and 7:00 a.m.
Day/Night Noise Level, L_{dn}	The 24-hour A-weighted average sound level from midnight to midnight, obtained after the addition of 10 decibels to sound levels occurring in the night between 10:00 p.m. and 7:00 a.m.
L_{max}, L_{min}	The maximum and minimum A-weighted sound levels measured on a sound level meter, during a designated time interval, using fast time averaging.
Sound Exposure Level, SEL	The cumulative sound exposure from a single noise event. Over a stated time period or event, the logarithm of the ratio of a given time integral of squared frequency-weighted sound pressure to the product of the reference sound pressure of 20 micropascals and the reference duration of 1 second.
Ambient Noise Level	The all-encompassing noise associated with a given environment at a specified time, usually a composite of sound from many sources at many directions, near and far; no particular sound is dominant.
Intrusive	The noise that intrudes over and above the existing ambient noise at a given location. The relative intrusiveness of a sound depends upon its amplitude, duration, frequency, and time of occurrence and tonal or informational content as well as the prevailing ambient noise level.

Source: Handbook of Acoustical Measurements and Noise Control, 1991.

As noise spreads from a source, it loses energy so that the farther away the noise receiver is from the noise source, the lower the perceived noise level would be. Geometric spreading causes the sound level to attenuate or be reduced, resulting in a 6 dB reduction in the noise level for each doubling of distance from a single point source of noise to the noise sensitive receptor of concern.

The predominant rating scales for human communities in the State of California are the L_{eq}, the community noise equivalent level (CNEL), and the day-night average level (L_{dn}) based on A-weighted decibels (dBA). The equivalent continuous sound level (L_{eq}) is the total sound energy of time-varying noise over a sample period. CNEL is the time-varying noise over a 24-hour period, with a 5 dBA weighting factor applied to the hourly L_{eq} for noises occurring from 7:00 p.m. to 10:00 p.m. (defined as relaxation hours) and a 10 dBA weighting factor applied to noise occurring from 10:00 p.m. to 7:00 a.m. (defined as sleeping hours). L_{dn} is similar to the CNEL scale, but without the adjustment for events occurring during the evening relaxation hours. CNEL and L_{dn} are within 1 dBA of each other and are normally interchangable. The noise adjustments are added to the noise events occurring during the more sensitive hours. Typical A-weighted sound levels from various sources are described in Table V.D-2.

Table V.D-2: Typical A-Weighted Sound Levels

Noise Level (dBA)	Extremes	Home Appliances at 10 feet	Speech at 3 feet	Motor Vehicles at 50 feet	Railroad Operations at 100 feet	General Type of Community Environment
120	Commercial Jet Aircraft at 500 ft					
110					Horns	
				Sirens		
100						
				Diesel Truck (Not Muffled)		
90		Shop Tools	Shout	Diesel Truck (Muffled)	Locomotive	
80		Vacuum Cleaner	Loud Voice	Automobile at 70 mph	Rail Cars at 50 mph	Major Metropolis (Daytime)
70		Dishwasher	Normal Voice	Automobile at 40 mph	Locomotive Idling	Urban (Daytime)
60		Air Conditioner	Normal Voice (Back to Listener)	Automobile at 20 mph		Suburban (Daytime)
50		Refrigerator				Rural (Daytime)
40						
30						
20						
10						
0	Threshold of Hearing					

Source: LSA Associates, Inc., 2009.

Other noise rating scales of importance when assessing the annoyance factor include the maximum noise level (L_{max}), which is the highest exponential time-averaged sound level that occurs during a stated time period. The noise environments discussed in this analysis are specified in terms of maximum levels denoted by L_{max} for short-term noise impacts. L_{max} reflects peak operating conditions, and addresses the annoying aspects of intermittent noise.

Noise standards in terms of percentile exceedance levels, L_n, are often used together with the L_{max} for noise enforcement purposes. When specified, the percentile exceedance levels are not to be exceeded by an offending sound over a stated time period. For example, the L_{10} noise level represents the level exceeded 10 percent of the time during a stated period. The L_{50} noise level represents the median noise level. Half the time the noise level exceeds this level, and half the time it is less than this level. The L_{90} noise level represents the noise level exceeded 90 percent of the time and is considered the lowest noise level experienced during a monitoring period. It is normally referred to as the background noise level. For a relatively steady noise, the measured L_{eq} and L_{50} are approximately the same.

Noise impacts can be organized into three categories. The first is audible impacts that refer to increases in noise levels noticeable to humans. Audible increases in noise levels generally refer to a change of 3.0 dBA or greater, since, as described earlier, this level has been found to be barely perceptible in exterior environments. The second category, potentially audible, refers to a change in the noise level between 1.0 and 3.0 dBA. This range of noise levels has been found to be noticeable only in laboratory environments. The last category is a change in noise level of less than 1.0 dBA that is inaudible to the human ear. Only audible changes in existing ambient or background noise levels are considered potentially significant.

(2) Physiological Effects of Noise. Physical damage to human hearing begins at prolonged exposure to noise levels higher than 85 dBA. Exposure to high noise levels affects the entire human system, with prolonged noise exposure in excess of 75 dBA increasing body tensions, and thereby affecting blood pressure, functions of the ear, and the nervous system. In comparison, extended periods of noise exposure above 90 dBA would result in permanent cell damage. When the noise level reaches 120 dBA, a tickling sensation occurs in the human ear even with short-term exposure. This level of noise is called the threshold of feeling.

b. Noise Regulatory Framework. The following section provides brief discussions of the regulatory framework related to noise.

(1) U.S. Environmental Protection Agency (EPA). In 1972 Congress enacted the Noise Control Act. This act authorized the EPA to publish descriptive data on the effects of noise and establish levels of sound "requisite to protect the public welfare with an adequate margin of safety." These levels are separated into health levels (hearing loss levels) and welfare levels (annoyance levels), as shown in Table V.D-3. The EPA cautions that these identified levels are not standards because they do not take into account the cost or feasibility of the levels. For protection against hearing loss, 96 percent of the population would be protected if sound levels are less than or equal to an $L_{eq(24)}$ of 70 dB. The "(24)" signifies an L_{eq} duration of 24 hours. The EPA activity and interference guidelines are designed to ensure reliable speech communication at about 5 feet in the outdoor environment. For outdoor and indoor environments, interference with activity and annoyance should not occur if levels are below 55 dBA and 45 dBA, respectively.

The noise effects associated with an outdoor L_{dn} of 55 dB are summarized in Table V.D-4. At 55 dB L_{dn}, 95 percent sentence clarity (intelligibility) may be expected at 12 feet, and with generally no community reaction. However, 1 percent of the population may complain about noise at this level and 17 percent may indicate annoyance.

(2) State of California. The State of California has established regulations that help prevent adverse impacts to occupants of buildings located near noise sources. Referred to as the "State Noise Insulation Standard," it requires buildings to meet performance standards through design and/or the use of building materials that would offset any noise source in the vicinity of the receptor. State regulations include requirements for the construction of new hotels, motels, apartment houses, and dwellings other than detached single-family dwellings that are intended to limit the extent of noise transmitted into habitable spaces. These requirements are found in the California Code of Regulations, Title 24 (known as the Building Standards Administrative Code), Part 2 (known as the California Building Code), Appendix Chapters 12 and 12A.

The State has also established land use compatibility guidelines for determining acceptable noise levels for specified land uses.[1] It should be noted that while federal agencies use the noise metric L_{dn}, the State of California has adopted land use compatibility guidelines based on the CNEL noise metric. However, the CNEL and L_{dn} noise metrics are considered interchangeable, as they are typically within 1 dBA of each other. For airport operational noise sources, the State's guidelines establish the threshold for the compatibility of noise sensitive land uses at a CNEL value of 65 dBA, which is adopted as part of the California Airport Noise Regulation (California Code of Regulations, Title 21).

The City has adopted and modified the State's land use compatibility guidelines as shown in Table V.D-5 and as discussed below. This bar chart also recommends steps to be taken if a specified land use (e.g., a residence) is proposed in an area exposed to a high noise level.

Table V.D-3: Summary of EPA Noise Levels for Protection of Public Health and Welfare with an Adequate Margin of Safety

Effect	Level	Area
Hearing loss	$L_{eq(24)} \leq 70$ dB	All areas.
Outdoor activity interference and annoyance	$L_{dn} \leq 55$ dB	Outdoors in residential areas and farms and other outdoor areas where people spend widely varying amounts of time and other places in which quiet is a basis for use.
	$L_{eq(24)} \leq 55$ dB	Outdoor areas where people spend limited amounts of time, such as school yards, playgrounds, etc.
Indoor activity interference and annoyance	$L_{eq} \leq 45$ dB	Indoor residential areas.
	$L_{eq(24)} \leq 45$ dB	Other indoor areas with human activities such as schools, etc.

Source: U.S. Environmental Protection Agency, 1974. "Information on Levels of Environmental Noise Requisite to Protect Public Health and Welfare with an Adequate Margin of Safety." March.

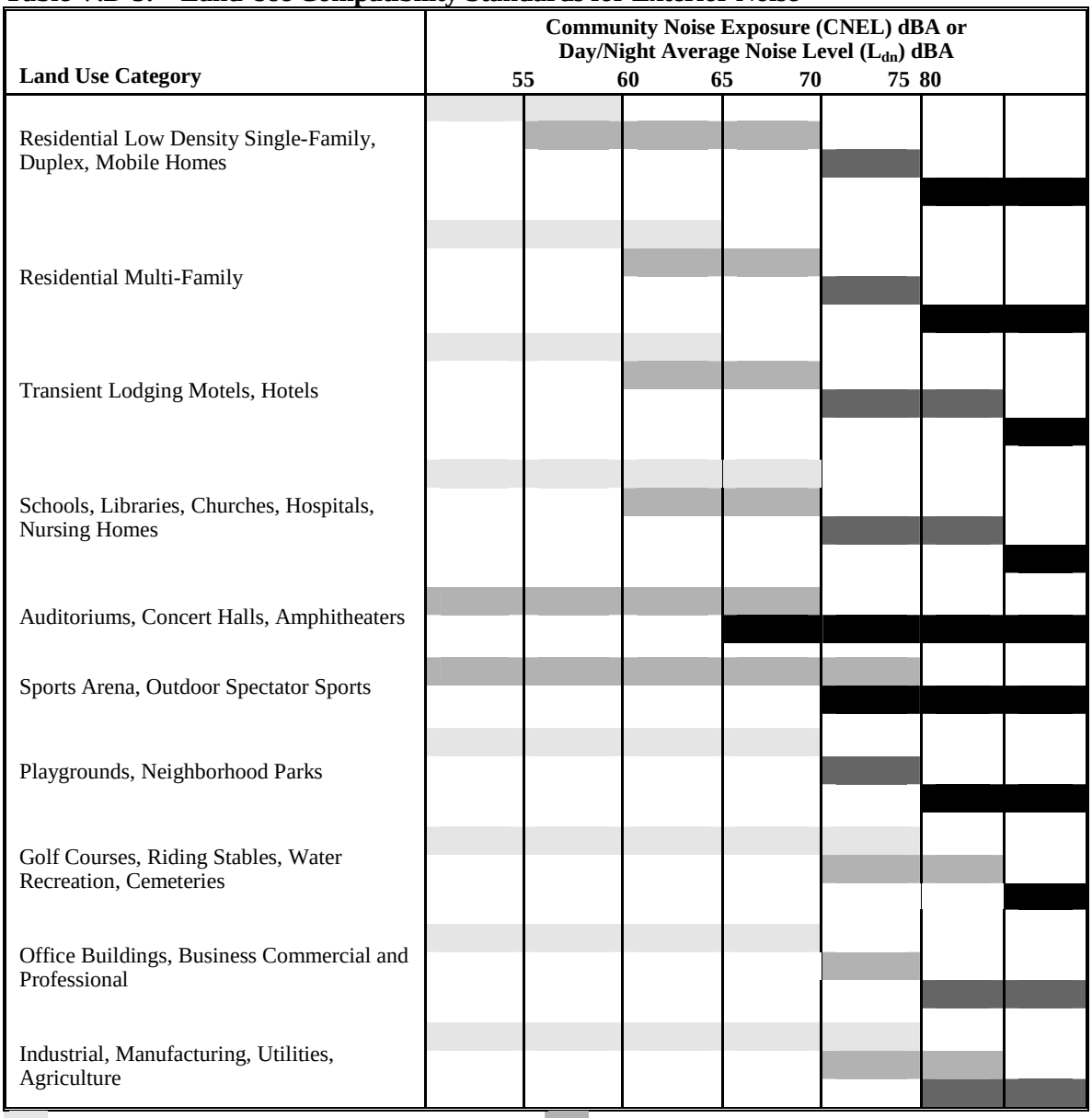
Table V.D-4: Summary of Human Effects in Areas Exposed to 55 dBA L_{dn}

Type of Effects	Magnitude of Effect
Speech – Indoors	100 percent sentence intelligibility (average) with a 5 dB margin of safety.
Speech – Outdoors	100 percent sentence intelligibility (average) at 1 foot. 99 percent sentence intelligibility (average) at 3 feet. 95 percent sentence intelligibility (average) at 12 feet.
Average Community Reaction	None evident; 7 dB below level of significant complaints and threats of legal action and at least 16 dB below "vigorous action."
Complaints	1 percent dependent on attitude and other non-level related factors.
Annoyance	17 percent dependent on attitude and other non-level related factors.
Attitude Towards Area	Noise essentially the least important of various factors.

Source: U.S. Environmental Protection Agency, 1974. "Information on Levels of Environmental Noise Requisite to Protect Public Health and Welfare with an Adequate Margin of Safety." March.

[1] State of California, 1998. Governor's Office of Planning and Research, *General Plan Guidelines (*Appendix A, Figure 2).

Table V.D-5: Land Use Compatibility Standards for Exterior Noise



NORMALLY ACCEPTABLE
Development may occur without requiring an evaluation of the noise environment unless the use could generate noise impacts on adjacent land uses.

CONDITIONALLY ACCEPTABLE
A specified land use may be permitted only after detailed analysis of the noise environment and the project characteristics to determine whether noise insulation or protection features are required.

NORMALLY UNACCEPTABLE
Development should generally not be undertaken unless adequate noise mitigation options have been analyzed and appropriate mitigations incorporated into the project to reduce the exposure of people to unacceptable noise levels.

CLEARLY UNACCEPTABLE
New construction or development should not be undertaken unless all feasible noise mitigation options have been analyzed and appropriate mitigations incorporated into the project to adequately reduce exposure of people to unacceptable noise levels.

Note: Where dBA levels overlap between these categories, determination of noise level acceptability will be made on a project-by-project basis.
Source: Livermore, City of, 2003. *City of Livermore General Plan, Noise Element, Table 9-7.*

(3) Local Regulations. The City of Livermore addresses noise in the Noise Element of the General Plan and in Chapter 9.36 of the Municipal Code. The City's land use compatibility standards for exterior noise for new development are shown in Table V.D-5. These standards apply to the development of specified land uses. While the proposed project includes a General Plan Amendment and rezoning, development could occur under implementation of the proposed project which would include new office, business commercial, and professional land uses. According to the City's land use compatibility standards, environments with existing or projected future ambient noise levels of up to 70 dBA CNEL are considered "normally acceptable" for development of these types of new land uses. This means that development of these land uses may occur without requiring an evaluation of the noise environment, unless the use could result in noise impacts on adjacent land uses. Noise impacts on adjacent land uses, according to the City's noise impact criteria, are determined by whether the project would result in a substantial permanent, temporary or periodic increase in ambient noise levels in the project site vicinity above levels existing without the project.

To control land use in the vicinity of the Livermore Municipal Airport, the City of Livermore developed, and currently implements, the Airport Protection Area (APA) described in the Public Safety and Land Use Elements of the General Plan. The policies of these elements include the prohibition of new residential land use designations or the intensification of existing residential land use designations within the APA. As shown in Figure IV-2 in Chapter IV, Consistency with Plans and Policies, the APA forms a rectangular boundary around the Airport, and includes the area located within 7,100 feet west of the western end of Airport runways, 5,000 feet north of the northern edge of Airport runways, 5,000 feet east of the eastern end of Airport runways, and 5,000 feet south of the southern edge of Airport runways. The APA forms a rectangular boundary that extends approximately 0.7 miles north of Airport property, 0.2 miles east of Airport property, 0.8 miles south of Airport property, and 0.3 miles west of Airport property.

The Noise Element of the General Plan includes the following policies and actions that are applicable to the proposed project. Please also refer to the discussion of the Noise Element in Chapter IV.

- *Policy N-1.1.P1*: The City shall emphasize noise considerations when making land use planning decisions.
- *Policy N-1.1.P3*: The City shall maintain a pattern of land uses that separates noise-sensitive land uses from major noise sources to the extent possible.
- *Policy N-1.1.P4*: The City shall use the Land Use Compatibility Guidelines for Exterior Noise (measured in dBA CNEL or L_{dn}) contained in Table 9-7 in this Element (of the General Plan) to direct the siting, design, and insulation of new development to reduce exposure to excessive noise. Where warranted, the City shall employ discretionary review of new development to ensure that the community will be protected from excessive noise levels. The City shall evaluate potential noise impacts and recommend mitigation measures through discretionary review procedures such as environmental review, design review, and evaluation of use permits.
- *Policy N-1.1.P5*: Review development proposals with respect to the Land Use Compatibility Guidelines for Exterior Noise in Table 9-7 as follows:
    (a) Normally Acceptable: If the noise level is within the "normally acceptable" level, noise exposure would be acceptable for the intended land use. Development may occur without requiring an evaluation of the noise environment unless the use could generate noise impacts on adjacent uses.
    (b) Conditionally Acceptable: If the noise level is within the "conditionally acceptable" level, noise exposure would be conditionally acceptable; a specified land use may be permitted only after detailed analysis of the noise environment and the project characteristics to determine whether noise insulation or protection features are required. Such noise insulation features may include

measures to protect noise-sensitive outdoor activity areas (e.g., at residences, schools, or parks) or may include building sound insulation treatments such as sound-rated windows to protect interior spaces in sensitive receptors.

(c) Normally Unacceptable: If the noise level is within the "normally unacceptable" level, analysis and mitigation are required. Development should generally not be undertaken unless adequate noise mitigation options have been analyzed and appropriate mitigations incorporated into the project to reduce the exposure of people to unacceptable noise levels.

(d) Clearly Unacceptable: If the noise level is within the "clearly unacceptable" level, new construction or development should not be undertaken unless all feasible noise mitigation options have been analyzed and appropriate mitigations incorporated into the project to adequately reduce exposure of people to unacceptable noise levels.

- *Policy N-1.2.P1*: When crafting mitigation programs for adverse noise exposure from new development, the City shall encourage the use of noise attenuation programs that avoid constructing sound walls.
- *Policy N-1.2.P3*: The City shall require the control of noise at the source for new development deemed to be noise generators through site design, building design, landscaping, hours of operation, and other techniques.
- *Policy N-1.2.P4*: The City shall require operational limitations and feasible noise buffering for new uses that generate significant noise impacts near sensitive uses.
- *Policy N-1.2.P5*: During all phases of construction, the City shall take measures to minimize the exposure of neighboring properties to excessive noise levels from construction related activity.
- *Policy N-1.2.P8*: It shall be the responsibility of new development or new land uses to be consistent with noise standards appropriate and sensitive to adjacent land uses.
- *Policy N-1.5.P1*: The City shall require that industrial and commercial uses be designed and operated so as to avoid the generation of noise effects on surrounding sensitive land uses (e.g., residential, churches, schools, hospitals) from exceeding the following noise levels for exterior environments:
  (a) 55 dBA L_{50} (7:00 a.m. to 10:00 p.m.)
  (b) 45 dBA L_{50} (10:00 p.m. to 7:00 a.m.)
- *Policy N-1.5P2*: In order to allow for temporary construction, demolition or maintenance noise and other necessary short-term noise events, the stationary source noise standards in Policy N-1.5.P1, above, may be exceeded within the receiving land use by:
  (a) 5 dBA for a cumulative period of no more than fifteen (15) minutes in any hour.
  (b) 10 dBA for a cumulative period of no more than five (5) minutes in any hour.
  (c) 15 dBA for a cumulative period of no more than one (1) minute in any hour.
- *Policy LU-4.4P1*: The City shall encourage development of property within the immediate vicinity of the Airport for light industrial and transportation uses to the extent that noise standards and flight clearance requirements are maintained, and environmental impacts are adequately mitigated
- *Policy LU-4.4P2*: New residential land use designations or the intensification of existing residential land use designations shall be prohibited within the Airport Protection Area (APA), which is shown on Figure 3-5. The APA includes the area located within 7,100-feet west of the western end of runway 7L-25R, 5,000-feet north of the northern edge of runway 7L-25R, 5,000-feet east of the eastern end of runway 7L- 25R, and 5,000-feet south of the southern edge of runway 7R-25L.
- *Policy LU-4.4P2*: Development at the Airport shall be subject to Federal Aviation Administration, Airport Land Use Commission, and City building/structure height restrictions.
- *Policy PS-5.1P1*: All construction in Livermore shall be consistent with the required setbacks and height restriction for the Airport Protection Area, as well as the policies of a master plan adopted to plan for future Airport operations.

The Municipal Code restricts the operation of loud noise-producing equipment used in construction or demolition on weekdays to the hours from 7:00 a.m. to 8:00 p.m. and on weekends to the hours from 9:00 a.m. to 6:00 p.m. No such activities are permitted on City-observed holidays.

The City has also addressed noise in section IV.H. Noise of the Livermore Draft General Plan and Downtown Specific Plan EIR.[2] In order to reduce potential aircraft noise impacts related to implementation of the General Plan, the EIR requires the following mitigation measure:

> "Mitigation Measure NOISE-GP-2: The City of Livermore shall develop a program to identify residences subject to excessive Airport noise. The program shall ensure that the State's 45 dBA CNEL/L_{dn} interior noise standard for residential uses is achieved for these affected residences. One way of implementing this measure would be for the City to contract with a qualified acoustical engineer to conduct annual exterior noise measurements, beginning along the block nearest the eastern edge of the Airport and, over the years, moving eastward, away from the Airport. If/when the exterior noise levels are within one dBA of 60 dBA CNEL on any block, the City should purchase and install air conditioning units for those single family residences exposed to such noise. The air conditioning units would allow these residences the option of keeping their windows closed during the summer months when it would otherwise be too hot to do so."

In April 2007, the Livermore-Pleasanton Liaison Committee agreed that instead of installing a permanent noise monitoring system, periodic aircraft noise monitoring studies should be conducted by contracting with an acoustical consultant. The consultant would prepare a baseline study using noise measurements and aircraft observations, and prepare a report on the findings. These studies would be conducted periodically (e.g., every 2 years) or when a substantial increase in aircraft operations occurs. The data would be used to identify the proximity of the 60 CNEL noise contour to residential areas in Livermore and Pleasanton. The City Councils of Livermore and Pleasanton subsequently agreed to engage the firm of Brown-Buntin Associates, Inc. to perform noise monitoring and contribute to the cost of a noise study. The resulting 2007-2008 Aircraft Noise Survey is included in Appendix D. The report concludes that the 60 CNEL has not reached the West Livermore residential area in that the highest presumed aircraft noise levels inside the residential area were measured at 58.5 dBA CNEL (Site 10). Similarly, CNEL levels of less than 55 dBA were captured in the East Pleasanton residential areas. Please refer to the discussion of "Existing Operational Noise Levels," below, for additional detail.

The collaborative efforts between the affected cities to identify aircraft noise levels effectively meets the intent of Mitigation Measure NOISE-GP-2, which requires the identification of residences subjected to excessive aircraft noise. Since the noise study was conducted, aircraft operations have declined; thus the 60 dBA CNEL contour is not expected to extend to include residential areas near the Airport. Unless operations increase and exceed the daily average of 480 aircraft operations counted during the 2007-2008 study, another study may not be required within the next 2- to 3-year time period. In the meantime, Airport staff will continue to disseminate noise abatement information to local and transient pilots, and promote the "Voluntary Restraint from Night Flying Policy" by strongly discouraging flight operations between 10:00 p.m. and 6:00 a.m.

[2] LSA Associates, Inc., 2003. *Livermore Draft General Plan and Downtown Specific Plan EIR.*

Pursuant to Mitigation Measure NOISE-GP-2, should the 60 CNEL reach residential areas around the Airport, the Airport will identify the affected residences that do not already have air conditioning units installed, and pay for the installation thereof, at an amount not to exceed $7,500 per dwelling.

c. Overview of the Existing Noise Environment. The Livermore Municipal Airport, including the project site, is located in an urban edge area with rural characteristics that is influenced by several surrounding noise sources. The Airport is bordered by commercial and light industrial land uses and Las Positas Golf Course to the north; the Livermore Water Reclamation Plant and residential lands to the east and southeast; and agricultural and mining land uses to the west and south. Primary noise sources that affect the baseline noise level of the area include vehicle traffic on Interstate 580 (I-580), Airway Boulevard, and Kitty Hawk Road, and on-site operational noise sources, including aircraft operational noise.

(1) Existing Traffic Noise Levels. Existing, or baseline, traffic noise levels along roadway segments in the project site vicinity were calculated using the Federal Highway Administration (FHWA) Highway Traffic Noise Prediction Model (FHWA-RD-77-108). This model requires the input of various parameters, including traffic volumes, vehicle mix, vehicle speed, and roadway geometry to compute typical equivalent noise levels during daytime, evening, and nighttime hours. Roadway traffic data used in the noise prediction model were obtained from the traffic impact analysis prepared by Fehr & Peers transportation consultants for this EIR (see Section V.D., Transportation, Circulation and Parking). The resultant noise levels were weighted and summed over 24-hour periods to determine the Community Noise Equivalent Noise Level (CNEL) values. The CNEL is the 24-hour A-weighted average sound level from midnight to midnight, obtained after the addition of 5 decibels to sound levels occurring in the evening between 7:00 p.m. and 10:00 p.m. and 10 decibels to sound levels occurring in the night between 10:00 p.m. and 7:00 a.m. Table V.D-6 lists the calculated traffic noise levels in the project site study area under the Existing (2009) Baseline conditions. Appendix D contains modeling worksheets for the traffic noise analysis.

The FHWA Highway Traffic Noise Prediction Model (FHWA-RD-77-108) was also used to identify existing noise levels generated by traffic on Interstate 580 (I-580). Using Caltrans' latest annual average daily traffic volumes for 2008[3] and assuming traffic travels at the posted speed, traffic noise levels along this segment of I-580 can reach up to 80 dBA CNEL at 50 feet from the centerline of the outermost travel lane. The project site is located approximately 1,400 feet from the centerline of I-580. At this distance and assuming a direct line of sight to the freeway from the project site, the freeway traffic noise levels would attenuate to below 64 dBA CNEL due to geometric spreading. However, due to terrain features and existing structures between the project site and the freeway, freeway traffic noise levels on the project site would be less than this modeled noise level.

(2) Existing Operational Noise Levels. This section describes the existing operational noise levels associated with the Livermore Municipal Airport, including the project site. The City's land use compatibility standards for exterior noise for new development, shown in Table V.D-5 above, show that environments with ambient noise levels of up to 70 dBA CNEL are considered "normally acceptable" for development of new office buildings, and business commercial and professional land uses.

[3] Caltrans, 2009. *2008 All Traffic Volumes on CSHS*. Website: www.dot.ca.gov/hq/traffops/saferesr/trafdata/2008all.htm. Accessed on June 17.

Table V.D-6: Existing (2009) Baseline Traffic Noise Levels

Roadway Segment	Average Daily Vehicle Trips	Center-line to 70 CNEL (Feet)	Center line to 65 CNEL (Feet)	Center-line to 60 CNEL (Feet)	CNEL (dBA) 50 Feet From Centerline of Outermost Lane
Airway Boulevard - Kitty Hawk Road to Club House Drive	14,300	< 50 [a]	95	203	67.9
Airway Boulevard - Club House Drive to Terminal Circle	16,400	< 50	104	223	68.5
Airway Boulevard - Terminal Circle to Kitty Hawk Road	16,300	< 50	104	222	68.4
Club House Drive - Terminal Circle to Airway Boulevard	1,200	< 50	< 50	< 50	54.4
Terminal Circle - Club House Drive to Airway Boulevard	200	< 50	< 50	< 50	43.7
Kitty Hawk Road - Airway Boulevard to Jack London Boulevard	20,100	< 50	100	211	67.1
Kitty Hawk Road - South of Jack London Boulevard	20,100	< 50	100	211	67.1
Jack London Boulevard - East of Kitty Hawk Road	9,900	< 50	< 50	108	62.6

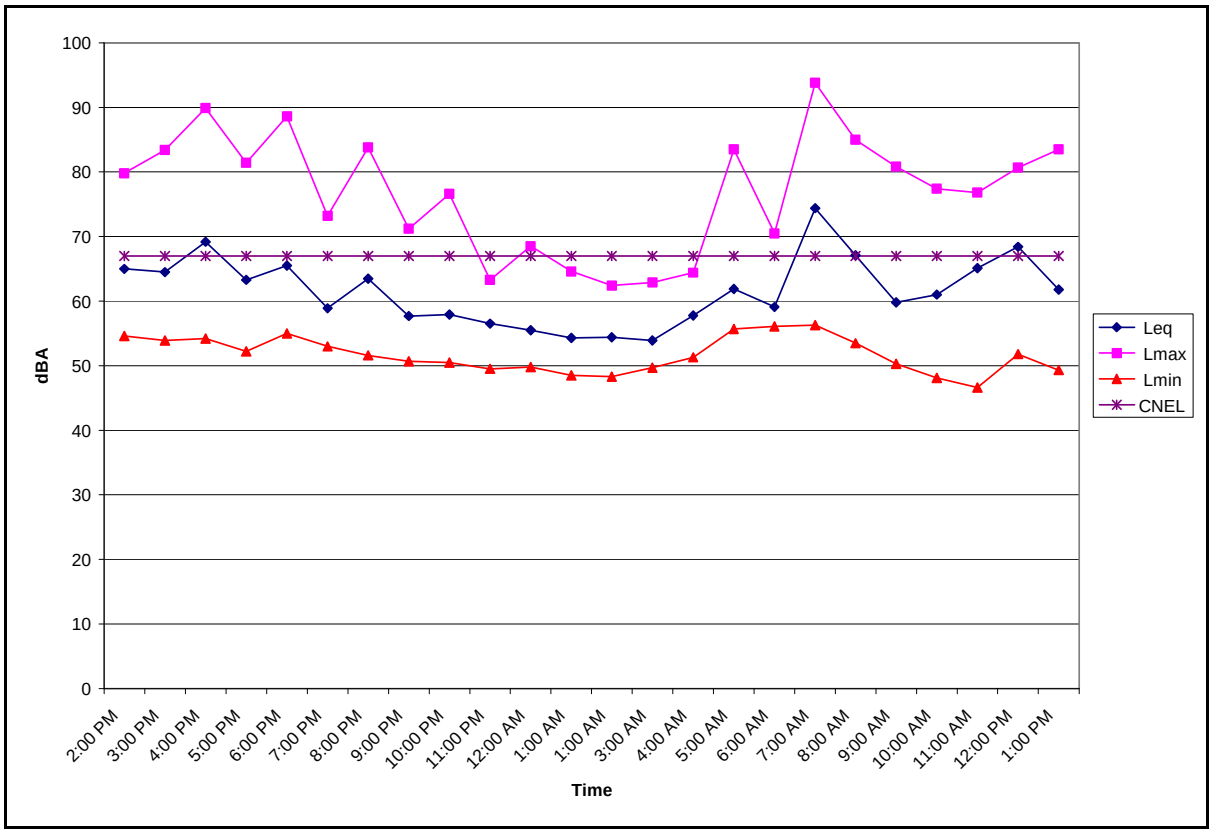
[a] Traffic noise within 50 feet of roadway centerline requires site specific analysis.
Source: LSA Associates, Inc., 2009.

In October 2008, LSA conducted a long-term, 24-hour, noise measurement on the project site in order to document existing ambient noise levels. The noise measurement equipment consisted of a Larson Davis Model 720 precision integrating (Type 2) sound level meter. The measurement was taken at a location 30 feet west of the southwest corner of the Airport terminal. The hourly maximum and minimum noise levels were recorded, as well as the hourly equivalent continuous sound level (L_{eq}). The results of this noise measurement effort are shown in Figure V.D-1. The calculated CNEL value on the project site for the 24-hour noise measurement is 67 dBA.

In 2008, Brown-Buntin Associates, Inc. (BBA), an acoustical consulting firm, prepared an aircraft noise survey report[4] concerning the aircraft operational noise levels of the Livermore Municipal Airport for the City of Livermore. This survey included two long-term noise monitoring phases; the first phase was conducted from October 29 to November 7, 2007, the second from April 15 to April 23, 2008. This report is included in Appendix D. The noise measurement equipment consisted of Larson Davis Model 820 precision integrating sound level meters. This equipment meets all of the standards of the American National Standards Institute (ANSI) for Type 1 sound level measurement systems. The sound level meters for these long-term measurements were placed in four locations in the residential communities nearest the Airport, and in one location near the west end of Runway 25R. Noise conditions in the monitoring locations are expected to be similar to existing conditions.

[4] Brown-Buntin Associates, Inc., 2008. *2007-2008 Aircraft Noise Survey Livermore Municipal Airport*. September 3.

Figure V.D-1: 24-Hour Noise Monitoring Results, October 22-23, 2008



Note: Please refer to Table V.D-1 for definitions of acoustical terms used in this figure.
Source: LSA Associates, Inc., 2009.

Overall community noise levels (all noise events plus all background noise) were recorded at each long-term monitoring site. In addition, cumulative aircraft noise levels and identification of presumed aircraft noise events were calculated using the Larson Davis Airport Noise Monitoring software package. This software allows the user to establish weighting factors for the maximum noise level, event duration, event time history, and frequency content that can be used to reasonably separate aircraft and community noise events. Thus, in addition to the overall CNEL values at each noise measurement location, BBA calculated the "presumed" aircraft noise level values by separating likely aircraft noise events from other noise sources. The overall CNEL values at the noise monitoring locations averaged from 56.4 dBA to 62.1 dBA CNEL; the calculated "presumed" aircraft-related noise levels averaged from 49.5 dBA to 58.5 dBA CNEL. The conclusion of the BBA report is that none of the noise monitoring locations lies within the existing 60 dBA CNEL aircraft noise level contours of the Livermore Municipal Airport.

In November 2008, BBA also prepared an Aircraft Noise Assessment analysis and report for the Airport Rezoning Project.[5] This report is included in Appendix D of this EIR. BBA analyzed the

[5] Brown-Buntin Associates, Inc., 2008. *Aircraft Noise Assessment, Airport Rezoning Project, Livermore Municipal Airport*. November 14.

aircraft/Airport operations and related noise levels to prepare the Community Noise Equivalent Level (CNEL) noise exposure maps for existing operations (2007-2008) and projected future operations (years 2013, 2018, and 2030) based on the existing runway configuration. The Federal Aviation Administration's (FAA) Integrated Noise Model (INM) Version 7.0a was used to prepare CNEL noise exposure maps based on the FAA aircraft noise level data base and Airport operational factors from the approved Airport activity forecasts (unconstrained forecasts) prepared by Coffman Associates in 2008. Refer to Chapter III, Project Description, for a detailed discussion of the Unconstrained forecasts prepared by Coffman Associates.[6]

The noise model results were projected by LSA Associates onto an aerial image in order to identify impacted land uses. The existing CNEL contours associated with Airport operations are shown in Figure V.D-2. This figure shows that the modeled 60 dBA CNEL noise contour does not encompass any of the residential land uses located east of the project site along Arlington Road (the 60 dBA CNEL contour encompasses commercial and light industrial uses, and open space to the north, south, and west). In addition, no noise sensitive land uses are located within the existing 65 dBA CNEL contour.

2. Impacts and Mitigation Measures

The following section presents a discussion of the impacts related to noise that could result from implementation of the proposed project. The section begins with the criteria of significance, establishing the thresholds to determine whether an impact is significant. The latter part of this section presents the noise impacts that could result from the proposed project. Impacts are organized into separate categories based on their significance according to the criteria listed below: less-than-significant impacts, and significant impacts.

a. Criteria of Significance. A project would normally have a significant effect on the environment related to noise if it would substantially increase the ambient noise levels for adjoining areas or conflict with adopted environmental plans and goals of the community in which it is located. The applicable standards governing noise on the project site are the criteria in the Noise Element of the General Plan. The project would result in a significant noise impact if it would:

- Expose persons to or generate noise levels in excess of normally acceptable standards established in the General Plan and City's Noise Ordinance.
- Expose persons to or generate excessive groundborne vibration or noise.
- Result in a substantial permanent, temporary or periodic increase in ambient noise levels in the project site vicinity by over 4 dBA above levels existing without the project.

b. Less-than-Significant Noise Impacts. The following noise sources would produce less-than-significant effects on sensitive receptors in the project vicinity.

(1) Traffic Noise. Implementation of the proposed project would result in the following less-than-significant impacts from traffic-related noise sources. Traffic noise levels along roadway segments in the project site vicinity were calculated using the FHWA Highway Traffic Noise

[6] Coffman Associates, Inc., 2008. *"Unconstrained" Forecasts; Airport Rezoning Project, Livermore Municipal Airport*. October 10.

Prediction Model (FHWA-RD-77-108). Roadway traffic data used in the noise prediction model were obtained from the traffic impact analysis prepared by Fehr & Peers transportation consultants for this EIR. Future traffic noise levels along modeled roadway segments in the project site vicinity under the "No Project" scenario are based on the assumption that buildout would occur on the project site based on the current governing planning documents and regulations, including the General Plan, Zoning Ordinance, and Airport Land Use Plan. For a detailed explanation of the No Project, and Plus Project trip generation scenarios, refer to Section V.D. Transportation, Circulation, and Parking. The traffic noise levels that would occur under the Existing Plus No Project conditions are shown in Table V.D-7. Appendix D contains the modeling worksheets for the traffic noise analysis. The following discussion describes future traffic noise that would result from project implementation independently and in conjunction with other planned and foreseeable projects (cumulative condition).

Existing Plus Project Traffic Noise. The traffic noise levels in the vicinity of the project site under the Existing (2009) Plus Project conditions are shown in Table V.D-8. These Existing Plus Project traffic noise levels show no (0.0 dBA) to very slight (0.3 dBA) increases over those currently experienced under existing baseline conditions. When compared to the traffic noise levels that would be experienced under the future No Project conditions, the Existing Plus Project scenario would produce equivalent or lower traffic noise levels (as much as a 4.8 dBA decrease) due to projected lower traffic volumes. Based on the significance criteria, a significant noise impact would occur if the project would result in a substantial increase in ambient noise levels in the project site vicinity by over 4 dBA above levels existing without the project. Therefore, increases in project-related traffic noise levels under Existing Plus Project conditions along roadway segments in the project site vicinity would be less than significant.

As shown in Table V.D-8, the modeled Existing Plus Project traffic noise levels would range from 43.7 dBA to 68.7 dBA CNEL at 50 feet from the centerline of the outermost travel lane of the primary roads that would be used by project-related traffic. The closest on-site planned development to these modeled roadway segments would be the FBO development area that would be located south of Club House Drive and the new structures that would be located south of Airway Boulevard. Due to the distance of these planned development locations from the roadway centerlines, the modeled traffic noise levels at these sites would range up to approximately 42.8 dBA and 65.6 dBA respectively at each location. These noise levels are well below the City's "normally acceptable" level of 70 dBA CNEL for new office, business commercial, and professional land uses. Therefore, traffic noise impacts under Existing Plus Project conditions would be less than significant.

Cumulative Plus Project Traffic Noise. The traffic noise levels in the vicinity of the project site under the Cumulative Baseline, Cumulative No Project, and Cumulative Plus Project conditions are shown in Tables V.D-9, V.D-10, and V.D-11, respectively. The Cumulative (2030) Baseline scenario assumes that there would be no new development on the project site; the Cumulative (2030) No Project scenario assumes that the buildout permitted under current regulations governing land use on the site would occur, including the General Plan, Zoning Ordinance, and Airport Land Use Plan; and the Cumulative (2030) Plus Project scenario assumes buildout of the proposed project, including the General Plan amendment and rezoning (see Chapter III, Project Description).

Table V.D-11 shows that the project would result in no increase (0.0 dBA) to only a very slight increase in noise levels (0.1 dBA) in the Cumulative Plus Project condition when compared to the Cumulative Baseline condition. When compared to the traffic noise levels that would be experienced under the No Project conditions, the Cumulative Plus Project scenario would produce equivalent or

LSA

65 dBA CNEL
60 dBA CNEL
55 dBA CNEL

0 1380 2760
FEET

NOTE: THE SPATIAL CONFIGURATION OF THE NOISE CONTOURS HAS A MARGIN OF ERROR OF UP TO 25 FEET DUE TO THE INHERENT GEOMETRIC DISTORTION OF THE AERIAL PHOTO.

FIGURE V.D-2

Livermore Municipal Airport General Plan Amendment and Rezoning Project EIR
Existing CNEL Noise Contours

SOURCE: BROWN-BUNTIN ASSOCIATES, INC. 2008; LSA ASSOCIATES, INC., 2009.

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Table V.D-7: Existing Plus No Project Traffic Noise Levels

Roadway Segment	Average Daily Vehicle Trips	Center-line to 70 CNEL (Feet)	Center-line to 65 CNEL (Feet)	Center-line to 60 CNEL (Feet)	CNEL (dBA) 50 Feet From Centerline of Outermost Lane
Airway Boulevard - Kitty Hawk Road to Club House Drive	15,800	< 50 [a]	101	217	68.3
Airway Boulevard - Club House Drive to Terminal Circle	17,600	52	109	234	68.8
Airway Boulevard - Terminal Circle to Kitty Hawk Road	17,700	52	109	234	68.8
Club House Drive - Terminal Circle to Airway Boulevard	1,500	< 50	< 50	< 50	55.4
Terminal Circle - Club House Drive to Airway Boulevard	600	< 50	< 50	< 50	48.5
Kitty Hawk Road - Airway Boulevard to Jack London Boulevard	21,300	< 50	104	219	67.4
Kitty Hawk Road - South of Jack London Boulevard	20,500	< 50	101	214	67.2
Jack London Boulevard - East of Kitty Hawk Road	10,400	< 50	56	111	62.9

[a] Traffic noise within 50 feet of roadway centerline requires site specific analysis.
Source: LSA Associates, Inc., 2009.

Table V.D-8: Existing Plus Project Traffic Noise Levels

Roadway Segment	Average Daily Vehicle Trips	Center-line to 70 CNEL (Feet)	Center-line to 65 CNEL (Feet)	Center-line to 60 CNEL (Feet)	CNEL (dBA) 50 Feet From Centerline of Outermost Lane	Change from Baseline Level (dBA)	Change from No Project Level (dBA)
Airway Boulevard - Kitty Hawk Road to Club House Drive	15,400	< 50 [a]	100	214	68.2	0.3	-0.1
Airway Boulevard - Club House Drive to Terminal Circle	17,500	51	109	233	68.7	0.2	-0.1
Airway Boulevard - Terminal Circle to Kitty Hawk Road	17,400	< 50	108	232	68.7	0.3	-0.1
Club House Drive - Terminal Circle to Airway Boulevard	1,200	< 50	< 50	< 50	54.4	0.0	-1.0
Terminal Circle - Club House Drive to Airway Boulevard	200	< 50	< 50	< 50	43.7	0.0	-4.8
Kitty Hawk Road - Airway Boulevard to Jack London Boulevard	21,200	< 50	104	218	67.4	0.3	0.0
Kitty Hawk Road - South of Jack London Boulevard	20,400	< 50	101	213	67.2	0.1	0.0
Jack London Boulevard - East of Kitty Hawk Road	10,400	< 50	56	111	62.9	0.3	0.0

[a] Traffic noise within 50 feet of roadway centerline requires site specific analysis.
Source: LSA Associates, Inc., 2009.

Table V.D-9: Cumulative (2030) Baseline Traffic Noise Levels

Roadway Segment	Average Daily Vehicle Trips	Center-line to 70 CNEL (Feet)	Center-line to 65 CNEL (Feet)	Center-line to 60 CNEL (Feet)	CNEL (dBA) 50 Feet From Centerline of Outermost Lane
Airway Boulevard - Kitty Hawk Road to Club House Drive	16,900	< 50 [a]	106	227	68.6
Airway Boulevard - Club House Drive to Terminal Circle	16,800	< 50	106	226	68.6
Airway Boulevard - Terminal Circle to Kitty Hawk Road	16,700	< 50	105	226	68.5
Club House Drive - Terminal Circle to Airway Boulevard	1,300	< 50	< 50	< 50	54.8
Terminal Circle - Club House Drive to Airway Boulevard	400	< 50	< 50	< 50	46.7
Kitty Hawk Road - Airway Boulevard to Jack London Boulevard	52,000	88	185	395	71.3
Kitty Hawk Road - South of Jack London Boulevard	56,400	93	195	417	71.6
Jack London Boulevard - East of Kitty Hawk Road	20,600	< 50	83	173	65.8

[a] Traffic noise within 50 feet of roadway centerline requires site specific analysis.
Source: LSA Associates, Inc., 2009.

Table V.D-10: Cumulative (2030) No Project Traffic Noise Levels

Roadway Segment	Average Daily Vehicle Trips	Center-line to 70 CNEL (Feet)	Center-line to 65 CNEL (Feet)	Center-line to 60 CNEL (Feet)	CNEL (dBA) 50 Feet From Centerline of Outermost Lane
Airway Boulevard - Kitty Hawk Road to Club House Drive	17,400	< 50 [a]	108	232	68.7
Airway Boulevard - Club House Drive to Terminal Circle	17,000	< 50	106	228	68.6
Airway Boulevard - Terminal Circle to Kitty Hawk Road	17,200	< 50	107	230	68.7
Club House Drive - Terminal Circle to Airway Boulevard	1,600	< 50	< 50	< 50	55.7
Terminal Circle - Club House Drive to Airway Boulevard	700	< 50	< 50	< 50	49.2
Kitty Hawk Road - Airway Boulevard to Jack London Boulevard	52,700	89	186	399	71.3
Kitty Hawk Road - South of Jack London Boulevard	56,800	93	196	419	71.7
Jack London Boulevard - East of Kitty Hawk Road	21,000	< 50	84	175	65.9

[a] Traffic noise within 50 feet of roadway centerline requires site specific analysis.
Source: LSA Associates, Inc., 2009.

Table V.D-11: Cumulative (2030) Plus Project Traffic Noise Levels

Roadway Segment	Average Daily Vehicle Trips	Center-line to 70 CNEL (Feet)	Center-line to 65 CNEL (Feet)	Center-line to 60 CNEL (Feet)	CNEL (dBA) 50 Feet From Centerline of Outermost Lane	Change from Baseline Level (dBA)	Change from No Project Level (dBA)
Airway Boulevard - Kitty Hawk Road to Club House Drive	17,000	< 50 [a]	106	228	68.6	0.0	-0.1
Airway Boulevard - Club House Drive to Terminal Circle	16,900	< 50	106	227	68.6	0.0	0.0
Airway Boulevard - Terminal Circle to Kitty Hawk Road	16,800	< 50	106	226	68.6	0.1	-0.1
Club House Drive - Terminal Circle to Airway Boulevard	1,300	< 50	< 50	< 50	54.8	0.0	-0.9
Terminal Circle - Club House Drive to Airway Boulevard	400	< 50	< 50	< 50	46.7	0.0	-2.5
Kitty Hawk Road - Airway Boulevard to Jack London Boulevard	52,500	89	186	398	71.3	0.0	0.0
Kitty Hawk Road - South of Jack London Boulevard	56,700	93	196	419	71.6	0.0	-0.1
Jack London Boulevard - East of Kitty Hawk Road	21,000	< 50	84	175	65.9	0.1	0.0

[a] Traffic noise within 50 feet of roadway centerline requires site specific analysis.
Source: LSA Associates, Inc., 2009.

lower traffic noise levels (as much as a 2.5 dBA decrease) due to projected lower traffic volumes. Therefore, implementation of the proposed project would not result in a substantial permanent, temporary or periodic increase in ambient noise levels in the project site vicinity of over 4 dBA above levels existing without the project, and increases in project-related traffic noise levels under Cumulative Plus Project conditions along roadway segments in the project site vicinity would be less than significant.

As shown in Table V.D-11, the modeled Cumulative Plus Project traffic noise levels would range from 46.7 dBA to 71.6 dBA CNEL at 50 feet from the centerline of the outermost travel lane of key roads that would be used by project-related traffic. The modeled traffic noise levels at the closest on-site planned development (the FBO development area that would be located south of Club House Drive and the new structures that would be located south of Airway Boulevard) would range up to approximately 45.8 dBA and 68.5 dBA respectively at each location. These noise levels are below the City's "normally acceptable" level of 70 dBA CNEL for new office, business commercial, and professional land uses. Therefore, implementation of the proposed project would not expose persons to or generate noise levels in excess of normally acceptable standards, and project-related traffic noise impacts would be less than significant.

Freeway Traffic Noise. As presented in the overview of the existing noise environment above, traffic noise levels along the segment of I-580 nearest the project site could reach up to 80 dBA CNEL at 50 feet from the outermost travel lane. Assuming, as a worst case condition, a direct line of sight to the freeway from the project site, freeway traffic noise levels could reach up to a maximum of 64 dBA CNEL. This noise level is well below the City's "normally acceptable" level of 70 dBA CNEL for new office, business commercial, and professional land uses. However, due to terrain

features and existing structures between the project site and the freeway, freeway traffic noise levels on the project site would be substantially less than this predicted noise level. In addition, the amount of traffic that project-related development would add to freeway traffic volumes would not result in any perceptible increase in freeway traffic noise levels. Therefore, noise impacts from freeway traffic noise sources on the project would be less than significant.

(2) Construction Noise. Specific development projects would occur on the project site as a result of the project. Such development could include a combination of uses permitted under the two Airport Zoning Subdistricts, see Chapter III, Project Description. The following section includes a discussion of potential construction noise impacts associated with future development activities at the project site.

The transport of workers and construction equipment and materials to the project site would incrementally increase noise levels on access roads leading to the Airport. Because workers and construction equipment would use existing routes, noise from passing trucks (86 dBA L_{max} at 50 feet) would be similar to existing truck-generated noise. Therefore, short-term construction-related impacts associated with worker and equipment transport to the project site would result in a less-than-significant impact on sensitive receptors along the access routes leading to the Airport. Construction is performed in discrete steps, each of which has its own mix of equipment and, consequently, its own noise characteristics. These phases would change the character of the noise generated on the project site and, therefore, the noise levels surrounding the site as construction progresses. Despite the variety in the type and size of construction equipment, similarities in the dominant noise sources and patterns of operation allow construction-related noise ranges to be categorized by work phase. Table V.D-12 lists typical construction equipment noise levels recommended for use in noise impact assessments, based on a distance of 50 feet between the equipment and a noise receptor. Typical construction noise levels vary up to a maximum of 91 dBA L_{max} at 50 feet during the noisiest construction phases. The site preparation phase, which includes excavation and grading of the site, tends to generate the highest noise levels because the noisiest construction equipment is earthmoving equipment. Earthmoving equipment includes excavating machinery such as backhoes, bulldozers, draglines, and front loaders and earthmoving and compacting equipment, which includes compactors, scrapers, and graders. Typical operating cycles for these types of construction equipment may involve 1 or 2 minutes of full power operation followed by 3 to 4 minutes at lower power settings.

Development permitted by the proposed project could result in the construction of new facilities such that local noise levels could increase. Construction of new facilities is expected to require the use of earthmovers such as bulldozers and scrapers, loaders and graders, water trucks, and pickup trucks. As shown in Table V.D-12, the typical maximum noise level generated by each earthmover on the project site is assumed to be 87 dBA L_{max} at 50 feet from the operating earthmover. The maximum noise level generated by water and pickup trucks is approximately 86 dBA L_{max} at 50 feet from these vehicles. Each doubling of the sound sources with equal strength would increase the noise level by 3 dBA. Assuming each piece of construction equipment operates at some distance apart from the other equipment, the worst-case combined noise level at the nearest residences during this phase of construction would be 91 dBA L_{max} at a distance of 50 feet from an active construction area.

Table V.D-12: Typical Construction Equipment Maximum Noise Levels, L_{max}

Type of Equipment	Range of Maximum Sound Levels (dBA at 50 feet)	Suggested Maximum Sound Levels for Analysis (dBA at 50 feet)
Pile Drivers	81 to 96	93
Rock Drills	83 to 99	96
Jackhammers	75 to 85	82
Pneumatic Tools	78 to 88	85
Pumps	74 to 84	80
Scrapers	83 to 91	87
Haul Trucks	83 to 94	88
Cranes	79 to 86	82
Portable Generators	71 to 87	80
Rollers	75 to 82	80
Dozers	77 to 90	85
Tractors	77 to 82	80
Front-End Loaders	77 to 90	86
Hydraulic Backhoe	81 to 90	86
Hydraulic Excavators	81 to 90	86
Graders	79 to 89	86
Air Compressors	76 to 89	86
Trucks	81 to 87	86

Source: Bolt, Beranek & Newman, 1987. *Noise Control for Buildings and Manufacturing Plants.*

The closest noise-sensitive land uses to areas that would experience construction activity with buildout of the proposed project are the residential land uses located at the southeast corner of Jack London Boulevard and Kitty Hawk Road (the far eastern portion of the project site is a runway protection zone that would remain undeveloped as part of the project). These residential land uses are located approximately 3,200 feet from the nearest areas of potential construction activity. Therefore, the nearest noise sensitive land uses would be exposed to noise levels from construction activity of less than 55 dBA L_{max}. This noise level is well below the traffic noise level that would be experienced at these residential land uses. In addition, the Municipal Code restricts the operation of loud noise-producing equipment used in construction or demolition on weekdays to the hours of 7:00 a.m. to 8:00 p.m. and on weekends to the hours of 9:00 a.m. to 6:00 p.m. No construction or demolition activities are permitted on City-observed holidays. Therefore, due to these low construction-related noise levels that would be experienced at the nearest sensitive receptors to the project site and the required conformance to the permissible hours of construction stated in the Municipal Code, noise impacts from construction activity associated with buildout of the proposed project would be considered less than significant.

(3) Operational Noise Impacts. Based on the City's stated significance criteria, the proposed project would result in a significant noise impact if it would expose persons to or generate excessive groundborne vibration or noise; expose persons to or generate noise levels in excess of normally acceptable standards established in the General Plan and City's Noise Ordinance; or result in a substantial permanent, temporary or periodic increase in ambient noise levels in the project site vicinity by over 4 dBA above levels existing without the project.

As discussed in Chapter III, Project Description, flight operations at the Airport are independent of the proposed project because of FAA regulations and the land use regulations currently in place at the Airport (primarily the 1975 Master Plan, General Plan, and Zoning Code) would only allow for the development of Airport uses, such as hangars and FBO facilities, that would be similar to those constructed under the proposed project. In addition, the proposed project would not include changes to existing runways, flight paths, or hours of operation at the Airport.

The following section describes changes in noise levels that would be expected to occur as a result of increases in aviation activities at the Airport and analyzes operational noise levels based on the City's stated significance criteria. The predicted operational noise levels are based on the "Unconstrained

forecasts" prepared by Coffman Associates in 2008, and a subsequent Aircraft Noise Assessment prepared by BBA, also in 2008.

Groundborne Noise and Vibration Impacts. The proposed project would not be affected by groundborne noise or vibration from any off-site land use or transportation facility. While the proposed project would result in development of Airport service facilities similar to those that currently exist on the site, these facilities would not result in excessive groundborne noise or vibration levels at any sensitive receptor location in the project site vicinity. Impacts from airborne noise from aircraft noise sources are discussed below. Take-off and landing operations at the Airport would generate minor amounts of groundborne vibration, which would not be perceptible at off-site sensitive receptors and would thus be considered less than significant. In addition, it should be noted that, because the project would not include any changes to existing runways, flight paths, or hours of operation, these groundborne noise and vibration levels would occur even without the proposed project. Therefore, all impacts from groundborne noise and vibration sources would be less than significant.

Excessive Noise Levels Impacts. The City's land use compatibility standards for exterior noise are shown in Table V.D-5. These standards apply to the development of specified land uses. The proposed project does not include the development of any noise-sensitive land uses, such as residences, schools, or hospitals. Potential future development as a result of implementation of the proposed project would include new office, business commercial, and professional land uses. According to the City's land use compatibility standards, environments with existing or projected future ambient noise levels of up to 70 dBA CNEL are considered "normally acceptable" for development of these types of land uses. Therefore, development of these land uses may occur without requiring an evaluation of the noise environment, unless the use could result in noise impacts on adjacent land uses.

Based on the results of the 24-hour noise measurement taken on the project site in October 2008, shown in Figure V.D-1, the calculated CNEL value on the project site for the 24-hour noise measurement period is 67 dBA. Therefore, existing measured ambient noise levels are considered normally acceptable for development that could occur under the proposed project. As a result, implementation of the proposed project would not expose persons on the project site to noise levels in excess of normally acceptable standards for the anticipated types of new land uses, and the effects of overall aircraft/Airport operational noise (both existing and future) on proposed land uses would be less than significant.

While airports do not have mitigation requirements for single event noise occurrences under FAA regulations, aircraft operations may cause noticeable noise annoyance from single events that result in impacts such as sleep disturbance.

The Federal Interagency Committee on Aviation Noise (FICAN) has recommended the use of the new 2008 ANSI standard (ANSI S12.9-2008) to predict awakenings from aircraft noise. However, this new ANSI standard was developed from field studies of behavioral awakenings in homes near airports subject primarily to routine jet aircraft operations, which is not representative of the typical flight operations of the Livermore Municipal Airport. In addition, the ANSI standard calculates the probability of awakenings from an entire night of noise events rather than awakenings from a single event noise occurrence. Therefore, because the proposed project involves an airport that experiences a

relatively low number of daily jet aircraft operations, and because the noise measurement monitoring data are in terms of the sound exposure level (SEL) of single noise events, the 1997 FICAN curve is better suited than the 2008 ANSI standard to predict potential behavioral awakening from aircraft noise. The 1997 FICAN curve represents the upper limit of the observed field data and should be interpreted as predicting the maximum percent of the exposed population expected to be behaviorally awakened. Based on their findings, the FICAN curve predicts that an indoor sound exposure of 80 dBA SEL would result in 10 percent awakenings for residential populations.

For the purposes of this analysis, single event noises resulting from aircraft landings and take-offs that result in indoor noise levels of 80 dBA SEL and above would be considered a significant impact on residential uses when they occur at night, between the hours of 10:00 p.m. and 7:00 a.m., when the noise stands out from ambient noise and when sleep disturbance is most likely to occur. It should be noted that, due to the short duration of aircraft landings and take-offs, this level of noise (80 dBA SEL) is similar to other single event noises typical of urban neighborhoods. For example, noise from a passing truck typically ranges up to 86 dBA L_{max} at 50 feet, while the SEL (the cumulative sound exposure) for such an event would be even higher.

Based on the EPA's Protective Noise Levels (EPA 550/9-79-100, November 1978), with a combination of walls, doors, and windows, standard construction for northern California residences would provide more than 25 dBA in exterior-to-interior noise reduction with windows closed and 15 dBA or more with windows open. Thus, with windows open, exterior single event noise levels would have to exceed 95 dBA SEL in order for the indoor sound exposure level to exceed 80 dBA SEL. The longest measured single aircraft noise event documented in the BBA report was 39 seconds resulting in the loudest documented outdoor sound exposure of 92.1 dBA SEL. Therefore, even with windows open, this loudest and longest single event would result in an indoor sound exposure of only 77.1 dBA SEL (i.e., 92.1 dBA – 15 dBA = 77.1 dBA). With windows closed, this loudest documented outdoor sound exposure of 92.1 dBA SEL would be reduced to 67.1 dBA SEL (i.e., 92.1 dBA – 25 dBA = 67.1 dBA).

As shown in the BBA report, none of the outdoor measured SEL values at sensitive receptors in the Airport vicinity exceeded 95 dBA SEL. While aircraft operations are expected to increase in number in future years, they are not expected to result in any louder single event noise occurrences (although additional events may occur). Thus aircraft operations are not expected to result in indoor sound exposure of 80 dBA SEL or greater at any existing noise-sensitive land use in the project vicinity. Therefore, single event aircraft operational noise impacts would be considered less than significant.

Impacts from Substantial Permanent, Temporary or Periodic Increase in Ambient Noise Levels. The CNEL contours for the future year 2030 shown in Figure V.D-5, shows that the modeled 60 dBA CNEL noise contour would expand to include a slightly larger portion of the residential land uses located east of the Airport along Arlington Road. The land uses that would be exposed to this increase in airport operational noise levels currently lie within the 55 dBA CNEL noise contour, meaning they are predicted to be exposed to aircraft operational noise levels between 55 dBA and 60 dBA CNEL. However, based on the ambient noise measurements taken by BBA, residential land uses in this area currently experience overall noise levels averaging from 60.9 dBA and 62.1 dBA CNEL. Therefore, projected future airport operational noise levels would be similar to the existing overall ambient noise levels from all noise sources in the area.

Because the proposed project does not include any changes to the existing runways, flight paths, or hours of operation, and flight operations would change independent of the project, the predicted aircraft operational noise levels for year 2030 would occur with or without the proposed project. Therefore, implementation of the proposed project would not result in a permanent, temporary, or periodic increase in ambient noise levels of more than 4 dBA above existing conditions and the effects of overall aircraft/Airport operational noise on surrounding land uses would be less than significant.

c. Significant Noise Impacts. The proposed project would result in the following significant noise impact.

Impact NOISE-1: In the cumulative condition, flight operations would result in an increased exposure of sensitive receptors to exterior noise levels in excess of 60 dBA CNEL. (S)

In November 2008, BBA prepared the Aircraft Noise Assessment analysis and report[7] included in Appendix D of this EIR. BBA prepared the CNEL noise exposure maps for projected future (years 2013, 2018, and 2030) Airport flight volumes based on the aircraft/Airport operations and related noise levels for the Airport. The Federal Aviation Administration's (FAA) Integrated Noise Model (INM) Version 7.0a was used to prepare CNEL noise exposure maps based on the FAA aircraft noise level data base and Airport operational data.

The INM results were projected by LSA onto an aerial image in order to identify potentially affected land uses. The CNEL contours for the future years 2013, 2018, and 2030 are shown in Figures V.D-3, V.D-4, and V.D-5, respectively. Because the project would not include any changes to the existing runway, flight patterns, or hours of operation, and flight operations would change independent of the project, these noise contours represent the predicted aircraft operational noise levels that would occur both without and with the project under cumulative conditions. These figures show that in the future, the modeled 60 dBA CNEL noise contour would expand to include a slightly larger portion of the residential land uses located east of the Airport along Arlington Road. No noise-sensitive land uses would be located within the 65 dBA CNEL contours in any of the future modeled years. Therefore, forecast aircraft/Airport operational noise levels are compatible with the federal and State adopted land use compatibility threshold standard of 65 dBA CNEL.[8]

However, per General Plan Policy N-1.1.P5 regarding the City's Land Use Compatibility Guidelines for Exterior Noise (see Figure V.D-5), additional existing residential land uses located east of the Airport would be within the modeled 60 dBA CNEL noise contour associated with predicted aircraft operational noise levels. The Livermore Draft General Plan and Downtown Specific Plan EIR includes Mitigation Measure NOISE-GP-2[9] which requires the City to identify residences that are exposed to airport noise levels within 1 dBA of reaching 60 dBA CNEL. Under cumulative conditions, the airport flight operation noise levels shown in Figures V.D-3, V.D-4, and V.D-5, would result in an increased exposure of sensitive receptors to noise levels in excess of 60 dBA CNEL.

[7] Brown-Buntin Associates, Inc., 2008. *Aircraft Noise Assessment, Airport Rezoning Project, Livermore Municipal Airport*. November 14.

[8] As noted under the State regulatory framework discussion, while the federal standard is expressed in terms of L_{dn}, the noise metrics CNEL and L_{dn} are considered interchangeable, as they are typically within 1 dBA of each other.

[9] LSA Associates, Inc., 2009. *Livermore Draft General Plan and Downtown Specific Plan EIR.*

LSA

65 dBA CNEL
60 dBA CNEL
55 dBA CNEL

0 1380 2760
FEET

NOTE: THE SPATIAL CONFIGURATION OF THE NOISE CONTOURS HAS A MARGIN OF ERROR OF UP TO 25 FEET DUE TO THE INHERENT GEOMETRIC DISTORTION OF THE AERIAL PHOTO.

FIGURE V.D-3

Livermore Municipal Airport General Plan Amendment and Rezoning Project EIR

2013 CNEL Noise Contour

SOURCE: BROWN-BUNTIN ASSOCIATES, INC. 2008; LSA ASSOCIATES, INC., 2009.

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LSA

N

0 1380 2760

FEET

65 dBA CNEL

60 dBA CNEL

55 dBA CNEL

NOTE: THE SPATIAL CONFIGURATION OF THE NOISE CONTOURS HAS A MARGIN OF ERROR OF UP TO 25 FEET DUE TO THE INHERENT GEOMETRIC DISTORTION OF THE AERIAL PHOTO.

FIGURE V.D-4

Livermore Municipal Airport General Plan Amendment and Rezoning Project EIR

2018 CNEL Noise Contours

SOURCE: BROWN-BUNTIN ASSOCIATES, INC. 2008; LSA ASSOCIATES, INC., 2009.

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LSA

N

0 1380 2760

FEET

65 dBA CNEL

60 dBA CNEL

55 dBA CNEL

NOTE: THE SPATIAL CONFIGURATION OF THE NOISE CONTOURS HAS A MARGIN OF ERROR OF UP TO 25 FEET DUE TO THE INHERENT GEOMETRIC DISTORTION OF THE AERIAL PHOTO.

FIGURE V.D-5

Livermore Municipal Airport General Plan Amendment and Rezoning Project EIR

2030 CNEL Noise Contours

SOURCE: BROWN-BUNTIN ASSOCIATES, INC. 2008; LSA ASSOCIATES, INC., 2009.

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Based on the EPA's Protective Noise Levels (EPA 550/9-79-100, November 1978), with a combination of walls, doors, and windows, standard construction for northern California residences would provide more than 25 dBA in exterior-to-interior noise reduction with windows closed and 15 dBA or more with windows open. Thus, with windows open, exterior noise levels greater than 60 dBA would result in indoor noise levels in excess of 45 dBA CNEL (i.e., 61 dBA – 15 dBA = 46 dBA). However, with windows closed, noise levels of up to 70 dBA could be reduced to maintain the interior noise level of 45 dBA CNEL (i.e., 70 dBA – 25 dBA = 45 dBA). Installation of an alternate ventilation system, such as air conditioning, in all impacted residences without such a system would ensure that windows can remain closed for a prolonged period of time in order to meet the interior noise standard of 45 dBA CNEL. Therefore, the following mitigation measure shall be implemented in order to reduce any potential noise impacts from the Airport flight operations under cumulative conditions. Because residential uses would be outside the 65 dBA CNEL contour in all future modeled scenarios (i.e., noise levels would be less than 65 dBA CNEL), no building upgrades, such as double-paned windows, would be required as part of the mitigation measure.

> Mitigation Measure NOISE-1: The City of Livermore shall develop and implement a program by the year 2010 to identify residences subject to excessive Airport noise. The program shall ensure that the State's 45 dBA CNEL/L_{dn} interior noise standard for residential uses is achieved for these affected residences. The program shall include conducting annual exterior noise measurements, beginning along the block nearest the eastern edge of the Airport and, over the years, moving eastward, away from the Airport. If/when the exterior noise levels are within one dBA of 60 dBA CNEL on any block, the City shall purchase and install air conditioning units for identified impacted single family residences that do not have existing air conditioning systems. Installation of such air conditioning units would allow residences to close their windows for prolonged periods of time.

E. HYDROLOGY AND WATER QUALITY

This section evaluates potential environmental effects from development that could occur under buildout of the proposed project related to flooding, drainage, and groundwater and surface water quality. The setting section includes a description of existing hydrology and water quality conditions in the vicinity of the project site and the pertinent federal, State, and local agency laws and regulations related to these conditions. The impacts and mitigation measures section defines the criteria of significance and identifies potential impacts and mitigation measures, as necessary, related to hydrology and water quality conditions as a result of development that could occur under buildout of the proposed project.

Information for this section was obtained from a site visit on July 8, 2008 and available reports, maps, and publications from the United States Geological Survey, the Association of Bay Area Governments, the State Water Resources Control Board (SWRCB), and the San Francisco Bay Regional Water Quality Control Board (Water Board).

1. Setting

This section includes a discussion of background information related to hydrology and water quality in and around the project site.

a. Climate. The climate of the Bay Area is characterized as dry-summer subtropical (often referred to as Mediterranean), with cool, wet winters and relatively warm, dry summers. From 1903 to 2008, the mean annual precipitation in Livermore was approximately 14.2 inches. During this period of record, annual rainfall has varied from 6.40 inches (1976) to 32.37 inches (1983), with a one-day high of 3.97 inches of precipitation on September 12, 1918. Typically, the vast majority of the precipitation occurs during the months of October to May.[1] Analysis of long-term precipitation records indicates that wetter and drier cycles lasting several years are common in the region.[2]

b. Runoff and Drainage. The topography of the project site slopes gradually downward from east to west with the elevation ranging from approximately 370 to 400 feet National Geodetic Vertical Datum 1929[3] (NGVD).[4] Impervious surfaces on the site include Airport facilities, access roads, and parking areas located in the northern and southern portions of the project site and two runways located in the central portion of the project site. Storm drains, located across the parking area in the northern portion of the project site, discharge into a channel connected to Arroyo Las Positas, northwest of the project site.[5] In other areas, stormwater runoff collects in vegetated retention basins

[1] Western Regional Climate Center, 2008. *Period of Record Climate Summary, Livermore, California (Station 044997)*, July 14. Website: www.wrcc.dri.edu. Accessed on June 9, 2009.

[2] Brown, William M. III, 1988. "Historical Setting of the Storm: Perspectives on Population, Development, and Damaging Rainstorms in the San Francisco Bay Region," in *Landslides, Floods, and Marine Effects of the Storm of January 3-5, 1982, in the San Francisco Bay Region, California*, Stephen D. Ellen and Gerald F. Wieczorek, Eds., U.S. Geological Survey Professional Paper 1434.

[3] The NGVD 1929 is a vertical control datum established to measure vertical positions or elevations based on mean sea level measurements circa 1929. For most purposes, NGVD is equivalent to mean sea level.

[4] United States Geological Survey (USGS), 1961. *Livermore Quadrangle 7.5 Minute Series (Topographic)*.

[5] City of Livermore, 2001. *City of Livermore Storm System Facilities*, Map 5c, prepared by Lynx Technologies, February.

adjacent to impervious surfaces. Refer to Section V.I, Biological Resources, for a discussion of the ecological function of these retention basins.

c. Flooding. Based on the Federal Emergency Management Agency (FEMA) Flood Insurance Rate Maps, the western portion of the project site is mapped as Zone X,[6] which indicates a low to moderate risk of flooding. The central and eastern portions of the project site are not located within a mapped flood hazard zone.[7] However, the current Flood Insurance Rate Maps in the vicinity of the project site have not been updated to reflect recent improvements to Arroyo Las Positas. Based on the existing condition of Arroyo Las Positas, the City of Livermore calculated a 100-year flood elevation of approximately 360 feet NGVD. Additional flood control improvements proposed by the City of Livermore and the Alameda County Flood Control and Water Conservation District for the El Charro Specific Plan area immediately west of the project site include excavation in the south overbank of Arroyo Las Positas to provide additional flood storage and construction of a berm along the north side of the project site to divert flood waters.[8]

d. Dam Failure. The western portion of the project site could be subject to inundation in the event of a catastrophic failure of the Del Valle Dam, which is located approximately 6.5 miles southeast of the project site.[9] The Del Valle Dam impounds a reservoir with a total capacity of approximately 77,100 acre-feet, but normally stores between approximately 25,000 and 40,000 acre-feet to provide a flood control reserve.[10] In 2005, the City of Livermore adopted an evacuation plan for the Del Valle Dam inundation area.[11] The Del Valle Dam is regularly inspected by the California Department of Water Resources (DWR), Division of Safety of Dams, to ensure adequate maintenance and substantially reduce the potential for a catastrophic failure.

e. Inundation by Tsunami and Seiche. Tsunamis are long period water waves caused by underwater seismic events, volcanic eruptions, or undersea landslides. Tsunamis affecting the San Francisco Bay Area would most likely originate west of the Bay in the Pacific Ocean. A tsunami entering the Bay through the relatively narrow Golden Gate would tend to dissipate as the wave energy spreads out and as the Bay becomes wider and shallower. Areas around the Bay that are susceptible to tsunami inundation tend to be low-lying coastal areas with elevations of approximately 10.0 feet NGVD or less.[12] Based on the elevation of the project (370 to 400 feet NGVD) and the distance from the Bay, the project site is not susceptible to tsunami inundation.

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[6] An area within the 500-year flood zone; an area within the 100-year flood zone with average depths of less than 1 foot or with drainage areas less than 1 square mile; or an area protected by levees within the 100-year flood zone.

[7] Association of Bay Area Governments, 2007. *FEMA Flood Hazard Areas Map*, March. Website: www.abag.ca.gov. Accessed on June 10, 2009.

[8] City of Livermore, 2008. *FEMA CLOMR Application Report, Arroyo Las Positas – El Charro , Livermore, CA.* January.

[9] Association of Bay Area Governments, 2007. *Dam Failure Inundation Map*, March. Website: www.abag.ca.gov. Accessed on June 10, 2009.

[10] City of Livermore, 2005. *Livermore Comprehensive Management Plan, Annex D, All Hazard Vulnerability Assessment.*

[11] City of Livermore, 2005. *Livermore Comprehensive Management Plan, Annex B, Evacuation.*

[12] Houston, J. R., Garcia, A.W., 1975. *Type 16 Flood Insurance Study: Tsunami Predictions for Monterey and San Francisco Bays and Puget Sound*, Technical Report H-75-17, November.

A seiche is a standing wave that oscillates in an enclosed or partially enclosed body of water and is most frequently observed in large lakes, bays, or harbors due to strong winds, changes in atmospheric pressure, or tides. Seiches can also be triggered when seismic waves from an earthquake pass through a water body, including rivers, reservoirs, ponds, or swimming pools. A series of former gravel pits that contain water are located approximately 750 feet south of the project site. The gravel pits appear as lakes and the water levels are managed by the Zone 7 Water Agency. The high water levels in the lakes closest to the project site are approximately 30 feet below the surrounding ground surface.[13] The maximum wave height[14] of seiches recorded during the 1906 San Francisco earthquake in the San Francisco Bay was approximately 4 inches. During the 1994 Northridge earthquake, seiches in Southern California caused swimming pools to overflow. Based on the depth to water in the lakes closest to the project site (about 30 feet), the project site would not be susceptible to seiche inundation.

Mudflows occur where colluvium and sediment accumulate, generally on a hillside, gully or ravine, and become dislodged by flowing waters, forming a mudflow. The project site and surrounding areas are relatively flat, and mudflow is therefore unlikely at the site.

f. Water Quality. Groundwater resources at the project site vicinity are located within the Livermore Valley basin (Basin No. 2-10), as defined in the San Francisco Bay Basin Plan. Beneficial uses of the Livermore Valley groundwater basin include the following uses: municipal, domestic, industrial (process and service), and agricultural. Existing and potential beneficial uses for Arroyo Las Positas, located approximately 700 feet northwest of the project site, include groundwater recharge, cold freshwater habitat, fish migration, fish spawning, warm freshwater habitat, wildlife habitat, and water recreation.[15]

The Livermore Municipal Airport has prepared a Storm Water Pollution Prevention Plan (SWPPP) and implements Best Management Practices (BMPs) to protect surface water quality from stormwater discharges and authorized non-stormwater discharges under the National Pollutant Discharge Elimination System (NPDES) Industrial Stormwater Program (see the discussion of State regulations, below). Oil and water separators are installed in the Airport washing facilities to remove petroleum compounds from wash water before it enters the sanitary sewer system. Waddles (straw rolls) are placed in front of drainage culverts and water trucks are used to reduce dust-generating activities at the Airport, such as construction. Annual Reports are submitted to the Water Board each year documenting the monitoring activities and efficacy of the BMPs used at the Airport.

g. Regulatory Framework. Regulations related to surface and groundwater quality are based on a combination of federal, State, and local laws and regulations. These laws and regulations are summarized below. This section also includes information on the federal, State, and local agencies that administer these water quality regulations.

(1) Federal. The U.S. Environmental Protection Agency (EPA) is the lead agency responsible for enforcing federal laws and regulations related to surface water quality. The Clean

[13] RMC Water and Environment, 2006. *Zone 7 Stream Management Master Plan*, August.

[14] Wave height is measured from crest to trough.

[15] California Regional Water Quality Control Board San Francisco Bay Region, 2007. *San Francisco Bay Basin (Region 2) Water Quality Control Plan (Basin Plan).* January 18.

Water Act of 1972 (CWA) established the basic structure for the EPA to regulate discharges of pollutants to the waters of the United States (not including groundwater). Pursuant to Section 402 of the CWA, the U.S. EPA regulates municipal-, industrial-, and construction-related stormwater discharges to surface waters through the NPDES permitting program. In California, the SWRCB is authorized by the EPA to administer the NPDES permitting program. NPDES permits adopted by the SWRCB that could apply to the proposed project are discussed further under State regulations, below.

In 1968, Congress established the National Flood Insurance Program (NFIP) to enable property owners in participating communities to purchase flood insurance if the community adopts and enforces floodplain management ordinances that meet or exceed the minimum NFIP criteria to reduce future flood damage. FEMA administers the NFIP and creates Flood Insurance Rate Maps that delineate 100-year floodplain zones and other flood hazard areas. A 100-year floodplain zone is an area that has a one in one hundred (1 percent) chance of being flooded in any year based on historical data. The 100-year floodplain delineates the standard flood zone within which communities may administer floodplain management programs.

(2) State. The Porter-Cologne Water Quality Control Act (PCWQCA) is the principal law governing water quality in California, and is consistent with the CWA. Under the PCWQCA, the SWRCB and the nine Regional Water Quality Control Boards were established as the Statewide and regional water quality planning agencies, respectively. The SWRCB and Regional Water Quality Control Boards are required to maintain Basin Plans that designate the beneficial uses of California's rivers and groundwater basins and establish water quality objectives to protect those waters. The water quality objectives of the Basin Plans are primarily implemented through the NPDES permitting program, which regulates the discharge of pollutants from point sources. Within the NPDES permitting program, there are three sub-programs that apply to development of the proposed project: the Construction Stormwater Program, the Industrial Stormwater Program, and the Municipal Stormwater Program, as described below.

Construction Stormwater Program. Projects disturbing 1 acre or more of land during construction are required to file a Notice of Intent (NOI) with the Water Board to be covered under the *SWRCB Order No. 99-08-DWQ, NPDES General Permit No. CAS000002, Waste Discharge Requirements for Discharges of Stormwater Runoff Associated with Construction Activity* (Construction General Permit). A SWPPP must be developed to implement appropriate use, installation, and maintenance of BMPs designed to reduce impacts to surface water quality through the construction period.

Industrial Stormwater Program. A wide range of industries are required to file a NOI with the Water Board to be covered under the *SWRCB Order No. 97-03-DWQ, NPDES General Permit No. CAS000001, Waste Discharge Requirements for Discharges of Stormwater Associated with Industrial Activities Excluding Construction Activities* (Industrial General Permit). Industrial activities covered under the Industrial General Permit are determined by the Standard Industrial Classification code, which includes Airport transportation facilities. A SWPPP must be developed and implemented that identifies appropriate BMPs designed to reduce stormwater pollution and eliminate unauthorized non-stormwater discharges. A monitoring program must be developed to measure the effectiveness of the BMPs in reducing or eliminating impacts to surface water quality associated with industrial activities. An Annual Report must be submitted to the Water Board by July 1 of every year that summarizes the activities, results, and findings of the monitoring program.

Municipal Stormwater Program. The Municipal Stormwater Program regulates discharges from municipal storm sewer systems into local waterways. In Alameda County, the Alameda Countywide Clean Water Program (ACCWP) implements the Municipal Stormwater Program under the *Water Board Order No. R2-2003-0021, NPDES Permit No. CAS0029831, Alameda Countywide NPDES Municipal Stormwater Permit* (Countywide NPDES Permit). The ACCWP has prepared a Stormwater Quality Management Plan[16] to serve as a framework for participating agencies, such as the City of Livermore, to comply with the Countywide NPDES Permit.

Provision C.3 of the Countywide NPDES Permit requires the ACCWP and participating agencies to address pollutant discharges and changes in runoff flow from new development and redevelopment projects that result in the creation or replacement of 10,000 square feet or more of impervious surface. Discharges and changes in runoff must be addressed through the implementation of post-construction site design, source control, and treatment measures to the maximum extent practicable (MEP). The ACCWP and participating agencies are also required to address impacts from changes in runoff rate and volume from development and redevelopment projects that create or replace a total of 1 acre or more of impervious surface, where these changes can cause excessive erosion damage to downstream water courses. These impacts must be mitigated through the implementation of enhanced hydromodification management (HM) measures.

(3) Local. The intent of the Stormwater Management and Control Program (SMCP) in the City of Livermore is to protect and enhance the water quality of local water courses, water bodies, and wetlands pursuant to and consistent with the CWA. The SMCP requires each discharger to comply with the Construction General Permit, Industrial General Permit, Countywide NPDES Permit, or other NPDES permits addressing the applicable discharge. Construction contractors are required, at a minimum, to provide filter materials at catch basins to retain any debris and dirt that would otherwise flow into the City's storm sewer system. City officials are authorized to inspect properties for potential violations of the SCMP, including the NPDES permits, and collect water samples to analyze for potential contamination. Violation of the provisions detailed in the SMCP may result in an order to cease and desist discharge operations, in addition to other municipal, State, and federal penalties.[17]

Prior to issuance of planning permits, the City of Livermore requires the sponsors of new development and redevelopment projects that create or replace a total of 10,000 square feet or more of impervious surface to submit site design, source control, and treatment measures for stormwater discharges. Site design measures are implemented to reduce impervious surfaces, promote infiltration, and reduce water quality impacts associated with stormwater runoff. Source control measures are used to keep pollutants out of stormwater. Stormwater treatment measures remove pollutants from the stormwater and typically include bio-retention areas, vegetated swales, and infiltration trenches. The ACCWP has prepared a C.3 Stormwater Technical Guidance manual[18] with a detailed summary of site design, source control, and treatment measures for stormwater to enable participating agencies to comply with Provision C.3 of the Countywide NPDES Permit.

[16] Alameda Countywide Clean Water Program (ACCWP), 2001. *Stormwater Quality Management Plan, July 2001-June 2008.*

[17] City of Livermore, 1997. *Livermore Municipal Code, A Codification of the General Ordinances of the City of Livermore, California*, Chapter 13.45, Stormwater Management and Control Program.

[18] Alameda Countywide Clean Water Program (ACCWP), 2006. *C.3 Stormwater Technical Guidance, A Handbook for Developers, Builders and Project Applicants*, 31 August (Version 1.0).

The City of Livermore is located upstream of areas susceptible to hydromodification impacts.[19] Prior to issuance of planning permits, the City of Livermore requires the sponsors of new development and redevelopment projects that would create or replace a total of 1 or more acres of impervious surface to evaluate runoff under pre-project and post-project conditions and design HM measures to ensure post-project runoff does not exceed estimated pre-project rates and/or durations, as necessary. The ACCWP has prepared a Hydrograph Modification Management Plan[20] to provide guidance for participating agencies to assess, implement, and evaluate HM measures. The Water Board approved the Hydrograph Modification Management Plan and amended the Countywide NPDES Permit in 2007 (Water Board Order No. R2-2007-0025).[21]

Stormwater treatment and HM measures often do not work unless adequately maintained. The City, in accordance with the Countywide NPDES Permit, requires an Operations and Maintenance Agreement to be submitted prior to issuance of building permits.

h. City of Livermore General Plan Policies. The Circulation Element of the General Plan contains the following policy related to water quality at the Airport:

- *Policy CIR-8.14.P1(e)*: No more than 60 percent of the Airport area designated Community Facility-Airport (CF-AIR) shall be covered with impervious surfaces, including but not limited to, buildings, taxiways, runways, parking areas, fuel areas, and wash areas.

The Health and Safety chapter of the General Plan contains the following policies and objectives related to hydrology and water quality.

- *Policy PS-2.1.P1*: Modification to the floodway will not be permitted in order to accommodate new adjacent development but will be permitted to restore creek capacity, stabilize creek banks, and restore habitat or water quality. However, modification of the land within the 100-year flood zone, but located outside of the floodway, will be permitted to protect the health and safety of existing development.
- *Policy PS-2.1.P2*: When feasible, arroyos and creeks shall be preserved in their natural state, and shall not be channelized or otherwise altered. Floodways should remain undeveloped and be allowed to function as natural flood protection features where flood waters are temporarily stored and conveyed during intense storms.
- *Policy PS-2.1.P3*: The City shall require new development and significant redevelopment projects to prepare drainage studies to assess storm runoff impacts on the local and regional storm drain and flood control system, and to develop recommended detention and drainage facilities to ensure that increased risks of flooding do not result from development. The drainage study shall include an analysis and recommended mitigations for projects that would increase peak runoff flows and increase runoff volume and for all projects where such increased flow and/or volume is likely to cause increased erosion of creek beds and banks, silt pollutant generation, or other impacts to beneficial uses.
- *Policy PS-2.1.P4*: Only uses which have low flood damage potential and do not threaten other lands during times of flooding shall be permitted in the 100-year flood zone.

[19] San Francisco Bay Regional Water Quality Control Board, Order No. R2-2007-0025, NPDES Permit No. CAS0029831.

[20] Alameda Countywide Clean Water Program (ACCWP), 2005. *Hydrograph Modification Management Plan*. May 15.

[21] San Francisco Bay Regional Water Quality Control Board, Order No. R2-2007-0025, NPDES Permit No. CAS0029831.

- *Policy PS-2.1.P5*: Subject to the North Livermore Urban Growth Boundary Initiative (NLUGBI), the City shall permit development in a flood-prone area when it is demonstrated that such development will not:
  (a) Interfere with the existing waterflow capacity of the floodway or substantially increase the erosion, siltation or chemical nutrients.
  (b) Contribute to the deterioration of any watercourse or the quality of water in any body of water.
  (c) Require storage of material, construction of any substantial grading or placement of fill.
- *Policy PS-2.1.P6*: Development shall only be allowed on lands within the 100-year flood zone, if it will not:
  (a) Create danger to life and property due to increased flood heights or velocities caused by excavation, fill, roads and intended use.
  (b) Create difficult emergency vehicle access in times of flood.
  (c) Create a safety hazard due to the expected heights, velocity, duration, rate of rise and sediment transport of the flood waters expected at the site.
  (d) Create excessive costs in providing governmental services during and after flood conditions, including maintenance and repair of public utilities and facilities.
  (e) Interfere with the existing waterflow capacity of the floodway.
  (f) Substantially increase erosion and/or sedimentation.
  (g) Contribute to the deterioration of any watercourse or the quality of water in any body of water.
  (h) Require storage of material, or any substantial grading or placement of fill.
- *Policy PS-2.1.P7*: Both public and private service facilities and utilities in existing 100-year flood zones shall be flood proofed to a point at or above the base flood elevation.
- *Policy PS-2.1.P8*: The City shall prevent the construction of flood barriers within the 100-year flood zone which will divert flood water or increase flooding in other areas.
- *Policy PS-2.1.P9*: Coordinate with Zone 7 and other appropriate agencies to construct creek improvements to protect public health and safety and to de-silt existing creeks while maintaining creeks in their natural state, whenever possible.
- *Policy PS-2.2.P1*: The City shall, in cooperation with the County of Alameda, prepare and maintain a disaster relief plan that addresses potential flood inundation in the areas below the Del Valle Reservoir and the Patterson Dam, as a result of dam failure.

2. Impacts and Mitigation Measures

The following section presents a discussion of the impacts related to hydrology and water quality that could result from implementation of the proposed project. The section begins with the criteria of significance, establishing the thresholds to determine whether an impact is significant. The latter part of this section presents the hydrology and water quality impacts that could result from the proposed project. Impacts are organized into separate categories based on their significance according to the criteria listed below: less-than-significant impacts, and significant impacts.

a. Criteria of Significance. The proposed project would have a significant effect on hydrology or water quality if it would:

- Violate any water quality standards or waste discharge standards set by the Regional Water Quality Control Board or otherwise substantially degrade surface or groundwater quality;
- Substantially deplete groundwater supplies or interfere substantially with groundwater recharge at the Livermore-Amador Valley Groundwater Basin such that the local groundwater table would be lowered;
- Substantially reduce the amount or quality of water otherwise available for public water supplies;
- Substantially alter an existing drainage such that substantial erosion, siltation, or flooding would occur in the City or on property in adjacent municipalities;
- Create or substantially contribute to runoff water which would exceed the capacity of existing or planned stormwater drainage systems or create an increase in calculated peak flood discharges;
- Substantially alter a natural water course;
- Place housing or other structures within a 100-year flood hazard zone, as defined by FEMA;
- Disturb, alter, or remove a seep or spring that could adversely affect stream flow, slope stability, or riparian habitat; or
- Expose people or structures to a significant risk of loss, injury, or death involving flooding, including flooding as a result of the failure of a levee or dam.

b. Less-than-Significant Hydrology and Water Quality Impacts. No housing would be constructed as part of the proposed project (after project implementation, only Airport-related uses would be permitted on the project site). Therefore, there would be no impacts to housing due to flooding at the project site. The project site is not located within a 100-year flood hazard area. Therefore, project-related development at the project site would not impede or redirect the flow of flood waters.

The project site is located within a mapped dam failure inundation area for the Del Valle Dam. The Del Valle Dam maintains a flood reserve and is regularly inspected by the DWR to ensure adequate maintenance and substantially reduce the potential for a catastrophic failure. Therefore, potential impacts to people or structures on the project site due to dam failure are less than significant.

The project site is not susceptible to inundation by tsunamis due to the elevation and distance of the project site from the San Francisco Bay. The freeboard in the ponds south of the project site is about 30 feet from the high water levels. Based on the small wave heights observed during the 1906 San Francisco earthquake and the 1994 Northridge earthquake, the project site is not expected to be susceptible to inundation by seiches associated with these ponds. The project site is not susceptible to inundation by mudflows due to the relatively flat topography of the site and adjacent areas. Based on the physical setting of the project site, potential impacts from inundation by tsunamis, seiches, or mudflows are considered less than significant.

c. Significant Hydrology and Water Quality Impacts. Implementation of the proposed project could result in significant impacts related to hydrology and water quality, as described below.

<u>Impact HYD-1:</u> Construction of specific development projects that could occur under buildout of the proposed project could degrade water quality due to erosion and sedimentation,

inadvertent hazardous materials releases, and groundwater discharges during construction and operation activities (S).

Development that could occur on the project site under buildout of the proposed project may introduce pollutants into runoff and/or surface water bodies, degrading water quality and potentially violating water quality standards. These potential impacts are assessed below for the construction and operation periods of specific development projects at the project site.

(1) Construction-Period Impacts. Construction activities related to development that could occur under buildout of the proposed project involving soil disturbance, such as excavation, soil stockpiling, or grading, could expose soils to runoff. If soils are not managed properly, the runoff could cause erosion and increased sedimentation in water courses outside of the project site. The accumulation of sediment could result in blockage of flows, potentially resulting in increased localized ponding or flooding.

The potential for chemical releases is present at most construction sites. Once released, substances such as fuels, oils, paints, and solvents could be transported to nearby surface waterways and/or groundwater in stormwater runoff, wash water, and dust control water, potentially reducing the quality of the receiving waters.

Dewatering of groundwater may be required in support of general construction activities for specific development projects that could occur under buildout of the proposed project. Dewatering involves pumping groundwater from the construction area and discharging it to nearby surface waterways (e.g., Arroyo Las Positas). High levels of suspended sediment and/or trace amounts of construction-related byproducts (e.g., fuels, lubricants, cement products) may be present in the dewatering effluent. If these pollutants are discharged directly to surface waterways, water quality could be degraded and water quality standards violated.

(2) Operation-Period Impacts. New development that could occur on the project site under buildout of the proposed project would increase the number of personnel and vehicles on the site and the potential for discharges of pollutants. Leaks of fuel or lubricants, tire wear, brake dust, and fallout from exhaust can contribute petroleum hydrocarbons, heavy metals, and sediment to the pollutant load in runoff transported to receiving waters. Long-term degradation of runoff water quality from the site could adversely affect the quality of receiving waters.

Implementation of the following three-part mitigation measure would reduce construction- and operation-period impacts to water quality to a less-than-significant level:

> Mitigation Measure HYD-1a: To address potential impacts to receiving waters during construction, the proponents of specific development projects shall fully comply with the requirements of the Construction General Permit (Water Quality Order No. 99-08-DWQ). The Construction General Permit requires that each project sponsor prepare and implement a SWPPP for construction activities. The SWPPP for the Construction General Permit must meet the following objectives:
>
> - Identify sources of pollutants that could affect stormwater quality.
> - Identify non-stormwater discharges.

- Identify, implement, inspect, and maintain BMPs to reduce or eliminate pollutants in stormwater discharges and authorized non-stormwater discharges from the construction site.
- Develop a maintenance schedule for any post-construction BMPs.
- Identify a sampling and analysis program for discharges that have been discovered through visual monitoring to be potentially contaminated by pollutants not visually detectable in the runoff.

At a minimum, BMPs shall include practices to minimize the contact of construction materials, equipment, and maintenance supplies (e.g., fuels, lubricants, paints, solvents, and adhesives) with stormwater. The SWPPP shall specify properly-designed centralized storage areas that keep these materials out of the rain.

BMPs designed to reduce erosion of exposed soil may include, but are not limited to: soil stabilization controls, watering for dust control, perimeter silt fences, fiber rolls, and sediment basins. The potential for erosion is generally increased if grading is performed during the rainy season because disturbed soil can be exposed to rainfall and stormwater runoff. If grading must be conducted during the rainy season, the primary BMPs selected shall focus on erosion control (i.e., keeping sediment on the site). End-of-pipe sediment control measures (e.g., basins and traps) shall be used only as secondary measures. Ingress and egress from construction areas shall be carefully controlled to minimize off-site tracking of sediment. Vehicle and equipment wash-down facilities shall be designed to be accessible and functional during both dry and wet conditions.

To educate on-site personnel and maintain awareness of the importance of stormwater quality protection, site supervisors of specific development projects shall conduct regular tailgate meetings to discuss pollution prevention. The frequency of the meetings and required personnel attendance list shall be specified in the SWPPP. The SWPPP shall specify a monitoring program to inspect and maintain the construction site BMPs prior to an anticipated storm event and after actual storm events.

It is not required that the SWPPP be submitted to the Water Board, but it must be maintained on-site and made available to Water Board or City staff upon request. Water Board personnel, who may make unannounced site inspections, are empowered to levy considerable fines if it is determined that the SWPPP has not been properly prepared and implemented.

Mitigation Measure HYD-1b: To address potential impacts to receiving water quality during the operation of new industrial facilities at the project site, project sponsors of "industrial projects" (as defined in the Industrial General Permit) shall fully comply with the requirements of the Industrial General Permit (Water Quality Order No. 97-03-DWQ). The Industrial General Permit requires Airport facilities that have vehicle maintenance shops, equipment cleaning operations, or Airport deicing operations to implement a SWPPP. The SWPPP for the Industrial General Permit shall meet the following objectives:

- Identify and evaluate sources of pollutants associated with industrial activities that may affect the quality of stormwater discharges and authorized non-stormwater discharges.

- Identify, implement, inspect, and maintain BMPs to reduce or prevent pollutants associated with industrial activities in stormwater discharges and authorized non-stormwater discharges.

The SWPPP shall describe BMPs to be implemented for each potential pollutant source associated with industrial processes, material handling and storage areas, dust and particulate generating activities, significant spills and leaks, non-stormwater discharges, and soil erosion. Each facility operator shall conduct an Annual Comprehensive Site Compliance Evaluation to evaluate the effectiveness of the BMPs and revise the SWPPP as necessary.

A monitoring program shall be prepared to aid in the implementation and evaluation of the SWPPP. The monitoring program shall include visual monitoring of non-stormwater discharges on a quarterly basis and visual monitoring of stormwater discharges from storm events once per month during the wet season (October 1 to May 30). The facility operator shall collect stormwater samples during the first hour of discharge from the first storm event of the wet season and at least one other storm event during the wet season. The Airport operators shall analyze samples of stormwater discharges for total suspended solids, pH, specific conductance, total organic carbon, biological oxygen demand, chemical oxygen demand, ammonia, toxic chemicals, and other pollutants which are likely to be present in stormwater discharges. Facility operators may reduce the analysis of some chemical based on evidence that the chemical is not likely to be present in significant quantities.

An Annual Report shall be submitted to the Water Board by July 1 each year that includes a summary of monitoring activities, laboratory reports, the Annual Comprehensive Site Compliance Evaluation Report, an explanation regarding any activities required by the Industrial General Permit not implemented, and an evaluation of the effectiveness of the BMPs.

Mitigation Measure HYD-1c: To address potential impacts to receiving water quality from specific development projects at the project site, each project sponsor shall fully comply with the City of Livermore's Municipal Code and the Countywide NPDES Permit (Water Quality Order No. R2-2003-0021).

For all specific development projects that would create or replace a total of 10,000 square feet or more of impervious surfaces, the project sponsor shall submit a description of site design and source control measures and a preliminary design of treatment measures to reduce pollutants in stormwater discharges to the City of Livermore. All site design, source control, and treatment measures shall be based on guidance from the ACCWP's C.3 Stormwater Technical Guidance Handbook.[22] All treatment measures shall be designed in accordance with the numeric sizing criteria for pollutant removal systems defined in Provision C.3.d of the Countywide NPDES Permit. Volume-based treatment measures are required to capture 100 percent of the annual stormwater runoff and treat 80 percent of the annual runoff. Flow-based treatment systems shall be sized to treat at least 0.2 inches of rain per hour. Alternative methods for designing a flow-based treatment system are also identified in the Countywide NPDES Permit.

[22] Alameda Countywide Clean Water Program (ACCWP), 2006.

For all specific development projects that would create or replace a total of 1 acre or more of impervious surface, the project sponsor shall comply with performance criteria in the ACCWP's Hydrograph Modification Management Plan[23] and submit an evaluation of runoff under pre-project and post-project conditions to the City of Livermore. A preliminary design of the HM measures to ensure the volumes and durations of post-project runoff match the characteristics of pre-project runoff shall also be submitted to the City of Livermore. The HM measures shall be designed using the Bay Area Hydrology Model (BAHM)[24] software to calculate the size of hydromodification control facilities necessary to match pre-project runoff conditions.

The project sponsor shall establish a self-perpetuating drainage system maintenance program that includes annual inspections and maintenance of stormwater treatment or HM measures for the life of the project. An Operations and Maintenance Agreement shall be submitted to the City of Livermore with building permit applications. (LTS)

Impact HYD-2: Construction of specific development projects that could occur under buildout of the proposed project could deplete groundwater resources or reduce groundwater recharge. (S)

Specific development projects that could be constructed under buildout of the proposed project would not be expected to use local groundwater supplies (e.g., by installing and pumping water supply wells), and therefore would not lower the groundwater table. Development of the project site may result in an increase of impervious surfaces, which can reduce the groundwater recharge rate. Implementation of the following mitigation measure would reduce impacts related to groundwater recharge to a less-than-significant level:

Mitigation Measure HYD-2: Implement Mitigation Measure HYD-1c. (LTS)

Impact HYD-3: Construction of specific development projects that could occur under buildout of the proposed project could increase erosion and flooding due to alteration of drainage patterns or an increase in impervious surfaces. (S)

Development of the project site under the proposed project may result in an increase of impervious surfaces, which would increase the potential for erosion and flooding if drainage patterns are not properly managed. In addition, the project could conflict with Policy CIR-8.14.P1 (e) of the General Plan if specific development projects cause the impervious surface coverage of the Airport to increase beyond 60 percent of the total land area of the Airport. Implementation of the following mitigation measure would reduce impacts related to alteration of drainage patterns and impervious surface coverage to a less-than-significant level:

Mitigation Measure HYD-3: Implement Mitigation Measure HYD-1c. (LTS)

[23] Alameda Countywide Clean Water Program (ACCWP), 2005.

[24] The Bay Area Hydrology Model (BAHM) software was designed by Clear Creek Solutions and is available for download at the following website: www.bayareahydrologymodel.org/aboutbahm.html.

F. GEOLOGY, SOILS AND SEISMICITY

This section describes the geologic environment of the project site based on published and unpublished reports and maps by the United States Geological Survey (USGS), California Geological Survey (CGS), the Association of Bay Area Governments (ABAG), City of Livermore, and a site reconnaissance. This section also assesses impacts associated with the project due to strong ground shaking, liquefaction, differential settlement, and unstable or expansive soils. Mitigation measures for identified significant impacts are provided, where appropriate.

1. Setting

The proposed project's existing conditions related to geology and seismicity are described below.

a. Geology. The project site is located in the northwestern Livermore Valley. The Livermore Valley is located in the California Coast Ranges Geomorphic Province, a geologically young and seismically active region. Northwest-southeast trending ranges of low mountains and intervening valleys dominate this region.[1] The Valley is bounded to the north by the Tassajara Hills, to the east by the Greenville Fault and Altamont Hills, to the south by the Las Positas Fault and the central Diablo Range, and to the west by the Amador Valley, which is in turn bounded by the Calaveras Fault. The Livermore Valley is a deep structural basin containing young unconsolidated sedimentary deposits.[2,3]

b. Soils and Minerals. Portions of the site that are less developed are mantled by surface soils that reflect the characteristics of the underlying materials on which the soils developed. The surface soils in the project site have been mapped by the Natural Resource Conservation Service (NRCS) and consist of several soil types (see Figure V.F-1 and Table V.F-1 for a map of soils in the project area and a description of these soils, respectively). Soils in the area are generally corrosive to steel, which can constrain foundation and utility construction design. In addition, the Sunnyvale, Rincon, and Diablo clay loam soils are moderately to highly expansive.[4] Expansive soils can shrink and swell in response to the presence of water, causing foundation and wall cracks, heaving sidewalks, and creating flaws in paved areas. Generally, development in areas with expansive soils may require special building foundations or grade preparation, such as the removal of problematic soils and replacement with engineered soils.

[1] California Department of Conservation, 2002. California Geomorphic Provinces, Note 36, California Geographic Survey.

[2] Sloan, Doris, 2006. Geology of the San Francisco Bay Region, University of California Press.

[3] Graymer, R.W., Jones, D.L., and Brabb, E.E., 1996. Preliminary geologic map emphasizing bedrock formations in Alameda County, California: A digital database: U.S. Geological Survey Open-File Report 96-252.

[4] United States Department of Agriculture (USDA), 2009. Natural Resources Conservation Service, Web Soil Survey: Custom Soil Report for the Alameda Area, California. June 18.

Table V.F-1: Soils in the Project Site

Map Unit Symbol	Map Unit Name	Corrosion of Steel	Corrosion of Concrete	Depth to Water Table (feet)	Acres in Project Site	Percent of Project Site
DvC	Diablo clay, very deep, 3 to 15 percent slopes	High	Low	>200	1.3	0.3%
Lg	Livermore gravelly loam	Moderate	Low	>200	20.6	5.2%
PgA	Pleasanton gravelly loam, 0 to 3 percent slopes	Moderate	Moderate	>200	2.2	0.6%
RdA	Rincon clay loam, 0 to 3 percent slopes	High	Low	>200	22.0	5.6%
Rh	Riverwash	--	--	31	7.2	1.8%
Sl	Sunnyvale clay loam	High	Low	137	21.9	5.5%
So	Sycamore silt loam	High	Moderate	137	106.3	26.9%
YmA	Yolo loam, 0 to 3 percent slopes	High	Low	>200	129.6	32.8%
Yr	Yolo gravelly loam, 0 to 3 percent slopes	High	Low	>200	63.5	16.1%
Za	Zamora silt loam 0 to 4 percent slopes	High	Low	>200	20.4	5.2%
Totals					**395.0**	**100.0%**

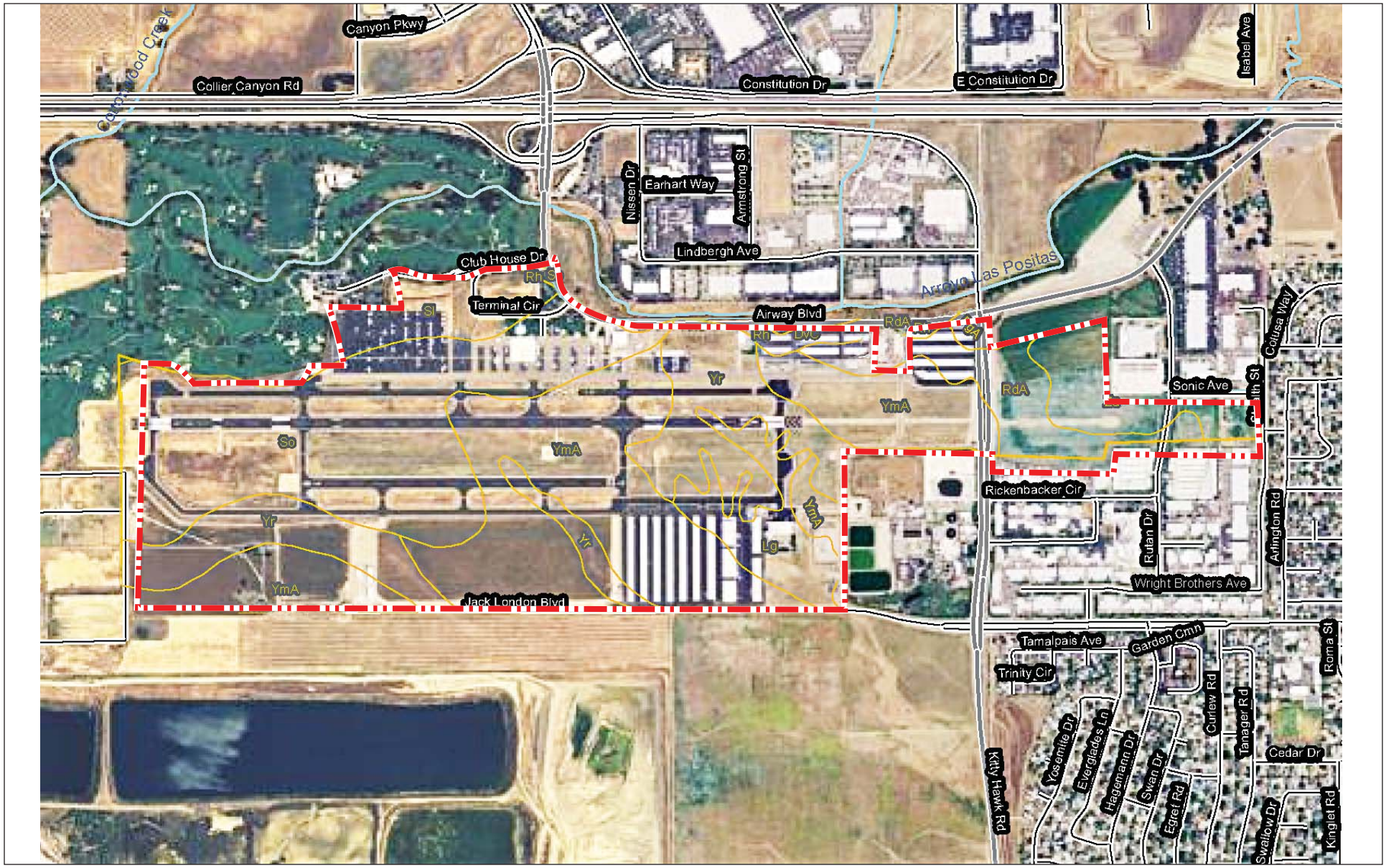
Source: USDA, 2009.

c. Topography. The approximately 395-acre project site is nearly flat with an overall down-slope to the west of less than 1 percent. The project site consists of an irregularly shaped rectangle, approximately 1.7 miles from east to west and 0.5 miles north to south. The elevation at the east end of the project site is approximately 410 feet National Geodetic Vertical Datum of 1929 (NGVD)[5], and approximately 375 feet NGVD at the west end.[6] Within the boundaries of the project site, drainage swales and slightly elevated taxiways and roads account for minor changes in local elevation. Along the north edge of the project site, Arroyo Los Positas influences the landforms and results in a gentle slope to the north near the edge of the project site. The areas surrounding the project site are similarly flat, with the nearest significant rise being the Tassajara foothills, approximately ½ mile to the north.

d. Seismic Conditions. The following discussion includes a description of the seismic setting of the project site.

[5] For most purposes, NGVD is equivalent to mean sea level.

[6] United States Geological Survey (USGS), 1961. Photo rev. 1980. Livermore Quadrangle 7.5' Topographic Map.



LSA

FIGURE V.F-1

Livermore Municipal Airport General Plan Amendment and Rezoning Project EIR

Soil Map

N

0 900 1800

FEET

DvC – DIABLO CLAY
Lg – LIVERMORE GRAVELLY LOAM
PgA – PLEASANTON GRAVELLY LOAM
RdA – RINCON CLAY LOAM
Rh – RIVERWASH
Sl – SUNNYVALE CLAY
So – SYCAMORE SILT LOAM
YmA – YOLO LOAM
Yr – YOLO GRAVELLY LOAM
Za – ZAMORA SILT LOAM

SOIL BOUNDARY
WATERCOURSE
PROJECT SITE

SOURCE: USDA, 2009. NRCS, WEB SOIL SURVEY: CUSTOM SOIL REPORT FOR THE ALAMEDA AREA, CALIFORNIA, JUNE 18

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Back of V.F-1

(1) Regional Seismicity. The entire San Francisco Bay Area is located within the San Andreas Fault System (SAFS), a complex of active faults forming the boundary between the North American and Pacific lithospheric plates. Movement of the plates relative to one another results in the accumulation of strain along the faults, which is released during earthquakes.[7] Numerous moderate to strong historic earthquakes have been generated in northern California by the SAFS. This level of active seismicity results in a relatively high seismic risk in the San Francisco Bay Area. The 2007 California Building Code provides for increasingly stringent construction requirements for projects in areas of high seismic risk.

The SAFS includes numerous faults found by the California Geological Survey under the Alquist-Priolo Earthquake Fault Zoning Act (A-PEFZA) to be "active" (i.e., to have evidence of fault rupture in the past 11,000 years). The A-PEFZA identifies hazard zones surrounding active faults where special geological investigations are required prior to construction of structures. Active regional faults include the San Andreas, Hayward, Calaveras, Concord-Green Valley, and Greenville faults. In addition to the known active faults, which are recognized under the A-PEFZA, recent research on the structural geology and tectonics of the region indicates that there is another potential source of large magnitude earthquakes in the region. A structural trend of folds and thrust faults has been mapped in the hills north of the Livermore Valley.[8] The largest of these features is the Mount Diablo anticline. Recent research has interpreted this feature to be a large fold developed above a buried ("blind") thrust fault.[9] The accumulation of strain on the "blind" Mount Diablo Thrust fault presents the potential for an earthquake along this structure. However, an earthquake on the fault would not be expected to cause fault rupture at the surface and therefore is not included in the A-PEFZA.

The Coast Range-Sierran Block Boundary (CRSBB) forms the geomorphic boundary of the Coast Ranges with the Central Valley to the east. A seismically active fold and thrust belt underlies this actively deforming boundary. The CRSBB is currently recognized as a potential seismic source capable of generating moderate earthquakes that could affect the project site.[10] Eleven moderate earthquakes (magnitude 5.8 to 6.8) have been documented along the CRSBB zone during the last 150 years, including the 1892 Winters earthquakes.[11] The 1983 Coalinga earthquake (magnitude 6.7) is a recent example of an earthquake that occurred on a blind thrust within the CRSBB zone. Active regional faults located in the vicinity of the project site are shown on Figure V.F-2.

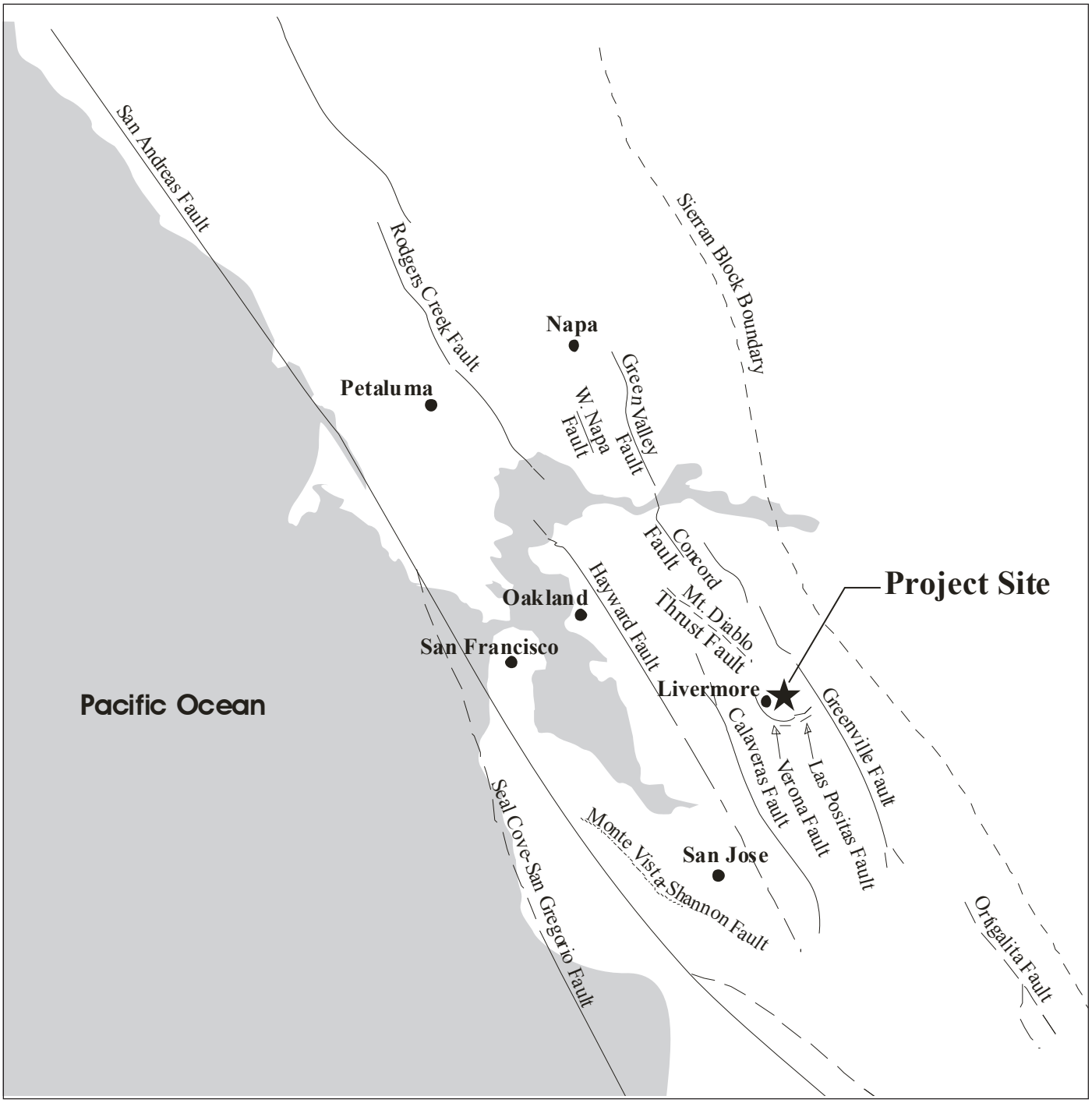
[7] Schulz, Sandra S., Wallace, Robert E., 1997. The San Andreas Fault, USGS General Interest Publications.

[8] Crane, R.C., 1995. "Geology of the Mount Diablo Region and East Bay Hills," in Sangines, E.M., Anderson, D.W., and Buising, A.V., eds., Recent Geologic Studies in the San Francisco Bay Area, Society of Economic Paleontologists and Mineralogists, Pacific Section, 76:87-114.

[9] Unruh, J.R., 2000. Characterization of Blind Seismic Sources in the Mt. Diablo-Livermore Region, San Francisco Bay Area, California, Final Technical Report, USGS National Earthquake Hazards Reduction Program Aware Number 99-HQ-GR-0069.

[10] Wong, I.G., Ely, R.W., and Lollmann, A.C., 1988. Contemporary Seismicity and Tectonics of the Northern and Central Coast Ranges-Sierran Block Boundary Zone, California, Journal of Geophysical Research, 93:7813-7833.

[11] Wakabayashi, J. and Smith, D.L., 1994. Evaluation of Recurrence Intervals, Characteristic Earthquakes, and Slip Rates Associated with Thrusting along the Coast Range-Central Valley Geomorphic Boundary, California, Bulletin of the Seismological Society of America, 84(6):1960-1970.



LSA

FIGURE V.F-2

Legend

Active Fault - Fault has evidence of surface displacement within the past 11,000 years (dashed where inferred)

Potentially Active Fault - Fault has evidence of surface displacement in the past 1.6 million years, but not within the past 11,000 years

Seismic Source without Surface Rupture

N

0 10 20
MILES

Livermore Municipal Airport General Plan Amendment and Rezoning Project EIR
Regional Faults

SOURCE: BASELINE ENVIRONMENTAL CONSULTING, 2009.

I:\CLV0802 Livermore Airport\figures\Fig_VF2.ai (6/23/09)

The USGS's Working Group on California Earthquake Probabilities estimates that there is a 63 percent chance that a 6.7 or greater magnitude[12] earthquake will occur in the San Francisco Bay Area between 2007 and 2036.[13] The probability of a 6.7 magnitude or greater earthquake occurring along individual faults was estimated to be 21 percent along the San Andreas Fault, 31 percent along the Hayward-Rodgers Creek Fault, 7 percent along the Calaveras Fault, 3 percent on the Concord-Green Valley fault, 3 percent on the Greenville Fault, and 1 percent along the Mt. Diablo Thrust Fault.

(2) Site-Specific Seismicity. A complex interaction of tectonic forces, geologic materials, soils, topography, and groundwater conditions affect the nature of seismic hazards at any site. There are no mapped active faults crossing or adjacent to the project site. The nearest A-PEFZA hazard zones to the project site are associated with the Calaveras Fault, approximately 5.5 miles to the southwest of the project site, and the Greenville Fault, approximately 6.3 miles to the northeast.[14] In 1980, two earthquakes occurred on the Greenville Fault that exhibited ground rupture and creep at the surface. On January 24, 1980 an earthquake of Richter Magnitude 5.5 (M5.5) occurred about 9 miles north of the project site. On January 26 a second quake, M5.8, occurred with an epicenter in the vicinity of Frick Lake. The earthquakes caused injuries and property damage in the City of Livermore. The damage included shattered windows, merchandise shaken from store shelves, mobile homes knocked off their foundations, swayed and cracked buildings, and snapped gas lines. The overpass of Greenville Road at I-580 was closed for repairs when the roadbed sank 12 inches due to the settlement of fill materials.[15]

e. Seismic and Geologic Hazards. The following section describes existing seismic and geologic hazards present at the project site.

(1) Surface Rupture. Surface rupture occurs when the ground surface is broken due to fault movement during an earthquake. The location of surface rupture generally can be assumed to be along an active or potentially active fault trace. No active faults have been mapped at or adjacent to the project site.[16]

(2) Ground Shaking. Ground shaking is a general term referring to all aspects of motion of the earth's surface resulting from an earthquake, and is normally the major cause of damage in seismic events. The extent of ground shaking is controlled by the magnitude and intensity of the earthquake, distance from the rupture, and local geologic conditions. Intensity is a subjective measure of the perceptible effects of seismic energy at a given point and varies with distance from the

[12] In the past, the standard for measurement of magnitude (M_L) by geologists and seismologists was the Richter Scale. However, due to limitations of the instruments used to measure Richter magnitude, moment magnitude (M_W) is now commonly used to characterize seismic events. Moment magnitude is determined from the physical size (area) of the rupture of the fault plane, the amount of horizontal and/or vertical displacement along the fault plane, and the resistance of the rock type along the fault to rupture. The moment magnitude can be calculated following an earthquake or estimated for an expected earthquake if the fault rupture area, displacement, and rock properties can be estimated accurately. Therefore, the magnitudes of expected earthquakes in the San Francisco Bay Area are reported as moment magnitudes.

[13] 2007 Working Group on California Earthquake Probabilities, 2008. The Uniform California Earthquake Rupture Forecast, Version 2 (UCERF 2): U.S. Geological Survey Open-File Report 2007-1437 and California Geological Survey Special Report 203.

[14] CGS, 1982. Special Studies Zone Map of the Altamont Quadrangle, (CDMG).

[15] California Geology, 1980. The Livermore Earthquake of January 1980, 33(4):91.

[16] GGS, 1982. Special Studies Zone Map of the Livermore Quadrangle.

epicenter and local geologic conditions. The Modified Mercalli Intensity Scale (MMI) (Table V.F-2) is the most commonly used scale for measurement of the subjective effects of earthquake intensity. Intensity can also be quantitatively measured using accelerometers (strong motion seismographs) that record ground acceleration at a specific location. Ground acceleration is a measure of force applied to a structure under seismic shaking. Acceleration is measured as a percentage of the acceleration under gravity (g).

A rupture of the Northern Calaveras Fault is considered capable of generating a moment magnitude (M_W) 6.8 earthquake. An earthquake matching this scenario is estimated to be capable of generating very strong to violent seismic shaking (MMI VIII - IX) at the project site.[17]

(3) Peak Acceleration. Estimates of peak ground acceleration have been made for the project site based on probabilistic models that account for multiple seismic sources. Under these models, consideration of the probability of expected seismic events is incorporated into the determination of the level of ground shaking at a particular location. The expected peak horizontal acceleration (with a 10 percent chance of being exceeded in the next 50 years) generated by any of the seismic sources potentially affecting the project site is estimated by the CGS as 0.525g peak ground acceleration.[18]

(4) Liquefaction. Liquefaction is the temporary transformation of loose, saturated, granular sediments from a solid state to a liquefied state as a result of seismic ground shaking. In the process, the soil undergoes a temporary loss of strength, which commonly causes ground displacement or ground failure to occur. Since saturated soils are a necessary condition for liquefaction, soil layers in areas where the groundwater table is near the surface have higher liquefaction potential than those in which the water table is located at greater depths. The depth below ground surface (bgs) to water in the area of the project site ranges from approximately 30 feet to more than 200 feet (see section V.B, Hydrology and Water Quality, for additional information about the groundwater system around the project site). Regional liquefaction hazard mapping indicates that the project site is subject to moderate to high liquefaction *susceptibility*, with an area at the north edge of the project site, along the channel for Arroyo Las Positas, mapped as having a "very high" susceptibility to liquefaction.[19] However, the liquefaction *hazard* is a function of liquefaction susceptibility, depth to groundwater, and the likelihood of severe earthquake-induced shaking. As a result, ABAG regional mapping indicates the liquefaction hazard is moderately low for the project site.[20]

[17] Association of Bay Area Governments (ABAG), 2004. Interactive Shaking Hazard Map. Website: gis.abag.ca.gov/website/Shaking-Maps/viewer.htm.

[18] CGS, 2003. Probabilistic Seismic Hazards. Website: www.conservation.ca.gov/cgs/rghm/psha/Pages/Index.aspx.

[19] ABAG, 2004. Interactive Liquefaction Susceptibility Map. Website: www.abag.ca.gov/cgi-bin/pickmapliq.pl.

[20] ABAG, 2001. Interactive Liquefaction Hazard Map. Website: www.abag.ca.gov/cgi-bin/pickmapliq.pl.

Table V.F-2: Modified Mercalli Intensity (MMI) Scale

I	Not felt except by a very few under especially favorable circumstances.
II	Felt only by a few persons at rest, especially on upper floors of buildings. Delicately suspended objects may swing.
III	Felt quite noticeably indoors, especially on upper floors of buildings, but many people do not recognize it as an earthquake. Standing motor cars may rock slightly. Vibration like passing of a truck. Duration estimated.
IV	During the day felt indoors by many, outdoors by few. At night some awakened. Dishes, windows, doors disturbed; walls make cracking sound. Sensation like heavy truck striking building. Standing motor cars rocked noticeably.
V	Felt by nearly everyone, many awakened. Some dishes, windows, etc., broken; a few instances of cracked plaster; unstable objects overturned. Disturbances of trees, poles, and other tall objects sometimes noticed. Pendulum clocks may stop.
VI	Felt by all, many frightened and run outdoors. Some heavy furniture moved; a few instances of fallen plaster or damaged chimneys. Damage slight.
VII	Everybody runs outdoors. Damage negligible in building of good design and construction; slight to moderate in well-built ordinary structures; considerable in poorly built or badly designed structures; some chimneys broken. Noticed by persons driving motor cars.
VIII	Damage slight in specially designed structures; considerable in ordinary substantial buildings, with partial collapse; great in poorly built structures. Panel walls thrown out of frame structures. Fall of chimneys, factory stacks, columns, monuments, walls. Heavy furniture overturned. Sand and mud ejected in small amounts. Changes in well water. Persons driving motor cars disturbed.
IX	Damage considerable in specially designed structures; well-designed frame structures thrown out of plumb; great in substantial buildings, with partial collapse. Buildings shifted off foundations. Ground cracked conspicuously. Underground pipes broken.
X	Some well-built wooden structures destroyed; most masonry and frame structures destroyed with foundations; ground badly cracked. Rails bent. Landslides considerable from river banks and steep slopes. Shifted sand and mud. Water splashed (slopped) over banks.
XI	Few, if any, (masonry) structures remain standing. Bridges destroyed. Broad fissures in ground. Underground pipelines completely out of service. Earth slumps and land slips in soft ground. Rails bent greatly.
XII	Damage total. Practically all works of construction are damaged greatly or destroyed. Waves seen on ground surface. Lines of sight and level are distorted.

Source: California Geological Survey, 2002. How Earthquakes and Their Effects are Measured, Note 32.

(5) Slope Stability and Lateral Spreading. Slope failure can occur as either a rapid movement of large masses of soil ("landslide") or a slow, continuous movement ("creep"). The primary factors influencing the stability of a slope are: 1) the nature of the underlying soil or bedrock; 2) the geometry of the slope (height and steepness); 3) rainfall; and 4) the presence of previous landslide deposits. The entire project site and the surrounding area are mapped for slope stability as Category 1 – Stable: areas of 0 – 5 percent slope that are not underlain by landslide deposits.[21]

Lateral spreading is a form of horizontal displacement of soil toward an open channel or other "free" face, such as an excavation boundary. Lateral spreading can result from either the slump of low cohesion unconsolidated material or, more commonly, by earthquake-induced liquefaction of either the soil layer or a subsurface layer underlying soil material on a slope, resulting in gravitationally

[21] USGS, 1979. Relative Slope Stability and Land-use Planning in the San Francisco Bay Region, California. USGS PP-944.

driven movement.[22] The project site is generally flat, and is unlikely to be subject to lateral spreading hazards.[23]

d. Regulatory Setting. The following discussion includes a description of the regulatory context (including regulatory agencies and policy documents) for geologic and seismic issues as they relate to development on the project site.

(1) Federal Aviation Administration. The Airports Division of the FAA maintains a record of Airport facilities and emergency services contacts. In the event of a serious earthquake around an Airport, the San Francisco Airports District Office will conduct a survey of the Airport facilities to assess damage and the need for federal funding for repairs to runways/taxiways, Airport access roads, and terminal/cargo facilities.[24]

(2) Surface Mining and Reclamation Act. The Surface Mining and Reclamation Act (SMARA, California Public Resources Code Section 2761, et seq.) requires local governments to consider the impacts of new development on the availability of mineral resources. [25]

(3) California Building Code. The 2006 Uniform Building Code (UBC) is published by the International Conference of Building Officials (ICBO), and is the widely adopted model building code in the United States. The 2007 California Building Code (CBC) is another name for the body of regulations known as the California Code of Regulations (CCR), Title 24, Part 2, which is a portion of the California Building Standards Code (CBSC). The CBC incorporates by reference the UBC requirements, with necessary California amendments. Title 24 is assigned to the California Building Standards Commission, which, by law, is responsible for coordinating all building standards. Under State law, all building standards must be centralized in Title 24 or they are not enforceable.

Compliance with the 2007 CBC requires that (with very limited exceptions) structures for human occupancy be designed and constructed to resist the effects of earthquake motions. The Seismic Design Category for a structure is determined in accordance with either CBC Section 1613 - *Earthquake Loads* or American Society of Civil Engineers (ASCE) Standard No. 7-05, *Minimum Design Loads for Buildings and Other Structures*. Based on the engineering properties and type of soils at a development site, the site is assigned a Site Class ranging from A to F. The Site Class is then combined with Spectral Response information (i.e., information about ground acceleration induced by earthquakes) for the location, resulting in the identification of a *Seismic Design Category* ranging from A to D, D representing the most severe conditions. The classification of the site and related calculations must be determined by a qualified person.

(4) Alquist-Priolo Earthquake Fault Zoning Act (A-PEFZA). Surface rupture is the most easily avoided seismic hazard. The A-PEFZA was passed in December 1972 to mitigate the hazard of surface faulting in structures used for human occupancy. The A-PEFZA's main purpose is to prevent

[22] Rauch, Alan F., 1997. EPOLLS: An Empirical Method for Predicting Surface Displacements Due to Liquefaction-Induced Lateral Spreading in Earthquakes, Ph. D. Dissertation, Virginia Tech, Blacksburg, VA.

[23] ABAG, 2004. Interactive Liquefaction Hazard Map.

[24] City of Livermore, 2005. Comprehensive Emergency Management Plan: Annex D.

[25] California Department of Conservation (CDC), 1987. Mineral Land Classification Special Report 146, Map Plate 2.14, Livermore Quadrangle.

the construction of buildings used for human occupancy on the surface trace of active faults. The A-PEFZA only addresses the hazard of surface fault rupture and is not directed toward other earthquake hazards (the Seismic Hazards Mapping Act, passed in 1990, addresses non-surface fault rupture earthquake hazards, including liquefaction and seismically-induced landslides).

The law requires the State Geologist to establish regulatory zones, known as Earthquake Fault Zones, around the surface traces of active faults and to issue appropriate maps. The maps are distributed to all affected cities, counties, and State agencies for their use in planning and controlling new or renewed construction. Local agencies must regulate most development projects within the zones. Projects include all land divisions and the development of most structures for human occupancy. Before a project can be permitted, cities and counties must require a geologic investigation of a project site to demonstrate that proposed buildings will not be constructed across active faults. The evaluation and written report of a specific site must be prepared by a licensed geologist. If an active fault is found, a structure for human occupancy must be set back 50 feet from the fault trace.

(5) Seismic Hazards Mapping Act (SHMA). In 1990, following the Loma Prieta earthquake, the California Legislature enacted the SHMA to protect the public from the effects of strong ground shaking, liquefaction, landslides and other seismic hazards. The SHMA established a State-wide mapping program to identify areas subject to violent shaking and ground failure; the program is intended to assist cities and counties in protecting public health and safety. The SHMA requires the State Geologist to delineate various seismic hazard zones and requires cities, counties, and other local permitting agencies to regulate certain development projects within these zones. As a result, the California Geologic Survey is mapping SHMA Zones and has completed seismic hazard mapping for the portions of California most susceptible to liquefaction, ground shaking, and landslides: primarily the San Francisco Bay area and Los Angeles basin. Before a development permit is granted for a site within a seismic hazard zone, a geotechnical investigation of the site must be conducted and appropriate mitigation measures incorporated into the project design. Seismic Hazard Zones mapped under the SHMA may include areas that have already had hazard mitigation imposed under local standards.

(6) City of Livermore. The City of Livermore Municipal Code is a compilation of applicable ordinances (rules, regulations, or standards) that comprise the City's primary code. Secondary codes include any other codes adopted by reference, such as building, fire safety, and electrical codes. Applicable amendments to the International Building Code (the CBC, as adopted in California) in the Municipal Code and geology and seismic policies in the General Plan are listed below.

City of Livermore Municipal Code. The following sections of the Municipal Code amend the applicable building code, in part to address seismic hazards.

Title 11 – Airports
Chapter 11.08 – Airport Rules and Regulations
Applicability and restrictions of the California Building Code applied to Airport facilities.

Title 15 – Building and Construction
Chapter 15.02.030 – Building Codes

Amendments to International Building Code. The International Building Code (IBC) adopted in this chapter by reference is amended by the following additions, deletions and amendments thereto as set forth in this chapter. Reference numbers are taken from the 2007 California Building Code. (Ord. 1833 Section 2, 2007)

City of Livermore General Plan, Public Safety Element. The following policies from the Public Safety Element of the City of Livermore General Plan that specifically address soil or geology hazards are applicable to the proposed project.

- *Policy PS-1.1.P2*: The City shall rely on the most current and comprehensive geologic hazard mapping available to assist in the evaluation of potential seismic hazards associated with proposed new development. Projects proposed in areas identified as being subject to moderate or high geologic hazard shall be required to conduct a site-specific geotechnical investigation.
- *Policy PS-1.P4*: Geologic and engineering studies shall be required for all proposed building projects, per State law, and all critical facilities (schools, hospitals, fire and police stations) within the City so that these facilities can be constructed in a manner that mitigates site-specific geotechnical challenges and will minimize the risk to the public from seismic hazards.
- *Policy PS-1.2.P2*: Areas of high shrink-swell potential soils shall incorporate suitable mitigation measures. If development is allowed in areas of high shrink-swell potential, special measures must be undertaken in site grading, foundation design and construction to alleviate potential movements.
- *Policy PS-1.2. P3*: The City shall control site preparation procedures and construction phasing to reduce erosion and exposure of soils to the maximum extent possible.

2. Impacts and Mitigation Measures

The following section presents a discussion of the impacts related to geology, soils and seismicity that could result from implementation of the proposed project. The section begins with the criteria of significance, establishing the thresholds to determine whether an impact is significant. The latter part of this section presents the geology, soils and seismicity impacts that could result from the proposed project. Impacts are organized into separate categories based on their significance according to the criteria listed below: less-than-significant impacts, and significant impacts.

a. Criteria of Significance. The following criteria of significance are used to establish the thresholds for determining whether an impact is significant. The project would have a significant impact related to geology, soils, or seismicity if it would:

- Expose significant numbers of people or structures to rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault;
- Expose people or structures to geologic hazards that could result in loss, injury or death related to strong seismic ground shaking or seismic-related ground failure, including liquefaction or landslides;
- Result in substantial soil erosion or the loss of topsoil, changes in topography, or unstable soil conditions;
- Result in development on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction, or collapse;

- Result in development on expansive soil, as defined in the Uniform Building Code, creating substantial risks to life or property;
- Result in the loss of availability of a known mineral resource that would be of value to the region and residents of the state or a locally-important mineral resource recovery site delineated on a local general plan, specific plan, or other land use plan; or
- Result in the development of incompatible uses in and within ½-mile of a designated mineral resource area.

b. Less-Than-Significant Geology Soils and Seismicity Impacts. The proposed project consists of rescinding the 1975 Airport Master Plan, undertaking a General Plan Amendment, and rezoning a 395-acre portion of the Airport. The project would allow for the development of aviation-related land uses and related facilities similar to those currently allowed on the site.

The project would not create new conditions that would expose people or structures to substantial adverse effects involving surface rupture of a known earthquake fault, as no active faults have been mapped at or adjacent to the project site. The potential for fault rupture at the project site is considered negligible. The project would not result in the exposure of people or structures to potential landslides as the site and surrounding area are relatively level, and have been mapped as stable land not underlain by landslide deposits.

Subsidence or collapse can result from the removal of subsurface water resulting in either a sudden or gradual depression of the surface elevation of a site. Development at the project site (similar to existing development) is expected to be supplied by local water utilities and would not remove groundwater. Therefore, subsidence or collapse would not be expected to occur. The project site is located in the north-central portion of the Livermore Valley, a relatively large structural basin that has filled with young sedimentary deposits; as such, the project site is not located on an unstable geologic unit, the development of which would be expected to result in on- or off-site landslides, subsidence, or collapse.

The project site does not overlie a mapped oil, gas, or geothermal field, and does not contain areas mapped as MRZ-2a or MRZ-2b (areas where information or data indicate that significant mineral resources do or may exist). Implementation of the proposed project would therefore not result in the loss of a known mineral resource that would be of value to the region or residents of the State, nor result in the loss of availability of a locally important mineral resource site.[26] The project would not result in fundamental changes to land uses within the site, and therefore would not result in the development of uses that would conflict with mineral extraction activities in the vicinity of the site (including potential future rock quarrying). Airport uses on the site are generally compatible with aggregate mining activities.

The proposed project area is served by a municipal sanitary sewer system; septic tanks and alternative waste water systems are not expected to be used on the site as part of future development conditions and so no impact related to these uses is anticipated. Environmental impacts related to soil and topsoil erosion are discussed in Section V.B, Hydrology and Water Quality.

[26] CDC, 1996. Update of Mineral Land Classification: Aggregate Materials in the South San Francisco Bay Production-Consumption Region. OFR 96-03, plate 16.

c. Significant Geology, Soils, and Seismicity Impacts. Two potentially significant impacts are discussed below.

Impact GEO-1: Seismically-induced ground shaking and liquefaction in the area of the proposed project could result in injuries, fatalities, and/or property damage. (S)

All structures in the Bay Area could be affected by ground shaking in the event of an earthquake. Worst-case ground shaking potential is estimated by assessing the maximum expected earthquake and designing for peak accelerations that may be generated. Very strong to violent (MMI VIII-IX) ground shaking is expected at the project site during a large earthquake on the Calaveras or Mt. Diablo faults. This level of seismic shaking could cause injuries and/or fatalities and structural and non-structural damage to buildings constructed as part of project buildout.

The entire project site has been mapped under the SHMA to be within a zone of required investigation for liquefaction. However, the depth to the water table (generally greater than 30 feet bgs), and level of earthquake shaking hazard in the project site results in a liquefaction hazard that is mapped as "moderately low" by ABAG based on USGS data. Nevertheless, the surface geology in the area of the project site is composed of young unconsolidated sedimentary deposits. These deposits are rated as highly *susceptible* to liquefaction, and the project site is within a State-mapped Seismic Hazard Zone for liquefaction.

Although the project would not include specific future development projects, eventual buildout of the project site would be subject to the constraints resulting from these seismic and geologic hazards. The mitigation measure described below would reduce the potential hazards associated with ground shaking and related liquefaction to a less-than-significant level.

> Mitigation Measure GEO-1: A geotechnical investigation, prepared by a licensed professional, shall be required under the terms of the SHMA for any future development within the project site. The geotechnical investigation shall also meet the requirements of the City of Livermore Building Division. The recommendations of the geotechnical investigation shall be adopted into future project design, and eventual construction shall be in conformance with standards in the applicable California Building Code. (LTS)

Impact GEO-2: Structures or improvements could be adversely affected by expansive and/or corrosive soils. (S)

Soils underlying the project site have a high shrink-swell potential.[27] This potential can result in expansive soils that undergo alternating cycles of wetting (swelling) and drying (shrinking). During these cycles, the volume of the soil changes markedly. As a consequence of such volume changes, structural damage to building and infrastructure may occur if the potentially expansive soils are not considered during the project design process and during construction. In addition, most soils on the project site are identified as being highly corrosive to steel.

[27] USDA, 2009.

Specific development projects on the site could be adversely affected by expansive and corrosive soils. The following two-part mitigation measure described below would reduce the potential hazards associated with expansive and/or corrosive soils to a less-than-significant level:

> Mitigation Measure GEO-2a: Plans for future projects, such as building foundations and improvements, including sidewalks, parking lots, and subsurface utilities, shall show consideration of expansive soil conditions and incorporate measures to ensure that potential damage due to shrink/swell potential of soils is minimized. Corrective measures may include removal and replacement of problematic soils with engineered and compacted fill, proper drainage design, or design and construction of improvements to withstand the forces exerted by expected shrink/swell cycles. The design criteria shall be in accordance with the recommendations of a licensed professional.
>
> Mitigation Measure GEO-2b: Plans for future projects shall be based on an evaluation of site soils for corrosion potential. If the results of the evaluation indicate corrosive soil conditions, appropriate measures to mitigate these conditions shall be incorporated into the design of project improvements that may come into contact with site soils as determined by the Building Division. Wherever corrosive soils are found in sufficient concentrations, recommendations shall be made to protect iron, steel, metal, and/or concrete, as appropriate, from long-term deterioration caused by contact with corrosive on-site soils. (LTS)

G. HAZARDS AND HAZARDOUS MATERIALS

This section describes hazardous materials[1] and other hazards to public health and safety that could result from implementation of the proposed project. Available reports, maps, and other documents, including a Phase I Environmental Site Assessment (ESA), a site visit on July 8, 2008, wildfire susceptibility mapping, and Federal Aviation Administration (FAA) records were reviewed to identify potential hazards in and around the project site.

1. Setting

This section summarizes the regulatory framework for hazardous materials, hazardous waste, and other hazards (including wildland fires); lead, asbestos, and other hazardous building materials; and applicable worker health and safety requirements. This section also describes Airport-specific hazards and the current use and storage of hazardous materials at the project site.

a. Regulatory Framework. Regulations pertaining to the management of hazardous materials, wildland fires, and Airport land uses are based on a combination of federal, State, and local laws and regulations. These laws and regulations are summarized below; this discussion also includes information on the administering federal, State, and local agencies.

(1) Federal. The U.S. Environmental Protection Agency (EPA) is the lead agency responsible for enforcing federal laws and regulations pertaining to hazardous materials that affect public health and the environment. The major federal laws and regulations enforced by the EPA include the: Resource Conservation and Recovery Act (RCRA); Toxic Substances Control Act (TSCA); Comprehensive Environmental Response, Compensation and Liability Act (CERCLA); and Superfund Amendments and Reauthorization Act (SARA).

In 1974, RCRA was enacted to provide a general framework for the EPA to regulate hazardous waste from the time it is generated until its ultimate disposal. In accordance with RCRA, facilities that generate, treat, store, or dispose of hazardous waste are required to ensure that the wastes are properly managed from "cradle to grave."

In 1976, TSCA was enacted to provide the EPA authority to regulate the production, importation, use, and disposal of chemicals that pose a risk of adversely affecting public health and the environment, such as polychlorinated biphenyls (PCBs), asbestos-containing materials (ACM), and lead-based paint. TSCA also gives the EPA authority to regulate the cleanup of sites contaminated with specific chemicals, such as PCBs. Additional regulations concerning the management of PCBs, ACM, and lead-based paint are discussed, below, under State regulations.

In 1980, CERCLA, commonly known as "Superfund," was enacted to ensure that a source of funds would be available for the EPA to clean up uncontrolled or abandoned hazardous materials release

[1] The California Health and Safety Code defines a hazardous material as "….any material that, because of its quantity, concentration, or physical or chemical characteristics, poses a significant present or potential hazard to human health and safety, or to the environment. Hazardous materials include, but are not limited to, hazardous substances, hazardous waste, radioactive materials, and any material which a handler or the administering agency has a reasonable basis for believing that it would be injurious to the health and safety of persons or harmful to the environment if released into the workplace or the environment." (Health and Safety Code, Section 25501).

sites that pose a risk of adversely affecting public health and the environment. Prohibitions and requirements regarding closed or abandoned hazardous waste sites and liability standards for responsible parties were also established by CERCLA. In 1986, SARA amended CERCLA to increase the Superfund budget, modify contaminated site cleanup criteria and schedules, and revise settlement procedures.

While the EPA regulates overall use and cleanup of hazardous materials, the U.S. Department of Transportation (DOT) is the federal administering agency responsible for hazardous materials transportation regulations. The DOT Office of Hazardous Materials Safety oversees a national safety program to minimize the risks related to commercial transportation of hazardous materials. The federal hazardous materials transportation law (49 USC 5101 et seq.) is the basic statute regulating hazardous materials transportation in the United States.

Motor carriers transporting petroleum are required to prepare and implement a Response Plan that describes health and safety training, equipment testing, and response actions to prevent or mitigate a release of petroleum during transportation.[2] Motor carriers transporting hazardous materials are subject to package marking, labeling, and placarding requirements that identify the hazards associated with the materials being transported. Health and safety training and emergency response information must also be maintained by motor carriers transporting hazardous materials to prevent or mitigate a release of hazardous materials.[3] In California, the California Department of Transportation (Caltrans) is the implementing agency for DOT laws and regulations.

(2) State. In California, the EPA has granted most enforcement authority of federal hazardous materials regulations to the California Environmental Protection Agency (Cal/EPA). Under the authority of Cal/EPA, the Department of Toxic Substances Control (DTSC) or the San Francisco Bay Regional Water Quality Control Board (Water Board) is responsible for overseeing the cleanup of contaminated sites in the vicinity of the project site.

Cal/EPA has also granted responsibilities to local agencies, such the Livermore-Pleasanton Fire Department, for implementation and enforcement of hazardous material regulations under the Unified Program.[4] The Unified Program is discussed, below, under local regulations.

Hazardous Materials Release Sites. Known or suspected contaminated sites under DTSC or Water Board oversight are identified by Cal/EPA pursuant to Government Code section 65962.5. The provisions of Government Code section 65962.5, which are commonly referred to as the Cortese List, require the DTSC, the Water Board, the Department of Health Services, and the California Integrated Waste Management Board to submit information pertaining to sites associated with solid waste disposal, hazardous waste disposal, and/or hazardous materials releases to the Secretary of Environmental Protection.

Worker Health and Safety. Worker health and safety is protected by federal and State laws and regulations. The Occupational Health and Safety Administration (OSHA) is the federal

[2] Code of Federal Regulations, Chapter 49, Part 130.

[3] Code of Federal Regulations, Chapter 49, Part 172.

[4] California Health and Safety Code, Chapter 6.11, Sections 25404-25404.8.

administering agency for worker health and safety regulations. The federal OSHA is responsible for enforcement and implementation of federal laws and regulations pertaining to worker health and safety. Under OSHA jurisdiction, the Hazardous Waste Operations and Emergency Response (HAZWOPER) regulations[5] require training and medical supervision for workers at hazardous waste sites. Additional regulations have been developed for construction workers regarding exposure to lead[6] and asbestos[7] during construction activities.

The California Department of Industrial Relations, Division of Occupational Safety and Health (DOSH), enforces State regulations and supervision of work places in California that are not under direct federal jurisdiction. State worker health and safety regulations applicable to construction workers include training requirements for hazardous waste operations and emergency responses,[8] and lead[9] and asbestos[10] regulations which equal or exceed their federal counterparts.

Hazardous Building Materials. Federal and State regulations govern the removal of ACM from structures prior to demolition. These requirements are promulgated by EPA, OSHA, DTSC, and the Bay Area Air Quality Management District (BAAQMD). At the project site, the BAAQMD, under authority of the California Air Resources Board, would be the lead agency overseeing hazardous air emissions. All friable (crushable by hand) ACMs, or non-friable ACMs subject to damage must be abated prior to demolition in accordance with applicable requirements. Friable ACM must be disposed of as an asbestos waste at an approved facility. Non-friable ACM may be disposed of as a non-hazardous waste at landfills that will accept such wastes. Workers conducting asbestos abatement must be trained in accordance with State and federal OSHA requirements. The BAAQMD must be notified at least 10 working days prior to commencement of demolition activities involving the removal of regulated ACM. In addition, Section 19827.5 of the California Health and Safety Code requires that local agencies not issue demolition or alteration permits until an applicant has demonstrated compliance with notification requirements under applicable federal regulations regarding hazardous air pollutants, including asbestos.[11]

Federal and State regulations also govern the demolition of structures where lead or material containing lead is present. Regulations pertaining to demolition of structures with lead-based paint are promulgated by EPA, the U.S. Department of Housing and Urban Development (HUD), DOSH, and DTSC. Federal regulations require that lead-based paint containing lead concentrations equal to or greater than one milligram per square centimeter, or 0.5 percent by weight, be removed prior to demolition if the paint is loose and peeling.[12] Loose and peeling paint must be disposed of as a State and/or federal hazardous waste if the concentration of lead equals or exceeds applicable waste thresholds. State and federal construction worker health and safety regulations require a supervisor

[5] Code of Federal Regulations, Chapter 29, Section 1210.120.

[6] Code of Federal Regulations, Chapter 29, Section 1926.62.

[7] Code of Federal Regulations, Chapter 29, Section 1926.1101.

[8] California Code of Regulation, Chapter 8, Section 5192.

[9] California Code of Regulation, Chapter 8, Section 1532.1.

[10] California Code of Regulation, Chapter 8, Section 1529.

[11] California Code of Regulation, Chapter 8, Sections 341.6 through 341.14 and 1529.

[12] Code of Federal Regulations, Chapter 40, Section 745.227(h).

who is certified to identify existing and predictable lead hazards to oversee air monitoring and other protective measures during demolition activities where lead-based paint may be present. Special protective measures and notification to DOSH are required for highly hazardous construction tasks related to lead as listed in 8 CCR 1532.1, such as manual demolition, abrasive blasting, welding, cutting, or torch burning of structures where lead-based paint is present.

Fluorescent lighting tubes and ballasts, mercury thermometers, and several other common items containing hazardous materials are regulated as "universal wastes" by the State. Universal waste must be recycled under the simple, streamlined universal waste handler standards for the State.[13]

Wildland Fire Hazards. State policies regarding wildland fire safety are administered by the Office of the State Fire Marshal (OSFM) and the California Department of Forestry and Fire Protection (CDF). State lands are classified by the CDF into Fire Hazard Severity Zones to assist responsible State and local agencies identify measures to reduce the potential for losses of life, property, and resources from wildland fire. Fire Hazard Severity Zones are classified by the CDF Director in accordance with California Public Resource Code (PRC) sections 4201 through 4204 for State responsibility areas and in accordance with Government Code sections 51176 through 51189 in local responsibility areas. Fire Hazard Severity Zones mapped by the CDF for State and local responsibility areas are classified as either "Medium," "High," or "Very High," based on expected fire hazards; however, the law only requires identification of Very High Fire Hazard Severity Zones in local responsibility areas. Wildland-Urban Interface Areas designated by local agencies are also classified as Fire Hazard Severity Zones.

Construction contractors are required to comply with the following requirements in the PRC during construction activities at sites with any forest, brush, or grass-covered land:

- Earthmoving and portable equipment with internal combustion engines must be equipped with a spark arrestor to reduce the potential for igniting a wildland fire (PRC Section 4442).
- Appropriate fire suppression equipment must be maintained during the highest fire danger period – from April 1 to December 1 (PRC Section 4428).
- On days when a burning permit is required, flammable materials must be removed to a distance of 10 feet from any equipment that could produce a spark, fire, or flame, and the construction contractor must maintain the appropriate fire suppression equipment (PRC Section 4427).
- On days when a burning permit is required, portable tools powered by gasoline-fueled internal combustion engines must not be used within 25 feet of any flammable materials (PRC Section 4431).

Airport Land Use Protection. The City of Livermore adopted an Airport Protection Area (APA) in 1991, which protects the Livermore Municipal Airport from the encroachment of land uses incompatible with safe Airport operations. The APA was incorporated by the Alameda County Airport Land Use Commission (ALUC) into the *Alameda County Airport Land Use Policy Plan* (ALUPP) for the Airport.[14] The ALUPP delineates four planning boundaries within and in the vicinity

[13] California Code of Regulations, Title 22, Division 4.5.

[14] Livermore, City of, 2003. *General Plan*.

of the Airport and identifies land uses within those boundaries that are potentially incompatible with Airport operations. The Airport planning boundaries include the following: a general referral area, height referral area, safety zone, and a noise impact zone. Proposed construction projects within the planning boundaries for the Airport must be referred to the ALUC to determine if the project is consistent with the ALUC policies for those boundaries.[15]

The ALUC policies restrict population density and structural development within the safety zone and height referral area of the Airport, respectively. The safety zone policies recommend that land within ¼-mile of the Airport runway remain clear and all other land uses within the safety zone be low density and non-residential. The ALUC height referral area for the Livermore Municipal Airport delineates navigable airspace that could potentially be affected by construction equipment or structures.[16] Furthermore, the FAA requires notification of proposed construction or alteration projects that exceed an adopted height referral area at least 30 days prior to beginning construction (FAA Form 7460-1). Following notification of proposed construction, the FAA would conduct an aeronautical study to determine if proposed structures and construction equipment would create an airspace hazard. The FAA commonly requires structures and construction equipment affecting navigable airspace to be marked and/or lighted to ensure visibility by aircraft.[17] Other airspace protection concerns identified by the FAA include electrical interference, lighting, glare, smoke, and bird strikes (see Section V.I, Biological Resources, for a discussion of bird strikes).

(3) Local. The Alameda County Water District (ACWD) entered into a Cooperative Agreement with the Water Board on June 27, 1996 to oversee the investigation and remediation of leaking underground fuel tanks and spills or leaks from other structures that contain polluted groundwater or surface water threaten to pollute bodies of water.[18] Hazardous waste management in the City of Livermore is governed by the Alameda County Hazardous Waste Management Plan. The Alameda County Hazardous Waste Management Plan encourages the reduction of hazardous waste generated in the County.[19]

The Livermore-Pleasanton Fire Department (LPFD) is a Certified Unified Program Agency that implements hazardous materials regulations under the Unified Program for the City of Livermore. The Unified Program consolidates, coordinates, and makes consistent the administrative requirements, permits, inspections, and enforcement activities of the following environmental and emergency response programs:

- Hazardous Materials Business Plan (HMBP) Program
- California Accidental Release Prevention Program

[15] Airport Land Use Commission of Alameda County, 1986. *Alameda County Airport Land Use Policy*. July 16.

[16] Ibid.

[17] Federal Aviation Administration (FAA), U.S. Department of Transportation, 2007. *Obstruction Marking and Lighting*. February 1.

[18] Alameda County Water District (ACWD), 1996. *Cooperative Agreement between the California Regional Water Quality Control Board – San Francisco Bay Region and Alameda County Water District*. June 27.

[19] Alameda County Waste Management Authority, 1995. *Alameda County Hazardous Waste Management Plan.* November.

- Underground Storage Tank Program
- Above Ground Petroleum Tank Program (Spill Prevention, Control, and Countermeasure (SPCC) plans)
- Hazardous Waste Generator Program
- On-site Treatment of Hazardous Waste Program

The City requires any facility that stores or uses hazardous materials to submit a Hazardous Materials Declaration to the City prior to the issuance of building permits. In accordance with the HMBP program, the LPFD requires a HMBP to be prepared for any facility storing aggregate quantities of any hazardous material equal to or greater than 55 gallons of liquids, 500 pounds of solids, or 200 cubic feet of gases. A HMBP must include measures for safe storage, transportation, use, and handling of hazardous materials. The HMBP must also include employee training provisions and a contingency plan that describes the facility's response procedures in the event of a hazardous materials release.

The LPFD oversees leak prevention requirements for underground storage tanks (USTs). An SPCC plan is required for facilities with more than 1,320 gallons of aggregate aboveground oil storage capacity or more than 42,000 gallons of underground oil storage capacity. An SPCC plan must address prevention, preparation, and response measures to prevent oil discharges into navigable water and adjoining shorelines.

b. Hazardous Materials in Soils and Groundwater. In general, land uses associated with hazardous materials at the project site have included agriculture and Airport operations. The project site was used for agricultural purposes as early as 1958 until construction of the Airport in 1965/1966.[20] Agricultural chemicals commonly used in the past, such as organochlorine pesticides and inorganic pesticides, can leave residues in shallow soils that persist for many decades. Chemicals used for maintenance and fueling of aircraft and Airport vehicles may include aviation gasoline, jet fuel, diesel fuel, motor oil, hydraulic fluids, coolants, and solvents. Hazardous materials at the Airport are handled in accordance with the safety and emergency response procedures described in the Airport's HMBP and SPCC plan.

A review of listed hazardous material release sites compiled pursuant to Government Code Section 65962.5 (Cortese List), indicates that there are two reported hazardous materials releases at the project site and one reported hazardous materials release at the Las Positas Golf Course adjacent to the project site. Regulatory agency oversight of the hazardous materials release sites has been closed, indicating that remediation and monitoring activities are complete. Summaries of each site are presented below.

(1) Project Site. In 1991, a release of jet fuel from a UST east of the terminal building on the northern portion of the project site was reported. The affected soils were excavated and disposed of

[20] Baseline, 2001. *Phase I Site Assessment, Livermore Municipal Airport, 636 Terminal Circle, Livermore, California*. October.

off-site. Regulatory oversight of the site was closed in 1996.[21] In November 2005, a release of aviation fuel from piping associated with USTs east of the terminal building on the northern portion of the project site was reported. Affected soils were excavated and disposed of off-site. Regulatory oversight of the site was closed in 2007.[22]

(2) Las Positas Golf Course. A release of diesel fuel from a UST at the Las Positas Golf Course site was reported in 1989. Affected soils were excavated and disposed of off-site. Regulatory oversight of the site was closed in 1998.[23]

c. Hazardous Building Materials. Hazardous materials are commonly found in building materials that may be affected by demolition and renovation activities. Building materials such as thermal system insulation, surfacing materials, and asphalt and vinyl flooring materials installed in buildings prior to 1981 may contain asbestos, according to DOSH.[24] Asbestos is a known human carcinogen.[25] Prior to 1978, lead compounds were commonly used in interior and exterior paints. Lead is a State-recognized carcinogen and reproductive toxicant.[26] Buildings at the project site may contain asbestos fibers and lead-based paint. In addition, other common items present in buildings, such as electrical transformers, fluorescent lighting, electrical switches, heating/cooling equipment, and thermostats could contain hazardous materials, which may pose a public health and environmental risk if not handled and disposed of properly.

d. Sensitive Receptors. No existing or proposed schools are located within ¼-mile of the project site, although residential uses border the far eastern end of the site.[27] The project site is located near Interstate 580, which would be used in the event of an emergency evacuation. According to the City of Livermore's Comprehensive Emergency Management Plan, the project site may be used as a place of refuge in the event of a large-scale evacuation.[28]

e. Wildland Fire Areas. Fire protection of the project site is the local responsibility of the LPFD. No Fire Hazard Severity Zones for State responsibility areas[29] or Very High Fire Hazard Severity

[21] State Water Resource Control Board (SWRCB), 2009. GeoTracker Database, *Livermore Municipal Airport (T0600100843)*. Website: geotracker.swrcb.ca.gov/. Accessed on June 23.

[22] Alameda County Environmental Health Services, 2007. *Fuel Leak Case No. RO0002909 and Geotracker ID T06019786373, City of Livermore Airport, 636 Terminal Drive, Livermore, CA 94550.* September 19.

[23] State Water Resource Control Board (SWRCB), 2009. GeoTracker Database, *Las Positas Golf Course (T0600100816)*. Website: geotracker.swrcb.ca.gov/. Accessed on June 23.

[24] California Code of Regulations, Title 8, Section 5208.

[25] Agency for Toxic Substances and Disease Registry, 2001. *ToxFAQs for Asbestos*. September.

[26] California Environmental Protection Agency (Cal/EPA), Office of Environmental Health Hazard Assessment, 2007. *Safe Drinking Water and Toxic Enforcement Act of 1986, Chemicals Known to the State to Cause Cancer or Reproductive Toxicity*. June 1.

[27] Livermore Valley Joint Unified School District, 2008. *Map - Livermore Valley Joint Unified School District.* Website: www.livermoreschools.com/_Submenu/Schools.html. Accessed on September 24.

[28] Livermore, City of, 2005. *Comprehensive Emergency Management Plan*. October 8.

[29] California Department of Forestry and Fires (CDF), 2007. *Fire Hazard Severity Zones in the State Responsibility Area of California*, Adopted by CAL FIRE on November 7.

Zones for local responsibility areas[30] are identified within or adjacent to the project site. The southwest portion of the project site, which is covered in grass, is mapped as a Moderate Fire Hazard Severity Zone for a local responsibility area.[31]

f. City of Livermore General Plan. The Health and Safety Element of the City of Livermore General Plan contains the following policies and objectives related to hazards and hazardous materials.[32]

- *Policy PS-3.1.P1*: Areas in which the elimination of fire hazard would require the following measures shall not be developed: (a) major modification of existing land forms; (b) significant removal of, or potential damage to, established trees and other vegetation; (c) exposure of slopes which cannot be suitably re-vegetated.
- *Policy PS-3.1.P2*: In order to ensure fire safety, development shall be restricted in areas of steep terrain.
- *Policy PS-4.1.P1*: Residual repositories shall be prohibited within the City limits.
- *Policy PS-4.1.P2*: Areas with a land use designation of High Intensity Industrial are appropriate for hazardous waste management facilities if other siting criteria can be met and potential environmental impacts are mitigated as part of conditional approval.
- *Policy PS-4.1.P3*: The City shall promote the safe transport of hazardous materials through Livermore through implementation of the following measures: (a) Maintain formally-designated hazardous material carrier routes to direct hazardous materials away from populated and other sensitive areas; (b) Prohibit the parking of vehicles transporting hazardous materials on City Streets; (c) Require that new pipelines and other channels carrying hazardous materials avoid residential areas and other immobile populations to the greatest extent possible.
- *Policy PS-4.1.P4*: Require emergency response plans for all large generators of hazardous waste to be submitted as part of use applications.
- *Policy PS-4.1.P5*: When reviewing applications for new development in areas historically used for commercial or industrial uses, the City shall require environmental investigation as necessary to ensure that soils, groundwater, and buildings affected by hazardous materials releases from prior land uses, and lead and asbestos potentially present in building materials, would not have the potential to affect the environment or the health and safety of future property owners or users.
- *Policy PS-4.1.P6*: Continue to encourage the reduction of solid and hazardous wastes generated within the City, in accordance with County-wide plans.
- *Policy PS-4.1.P7*: The City shall encourage the reuse and/or recycling of debris following a disaster, in accordance with all applicable regulations.
- *Policy PS-5.1.P1*: All construction in Livermore shall be consistent with the required setbacks and height restrictions for the Airport Protection Area, as well as the policies of a master plan adopted to plan for future Airport operations.
- *Policy PS-6.1.P1*: The City shall complete regularly-scheduled reviews and updates of its emergency management plans.

[30] California Department of Forestry and Fires (CDF), 2007. *Draft Fire Hazard Severity Zones in Local Responsibility Area-Alameda County*. September 19.

[31] Ibid.

[32] Livermore, City of, 2003.

2. Impacts and Mitigation Measures

The following section presents a discussion of the impacts related to hazards and hazardous materials that could result from implementation of the proposed project. The section begins with the criteria of significance, establishing the thresholds to determine whether an impact is significant. The latter part of this section presents the hazards and hazardous materials impacts that could result from the proposed project. Impacts are organized into separate categories based on their significance according to the criteria listed below: less-than-significant impacts, and significant impacts.

a. Criteria of Significance. A significant hazardous materials impact would occur if the project would:

- Create a significant hazard to the public or the environment as a result of routine transport, use, or disposal of hazardous materials.
- Create a significant hazard to the public or the environment through reasonably foreseeable upset or accident conditions involving the release of hazardous materials into the environment.
- Create a significant hazard to the public or environment through exposure to hazardous materials present in soils, surface water, ground water, and/or building materials as a result of historical land uses in the project vicinity.
- Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within ¼-mile of an existing or proposed school.
- Be located on or adjacent to a site that is included on a list of hazardous materials sites compiled pursuant to Government Code section 65962.5 and, as a result, would result in a safety hazard for people residing or working in the area.
- Impair the implementation of, or physically interfere with, an adopted emergency response plan or emergency evacuation plan.
- Result in an increased risk of exposure to wildland or urban fire hazards.
- Result in a safety hazard for people residing or working within an Airport land use plan area or, where such a plan has not been adopted, within 2 miles of a public Airport or public use Airport.

b. Less-than-Significant Hazards and Hazardous Materials Impacts. No existing schools were identified within ¼-mile of the project site. Therefore, development of the proposed project would have no impact related to hazardous materials and nearby schools.

Two hazardous materials releases from the UST area on the project site and one hazardous materials release on the property adjacent to the project site were identified on the Cortese List. Regulatory agency oversight of monitoring and/or remediation activities at all three release sites has been completed. Based on the conceptual development patterns identified in Figure III-4, no new development is expected in the immediate vicinity of the USTs on the project site or near the release site on the adjacent property. Potential impacts from hazardous material releases identified on the Cortese List in the project site vicinity are considered less than significant.

Development of specific projects on the project site would not be expected to interfere with the City's emergency response or evacuation plans, because such development would not restrict access to Interstate 580 and would not reduce the site's function as a place of refuge in an emergency. The

southwestern portion of the project site is covered in grass and is mapped as a Moderate Fire Hazard Severity Zone for a local responsibility area. Construction contractors are required to comply with fire prevention measures for grass-covered land identified in PRC Sections 4428-4442. Compliance with the existing fire prevention regulations would reduce the risk of wildland fires to a less-than-significant level.

The project site is a public use Airport. Construction equipment used to develop specific projects, such as heavy earthmoving equipment and cranes, could affect navigable airspace. Compliance with FAA regulations and notification requirements, as well as recommendations from a required FAA aeronautical study, would minimize the potential for proposed construction activities to impact aviation.

As discussed in Chapter III, flight operations over time would change independent of the proposed project because the land use regulations currently in place at the Airport would allow for the development of airport uses, such as hangars and FBO facilities, that would be similar to those that would be constructed after implementation of the proposed project. In addition, the Airport is precluded by the FAA from restricting various types of aviation activities at the Airport. Based on the "Unconstrained" Forecasts prepared by Coffman Associates, Inc. for the proposed project, there is expected to be an increase in operations at the Airport, which would increase the potential for aviation hazards. However, land use policies presented in the General Plan and the ALUPP for the Airport would minimize potential hazards associated with flight operations. In particular, compliance with these policies would ensure that runway safety areas are protected. The proposed rezoning would ensure that development in the AIR-OP Subdistrict would be limited to runways, taxiways, and related features, and the development of uses that would pose safety hazards to aircraft engaged in landings and takeoffs would be prohibited. Uses that would be permitted by right under the AIR-SE Subdistrict include access taxilanes, aircraft hangars, aircraft manufacturing and research uses, aircraft sales, ancillary support services, and similar uses. Compliance with existing Airport regulations and policies during buildout of the proposed project would reduce aviation hazards to a less-than-significant level.

c. Significant Hazards and Hazardous Materials Impacts. Development of the proposed project could result in two significant impacts related to hazards and hazardous materials, as discussed below.

Impact HAZ-1: Construction of specific development projects that could occur under buildout of the proposed project could result in the accidental release of hazardous materials. (S)

New construction and operation activities at the project site associated with project buildout could increase the transport, use, storage, and disposal of hazardous materials. Potential impacts related to hazardous materials releases during the construction and operation periods at the project site are assessed, below.

(1) Construction-Period Impacts. Construction activities could include the use of hazardous materials such as motor fuels, oils, solvents, and lubricants. An accidental release of hazardous materials during fueling, maintenance, or improper operation of construction equipment could potentially occur and pose a risk to construction workers, the public, and the environment.

(2) Operation-Period Impacts. Use of new Airport facilities could increase the transportation, use, storage, and disposal of hazardous materials associated with aircraft fueling and maintenance activities. Worker health and safety training, hazard communications, and emergency response procedures for transporting hazardous materials, such as aviation gasoline or jet fuel, are regulated by the DOT. These regulations would ensure that ongoing fuel deliveries to the Airport would not result in significant hazards. The safe storage, use, and handling of hazardous materials at any facility, including emergency response procedures in the event of a hazardous materials release, are covered under the HMBP, UST, and Above Ground Petroleum Tank programs administered by the LPFD. Compliance with existing hazardous materials regulations would reduce the potential for impacts from accidental hazardous materials releases during operation of specific development projects to a less-than-significant level.

Implementation of the following mitigation measure would the potential for construction period hazardous materials releases to a less-than-significant level.

Mitigation Measure HAZ-1: Implement Mitigation Measure HYD-1a. (LTS)

The Storm Water Pollution Prevention Plan (SWPPP) required as part of Mitigation Measure HYD-1a would contain Best Management Practices used to contain hazardous materials and minimize the contact of hazardous materials (e.g., fuels, lubricants, paints, solvents, and adhesives) with stormwater.

Impact HAZ-2: Construction of specific development projects that could occur under buildout of the proposed project could result in exposure to hazardous materials in soil and building materials. (S)

Hazardous materials at the project site may be present in soils and building materials. Direct contact, inhalation, or ingestion of hazardous materials could cause adverse health effects. The severity of health effects would depend on the contaminant(s), concentration, use of personal protective equipment during construction, and duration of exposure. The release of hazardous materials during demolition, renovation, and/or earthwork activities associated with specific development projects in the project site could pose a hazard to construction workers, nearby receptors, and the environment. Future commercial workers, patrons, and trench workers who come into contact with contaminated soil at the project site could experience adverse health effects. Implementation of the following mitigation measure would reduce potential impacts associated with hazardous material releases at the project site to a less-than-significant level:

> Mitigation Measure HAZ-2a: Prior to construction of each specific development project, a soil investigation shall be performed by a licensed professional to determine if organochlorine and inorganic pesticides are present in shallow soils that will be disturbed during project construction. A licensed professional shall review the results of the soil investigation and provide recommendations regarding further investigation activities, soil management during construction, or remediation of soil, if applicable. Any investigation and/or remediation of soil shall be conducted with oversight from a local or State regulatory agency. Any remedial actions (either source removal or institutional and/or engineering controls) shall be implemented to levels that will ensure that future site users

and the environment would not be subject to excessive risks, as determined by the regulatory agency.

Mitigation Measure HAZ-2b: A site-specific Health and Safety Plan (HASP) shall be prepared by a certified industrial hygienist for the contractor of each specific development project. The HASP shall include measures to protect construction workers and the general public by including monitoring, engineering controls, administrative controls, and security measures to prevent unauthorized entry to the construction area. If prescribed exposure levels for contaminants (see Mitigation Measure HAZ-2a), are exceeded, personal protective equipment shall be required for workers in accordance with State and federal regulations. The HASP shall address the possibility of encountering unknown contamination or subsurface hazards and emergency response procedures in the event of a hazardous materials release. The sponsor of the specific development project shall verify that the HASP is incorporated into the contractor's worker health and safety programs.

Mitigation Measure HAZ-2c: Hazardous building materials surveys shall be conducted by a qualified professional for structures proposed for demolition or renovation at the project site. Lead-based paint and ACM should be included in the hazardous materials building surveys for buildings constructed prior to 1978 and 1981, respectively. All loose and peeling lead-based paint and ACM shall be abated by a certified contractor(s) in accordance with local, State, and federal requirements. All other hazardous materials shall be removed from buildings prior to demolition in accordance with DOSH regulations. The findings of the abatement activities shall be documented by a qualified environmental professional(s) and submitted to the City of Livermore prior to the issuance of construction and demolition permits. (LTS)

H. PUBLIC SERVICES AND UTILITIES

This section describes the public services (police, fire, parks) and utility systems (water, wastewater, and storm drainage) that serve Livermore Municipal Airport and the project site, and identifies the potential impacts to public services and utilities that could result from implementation of the proposed project. Mitigation measures are recommended, as appropriate.

1. Setting

The section addresses the following public services and utilities: police; fire and emergency; parks and recreation; water supply, treatment, and distribution; wastewater collection, treatment, and disposal; and storm drainage. Water quality issues associated with stormwater management are addressed in Section V.B, Hydrology and Water Quality, of this EIR.

a. Police Services. The following subsection describes police services and facilities in Livermore, as well as relevant General Plan policies.

(1) Police Services and Facilities. Police protection services within the City of Livermore are provided by the Livermore Police Department (LPD). The LPD operates one station, located at 1110 S. Livermore Avenue, approximately 4 miles southeast of the Airport. LPD does not respond to calls outside of the City limits unless requested to do so by another agency. The area surrounding Livermore is in the jurisdiction of the Alameda County Sheriff's Department and the California Highway Patrol. LPD assists these agencies occasionally with their requests. The LPD has a current staff of 94 sworn officers and five volunteer or Reserve Police Officers. The LPD is authorized for 95 sworn officers.[1]

The LPD divides the City into five beats, and the Airport is located within Beat 1. The LPD has a policy to staff all beats with a minimum of one officer at all times; during peak service times, staffing may be two officers per beat. Officers routinely patrol the Airport and the surrounding area.[2]

The LPD has established the following targeted response times to calls for police services: 3 minutes or less for Priority 1 (emergency) calls; 10 minutes or less for Priority 2 (non-serious crime) calls; and 30 minutes or less for Priority 3 (immediate police presence not required) calls. The LPD currently achieves its targeted response time for Priority 1 calls 55 to 65 percent of the time City-wide, and for Priority 2 and 3 calls 95 to 97 percent of the time City-wide. Between January 2008 and June 2009, the LPD did not receive any Priority 1 calls from sources at the Airport. The LPD reports that there are few calls for police services from the Airport and the surrounding light industrial and commercial development.[3]

(2) Relevant Policies. The following City of Livermore General Plan policies and actions are applicable to police services.

[1] Trudeau, Scott, 2009. Captain, Operations Division Commander, Livermore Police Department. Personal communication with LSA Associates, Inc. June 18.

[2] Ibid.

[3] Ibid.

- *Policy INF-5.1.P1*: Major land use development proposals shall be reviewed for site design criteria and other law enforcement concerns.
- *Action 5.2.A1*: Maintain adequate crime prevention programs to serve Livermore's existing population as well as any future growth.

b. Fire and Emergency Services. The following subsection describes fire and emergency services and facilities in Livermore, as well as relevant General Plan policies.

(1) Fire and Emergency Services and Facilities. Fire protection and emergency medical services in Livermore are provided by the Livermore-Pleasanton Fire Department (LPFD). The Livermore and Pleasanton Fire Departments were consolidated through a joint powers authority in 1996 in order to provide more efficient and effective service to the two communities. The LPFD budget is shared by the cities of Livermore and Pleasanton through a cost-sharing plan that enables each city to pay its fair share of the Fire Department's operating expenses. Each city builds and maintains its own fire stations and purchases and maintains its own light-duty vehicles and fire apparatus. In addition, the Alameda County Fire Department (ACF) staffs a fire station, Station 20, at the Lawrence Livermore National Laboratory (LLNL). ACF Station 20 is equipped with a Quint (combined fire engine and ladder truck) unit and an Engine and staffed by eight personnel. LPFD has a mutual aid agreement with the Alameda County Fire Department.[4]

The LPFD has a total of 131 personnel. There are ten fire stations in the LPFD system, which are staffed by 108 suppression personnel, eight engine companies, two Quint units, and a mix of three- and four-person companies. First responder paramedics are staffed on all ten companies. In 2008, the LPFD responded to 10,798 fire and emergency calls Citywide,[5] including 18 calls to the Airport.[6]

The LPFD maintains five fire stations in Livermore and five fire stations in Pleasanton. LPFD headquarters are located in Pleasanton. The Airport is served by Fire Station #10, which is located within the project site, at 330 Airway Boulevard. If an emergency call were to warrant additional units, the project site could also be served by Fire Station #7, located at 951 Rincon Avenue in Livermore (approximately 2 miles east of the Airport) and Fire Station #3, located at 3200 Santa Rita Road in Pleasanton (approximately 4.5 miles west of the Airport).[7] Fire Station #10 is staffed with three firefighters (one of which is a paramedic) at all times, and is equipped with a Type I structural and Type IV wildland engine.[8] Fire Stations 7 and 3 are staffed with 3 or 4 firefighters (one of which is a paramedic) at all times.[9]

The LPFD seeks to respond to fire incidents and medical emergencies within 7 minutes from receipt of the 911 call by the dispatch center at least 90 percent of the time. This 7-minute total response time

[4] Moorhead, Jane, 2009. Battalion Chief – Training, Livermore-Pleasanton Fire Department. Personal communication with LSA Associates, Inc. July 16.

[5] Ibid.

[6] Deaver, Scott, 2009. Fire Marshal, Livermore-Pleasanton Fire Department. Personal communication with LSA Associates, Inc. July 8.

[7] Ibid.

[8] Moorhead, Jane, 2009.

[9] Deaver, Scott, 2009.

includes 5 minutes travel time, 1 minute for dispatch processing, and 1 minute for the crew to get dressed in protective clothing and prepare the fire engine. In 2008, the LPFD's average Citywide response time was 6 minutes and 36 seconds, and its average response time to the Airport was 5 minutes and 2 seconds. The LPFD is currently meeting its response time goal for emergency calls both for the City as a whole and the project site.[10]

(2) Relevant Policies. The following City of Livermore General Plan policies and actions are applicable to fire services.

- *Policy INF-6.1.P1*: The City shall continue to participate in the joint powers authority agreement governing the consolidated Livermore-Pleasanton Fire Department.
- *Policy INF-6.1.P2*: The City shall continue to provide fire fighting equipment, facilities and manpower sufficient to assure:
  (a) quick response to all calls by the "first due" company
  (b) availability of additional companies for serious fires in high value areas
  (c) capability for handling simultaneous fires
  (d) a water system capable of sustaining prerequisite fire flow at all times.
- *Policy INF-6.1.P4*: The City will continuously strive to improve performance and efficiency in the Fire Department.
- *Policy INF-6.2.P1*: Major land use development proposals in fire hazard areas shall be reviewed for site design criteria and appropriate preventive and self-protective measures.
- *Policy INF-6.3.P1*: The City shall continue to cooperate with State, County and LLNL fire protection agencies.
- *Policy INF-6.3.P2*: The City shall build and require roadways that are adequate in terms of width, radius, and grade to facilitate access by City fire-fighting apparatus, while considering maintenance of Livermore's character.

c. Parks and Recreation. The following subsection describes park and recreational facilities in Livermore, and relevant General Plan policies.

(1) Park and Recreation Facilities. Livermore is served by an extensive network of parks, ranging from large regional parks covering several hundred acres to small neighborhood parks. Most of the small neighborhood parks in Livermore are owned by the City. The East Bay Regional Parks District (EBRPD) and Livermore Area Recreation and Park District (LARPD) are responsible for the development and maintenance of parks and public open space in the Livermore area that are not managed by the City. LARPD is responsible for the operation of most of Livermore's parks and community facilities, as well as many miles of scenic multi-use trails.

Parks managed by LARPD in the vicinity of the Airport include: Maitland R. Henry Neighborhood Park (5 acres); Al Caffodio Neighborhood Park (2 acres); and Livermore Downs Neighborhood Park (6 acres). These facilities are located within the residential area east of the Airport. In addition, the City-owned and operated Las Positas Golf Course is located directly north and west of the Airport.

Funding for the LARPD comes from a variety of sources, including property taxes, a special tax, fees, charges, and grants. Since 1993, approximately half of Livermore's property tax revenue has been

[10] Ibid.

diverted to the Education Revenue Allocation Fund, resulting in a funding shortfall of almost $3.5 million annually for LARPD.

(2) Relevant Policies. The following City of Livermore General Plan policies are applicable to park and recreation concerns associated with the proposed project.

- *Policy OSC-5.1.P1*: Livermore's existing parks shall be maintained and enhanced, as appropriate.
- *Policy OSC-5.1.P3*: The City shall implement a standard of five acres of publicly-owned parkland per thousand population and require new development to provide new park acreage or in-lieu fees at this ratio.
- *Policy OSC-5.1.P4*: Where feasible and safe, the City shall provide recreational access to properties on which new public facilities are sited.
- *Policy OSC-5.4.P1*: The City shall continue to encourage public access to, and maintenance of, existing recreational trails in the Planning Areas.

d. Water Services. The following discussion provides background information on the City's sources of water supply, water treatment facilities, and water distribution system. It also summarizes the City's General Plan policies related to water services.

(3) Water Supply. Zone 7 of the Alameda County Flood Control and Water Conservation District (Zone 7) supplies treated water to the City of Livermore (in addition to the City of Pleasanton and the California Water Service Company) for municipal and industrial use. Zone 7 serves nearly 200,000 people in Pleasanton, Livermore, Dublin, and through special agreement with the Dublin San Ramon Services District to provide water to the Dougherty Valley area. In addition, Zone 7 supplies agricultural water to farms and vineyards, and provides flood protection to all of eastern Alameda County.[11]

Approximately 80 percent of the water supplied to Zone 7 is imported through the Sacramento-San Joaquin River Delta. The water travels through a series of rivers, lakes, canals, and pumping stations that move it into the Livermore-Amador Valley though the State Water Project's South Bay Aqueduct. This aqueduct also conveys water to the Alameda County Water District and the Santa Clara Valley Water District. The balance of the Zone 7 service area supply is from local groundwater supplies and surface water in Lake Del Valle.

In 2008, total demand for Zone 7 water was 49,100 acre-feet and the overall supply was 52,500 acre-feet.[12] In 2007, the demand for untreated water (primarily used for agriculture) was approximately 4,200 acre-feet.[13] Demand for Zone 7 water is estimated to grow to 81,000 acre-feet/year by 2020. The 2020 demand estimate comprises the water demands anticipated to serve the amount of growth projected in the current general plans for each of the local jurisdictions within Zone 7's service area.[14] In Livermore, this long-term water demand is estimated to be approximately 22,000 acre-feet, based on the City's current General Plan, which includes new urban development within the urban growth

[11] Alameda County, Zone 7 Water Agency, 2009a. *2008 Annual Report*.

[12] Ibid.

[13] Ibid.

[14] Alameda County, Zone 7 Water Agency, 2008. *2007 Annual Report.*

boundary.[15] According to the General Plan, Zone 7 identified a long-term average sustainable water supply[16] of 84,100 acre-feet per year. Zone 7 projects that it can supply sufficient water supplies to meet the City's future treated water needs, assuming that it continues to receive its contractual allocation from its supply sources.[17]

Zone 7 has acquired a total of 65,000 acre-feet of storage capacity in the Semitropic Water Storage District (Semitropic) in Kern County for storage of surplus water for later use. During dry years, Zone 7 can receive water from Semitropic by way of entitlement exchanges with Southern California State Water Project contractors, such as the Metropolitan Water District of Southern California.

If an extended drought were to force cutbacks in State Water Project deliveries, Zone 7 would utilize its local and Semitropic groundwater resources to meet its policy of providing for 100 percent of its expected treated water demands under all hydrologic conditions. The local groundwater basin holds approximately 200,000 acre-feet, and Semitropic holds about 50,000 acre-feet. The Livermore-Amador Valley groundwater basin is considered full at about 240,000 acre-feet, and Zone 7 estimates that about half of this amount could be made available during periods of drought through well pumping and the use of other emergency supplies.[18] Current and recent efforts to find long-term solutions to water shortages in the Sacramento-San Joaquin Delta region include the recent State-led Delta Vision,[19] as well as the ongoing Bay Delta Conservation Plan, which involves federal and State agencies, environmental organizations, fishery agencies, water agencies, and other organizations.[20]

Recycled water is provided by the City of Livermore to certain areas within its jurisdiction, primarily for irrigation purposes, and is available at the Airport. A pump station at the Livermore Water Reclamation Plant pumps recycled water into two 1.9 million gallon recycled water reservoirs. These reservoirs provide sufficient storage for recycled water demand within Pressure Zone 1. The first reservoir was constructed 30 years ago, and the second was constructed in 2009. Filter improvements and additional pump installation at the Water Reclamation Plant will be required to supply General Plan buildout[21] (2030) demand for recycled water; these improvements are planned for construction in 2010, are in the City's current (fiscal year 2009/2010) Capital Improvement Plan, and are funded.[22]

(4) Water Treatment Facilities. Zone 7 operates two water treatment plants (WTPs), the Del Valle and Patterson Pass WTPs, which treat water from the State Water Project before

[15] Livermore, City of, 2004a. *City of Livermore General Plan, Infrastructure and Public Services Element.* February 9.

[16] Long-term average sustainable water supply is the average expected yield of a given water supply source over a long period of time.

[17] Livermore, City of, 2004b. *Livermore Downtown Specific Plan; Chapter 10, Utilities and Infrastructure.*

[18] Zone 7 Water Agency, 2009. Website: Bay Delta – A Critical Water Supply. Website: www.zone7water.com/index.php?option=com_content&task=view&id=47&Itemid=218. Accessed July 29.

[19] California, State of, 2009. Delta Vision Website: http://deltavision.ca.gov. Accessed July 29.

[20] California Natural Resources Agency, 2009. Bay Delta Conservation Plan Website: http://resources.ca.gov/bdcp. Accessed July 29.

[21] Buildout on the project site according to existing regulations at the Airport is included in General Plan buildout assumptions. Source: Waxdeck, Joel, 2009. Associate Civil Engineer, City of Livermore. Personal communication with LSA Associates, Inc. June 19.

[22] Ibid.

distribution throughout the Valley. The Del Valle WTP, located in the southern portion of Livermore, has a capacity of 36 million gallons per day (mgd). The Patterson Pass Conventional WTP and the Patterson Pass Ultrafiltration WTP, located in the eastern portion of Livermore, have a combined capacity of 20 mgd.[23] Once the water is treated at the WTPs, it is then conveyed via transmission mains (typically 24 to 48 inches in diameter) to the City of Livermore and other retailer turnouts.[24]

In February 2005, the Zone 7 Board of Directors approved a contract to begin design and construction of the Altamont Water Treatment Plant and Pipeline (AWTP). The AWTP will have a capacity of 24 mgd, and is expandable to 42 mgd.[25] The 24 mgd capacity added to Zone 7's existing delivery system will result in an overall water treatment capacity of 80 mgd. Construction of the Livermore reach of the pipeline began in June 2008, and is ongoing. Zone 7 is currently evaluating the timing for completion of the entire AWTP and the remaining 6-mile stretch of pipeline through unincorporated Alameda County.[26] When complete, the AWTP will work in conjunction the Del Valle and Patterson Pass WTPs, along with Zone 7's well and distribution system to meet the Valley's drinking-water supply needs.

(5) Water Distribution Systems. Livermore Municipal Water (LMW), a City-owned utility, provides water to an area that includes the Airport, as well as northeastern and eastern portions of the City. The rest of the City receives water from the California Water Service Company (Cal Water). LMW, whose distribution system includes 113 miles of pipeline that varies in diameter from 6 to 22 inches, provides water to more than 28,800 City residents.[27]

Water is transported to the City through seven turnouts from Zone 7's Cross Valley Pipeline. LMW stores water in reservoirs, which are grouped into three pressure zones; the Airport is located in Zone 1, which receives water from Zone 7 through two of the LMW's seven turnouts.[28] Water is pumped to a 3 million gallon reservoir, which, along with a new pump station, was constructed for Zone 1 in the hills north of the Airport within the past 3 years. The new reservoir and pump station are sized to serve General Plan buildout within Zone 1.

Potable water infrastructure at the Airport includes water lines that enter Airport property from Airway Boulevard to the north, Isabel Avenue to the east, and Jack London Boulevard to the south. In addition, a 16-inch water line is located on the western edge of the project site. Water lines at the Airport are generally 20 to 30 years old, and are adequately sized for General Plan buildout in the vicinity of the Airport.[29]

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[23] Zone 7 Water Agency, 2009b. *Treatment Plants.* Website: www.zone7water.com/index.php?option=com_content&task=view&id=60&Itemid=262. Accessed June 9.

[24] Water turnouts are facilities that transfer water from Zone 7's water system to a public or private water system.

[25] Zone 7 Water Agency, 2009b.

[26] Zone 7 Water Agency, 2009. *AWTPP Project*. Website: www.zone7water.com/index.php?option=com_content&task=view&id=97&Itemid=414. Accessed June 10.

[27] Livermore, City of, 2009. Public Works Department, Water Resources. Website: www.ci.livermore.ca.us/wrd/water_service.html. Accessed June 10.

[28] Livermore, City of, 2004a.

[29] Waxdeck, Joel, 2009.

The Livermore Water Reclamation Plant pumps recycled water up to two recycled water reservoirs in the hills north of the Airport, and then to the Airport through pressure reducing valves (PVRs). Recycled water lines within the Airport are generally 8-inch lines, and are approximately 20 years old. Recycled water at the Airport is used for both irrigation and fire protection. The Recycled Water Master Plan determined that recycled water pipelines in the vicinity of the Airport are sized adequately to serve General Plan demand, with the exception of a 6-inch pipeline at Terminal Circle, at the northern edge of the project site; this line needs to be upsized to an 8-inch line in order to provide adequate fire protection for the Airport terminal at Terminal Circle. This project is not currently funded, and is not included in the City's current Capital Improvement Plan; however, the City plans to add the project to its Capital Improvement Plan and fund it in the future.[30]

(6) Relevant Policies. The following City of Livermore General Plan policies and actions are applicable to water supply, treatment, and distribution.

- *Policy INF-1.1.P2*: The City shall maintain a water system capable of sustaining required fire flows at all times. The City shall work with California Water Service Company to ensure its system also meets required fire flows.
- *Action INF-1.1.A8*: All new development projects shall be responsible for constructing an adequate potable water distribution system and paying water connection fees to construct additional necessary storage, pumping, and distribution facilities.
- *Policy INF-1.2.P1*: The potable water distribution and storage system shall be sized to serve development anticipated under the General Plan and shall not provide for additional growth and development beyond that anticipated under the General Plan.
- *Policy INF 1.2.P7*: Major utility lines, such as water supply mains and fire protection mains, shall be carefully planned where they cross a seismic fault. They shall cross at right angles, or nearly so, be accessible for rapid repair, and be provided with safety features such as automatic shutoff valves, switches, and expansion joints. Other equipment shall be provided to ensure minimal adverse impact on adjacent and surrounding areas and to facilitate restoration of service in the event of fault displacement.
- *Policy INF-1.3.P2*: Projects deemed appropriate for the use of recycled water shall be required to use recycled water, when available, for uses outlined in the State Water Code.
- *Policy INF-1.3.P4*: Require compliance with the State and City's mandatory water efficient landscape ordinance.
- *Action INF-1.3.A2*: Develop and institute a City-sponsored program of mandatory water conservation measures for new development. Develop a program for existing developments that is based on a voluntary participation with incentives to achieve specific targets for water conservation. Examples include:
    - Ultra-low flush toilets
    - Plumbing retrofits
    - Leak detection
    - Efficiency standards for water-using appliances and irrigation devices, and industrial and commercial processes
    - Gray water use
    - Swimming pool and spa conservation measures such as covers to reduce evaporation

[30] Ibid.

- Xeriscape landscape design standards

e. Wastewater Infrastructure. The following discussion provides background information on the City's wastewater collection and treatment system, including information from the City's Final Report Sewer Master Plan.[31] It also summarizes the City's General Plan policies related to wastewater.

(1) Wastewater Collection. Within the City, sewer service is provided by the Livermore Public Works Department. There are approximately 267 miles of existing sewer collection lines within the City (ranging in size from 6 inches to 48 inches in diameter), of which approximately 50 miles are major trunk sewer lines (18 inches or larger).[32]

Wastewater from the Airport flows through 8-inch lateral collector pipes and an 18-inch trunkline to the Airport lift station at the southwest corner of the project site. Wastewater is then pumped from the lift station through a 10-inch force main to a 39-inch trunkline on Isabel Avenue, which flows into the headworks of the Livermore Water Reclamation Plant. Sewer lines within Airport property were constructed between 20 and 30 years ago. The Airport lift station and force main were constructed in 2004, and are sized for General Plan buildout flows.

(2) Wastewater Treatment. The Water Resources Division of the City's Public Works Department operates the Livermore Water Reclamation Plant (WRP), located in the western portion of the City near the Airport. The facility currently has a capacity of 8.5 mgd.[33] The most recent plant expansion was completed in 1993, and a Phase VI Expansion project, discussed below, is in the planning phase.

Approximately 4 to 7 mgd of treated wastewater is sent through the Livermore and Amador Valley Management Agency (LAVWMA) pipeline for ultimate disposal by the East Bay Dischargers Authority (EBDA) in San Francisco Bay. The Livermore WRP has a rated capacity of 8.5 mgd average dry weather flow, and the current average daily dry weather inflow into the WRP is 7.2 mgd.[34] Wastewater is subject to primary, secondary, and tertiary treatment processes, as well as ultra-violet disinfection. Treatment plant solids are thickened, stabilized, and dewatered prior to transport offsite for use as a landfill cover. The WRP also has microfiltration and reverse-osmosis facilities that are capable of removing bacteria, viruses, and some dissolved chemicals from wastewater.

Current wet weather flows reach 17 million gallons per day during the peak hour. The WRP uses an Emergency Holding Basin to equalize and treat these peak flows. General Plan buildout flows are projected to increase to a flow rate of 26.1 million gallons per day during peak periods. The Emergency Holding Basin and the recently completed LAVWMA pump station at the WRP are sized to equalize and pump these peak flows down to the primary LAVWMA pump station in Dublin. The primary LAVWMA pump station in Dublin is sized to pump Livermore, Dublin, and Pleasanton

[31] Livermore, City of, 2004c. *2004 Final Report Sewer Master Plan*. July.

[32] Ibid.

[33] Livermore, City of, 2009. *Wastewater Services.* Website: www.ci.livermore.ca.us/wrd/wastewater.html. June 12.

[34] Waxdeck, Joel, 2009.

treated wastewater flows into San Francisco Bay. The Phase VI improvements at the Livermore Water Reclamation Plant (described below) are sized to treat increased future peak flows.[35]

The 2004 Sewer Master Plan estimates that at buildout of the General Plan, sewage flows will reach 9.47 mgd (average dry weather flow) and approximately 26.10 mgd (peak wet weather hourly rate).[36] The Livermore Water Reclamation Plant Master Plan identifies a shortfall of capacity to treat and dispose of sewage flows generated by buildout of the General Plan. New facilities at the WRP would be needed to handle projected ultimate flows and to ensure that all wastewater generated by the General Plan would be subject to primary, secondary, and tertiary treatment processes. The City has planned a Phase VI Expansion project to address the need to increase the capacity of the plant and has a sanitary sewer impact fee program in place to fund the required improvements. The Phase VI Expansion is currently being planned in several phases based on available sewer connection fee funding and projected future flows, which are anticipated to reach an average dry weather flow of approximately 9.47 mgd. The first phase of the Phase VI Expansion is under design and is approximately 50 percent complete. This phase focuses on solids handling improvements that include new gravity belt thickeners and increasing the capacity of the existing sludge holding tanks. Construction of these improvements will start in 2010. Future phases of the Phase VI Expansion are expected to include a fourth anaerobic methane and acid digester, chlorine contact expansion, and other facilities that would allow the WRP to have sufficient capacity to process the wastewater flows projected for buildout of the General Plan. These projects are in the City's current Capital Improvement Plan and are funded.[37]

(3) Wastewater Disposal. Wastewater treated at the Livermore WRP is conveyed to the LAVWMA export pipeline via a gravity-flow pipeline (known as the Livermore interceptor) that conveys the effluent to a LAVWMA metering structure. The rated capacity of the Livermore gravity interceptor is 9.2 mgd for both dry weather and wet weather flows. At the metering structure, effluent from the Livermore WRP combines with wastewater treatment plant effluent from the Dublin San Ramon Services District and the City of Pleasanton. The combined effluent then flows through two flow equalization basins, receives additional chlorination, and is transported to the LAVWMA by a 27-inch gravity pipeline. Treated wastewater is pumped through the export pipeline to the East Bay Dischargers Authority, which is responsible for dechlorination and final flow discharge into the Bay.

The peak wet weather flow capacity of the existing LAVWMA export pipeline is 41.2 MGD. The City shares this overall capacity with Dublin San Ramon Services District and the City of Pleasanton. Livermore's portion of the existing LAVWMA pipeline capacity is 11.1 mgd for average dry weather flows and 12.4 mgd during peak wet weather flow conditions.[38] The capacity of the LAVWMA was increased from 21 mgd to 41.2 mgd in 2005 with the implementation of the Export Pipeline Facilities Program. The program has increased wet weather flow capacity to serve planned growth in the area served by LAVWMA until 2023, and has increased overall capacity to serve planned growth (based on member agencies' General Plans) until 2040.

[35] Ibid.

[36] Livermore, City of, 2004c. *2004 Final Report Sewer Master Plan*. July.

[37] Waxdeck, Joel, 2009.

[38] Livermore-Amador Valley Water Management Agency, 2008. LAVWMA. Website: http://lavwma.com/. September.

(4) Relevant Policies. The following General Plan policies and actions are applicable to wastewater infrastructure.

- *Policy INF-2.1.P3*: The approval of new development shall be conditioned on the availability of adequate long-term capacity of wastewater treatment, conveyance, and disposal sufficient to service the proposed development.
- *Policy INF-2.1.P5*: All new development shall demonstrate to the City that the downstream sanitary sewer system is adequately sized and has sufficient capacity to accommodate anticipated sewage flows. If the downstream mains are found to be inadequate, the developer shall provide additional facilities to accept the additional sewage expected to be generated by the development.
- *Policy INF-2.1.P7*: Major sewer collection and transmission systems shall be carefully planned where they cross a seismic fault. They shall cross at right angles, or nearly so, be accessible for rapid repair, and be provided with safety features such as automatic switches, expansion joints and sufficient drop between manholes to accommodate vertical displacement across faults. Other equipment shall be provided to ensure minimal adverse impact on adjacent and surrounding areas and to facilitate restoration of service in the event of fault displacement.
- *Policy INF-2.1.P8*: Sewer collection and transmission systems shall be designed and constructed in such a manner as to minimize potential inflow and infiltration.
- *INF-2.1.P10*: All new development projects shall be responsible for construction of a sanitary sewer collection and conveyance system as part of the Citywide infrastructure plan. This system shall be designed to serve developments within the approved General Plan only and shall not be extended to serve uses outside of the Urban Area.
- *Policy INF-2.1.P11*: The sanitary sewer system shall be designed and constructed in such a manner as to minimize potential environmental impacts.
- *Action INF-2.1.A7*: Installation of the sanitary sewer system should occur concurrent with construction of new roadways to maximize efficiency and minimize disturbance due to construction activity.
- *Action INF-2.1.A9*: The City shall utilize sanitary sewer connection fees collected from new development and elsewhere within the City to construct necessary improvements to the City's trunk sewer mains (as identified in the latest master plan prepared for) in order to accommodate anticipated cumulative development.

f. Stormwater System. The following discussion provides background information on the City's stormwater system. It also summarizes the City's General Plan policies related to stormwater. Water quality issues associated with stormwater management are addressed in Section V.B, Hydrology and Water Quality, of this EIR.

(1) Stormwater Collection. The City's storm drain system consists of more than 200 miles of pipeline, ranging in size from 8 to 66 inches in diameter. The storm drain pipes are generally concrete, with some corrugated metal pipes and some high density polyethylene (HDPE) pipes. There are also ditches and open channels within existing developed areas. Most of the drainage reaches are relatively short due to the proximity of the many major channels. A few detention basins have recently been constructed as part of the development of new subdivisions within Livermore in order to maintain runoff at predevelopment levels and protect habitat for sensitive species.

The City's 2004 Storm Drain Master Plan identifies a large number of capacity-related deficiencies in the existing storm drainage system. However, many of the deficiencies were attributable to the adoption of more demanding design criteria since the time the storm drains were originally built. Most

needed improvements are located throughout the older neighborhoods south of I-580, with just a few north of I-580 in the Springtown area. The recommended improvements would provide protection against extreme rainfall events. However, in most cases, the system handles typical rainfall events well. [39]

The City also has an ongoing maintenance program, which includes catch basin cleaning, street/sidewalk sweeping, site inspection testing and monitoring, run-off control from new development, and public information**.** The maintenance program is funded by the Storm Water Users Fund and includes cleaning catch basins and street gutters, keeping them free of debris, and subsequently allowing stormwater to flow unobstructed along the intended pathway.

Stormwater on the project site generally drains to the south and west across the project site into drains located on the southern edge of the site along Jack London Boulevard. Stormwater from the northwestern portion of the Airport flows to a channel between Las Positas Golf Course and the Airport, which drains into Arroyo Las Positas at the western end of the golf course. The Storm Drain Master Plan does not identify any storm drainage deficiencies within or in the vicinity of the project site. [40]

(2) Natural Drainages. The Livermore-Amador Valley drains in a westerly direction to the Arroyo de la Laguna, then to Alameda Creek near Sunol. The Alameda Creek basin drains an area primarily east of the Coast Range to San Francisco Bay through Niles Canyon. The Valley watershed has four major watersheds, each drained by a major channel: Arroyo del Valle, Arroyo Mocho, Arroyo Las Positas, and Altamont Creek. A small portion of Arroyo Las Positas (approximately 8 feet in width by 250 feet in length) crosses the northernmost portion of the Airport lands to the north of the project site.

The Zone 7 Water Agency is responsible for flood control and stream management of some portions of Arroyo Las Positas, Altamont Creek, a portion of Arroyo Mocho, Arroyo Seco, and Collier Canyon Creek, within the City. Special Drainage Area agreements provide for improvement of channels and arroyos to Zone 7 standards. Zone 7 assumes ownership of these facilities upon completion of improvements. Responsibility for maintaining unimproved arroyos to the centerline of the arroyo falls to the underlying property owner.

Flood control improvements are needed in sections of Arroyo Las Positas, including the section along Airway Boulevard, directly north of the project site. Zone 7's Stream Management Master Plan[41] identifies improvements that would prevent the Arroyo Las Positas from overflowing and flooding portions of the Airport, including de-silting and widening the creek, and installing new culverts at Airway Boulevard. These improvements are currently unfunded;[42] however, de-silting of Arroyo Las Positas is currently in the planning stage.[43] The El Charro Specific Plan, which covers a site directly

[39] Livermore, City of, 2004d. *Final Report; Storm Drain Master Plan*. July.

[40] Ibid.

[41] Zone 7 Water Agency, 2006. *Stream Management Master Plan*. August.

[42] Waxdeck, Joel, 2009.

[43] Frost, Susan, 2009. Principal Planner, City of Livermore. Personal communication with LSA Associates, Inc. August 5.

northwest of the Airport, includes flood control design improvements, including: bioswales located throughout the Specific Plan area; perforated curbs to allow stormwater to drain into landscaped areas and bioswales; and use of paved surfaces that are permeable, in order to minimize surface runoff.[44] Additional flood control improvements proposed by the City and the Alameda County Flood Control and Water Conservation District for the Specific Plan area include excavation in the south overbank of Arroyo Las Positas to provide additional flood storage and construction of a berm along the north side of the project site to divert flood waters.[45] Refer to Section V.B, Hydrology and Water Quality, for a discussion of stormwater quality regulations.

(3) Relevant Policies. The following General Plan policies and actions are applicable to the stormwater system.

- *Policy INF-3.1.P1*: Design local storm drainage improvements to carry appropriate design-year flows resulting from buildout of the General Plan.
- *Policy INF-3.2.P1*: All new development projects shall be responsible for constructing a stormwater collection system and contributing stormwater collection fees to construct additional necessary facilities. These fees include the City storm drain fees as well as Zone 7 regional storm drainage fees.
- *Policy INF-3.2.P4*: Installation of stormwater collection systems should occur concurrently with construction of new roadways to maximize efficiency.
- *Action INF-3.2.A2*: Existing property owners shall be encouraged, or required as appropriate, to reduce stormwater runoff by reducing impermeable surfaces.

2. Impacts and Mitigation Measures

The following section presents a discussion of the impacts related to public services and utilities that could result from implementation of the proposed project. The section begins with the criteria of significance, establishing the thresholds to determine whether an impact is significant. The latter part of this section presents the public services and utilities impacts that could result from the proposed project. Impacts are organized into separate categories based on their significance according to the criteria listed below: less-than-significant impacts, and significant impacts.

a. Criteria of Significance. The proposed project would result in a significant impact on public services and utilities if it would:

- Result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, resulting in the need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for any of the public services listed below:
  - Police protection; or
  - Fire protection.
- Increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated;

[44] Livermore, City of, 2007. *City of Livermore El Charro Specific Plan*. Adopted July 9.

[45] City of Livermore, 2008. *FEMA CLOMR Application Report, Arroyo Las Positas – El Charro , Livermore, CA.* January.

- Create a shortage of park facilities for new residents in which the City standard of 5 acres/1,000 population would be violated;
- Include recreational facilities or require the construction or expansion of recreational facilities that might have an adverse physical effect on the environment;
- Have insufficient water supplies available to serve the project from existing entitlements and resources, requiring new or expanded entitlements;
- Create substantial demand for water beyond the existing or planned City's water supply, requiring additional water storage capacity;
- Require the extension or substantial reconstruction of major water and wastewater lines to serve new development beyond improvements identified in the City's Capital Improvement Plan;
- Exceed wastewater treatment requirements of the Regional Water Quality Control Board;
- Generate wastewater flows that would exceed the existing or planned wastewater treatment, storage, and disposal capacity;
- Conflict with current infrastructure plans of wastewater service providers; or
- Generate additional stormwater runoff that would exceed the existing or planned capacity of the Region Zone 7 and City's storm drain systems and require the construction or substantial expansion of existing facilities.

b. Less-than-Significant Public Services and Utilities Impacts. The following discussion describes the less-than-significant public services and utilities impacts of the proposed project.

(1) Police Services. As discussed in Chapter III, Project Description, the proposed project does not include specific development projects at the Airport. However, new development projected at buildout under the proposed project could generate a small increase in demand for police services; however, the LPD has indicated that this amount of development would not require additional personnel, equipment, facilities, or other physical improvements. Furthermore, the project would not affect the LPD's ability to meet its response time goals to the Airport.[46] Therefore, the project would have a less-than-significant impact on police services.

(2) Fire Services. Development that could occur on the project site under buildout of the proposed project would result in an incremental increase in fire and emergency medical calls. However, due to Fire Station #10's location within the project site (it would not be moved as part of the project), the LPFD would continue to be able to serve the site, and meet its response time goals with existing facilities. In addition, the LPFD would review the site plans of specific development projects that could occur under the proposed project prior to approval of specific development projects to identify potential fire fighting or emergency access concerns (consistent with Policy INF-6.3.P2), as well as needs for additional equipment or staff. Any site planning or vehicular access concerns would be addressed via revisions to the project site plans prior to approval. Therefore, the project would have a less-than-significant impact on fire services.[47]

[46] Trudeau, Scott, 2009.

[47] Deaver, Scott, 2009. op cit.

(3) Parks and Recreational Facilities. Housing would not be allowed on the project site under the proposed Airport (AIR) Zoning District. Therefore, an increased use of local parks and recreational facilities associated with the proposed project is not expected. However, as shown in Table III-3 in Chapter III, Project Description, the project would generate 127 new jobs on the project site. These new workers might use local open space and recreational facilities before work, at lunch, or after work. However, the increase in use at these parks that could occur as a result of implementation of the proposed project is expected to be small, and would not result in substantial physical deterioration of local parks, including Maitland R. Henry Neighborhood Park, Al Caffodio Neighborhood Park, and Livermore Downs Neighborhood Park. Furthermore, the project would not create a shortage of park facilities for new residents in the City, nor would it require the construction or expansion of recreational facilities. Park facilities would not be allowed on the project site under the proposed AIR Zoning District. Therefore, the project would have a less-than-significant impact on parks and recreational facilities.

(4) Water Supply. New development on the project site projected at buildout under the proposed project is expected to result in a net increase of 41,290 square feet of office space on the site when compared to existing conditions.[48] This increase represents the total area of potential future uses on the project site that would substantially contribute to water demand when compared to existing development at the Airport.

Based on a wastewater generation rate of 0.05 gallons per square foot of office space per day,[49] the proposed project could increase water demand at the project site by approximately 2,065 gallons per day (gpd), or 2.3 acre-feet per year. This anticipated increase in water demand resulting from the proposed project would represent substantially less than 1 percent of the projected sustainable long-term water supply for all of Zone 7 (84,100 acre-feet per year).

Although shortages of water from the State Water Project could occur during drought years, the water supply would be supplemented by local and Semitropic water groundwater resources. In addition, conservation measures would likely be implemented during drought years, further reducing water demand. Therefore, adequate water supplies are anticipated to serve the proposed project; no new or expanded entitlements or enhanced water storage capacity would be required,[50] and the proposed project would have a less-than-significant impact on water supplies.

(5) Require the Extension or Reconstruction of Existing Water or Wastewater Lines. As previously described, the project site is adequately served by water and wastewater infrastructure. The Airport lift station and force main were constructed in 2004, and are sized for General Plan buildout flows. In addition, water and wastewater lines at the Airport are adequately sized for General Plan buildout in the vicinity of the Airport. As discussed in further detail Chapter III, Project Description, the proposed project would not increase the development potential of the site compared to existing

[48] Hauri, Leander, 2009. Airport Manager, Livermore Municipal Airport, Public Works Department, City of Livermore. Personal communication with LSA Associates, Inc. August 3. This total includes the following components: 24,950 square feet of office space within the Northside FBO, Southside FBO, and Southside private storage hangars; 8,840 square feet of new office space within the administration building; and 7,500 square feet of office space on the second floor of the 15,000-square-foot helicopter facility.

[49] Waxdeck, Joel, 2009.

[50] Ibid.

land use regulations for the site; therefore, development that could occur on the site under buildout of the proposed project would not exceed planned development for the site taken into account in demand forecasts for water and wastewater services under for General Plan buildout. City staff has indicated that existing water and wastewater infrastructure at the Airport and its vicinity could accommodate increased water demand and wastewater flows associated with buildout of the proposed project.[51] Therefore, implementation of the proposed project would not result in a significant environmental impact related to the extension of water or wastewater lines.

(6) Wastewater Treatment. For the purposes of this analysis, wastewater generation is assumed to be approximately 90 percent of total water usage (the 10 percent differential includes consumed water and water used for irrigation). As previously noted, the project is projected to increase water generation on the site by approximately 2,065 gpd; therefore, the anticipated increase in wastewater flows would be approximately 1,859 gpd. This amount would represent less than 1 percent of the total 9.47 mgd average dry weather flow of projected capacity of the WRP after completion of the Phase VI Expansion project. As described in the settings subsection above, the Water Resources Division of the City's Public Works Department is currently planning the phasing of the Phase VI Expansion of the Livermore WRP, which will increase the capacity of the WRP so that it will be able to handle the projected ultimate flows generated by the buildout of the General Plan. The proposed project would not increase the development potential of the site compared to existing land use regulations for the site. Therefore, the projected additional wastewater generated by the project would not result in a significant impact to treatment and disposal facilities as there is sufficient capacity at the WRP to accommodate the projected amount of additional wastewater associated with buildout under the proposed project.[52]

c. Significant Public Services and Utilities Impacts. Implementation of the proposed project could result in significant impacts related to public services and utilities, as described below.

Impact UTIL-1: Construction of specific development projects that could occur under buildout of the proposed project would increase impervious surfaces on the project site, and contribute to flooding at Arroyo Las Positas during storm events. (S)

As previously noted, the project site is currently served by stormwater infrastructure, and the Storm Drain Master Plan[53] does not identify any storm drainage deficiencies within or in the vicinity of the Airport. However, as previously noted, Zone 7 Water Agency's Stream Management Master Plan identifies deficiencies to flood control infrastructure at the section of Arroyo Las Positas along Airway Boulevard, directly north of the project site, and proposes specific improvements (Projects R5-2 and R5-3, described below) to mitigate these deficiencies.[54] Development on the project site under buildout of the proposed project would increase impervious surfaces on the site by at least 1 acre. This increase in impervious surfaces could contribute to overflowing at Arroyo Las Positas during storm events. Implementation of the following two-part Mitigation Measure would reduce this impact to a less-than-significant level:

[51] Ibid.

[52] Ibid.

[53] Livermore, City of, 2004d.

[54] Zone 7 Water Agency, 2006.

Mitigation Measure UTIL-1a: Project sponsors for future specific development projects within the project site shall pay flood protection and stormwater drainage development impact fees to the Zone 7 Water Agency, per the requirements of its Ordinance No. 2009-01 establishing the impact fee. These development impact fees will be used to help fund flood control improvement projects at Arroyo Las Positas identified in the Stream Management Master Plan, including: 1) Project R5-2, Airway Improvement Project, which includes removing sediment along Kitty Hawk Road and Airway Boulevard, re-vegetating Airway Boulevard, and constructing a sediment basin and levees; and 2) Project R5-3, Arroyo Las Positas Diversion Project, which includes the construction of a diversion channel and widening Arroyo Las Positas through the golf course and downstream of the proposed diversion.

Mitigation Measure UTIL-1b: Implement Mitigation Measure HYD-1c. (LTS)

I. BIOLOGICAL RESOURCES

This section presents information on biological resources found on the project site. The analysis includes a discussion of: 1) the methods used to assess biological resources on the project site; 2) regulatory requirements and resource agency jurisdiction; 3) the ecological setting of the project site; 4) the habitats and biological resources on the site, including jurisdictional waters (e.g., wetlands); 5) the results of surveys intended to determine the presence or potential presence of special-status species on the project site; 6) potential impacts to biological resources on the project site that could result from the project and 7) measures to mitigate these impacts.

1. Setting. This section describes background information related to biological resources on the project site.

a. Methods and Protocols. The methods and protocols used to evaluate biological resources on the site and the potential effects of the project on these resources are identified below.

(1) Study Area. The study area for the biological surveys and studies described below encompasses the entire project site, as illustrated on Figures III-1 and III-2. In certain cases, as noted, the study area for specific analyses also includes the entire Airport property and Airport vicinity. The project site encompasses 403 acres, all owned by the City of Livermore.

(2) Literature Review. Available reports of biological resources on and in the vicinity of the project site were reviewed to identify habitat types and species potentially occurring on the site. These reports include the following:

- Biological Survey, Proposed Livermore Municipal Airport Activity Area, Livermore Municipal Airport Master Plan.[1]
- 2003 Clean Water Act Jurisdictional Delineation at the Livermore Municipal Airport.[2]
- 2009 Clean Water Act Jurisdictional Delineation at the Livermore Municipal Airport.[3]

(3) Database Searches. The *California Natural Diversity Database (CNDDB)*[4] and the California Native Plant Society's *Inventory of Rare and Endangered Plants of California* (electronic version)[5] were searched in order to identify potentially occurring special-status species that have been identified in and around the project site.

[1] LSA Associates, Inc. 2002. Biological Survey, Proposed Livermore Municipal Airport Activity Area, Livermore Municipal Airport Master Plan. Letter Report to the City of Livermore. April 8.

[2] LSA Associates, Inc. 2003. Clean Water Act Jurisdictional Delineation at the Livermore Municipal Airport. Letter report to the U.S. Army Corps of Engineers. July 16.

[3] LSA Associates, Inc. 2009. Clean Water Act Jurisdictional Delineation at the Livermore Municipal Airport. Letter report to the U.S. Army Corps of Engineers.

[4] California Department of Fish and Game, 2008. California Natural Diversity Data Base (CNDDB), Commercial Version, December 1, 2008. California Department of Fish and Game, Biogeographic Data Branch, Sacramento, CA.

[5] California Native Plant Society (CNPS), 2008. Electronic Inventory of Rare and Endangered Plants of California. Rel. 1.5.2, California Native Plant Society, Sacramento, CA.

(4) Field Surveys. An LSA team consisting of a wildlife biologist and a wetland scientist first visited the project site on August 8 and September 25, 2001. During these visits, the biologist walked the project site to map existing plant communities and wildlife habitat and search for sensitive plant communities/habitats. In addition, the biologist looked for evidence of special-status species or habitats that could support such species. The survey focused on characterizing the vegetation communities and wildlife habitats, identifying sensitive habitats, and evaluating the potential for special-status species to occur on the site. Plants and animals observed during the survey were recorded in field notes.

The wetland scientist identified potential waters of the United States and the State of California on the site. Depressed topographic features (such as swales and basins), ditches, and plant communities dominated by hydrophytic vegetation were all considered to be potentially regulated waters and suitable for investigation. Sample points were established within potential wetland areas that were considered representative of each type of potential wetland. Each sample point was investigated to determine if the area or plant community that was being sampled met federal wetland criteria.[6] The results of the investigation were subsequently verified by the U.S. Army Corps of Engineers (Corps). See "Existing Biological Resources on the Project Site," below, for additional detail about the mapping of regulated waters.

An LSA biologist visited the site again on November 19, 2008 to determine if conditions had changed measurably since 2001. The biologist re-investigated the entire project site and established additional wetland sample points.[7] Similar to the initial visits, plants and animals observed were recorded in field notes.

(5) Nomenclature. In the descriptions below, plant communities are classified according to *A Manual of California Vegetation*.[8] Botanical nomenclature conforms to *The Jepson Manual, Higher Plants of California*.[9] Nomenclature for special-status plant and animal species conforms to the *California Natural Diversity Data Base* (CNDDB).[10]

(6) Definitions of Key Terms. "Special-status species" are:

- Plants and animals that are listed or proposed for listing as threatened or endangered or rare (for plants) under the California Endangered Species Act (Fish and Game Code 1992 Sections 2050 et. seq.; 14 CCR Sections 670.1 et. seq.) and/or the Federal Endangered Species Act (50 CFR 17.12 for plants; 50 CFR 17.11 for animals; various notices in the Federal Register (FR) for proposed species);

[6] LSA Associates, 2003.

[7] LSA Associates, 2009.

[8] Sawyer, J. and T. Keeler-Wolf, 1995. A Manual of California Vegetation. California Native Plant Society, Sacramento, CA.

[9] Hickman, J.C. (Ed.), 1993. The Jepson Manual, Higher Plants of California. University of California Press, Berkeley, CA.

[10] California Department of Fish and Game, 2008.

- Plants and animals that are candidates for possible future listing as threatened or endangered under the Federal Endangered Species Act (50 CFR 17.12 for plants; 61 FR 7591, February 28, 1996, for animals);
- Plants and animals that meet the definition of rare or endangered under CEQA (14 CCR section 15380) but are not included on State or federal Endangered Species lists;
- Plants occurring on List 1A, List 1B, and List 2 of the California Native Plant Society's (CNPS) *Inventory of Rare and Endangered Plants of California.* The California Department of Fish and Game (CDFG) recognizes that Lists 1A, 1B, and 2 of the CNPS inventory contain plants that, in the majority of cases, would qualify for State listing, and CDFG requests their inclusion in EIRs, as necessary;
- Species identified as species of concern in ecosystem-based recovery plans;
- Animals that are designated as "Species of Special Concern" by CDFG; and
- Animals that are "fully protected" in California (Fish and Game Code, Sections 3511, 4700, 5050, and 5515)

The term "sensitive species" includes not only all special-status species (as defined above), but all other species that might be considered of sufficient local or general interest that negative impacts to the individuals of the species, or to their habitat, could potentially be considered a significant impact under CEQA.

b. Regulatory Context. Biological resources on the project site may be regulated by the agencies listed below:

(1) U.S. Army Corps of Engineers (Corps). Under Section 404 of the Clean Water Act (CWA), the Corps is responsible for regulating the discharge of fill material into waters of the United States. Waters of the United States and their lateral limits are defined in 33 Code of Federal Regulations (CFR) Part 328.3(a) and include streams that are tributary to navigable waters and their adjacent wetlands. Wetlands that are not adjacent or tributary to waters of the United States are termed "isolated wetlands" and are not subject to Corps jurisdiction.

In general, a Corps permit must be obtained before placing fill in wetlands or other waters of the United States. To qualify for a nationwide permit, a project must demonstrate that it has no more than a minimal adverse effect on the aquatic ecosystem of the water to be filled. The Corps typically interprets this condition to mean that there will be no net loss of either habitat acreage or habitat value. This interpretation almost always results in a requirement to provide mitigation for project-related fill of any watercourse, water body, or wetland.

(2) U.S. Fish and Wildlife Service (USFWS). USFWS has jurisdiction over species that are formally listed as threatened or endangered under the federal Endangered Species Act (ESA). The ESA protects listed wildlife species from harm or "take." The term "take" is broadly defined as to "harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or attempt to engage in any such conduct." An activity is defined as a "take" even if it is unintentional or accidental. An endangered plant or wildlife species is one that is considered in danger of becoming extinct throughout all, or a significant portion of its range. A threatened species is one that is likely to become endangered within the foreseeable future.

Per the ESA, project proponents are not just required to avoid take of listed species, they must also avoid adverse modification of habitat that is determined to be essential to the survival and recovery of listed species.

In addition to the lists of endangered and threatened species, the USFWS also recognizes proposed and candidate species. Proposed species are those for which a proposed rule to list the species as endangered or threatened has been published in the Federal Record. A candidate species is one for which the USFWS currently has enough information to support a proposal to list it as a threatened or endangered species. Species designated as proposed or candidate are not afforded legal protection under the federal Endangered Species Act. However, project-related impacts to federally-listed, proposed, and candidate species or their habitats are considered "significant" under the *CEQA Guidelines* (discussed below).

(3) California Department of Fish and Game (CDFG). CDFG has jurisdiction over threatened or endangered species that are formally listed by the State under the California Endangered Species Act. The California Endangered Species Act is similar to the federal Endangered Species Act both in process and substance; it is intended to provide protection to threatened and endangered species in California. The California Endangered Species Act prohibits the "take" of any plant or animal listed or proposed as threatened, endangered, or rare ("rare" applies only to plants). The California Endangered Species Act does not supersede the federal Endangered Species Act, but operates in conjunction with it. Species may be listed as threatened or endangered under both acts (in which case the provisions of both State and federal laws would apply) or under only one act.

CDFG also maintains informal lists of "species of special concern." These species are broadly defined as plants and wildlife that are of concern to CDFG because of population declines and restricted distributions, and/or they are associated with habitats that are declining in California. Project-related impacts to species on the State endangered or threatened lists and lists of species of special concern are considered "significant" under the *CEQA Guidelines* (discussed below). CDFG also asserts jurisdiction over the bed and banks of watercourses according to the provisions of Sections 1600 et. seq. of the Fish and Game Code. The CDFG requires a Streambed Alteration Agreement for the fill or removal of material from any natural drainage. CDFG jurisdiction over lakes and streams extends to the top of the bank and often includes the outer edge of riparian vegetation canopy cover.

(4) Regional Water Quality Control Board (RWQCB). Pursuant to Section 401 of the CWA, projects that apply for a Corps permit for discharge of dredge or fill material into wetlands or other waters of the United States must also obtain water quality certification from the RWQCB. This certification ensures that the project will uphold State water quality standards. The RWQCB also directly regulates Waters of the State pursuant to the Porter-Cologne Water Quality Act, and may elect to issue state Waste Discharge Requirements in addition to a Section 401 certification for a project. Wetlands and waters determined by the Corps to be isolated from navigable waters and not subject to CWA jurisdiction may still be regulated by the RWQCB as Waters of the State.

(5) CEQA Guidelines Section 15380. Although threatened and endangered species are protected by specific federal and State statutes, *CEQA Guidelines* section 15380(b) provides that a species not listed on the federal or State lists of protected species may be considered rare or endangered if the species can be shown to meet certain specified criteria. These criteria have been modeled after the definitions in the federal Endangered Species Act and the California Fish and Game

Code. Section 15380 (b) was included in the guidelines primarily to deal with situations in which a public agency is reviewing a project that may have a significant effect on a species that has not yet been listed by either the USFWS or CDFG. CEQA thus provides a lead agency with the ability to protect a species from a project's potential impacts until the responsible government agencies have an opportunity to designate the species as protected.

(6) California Native Plant Society (CNPS). CNPS, a non-governmental conservation organization, has developed lists of plants of special concern in California. A CNPS List 1A plant is a species, subspecies, or variety that is considered to be extinct. A List 1B plant is considered rare, threatened, or endangered in California and elsewhere. A List 2 plant is considered rare, threatened, or endangered in California but is more common elsewhere. A List 3 plant is a species for which CNPS lacks necessary information to determine if it should be assigned to a list. A List 4 plant has a limited distribution in California.

All of the plant species on List 1 and List 2 meet the requirements of Section 1901, Chapter 10 (Native Plant Protection Act) or Sections 2062 and 2067 (California Endangered Species Act) of the CDFG Code, and are eligible for State listing. Therefore, plants appearing on Lists 1 or 2 are considered to meet the *CEQA Guidelines* Section 15380 criteria and effects to these species are considered "significant" in this document.

(7) City of Livermore General Plan. The key policies and actions in the Livermore General Plan that relate to biological resources and are potentially applicable to the project site are listed below. All the policies and actions are from the Open Space and Conservation Element.

- *OSC-1.1.P4*: The City shall require all projects that impact a federal or State listed threatened or endangered species, federal or State listed candidate species, State species of special concern, or State designated sensitive habitats, to mitigate for identified impacts in a way consistent with mitigation and avoidance measures published and distributed by the federal and/or State resource agencies at the time of the specific plan or project-level review. Monitoring requirements also shall be consistent with published requirements for each species or habitat. For listed or candidate species, species of special concern, or sensitive habitats for which no mitigation or avoidance measures have been published, the City shall require evidence of coordination with the responsible agencies prior to acceptance of mitigation or avoidance measures or monitoring requirements.
- *OSC-1.2.P1*: Habitats of rare or endangered species shall be preserved.
- *OSC-1.2.P6*: The City shall require all development to comply with State and federal regulations to preserve and protect the habitats of rare and endangered species.
- *OSC-1.2.P7*: The City shall require project proponents to identify and map sensitive biological and wetland resources on each development parcel and identify the measures necessary to avoid and/or minimize impacts on sensitive biological and wetland resources prior to approving the development. Mitigation for impacts to sensitive biological and wetland resources shall replace the functions and values of the resources as well as gross acreage.
- *OSC-1.2.P8*: The City shall require development to avoid take of species listed as threatened, endangered, or candidate under federal and state endangered species acts by implementing measures determined in consultation with the U.S. Fish and Wildlife Service and the California Department of Fish and Game.
- *OSC-1.2.P9*: Development, conversion to cultivated agriculture, or keeping of animals is not permitted if the quantity or biological quality of wetlands would be reduced materially. "Wetlands" are areas permanently or periodically covered by water, where hydrophytic vegetation is present under normal circumstances, or that have soils primarily hydric in nature.

- *OSC-1.2.P11*: No development or conversion to cultivated agriculture shall be permitted by the City which will cause a reduction or impairment contrary to federal or State law of habitat for animals or plants that are listed by the federal or State governments as endangered or threatened.
- *OSC-1.2.P12*: The City shall require the maintenance of adequately-sized terrestrial and aquatic movement corridors that connect natural open space areas.
- *OSC-1.3.P1*: Require new developments to incorporate native vegetation into their landscape plans, and prohibit the use of invasive non-native plant species. Propagules (seeds or plants) of native plants shall be from native sources.
    - *Action 1*: Restore areas adjacent to existing open space areas with native plant and animal communities. Restoration should be accomplished with native plants from local sources.
- *OSC-2.1.P1*: Require the implementation of Best Management Practices (BMPs) to minimize erosion, sedimentation, and water quality degradation resulting from the construction of new impervious surfaces.
- *OSC-2.1.2*: The City shall take all necessary measures to regulate runoff from urban uses to protect the quality of surface and ground water.
    - *Action 1:* Implement a program for integrated pest management (IPM) for City-managed landscaping areas that minimizes the use of pesticides and herbicides, and strives toward an organic pest-management approach. Provide incentives for the adoption of IPM practices on private land.

(8) Other Statutes, Codes, and Policies Affording Species Protection. The federal Migratory Bird Treaty Act (16 U.S.C., Sec. 703, Supp. I, 1989) prohibits killing, possessing, or trading in migratory birds except in accordance with regulations prescribed by the Secretary of the Interior. This act encompasses whole birds, parts of birds, and bird nests and eggs.

The federal Bald and Golden Eagle Protection Act prohibits persons within the United States (or places subject to U.S. jurisdiction) from "possessing, selling, purchasing, offering to sell, transporting, exporting or importing any bald eagle or any golden eagle, alive or dead, or any part, nest, or egg thereof."

Additionally, birds of prey (hawks, eagles, falcons, and owls) are protected in California under the State Fish and Game Code (Section 3503.5). Section 3503.5 states that it is "unlawful to take, possess, or destroy any birds in the order Falconiformes or Strigiformes (birds of prey) or to take, possess, or destroy the nest or eggs of any such bird except as otherwise provided by this code or any regulation adopted pursuant thereto." Disturbance that causes nest abandonment and/or loss of reproductive effort is considered "taking" by the California Department of Fish and Game and would be considered a significant impact.

c. Biological Resources Setting. The Livermore Municipal Airport is located in the unsectioned lands of Township 3 South, Ranch 1 East, within the former boundaries of Rancho Santa Rita. The Airport is located on the floor of the Livermore-Amador Valley in the Arroyo Las Positas watershed, and drains via a series of ditches and culverts to Arroyo Las Positas. The project site is relatively flat; the elevation at the east end of the project site is approximately 410 feet National Geodetic Vertical Datum of 1929 (NGVD)[11], and approximately 375 feet NGVD at the west end.[12]

[11] For most purposes, NGVD is equivalent to mean sea level.

[12] United States Geological Survey (USGS), 1961. Photo rev. 1980. Livermore Quadrangle 7.5' Topographic Map.

Much of the project site has been covered with asphalt or aviation-related buildings and associated structures. Developed portions include two runways, three taxiways, 22 hanger buildings, an aircraft storage shelter, a corporate-style hanger building, and the main terminal. Undeveloped parcels and areas between runways are open, level fields supporting non-native annual grassland. The open fields are disked or mowed annually for fire control.

The project site was graded in a manner that directs sheet-flow runoff from the undeveloped and unpaved portions of the site toward culverts that pass beneath runways and taxiways. There are no slopes or watercourses that flow onto or into the project site. A pair of drainage ditches eventually collects almost all the runoff generated on the project site. The two ditches parallel the runway, one to the north and the other to the south. The ditches carry runoff westward and eventually merge into a single ditch west of the project site. A segment of the northern drainage ditch has been cut off and isolated from downstream segments by construction activities. The isolated segment is located adjacent to the main terminal and just south of Club House Drive. Despite the lack of an outlet for the cut off segment, there is no evidence of ponding or overflow.

The project site is bordered by light industrial and commercial uses to the north and east, the City of Livermore's Water Reclamation Plant and mixed uses to the east, open space and lands containing quarries to the south, and a golf course to the west and north. All of these activities serve as barriers to wildlife movement, as summarized below:

- Properties to the northeast, east, and southeast have been developed as industrial and commercial parks. These areas are mostly paved and conduct regular vehicle traffic. Fences and lighting are common. Beyond those properties are residential developments.
- The Las Positas Golf Course to the north and northwest of the project site contains manicured, perennial grass lawns with ornamental trees. The course is heavily trafficked by golfers during the day and there is fencing, lighting, maintenance activities, water features, and sprinkler irrigation to discourage after-hours and night use.
- Lands to the north of the golf course are further separated from the project site by Interstate 580 (I-580), a busy eight-lane freeway.
- The area to the southeast is used for horse boarding and aggregate mining. The mining has altered the original upland habitats into a series of large perennial ponds separated by berms and roadways.

d. Existing Biological Resources on the Site. The existing biological conditions in the project site are described below for six categories of biological resources: 1) vegetation communities; 2) wildlife habitats; 3) wetlands and other waters; 4) sensitive plant communities and habitats; 5) sensitive plant species; and 6) sensitive wildlife species.

(1) Vegetation Communities. The plant communities present on the project site are described below and their distribution on the site is shown in Figure V.I-1.

Non-Native (Annual) Grassland. Non-native grassland is the only plant community that occurs within the project site. This annual grassland community, where it occurs on the project site, most closely resembles the non-native grassland described by Sawyer and Wolf.[13] Grasses

[13] Sawyer, J. and T. Keeler-Wolf, 1995.

characteristic of this community that were observed on the site include soft chess (*Bromus hordeaceus*), wild oats (*Avena fatua*), ripgut brome (*Bromus diandrus*), hare barley (*Hordeum murinum* ssp. *leporinum*), and Italian ryegrass (*Lolium multiflorum*). All of these are introduced species; no native grasses were observed. Weedy forbs observed include bur-clover (*Medicago polymorpha*), bellardia (*Bellardia trixago*), filaree (*Erodium cicutarium*), yellow-star thistle (*Centaurea solstitialis*), Russian thistle (*Salsola tragus*) and field bindweed (*Convolvulus arvensis*). The average proportion of ruderal weeds to non-native grasses is approximately 50 percent. Non-native grassland occurs on all of the undeveloped portions of the project site. Most of these non-native grassland areas are regularly disked and/or mowed. The project site does not contain any alkali soils, claypan soils or valley sink topography that might support sensitive grassland plant communities.

A row of ornamental trees, including several large black walnuts (*Juglans californica*) and Monterey pines (*Pinus radiata*), are located within the mown non-native grassland in the southwestern corner of the project site. These trees were likely planted in association with a historical farm operation on the site. The farm buildings are no longer present, but the trees remain.

Developed. The developed portions of the project site are either barren of vegetation or contain very small plots of landscaped turf and/or ornamental woody plants. The majority of acreage in this type is bare asphalt runway, taxiway, or road.

(2) Wildlife Habitat. The wildlife observed within the non-native grasslands on the project site consists mainly of species typical of disturbed grassland communities in central California. These are species of animals that are adapted to exposed conditions and semi-urban surroundings. Many of these grassland species are dependant on the burrows of subterranean mammals, such as the California ground squirrel (*Spermopholus beechii*), to provide the only available shelter in this otherwise open habitat.

Wildlife expected or observed on the project site include grassland species such as California ground squirrel, black-tailed hare (*Lepus californicus*), western meadowlark (*Sturnella neglecta*), and morning dove (*Zenaida macroura*) as well as generalist species such as Brewer's blackbird (*Euphagus cyanocephalus*), coyote (*Canis latrans*), striped skunk (*Mephitis mephitis*), and western fence lizard (*Sceloporus occidentalis*).

An adult and a juvenile red-tailed hawk and an adult white-tailed kite were observed in the walnut trees on the western side of the project site in 2001. A sharp-shinned hawk was observed in these same trees during the 2008 site visit. No nests could be located. Many species of raptor would be expected to forage over the site.

(3) Wetlands and Other Waters. Waters in the project site that *could* be subject to federal or State regulation (but are not subject to such regulation, as described below) are depicted on Figure V.I-1. In 2001, LSA investigated the drainage ditches along the perimeter of the runway and taxiways and several poorly-defined swales in the un-paved median strips of the runway areas as part of a formal CWA wetland delineation. All were found to lack wetland plant cover and to otherwise not meet CWA jurisdictional criteria. The swales failed to meet any of the jurisdictional wetland criteria; the drainage ditches were determined not to be jurisdictional primarily because they are man-made

LSA

FIGURE V.I-1

PROPOSED AIRPORT ZONING DISTRICT BOUNDARY

DRAINAGE DITCH

ANNUAL GRASSLANDS

DEVELOPED (PAVED SURFACES AND STRUCTURES)

N

0 350 700

FEET

Livermore Municipal Airport General Plan Amendment and Rezoning Project EIR

Vegetation Communities in Study Area

SOURCE: LSA ASSOCIATES, INC., 2009

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features constructed on dry land, although the ditch segments sometimes display a narrow, scoured flowline. The Corps reviewed LSA's findings during a site visit on August 18, 2003 and accepted a verified wetland delineation map of the site on September 23, 2003. This verification expired on September 23, 2008.

LSA's visit on November 19, 2008 found the condition of the features discussed above unchanged. LSA is producing a revised delineation of the project site, and will submit it to the San Francisco District of the Corps upon completion.[14]

(4) Sensitive Plant Communities and Habitats. The CDFG monitors the status of uncommon and declining plant communities and habitats in California. Such communities found in the region surrounding the City of Livermore are Alkali Meadow, Alkali Seep, Northern Claypan Vernal Pool, Sycamore Alluvial Woodland, Valley Needlegrass Grassland, and Valley Sink Scrub, as well as various wetland communities.[15]

Sensitive communities and habitats have no direct legal protection, though wetlands and other waters receive protection under federal and State statutes. Sensitive communities and habitats may nevertheless be considered "rare and worthy of protection" by CDFG or by other government bodies, and may therefore require mitigation for impacts under CEQA.

LSA did not find any evidence that any of the generally recognized sensitive plant communities and habitats listed above are present in or adjacent to the project site. Most of the plant communities would be unlikely to occur on the project site due to unsuitable soil substrate or habitat factors. The soils on the project site are typical of the alluvial soils that cover much of the Livermore Valley, while most of the sensitive plant communities listed above are confined to atypical substrates. Specifically, the project site does not contain any alkali soils, claypan soils, valley sink topography, or the kind of riparian habitat required for sycamore woodlands.

Valley Needlegrass Grassland could theoretically occur on the site, but this plant community mostly survives in remote areas that have not been subject to historic agriculture, grazing, or development disturbance. The project site is an unlikely location to find a remnant population of Needlegrass Grassland given its long history of agricultural and post-agricultural disturbance to soils and plant communities (e.g., discing, grazing, and grading).

(5) Sensitive Plant Species. Table V.I-1 presents the 19 species of special-status plants that are currently known to occur in the vicinity of the City of Livermore.[16,17] This list has been updated to reflect changes in the State and federal lists of special-status plant species that have occurred since biological work was last conducted by LSA at the Airport in 2002. In addition, the distribution of these and the previously considered plants has become better understood.

[14] LSA Associates, Inc., 2009.

[15] California Department of Fish and Game, 2008.

[16] California Department of Fish and Game, 2008.

[17] California Native Plant Society (CNPS), 2008.

Table V.I-1: Special-Status Species Potentially Occurring on the Project Site

Scientific Name	Common Name	Status	Habitat Requirements	Potential Status in Project Site
Mammals				
Androzous pallida	Pallid bat (roost sites)	CSC	Roosts under bridges, and in large culverts, buildings and tree hollows associated with a variety of open, dry habitats.	**Possible.** Some of the buildings and other structures on the project site could provide suitable roosting sites.
Coryrhynos townsendii townsendii	Townsend's western big-eared bat (roost sites)	CSC	Roosts under bridges, and in large culverts, buildings and tree hollows associated with a variety of habitat types. Very sensitive to disturbance of roosting sites.	**Possible.** Some of the buildings and other structures on the project site could provide suitable roosting sites.
Neotoma fuscipes annectens	San Francisco dusky-footed woodrat	CSC	Builds large stick nests in scrub, chaparral, and woodland habitats of moderate canopy and moderate to dense understory.	**Absent.** Dusky-footed woodrats typically nest in woodland and scrub habitats. No stick nests typical of this species have been observed on the site.
Taxidea taxus	American badger	CSC	Burrows in friable soils of drier open shrub, forest, and open grassland habitats.	**Unlikely.** The small size and isolated nature of grassland habitats on the project site would minimize the value and availability of these habitats to badgers.
Vulpes macrotis mutica	San Joaquin kit fox	FE; ST	Habitat includes annual grasslands or grassy open stages with scattered shrubby vegetation. Needs loose-textured sandy soils for burrowing and a suitable prey base.	**Unlikely.** The small size and isolated nature of grassland habitats on the project site would minimize the value and availability of these habitats to kit fox.
Birds				
Agelaius tricolor	Tricolor blackbird (nesting colonies)	CSC	Nests in freshwater marshes with tules or cattails, or in other dense vegetation such as thistle and blackberry thickets in close proximity to open water. Forages in a variety of habitats, including pastures, agricultural fields, rice fields, and feedlots.	**Absent.** No suitable nesting habitat occurs in or adjacent to the project site. Nearest recorded occurrence is within 5 miles from the site. Not expected to occur.
Aquila chrysaetos	Golden eagle	CFP	Nests in stands with few trees, in juniper-sage flats, riparian areas, and in oak savannah. Requires open terrain for foraging such as grasslands, or alfalfa or grain fields supporting rodent populations.	**Absent.** No suitable nesting habitat occurs in or adjacent to the project site. Nearest recorded occurrence is within 5 miles from the site. Not expected to occur.
Athene cunicularia hypungea	western burrowing owl	CSC	Uses burrows in open, dry, annual or perennial grasslands.	**Possible.** Suitable burrows observed in most of the undisturbed portions of the site. Potential foraging habitat throughout the site. Nearest recorded occurrence is within 2 miles of the site.
Elanus caerulus	White-tailed kite	CFP	Nests in tall shrubs and small trees of grasslands and savannas.	**Possible.** Suitable nesting locations occur within the trees and shrubs in the undisturbed portions of the site.
Falco mexicanus	Prairie falcon (nesting locations)	CSC	Nest on ledges and other shelves on cliff faces in dry terrain. Forages in open areas, including grasslands, rangelands, savannas, desert scrub, and some agricultural fields.	**Absent.** No suitable breeding habitat occurs within the project site. Foraging habitat is available. Most recent documented occurrence was recorded in 1979 near Camp Roberts.

Table V.I-1 *Continued*

Scientific Name	Common Name	Status	Habitat Requirements	Potential Status in Project Site
Haliaeetus leucocephalus	Bald eagle	SE	Nests in mature open canopies of large trees along the broad lower flood-bottoms of larger river systems. Typically nests within 1 mile of a large water source.	**Absent.** No nesting or foraging habitat is present on the site.
Lanius ludovicianus	Loggerhead shrike (nesting locations)	CSC	Nests in shrubs and small tress located within or adjacent to open habitats such as grasslands, prairies, and deserts.	**Possible.** Suitable nesting locations occur within the trees and shrubs in the undisturbed portions of the site. Potential foraging habitat is present.
Amphibians				
Ambystoma californiense	California tiger salamander	FT; CSC	Occurs primarily in open habitats such as grasslands and prairies. Seasonal ponds and pools are essential for breeding and egg-laying.	**Unlikely.** The small size and isolated nature of grassland habitats on the project site would minimize the value and availability of these habitats to California tiger salamander. No suitable breeding sites occur within 1 mile of the site.
Spea hammondii	Western spadefoot toad	CSC	Occurs primarily in open habitats such as grasslands, prairies and deserts. Seasonal ponds and drainages are essential for breeding and egg-laying.	**Absent.** The project site is located well outside of the known range of the western spadefoot toad.
Rana draytonii	California red-legged frog	FT; CSC	Occurs in permanent or nearly permanent water sources, ponds, marshes, rivers, streams, and irrigation ditches, typically with emergent vegetation.	**Absent.** The section of Arroyo Las Positas north of the project site provides suitable habitat for this species. There are records of this species in the Arroyo las Positas and its tributary, Catano Creek
Reptiles				
Actinemys marmorata	Western pond turtle	CSC	Occurs in permanent or nearly permanent water sources, ponds, marshes, rivers, streams, and irrigation ditches. Lays eggs in adjacent upland habitat consisting of sandy banks or grassy, open fields.	**Absent.** The closest potentially suitable habitat is Arroyo Las Positas, which is not located in the project site. There are records of this species in the Arroyo las Positas and its tributary, Catano Creek
Coluber lateralis euryxanthus	Alameda whipsnake	FT	Typically in scrub and chaparral habitats, but occasionally found in grasslands and woodlands within 1 mile of occupied scrub.	**Absent.** There is no habitat for Alameda whipsnake on the site or within 1 miles of the site.
Coluber flagellum ruddockii	San Joaquin whipsnake	CSC	Grasslands and prairie habitats of the southern Central Valley.	**Absent.** The project site is located outside of the known range of the San Joaquin whipsnake. The small size and isolated nature of grassland habitats on the project site would minimize the value and availability of these habitats to San Joaquin whipsnake.
Phrynosoma blainvillei	California horned lizard	CSC	Typically occurs in sandy and gravelly soil substrates of grassland and scrub habitats.	**Absent.** No suitable sandy or gravelly soil habitat occurs within the project site.

Table V.I-1 *Continued*

Scientific Name	Common Name	Status	Habitat Requirements	Potential Status in Project Site
Invertebrates				
Branchinecta lynchi	Vernal pool fairy shrimp	FT	Occurs in freshwater vernal pools of grasslands in the Central Valley and Central Coast foothills.	**Absent.** No vernal pools or other suitable seasonal wetlands are located on the project site.
Branchinecta longiantenna	Longhorn fairy shrimp	FE	Occurs in sandstone erosion pools and grassland vernal pools of the Central Valley and Central Coast foothills.	**Absent.** The project site is located outside of the known range of the longhorn fairy shrimp. No vernal pools or other suitable seasonal wetlands are located on the project site.
Plants				
Amsinkia lunaris	Bent-flowered fiddleneck	--/--/List 1B	Occurs in grasslands and woodlands; blooms March-June.	**Absent.** The degraded grassland habitat on the project site is too disturbed and isolated to support this species. The site also lacks suitable soil conditions.
Astragalus tener var. *tener*	Alkali milk-vetch	--/--/List 1B	Occurs in grasslands and seasonal wetlands with adobe clay or alkaline soils; blooms March-June.	**Absent.** The degraded grassland habitat on the project site is too disturbed and isolated to support this species. The site also lacks suitable soil conditions.
Atriplex cordulata	Heartscale	--/--/List 1B	Occurs in grasslands and seasonal wetlands with saline or alkaline soils; blooms April-October.	**Absent.** The degraded grassland habitat on the project site is too disturbed and isolated to support this species. The site also lacks suitable soil conditions.
Atriplex depressa	Brittlescale	--/--/List 1B	Occurs in grasslands and seasonal wetlands with adobe clay or alkaline soils; blooms May-October.	**Absent.** The degraded grassland habitat on the project site is too disturbed and isolated to support this species. The site also lacks suitable soil conditions.
Atriplex joaquiniana	San Joaquin spearscale	--/--/List 1B	Occurs in grasslands and seasonal wetlands with alkaline soils; blooms April-November.	**Absent.** The degraded grassland habitat on the project site is too disturbed and isolated to support this species. The site also lacks suitable soil conditions.
Balsamorhiza macrolepis var. *macrolepis*	Big-scale balsamroot	–/–/List 1B	Occurs in grasslands and woodlands, usually on hillsides with thin, rocky soil, sometimes on serpentine; blooms March-June.	**Absent.** No suitable habitat within the project site.
Blepharizonia plumosa	Big tarplant	–/–/List 1B	Occurs in grasslands; blooms July-October.	**Absent.** The degraded grassland habitat on the Airport site is too disturbed and isolated to support this species.
California macrophylla	Round-leafed filaree	–/–/List1B	Occurs in grasslands and woodlands, usually on clay soils, blooms March-May.	**Absent.** The degraded grassland habitat on the project site is too disturbed and isolated to support this species. The site also lacks suitable soil conditions.
Centromadia parryi ssp. *congdonii*	Congdon's tarplant	--//List 1B	Occurs in grasslands, usually with alkaline or saline clay soils; blooms June-November.	**Unlikely.** Congdon's tarplant is known to occasionally occupy highly disturbed grasslands like those on the project site but was not observed.
Cordylanthus mollis ssp. *hispidus*	Hispid bird's-beak	--/--/List 1B	Occurs in grasslands with alkaline or saline clay soils; blooms June-September.	**Absent.** The degraded grassland habitat on the Airport site is too disturbed and isolated to support this species. The site also lacks suitable soil conditions.

Table V.I-1 *Continued*

Scientific Name	Common Name	Status	Habitat Requirements	Potential Status in Project Site
Cordylanthus palmatus	Palmate-bracted bird's-beak	FE/SE/List 1B	Occurs in grasslands with alkaline or saline clay soils; blooms May-October.	**Absent.** The degraded grassland habitat on the project site is too disturbed and isolated to support this species. The site also lacks suitable soil conditions.
Deinandra bacigalupii	Livermore tarplant	--/--/List 1B	Occurs in alkaline meadows and seeps; blooms June-October	**Absent.** No suitable habitat within the project site.
Delphinium californicum ssp. *interius*	Hospital Canyon larkspur	--/--/List 1B	Occurs in grasslands and woodlands, usually on hillsides with thin soil; blooms April-June.	**Absent.** The degraded grassland habitat on the project site is too disturbed and isolated to support this species. The site also lacks suitable soil conditions.
Dirca occidentalis	Western leatherwood	--/--/List 1B	Occurs in variety of forest and woodland habitats; blooms January-April.	**Absent.** No suitable habitat within the project site.
Eschscholzia rhombipetala	Diamond-petaled California poppy	--/--/List 1B	Occurs in grasslands, usually with alkaline or clay soils; blooms March-April.	**Absent.** The degraded grassland habitat on the project site is too disturbed and isolated to support this species. The site also lacks suitable soil conditions.
Helianthella castanea	Diablo helianthella	--//List 1B	Occurs in grassy woodland and chaparral edges, often on hillsides with thin, rocky soil; blooms April-May.	**Absent.** No suitable habitat within the project site.
Plagiobothrys glaber	Hairless popcorn flower	--//List 1A	Occurs in grasslands with alkaline or saline clay soils; blooms March-May.	**Absent.** Considered extinct. The degraded grassland habitat on the project site is too disturbed and isolated to support this species.
Trifolium depauperatum var. *hydrophilum*	Saline clover	--/--/List 1B	Occurs in grasslands and seasonal wetlands with alkaline soils; blooms April-June.	**Absent.** The degraded grassland habitat on the project site is too disturbed and isolated to support this species. The site also lacks suitable soil conditions.
Tropidocarpum capparideum	Caper-fruited tropidocarpum	--/--/List 1B	Occurs in grasslands with alkaline or saline clay soils; blooms March-April.	**Absent.** The degraded grassland habitat on the project site is too disturbed and isolated to support this species. The site also lacks suitable soil conditions.

Source: LSA Associates, Inc., 2009.

Notes:

Federal

FT = Threatened
FPE = Proposed Endangered
FPT = Proposed Threatened

FC = Candidate
FD = Delisted

State

SE = Endangered
ST = Threatened
SR = Rare

CSC = Species of Concern
CFP = California Fully Protected

California Native Plant Society

CNPS 1A = Presumed extinct in California
CNPS 1B = Rare or Endangered in California and elsewhere
CNPS 2 = Rare or Endangered in California, more common elsewhere
CNPS 4 = Plants of limited distribution – a watch list

Habitats that would be suitable for four of the species in Table V.I-1 (big-scale balsamroot, Livermore tarplant, western leatherwood and Mt. Diablo helianthella), do not occur in the project site.[18] These species can therefore be removed from further consideration. The remaining 15 species are known to occur, at least occasionally, in non-native annual grasslands.

The grassland communities on and around the project site have been significantly disturbed by historic land uses since the 1800s. These historic uses include development, agriculture, grazing, mining, grading, disking and mowing. Within the project site, these historic land use practices have eliminated most of the native vegetation, and surrounding development and mining have isolated the Airport from other suitable habitat areas. The loss of native vegetation has promoted the establishment of exotic species such as the introduced annual grasses and weeds observed during site visits.

Typically, in upland habitats, exotics and invasive plant species prevent all but the most hardy of native plant species from returning to a site. LSA observed only a few native species, such as California poppy (*Eschscholzia californica*), growing among the non-native grasses at the project site. The dominance of non-native grasses and forbs at the project site is sufficiently great to preclude the more sparsely distributed native plant species from growing on the site. Most of these species now require particular growing conditions that are not present at the project site. Due to these conditions, it is generally unlikely that any of the special-status plant species known from the Livermore area would occur on the project site.

Specific special-status plants known to occur in Livermore area grassland communities are discussed below:

Palmate-bracted Bird's-beak. Palmate-bracted bird's-beak is considered an endangered species under both the State and federal Endangered Species Acts. This plant occurs in grassland communities with highly alkaline soils where seasonal wetlands and other pooled water features can accumulate salts. A well documented population occurs in the Springtown Alkali Preserve north of I-580, approximately 4 miles northeast of the project site. The project site is not located within federally designated Critical Habitat for this plant.[19]

LSA did not observe any evidence of alkaline soil conditions within the project site. Nor did LSA observe any evidence of pooled water or other typical habitat conditions associated with palmate-bracted bird's-beak. In addition, the isolated nature of the project site and the level of historic disturbance to the grassland habitats render the site unsuitable for palmate-bracted bird's-beak.

Other Special-Status Plants. The remaining sensitive plants are not listed as endangered or threatened by the State or federal governments. However, most are included on the CNPS list of plants that are Rare or Endangered in California and elsewhere (List 1B). One, hairless popcornflower, is listed by the CNPS as likely to be extinct (List 1A).

None of the 14 remaining non-listed special-status plant species known to occur in the Livermore area are expected to occur on the project site.

[18] Ibid.

[19] U.S. Fish and Wildlife Service, 1998. Recovery Plan for Upland Species of the San Joaquin Valley, California. U.S. Fish and Wildlife Service. Region 1. Portland Oregon, USA.

Five species of these plants (bent-flowered fiddleneck, big tarplant, round-leaf filaree, Hospital Canyon larkspur, and diamond-petaled California poppy) typically grow in grasslands on well-drained soils on hillsides, where water can drain away from root systems. The level topography and fine alluvial soils within the project site would therefore preclude the occurrence of these species. In addition, these five species are known to be highly sensitive to soil disturbance and competition with non-native annual grasses and ruderal weeds.

Eight of these plants (alkali milk-vetch, heartscale, brittlescale, San Joaquin spearscale, hispid bird's-beak, hairless popcorn flower, saline clover, and caper-fruited tropidocarpum) are associated with alkaline soils. These species are not expected to occur in the project site for the same reasons discussed above under palmate-bracted bird's-beak (i.e., historic disturbance to the site, and soils at the site that are not alkaline enough to support these species). Several of these species, (heartscale, brittlescale, and San Joaquin spearscale), would also have been readily identifiable during the time of the 2001 and 2008 site visits, but were not observed.

Congdon's tarplant is known to occasionally grow in disturbed conditions similar to those present on the project site. However, this plant would have been readily identifiable and was actively searched for during the two site visits. Congdon's tarplant was not observed on the site.

(6) Sensitive Wildlife Species. Table V.I-2 presents a list of 24 special-status wildlife species reported from the Livermore vicinity.[20] Habitats (i.e., woodland, chaparral, riparian, etc.) that would be necessary to support nine of the non-listed species (San Francisco dusky-footed woodrat, nesting sharp-shinned hawk, nesting Cooper's hawk, nesting tricolor blackbird, golden eagle, nesting prairie falcon, bald eagle, western pond turtle, and horned lizard) are not present on the site. These species have been removed from further consideration in this analysis. Two unlisted species, the western spadefoot toad and the San Joaquin whipsnake, are endemic to the Central Valley. These species are occasionally found in the Altamont Hills, more than 10 miles from the project site, but have never been reported from the Livermore Valley.[21] These species have also been removed from further consideration in this analysis. The potential for listed species and the remaining unlisted species to occur on the project site are discussed below.

San Joaquin Kit Fox. The San Joaquin kit fox is a small brown fox listed as a threatened species under both the federal and State Endangered Species Acts. This species lives in abandoned rodent burrows within the grasslands and prairies in the Salinas and San Joaquin Valleys of California. While endemic to the Central Valley, the northernmost range of the San Joaquin kit fox extends into the Altamont Hills between northern Livermore and the southern Antioch/Brentwood area.[22, 23, 24] The very occasional observations of San Joaquin kit fox in this area indicate that a stable

[20] California Department of Fish and Game, 2008.

[21] Jennings, M. R. and M.P. Hayes. 1994. Amphibian and Reptile Species of Special Concern in California. The California Dept. of Fish and Game, Inland Fisheries Division, Rancho Cordova, CA. Contract No. 8023. 225pp.

[22] U.S. Fish and Wildlife Service. 1993. U. S. Fish and Wildlife Service San Joaquin Kit Fox Survey Protocol for the Northern Kit Fox Range. (map) Prepared by the Sacramento Field Office, April 30, 1993.

[23] Sproul M.J., and M.A. Flett, 1993. Status of the San Joaquin Kit Fox in the Northwestern Margin of Its Range. 1993 Transactions of the Western Section of the Wildlife Society 29:61-69

population is unlikely.[25] There have been no recorded observations of San Joaquin kit south of I-580 in the Livermore area.

The project site is separated from the Altamont Hills portion of the kit fox range by urban neighborhoods in Livermore and the I-580 freeway corridor. Both of these features serve as virtually impenetrable barriers to the movement of San Joaquin kit fox onto the project site. While the disturbed grasslands on the project site represent marginally suitable habitat for the San Joaquin kit fox, the small size of these habitats combined with the isolated nature of the Airport renders the site unusable for this species. Therefore, the San Joaquin kit fox is not expected to occur on the project site.

Badger. The American badger, a burrowing member of the mink family, is a California Species of Special Concern. Badgers reside in grasslands, savannas, and prairies throughout much of the western United States.[26] The species has been observed in open space areas to the north and south of the project site.[27]

Surrounding urban development and the I-580 transportation corridor block access between the project site and suitable open space areas (that could be used by badgers) to the north and east. Quarry ponds, development and a small amount of intense agriculture block access between the project site and open space areas to the south and west. While the disturbed grasslands on the project site represent marginal habitat for badgers, the small size of these habitats combined with the isolated nature of the project site renders the project site unusable for this species. Therefore, the American badger is not expected to occur on the project site.

Bats. The roosting locations of two species of bat, the pallid bat and Townsend's western big-eared bat, are protected by the CDFG as species of special concern when the roosting areas are occupied. Both species of bat are known to roost in dwellings, under bridges, in culverts and occasionally in tree hollows.[28] The large buildings located within the project site could provide roosting locations for colonies of either or both of these bat species.

Western Burrowing Owl. Western burrowing owl is a small long-legged owl that nests and lives in abandoned rodent burrows or other similar features throughout the western United States. In California, the western burrowing owl is a California Species of Special Concern. Western burrowing owls have been reported from numerous locations in the vicinity of the project site.[29]
Portions of the grasslands within the project site, particularly in the southwestern corner, support a number of California ground squirrels whose burrows could serve as nesting habitat for western

[24] U.S. Fish and Wildlife Service, 1998.

[25] Clark, Jr., H.O., R.R. Duke, M.C. Orland, R.T. Golightly, and S.I. Hagen, 2007a. The San Joaquin Kit Fox in Northern-Central California: A Review. Transactions of the Western Section of the Wildlife Society 43:27-36; 2007.

[26] Hall, E. Raymond, 1981. *The Mammals of North America (2nd edition).* John Wiley and Sons, New York. 2 Volumes. 1181pp.

[27] California Department of Fish and Game, 2008.

[28] Ingles, Lloyd G., 1965. *Mammals of the Pacific States*. Stanford University Press, Stanford, California.

[29] California Department of Fish and Game, 2008.

burrowing owl. Other debris, such as open pipes and stacked metal, wood, or cement can also provide artificial nesting sites. While no owls or evidence of their presence were detected during site visits, the site still contains potential nesting and foraging habitat for western burrowing owl.

Nesting Birds. White-tailed kite and loggerhead shrike are protected at their nest sites by the California Department of Fish and Game as Species of Special Concern. These species have been reported from various localities around the project site[30] and are discussed in detail below:

White-Tailed Kite. White-tailed kite, which is also a State fully-protected species, nests in trees and tall shrubs growing in grasslands, savannahs, and open woodlands throughout California's Central and Salinas valleys. The trees and shrubs in and adjacent to project site provide suitable nesting sites for this species. While no white-tailed kite nests have been located on the project site during biological inventory work, a single adult white-tailed kite was observed perched in an ornamental tree in the southwestern corner of the site during the 2002 surveys.[31] White-tailed kite could nest and forage on the project site.

Loggerhead Shrike. Loggerhead shrike nests in small trees and tall shrubs growing in grasslands, savannahs, and open woodlands throughout California's Central and Salinas valleys. The trees and shrubs in and adjacent to project site provide suitable nesting habitat for this species. While no loggerhead shrike nests were observed during biological inventory work, the species could nest in the trees and shrubs in and adjacent to project site.

In addition to the special-status species described above, the site serves as nesting habitat for other common bird species that nest in grasslands, shrubs, and trees. Active nests of many native bird species are protected under the Migratory Bird Treaty Act and the California Fish and Game Code. Impacts to active nests of native bird species are considered potentially significant under CEQA.

Alameda Whipsnake. The Alameda whipsnake is a medium-sized snake listed as a threatened species under the federal and State Endangered Species Acts. A diurnal species (i.e., a species that is active during the day), the Alameda whipsnake occupies shrub and chaparral habitats in the San Francisco East Bay and the Tri-Valley area. While endemic to scrub habitats, individuals are known to occasionally wander into adjacent grasslands and woodlands up to 1 mile away. The project site is located outside of any USFWS-designated critical Alameda whipsnake habitat.[32]

There is no scrub or chaparral habitat suitable for Alameda whipsnake on the project site and the closest suitable habitat areas are located several miles to the north, west and south. The Alameda whipsnake is not expected to occur on the project site.

California Tiger Salamander. The California tiger salamander is listed as a federally threatened species and a California Species of Special Concern. It is a subterranean species that occupies rodent burrows and other underground retreats in the grassland, prairie, savanna, and scrub communities of California's Central Valley and foothills. California tiger salamanders remain

[30] Ibid.

[31] LSA Associates, Inc., 2002

[32] U.S. Fish and Wildlife Service, 2002. Draft Recovery Plan for Chaparral and Scrub Community Species East of San Francisco Bay, California. Region 1, Portland, OR.

underground most of the year, coming to the surface only during the rainy season, when the adults will move up to 1 mile to ephemeral pools to breed.[33,34] California tiger salamanders have been documented throughout the Livermore area with known occurrences in the Ruby Hills development 4 miles to the southwest of the project site.

The grasslands on the project site provide conditions typical of California tiger salamander habitat. However, the small size and isolated nature of this habitat severely reduces its value.[35,36] In addition, there are no suitable breeding locations within 1 mile of the site. The quarry ponds located to the southwest of the site are too large and deep to provide the ephemeral pond conditions suitable as breeding habitat for this species. [37] LSA conducted surveys for California tiger salamander on these mining lands in 2002, and found no evidence of their presence.

USFWS protocol studies were conducted in 2007 by Jones and Stokes for the El Charro Specific Plan Area, which adjoins the western and southern boundaries of the project site. These studies also revealed no evidence of California tiger salamander. California tiger salamander is not expected to occur on the project site based on the characteristics of the site and all available evidence to date.[38]

California Red-Legged Frog. The California red-legged frog is listed under the federal Endangered Species act as threatened and is protected as a California Species of Special Concern. California red-legged frogs occur in ponds, lakes, rivers and creeks throughout central and coastal California.[39] The species has been documented immediately to the west, north and northeast of the project site, in the Arroyo Las Positas watershed. A substantial number of these records are associated with Cayetano Creek, a tributary to Arroyo Las Positas.[40] There is no aquatic habitat for California red-legged frog on the project site, and the upland habitat is not suitable due for the species due to lack of refugia and also due to regular mowing and discing of all undeveloped areas. The species is therefore not expected to occur on the site.

Vernal Pool and Longhorn Fairy Shrimp. The vernal pool fairy shrimp has been placed on the federal Endangered Species Act's list of threatened species, while the longhorn shrimp is on the list of endangered species. These crustaceans are small shrimp-like animals that occur in vernal pools and other seasonal wetlands that pond water for the 3 to 8 weeks necessary for the shrimp to complete their life cycles.[41] Fairy shrimp lay desiccation-resistant eggs that can over-summer in the soil. Vernal

[33] Storer, T. I., 1922. *A Synopsis of Amphibians of California*. University of California Press. Berkeley, CA.

[34] Jennings, M. R. and M.P. Hayes, 1994.

[35] Trenham, P.C., H.B. Shaffer, W.D. Koenig, and M.R. Stromberg, 2000. Life history and demographic variation in the California tiger salamander (*Ambystoma californiense*). Copeia 2000(2): 365-377.

[36] Trenham, P.C. and H.B. Shaffer, 2005. Amphibian upland habitat use and its consequences for population viability. Ecological Applications 15(4): 1158-1168.

[37] Ibid.

[38] Jones and Stokes, 2007. El Charro Specific Plan, Final EIR. April.

[39] Jennings, M. R. and M.P. Hayes, 1994.

[40] California Department of Fish and Game, 2008.

[41] Eriksen, C., and D. Belk, 1999. Fairy Shrimps of California's Puddles, Pools, and Playas. Mad River Press. Eureka, CA.

pool fairy shrimp have been reported from several vernal pools located on lands northwest of the project site.[42] Long-horned fairy shrimp are known from the Altamont Pass area. The project site is adjacent to designated vernal pool critical habitat.[43] However, there are no vernal pools or other seasonal wetlands that could provide habitat for these or any other species of fairy shrimp on the project site. Therefore, vernal pool fairy shrimp and longhorn fairy shrimp are not expected to occur on the project site.

2. Impacts and Mitigation Measures

The following section presents a discussion of the impacts related to biological resources that could result from implementation of the proposed project. The section begins with the criteria of significance, establishing the thresholds to determine whether an impact is significant. The latter part of this section presents the biological resources impacts that could result from the proposed project. Impacts are organized into separate categories based on their significance according to the criteria listed below: less-than-significant impacts, and significant impacts.

a. Significance Criteria. The proposed project would result in a significant impact on biological resources if it would:

- Result in substantial reduction in numbers of, restriction in range for, or loss of habitat for a population of any species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Game or U.S. Fish and Wildlife Service;
- Have a substantial adverse effect by diminishing the area or quality of any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations or by the California Department of Fish and Game or U.S. Fish and Wildlife Service;
- Have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act through direct removal, filling, hydrological interruption, or other means;
- Substantially interfere with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites;
- Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional or State policies protecting biological resources, including the City's ancestral tree ordinance.

b. Less-than-Significant Biological Resources Impacts. The following discussion examines potential less-than-significant impacts of the proposed project.

(1) Jurisdictional Waters. Future construction activities associated with the development of specific projects at the Airport could result in fill and other alteration to the drainage ditches on the site. The impacts to biological resources associated with modification of these drainages would be

[42] California Department of Fish and Game, 2008.

[43] U.S. Fish and Wildlife Service, 2005. Endangered and Threatened Wildlife and Plants; Final Designation of Critical Habitat for Four Vernal Pool Crustaceans and Eleven Vernal Pool Plants in California and Southern Oregon; Evaluation of Economic Exclusions From August 2003 Final Designation; Final Rule (Aug. 11, 2005). Federal Register. 70 (154): 46924-46999.

considered less than significant because the ditches are artificial in origin and function, are not subject to State or federal regulation, and have low ecological value. There are no riparian zones in the project site.

(2) Annual Grasslands. Future construction at the project site could result in the loss of approximately 20 acres of non-native grassland plant communities. These non-native habitats are common throughout California. Therefore, the loss of non-native grassland communities in the project site would not be considered significant. There are no sensitive habitat types at the project site.

(3) Protected Plants. No sensitive plant communities or plant species are present at the project site. Therefore, no significant impacts to these species or communities are anticipated as a result of specific development activities undertaken as part of project buildout.

(4) Wildlife Strikes. Wildlife strikes at Airports in the United States are receiving increased attention from both the Federal Aviation Administration (FAA) and public due to the serious aircraft damage and occasional loss of human life they can cause. In recognition of the increased risk to aircraft and human life that wildlife strikes pose, greater emphasis is being placed on preparing Airport Wildlife Hazard Management Plans that effectively deal with the problem.[44] Several alerts and Advisory Circulars (AC) that pertain to wildlife strikes and attractants have also been issued by the FAA (e.g., AC 150/5200-33A titled *Hazardous Wildlife Attractants on or near Airports*).

Operators of Airports that have been certified by the FAA[45] are required to conduct a Wildlife Hazard Assessment when any of the following events occurs on or near the Airport: 1) an air carrier aircraft experiences multiple wildlife strikes; 2) an air carrier aircraft experiences substantial damage from striking wildlife; 3) an air carrier aircraft engine ingests wildlife; or 4) wildlife of sufficient size or number, capable of causing any of the previous three events is observed to have access to any Airport flight pattern or aircraft movement area (14 CFR 139.337[b]).

The first three events listed above have not occurred at the Airport in recent years, based on Airport records. However, the possibility of the fourth event (i.e., wildlife capable of causing aircraft damage having access to any Airport flight pattern or movement area) cannot be discounted. Several land uses in the immediate Airport vicinity (i.e., Las Positas Golf Course, Livermore Water Reclamation Plant) have the potential to attract hazardous wildlife such as Canada geese and gulls (as per FAA AC 150/5200-33A). As such, there is the potential for hazardous wildlife to access aircraft movement areas or flight patterns. The numerous water bodies in the immediate vicinity of the Airport can be expected to attract geese and gulls, and individuals flying between these bodies would occupy the same airspace as aircraft flight paths.

[44] Cleary, E. C., and R. A. Dolbeer, 2005. Wildlife Hazard Management at Airports: A Manual for Airport Personnel. U.S. Department of Transportation, Federal Aviation Administration, Office of Airport Safety and Standards, Washington, D.C., and U.S. Department of Agriculture, Animal & Plant Health Inspection Office, Wildlife Services, Sandusky, Ohio.

[45] Since 1970, Section 12 of the Federal Aviation Act of 1958, as amended (49 U.S.C. 1432), has empowered the FAA administrator to issue Airport operating certificates to Airports serving certain air carriers and to establish minimum safety standards for the operation of these Airports.

The proposed project would not result in any changes to the current runway environment and is not expected to have a substantial effect on existing flight operations. Therefore, the project would not be expected to have a substantial effect associated with wildlife hazards. The Airport is not certified by the FAA and thus is not officially required to complete a Wildlife Hazard Assessment. Nevertheless, such an assessment would be the first step in defining the scope and magnitude of potential wildlife hazards at the Airport and should be considered by Airport operators if and when funding becomes available and/or wildlife strikes increase in frequency. Environmental review documents for future Airport development projects should also consider whether the proposed development(s) will increase wildlife hazards. Much more detailed information on wildlife strikes, attractants, and control strategies for Airports can be found in *Wildlife Hazard Management at Airports: A Manual for Airport Personnel*, prepared by the FAA and U.S. Department of Agriculture.

(5) Habitat Conservation Plan. No Habitat Conservation Plan or Natural Community Conservation Plan applies to the project site. In addition, projects involving tree removal would be required to adhere to applicable City regulations, including the City's Tree Preservation Ordinance. Therefore, the project would not result in physical environmental impacts associated with non-compliance with biological resources protection regulations. Impacts to sensitive species, which could conflict with General Plan policies protecting these species, are addressed under significant impacts, below.

c. Significant Biological Resources Impacts. The following discussion describes significant impacts to biological resources that could result from project implementation and proposes measures that would mitigate these impacts to a less-than-significant level, where appropriate. Future construction in the project site could result in impacts to burrowing owls, raptors nesting in trees, other nesting birds, and bat colonies. These impacts include affects to nursery sites and migrating species.

Impact BIO-1: Ground-disturbing activities associated with development of specific projects that could occur under buildout of the proposed project could result in the removal or disturbance of occupied western burrowing owl burrows. (S)

Suitable burrows for western burrowing owl were observed in most of the undisturbed portions of the site, and there is potential foraging habitat throughout the site. Construction activities at the site could adversely affect these burrows and the ability of western burrowing owl to use the site. Implementation of the following four-part mitigation measure would reduce this potential impact to burrowing owl to a less-than-significant level.

> Mitigation Measure BIO-1: Preconstruction surveys shall be conducted for burrowing owls prior to any project involving construction, including clearing and grubbing. These surveys shall conform to the survey protocol established by the California Burrowing Owl Consortium.[46] Preconstruction surveys shall be conducted no more than 30 days prior to the initiation of construction activities, and at succeeding 30-day intervals if construction activities are delayed.
>
> The following measures shall also apply:

[46] Burrowing Owl Survey Protocol and Survey Guidelines, 1993. April.

a) If burrowing owl is found on-site, they shall be avoided to the extent practicable. A clearly defined area shall be delineated around each burrowing owl burrow to be avoided using orange construction fencing or other readily visible barrier. No disturbance should occur within 50 meters (approx. 160 feet) of occupied burrows during the non-breeding season of September 1 through January 31 or within 75 meters (approx. 250 feet) during the breeding season of February 1 through August 31.

b) If burrowing owls occurs on the project site and construction is planned to begin before February or after the end of August, and the burrows cannot be avoided, then passive relocation techniques may be used to relocate owls from the site. Passive relocation techniques consist of excavating potential burrows after excluding owls from the burrows for a length of time specified by the CDFG. Passive relocation shall be conducted according to the current protocol established by the CDFG. Artificial burrows shall be provided at a mitigation site at a ratio of 2:1 (two artificial burrows created for each occupied burrow destroyed).

c) If burrowing owl occurs on the project site and construction is planned to begin during the breeding season (February through August), then a buffer with a radius of 75 meters (250 feet) shall be established around any burrows containing owls.

d) Removal of burrowing owl on the project site shall conform to the requirements of CDFG's *Staff Report on Burrowing Owl Mitigation*.[47] This entails establishing 6.5 acres of suitable habitat for each pair of burrowing owls displaced from the project site. These 6.5 acres shall be adjacent to an area already used by burrowing owl. The replacement mitigation site shall be preserved in perpetuity for use as burrowing owl and wildlife habitat. An endowment for management and monitoring of the site shall also be established. (LTS)

<u>Impact BIO-2</u>: Ground-disturbing activities associated with development of specific projects that could occur under buildout of the proposed project could result in the removal or disturbance of occupied bird nests. (S)

The grasslands throughout the project site and trees along the northern boundary of the project site provide foraging and nesting habitat for white-tailed kite, northern harrier, other raptor species, loggerhead shrike, and other bird species. Red-tailed hawk and loggerhead shrike were observed on or over the site during LSA's field investigations, and either of these species could use the site for nesting. Grading and construction activities near nests could cause nest abandonment and/or loss of eggs or young and would represent a significant impact.

Implementation of the following mitigation measure would reduce this impact to a less-than-significant level.

<u>Mitigation Measure BIO-2</u>: A qualified biologist shall conduct bird nest surveys to locate any active nests on or immediately adjacent to the project site prior to tree pruning, tree removal, ground disturbing activities, or grading. Preconstruction surveys shall be conducted at 30-day intervals until the activities begin. Preconstruction surveys shall be conducted between

[47] California Department of Fish and Game, 1995. Staff Report on Burrowing Owl Mitigation. Memo to Div. Chiefs from C.F. Raysbrook, Interim Director. Sacramento, Ca. October 17.

February 1 and August 31. Locations of active nests shall be described and protective measures implemented. Protective measures shall include delineating avoidance areas with orange construction fencing or other highly-visible barrier around each nest site. The avoidance area shall extend a minimum of 300 feet from the dripline of the nest tree or nest for raptors, 100 feet for shrikes, and 50 feet for other bird species. The active nest sites within an exclusion zone shall be monitored on a weekly basis throughout the nesting season to identify any signs of disturbance. These protection measures shall remain in effect until the young have left the nest and are foraging independently or the nest is no longer active. A report shall be prepared at the end of each construction season detailing the results of the preconstruction surveys. The report shall be submitted to CDFG by November 30 of each year. (LTS)

Impact BIO-3: Ground-disturbing activities associated with development of specific projects that could occur under buildout of the proposed project could result in the removal or disturbance of occupied bat roosts. (S)

The buildings within the project site could provide roosting locations for species of bat, including pallid bat and Townsend's big-eared bat. Removal of these buildings could destroy occupied roosts by killing bats and their young. Activities adjacent to an occupied building may also cause bats to abandon an occupied roost. Loss or abandonment of an active bat roost would represent a significant impact.

Implementation of the following mitigation measure would reduce potential impacts to bat roosting sites to a less-than-significant level.

Mitigation Measure BIO-3: A qualified biologist shall conduct pre-construction surveys of any on-site building proposed for demolition to identify bat roosting colonies within the structure or within 100 feet of the proposed demolition area. These surveys shall be conducted no sooner than 2 weeks prior to the start of demolition activities. Impacts to active bat roosts shall be avoided by establishing exclusion zones around all roosting bat colonies. Construction-related activities shall be prohibited within the exclusion zone until the bats have abandoned the roost site. Passive exclusion measures that allow bats to leave but not return to the roost shall be allowed unless the roost site supports a maternity colony. Exclusion measures shall only be allowed at a maternity roost site when the young are fledged. A qualified biologist shall monitor each roost once per week in order to track the status of each roost and inform the project proponent of when a roost site has been cleared for construction. (LTS)

J. CULTURAL AND PALEONTOLOGICAL RESOURCES

This section evaluates the proposed project's potential impacts to cultural and paleontological resources. Cultural resources are sites, buildings, structures, objects, and districts that may have traditional or historical significance. Paleontological resources, as a subset of cultural resources, are the fossilized remains of prehistoric plant and animal life.

CEQA defines a "historical resource" as a resource which is listed in or determined eligible for listing in the California Register of Historical Resources (California Register), listed in a local register of historical resources (as defined in Public Resources Code section 5020.1(k)), identified as significant in a historical resource survey meeting the requirements of Public Resources Code section 5024.1(g), or determined to be a historical resource by a project's lead agency. According to *CEQA Guidelines* section 15064.5, a historical resource consists of: "Any object, building, structure, site, area, place, record, or manuscript which a lead agency determines to be historically significant or significant in the architectural, engineering, scientific, economic, agricultural, educational, social, political, military, or cultural annals of California." *CEQA Guidelines* section 15064.5 states that a substantial adverse change in the significance of a historical resource may result in a significant effect on the environment.

CEQA also applies to effects on archaeological sites. The lead agency must apply a two-step screening process to determine if an archaeological site meets the definition of a historical resource or a unique archaeological resource. Prior to considering potential impacts, the Lead Agency must determine whether the archaeological site meets the definition of a historical resource in *CEQA Guidelines* section 15064.5(a). If the archaeological site meets the definition of a historical resource, then it must be treated like any other type of historical resource in accordance with *CEQA Guidelines* section 15126.4. If the cultural resource does not meet the definition of a historical resource, then the Lead Agency must then determine if the resource meets the definition of a unique archaeological resource as defined in Public Resources Code section 21083.2(g). If the archaeological site meets the definition of a unique archaeological resource, then it must be treated in accordance with section 21083.2(g). If the archaeological site does not meet the definition of a historical resource or a unique archaeological resource, then effects to the site are not considered significant effects on the environment.

Public Resources Code section 5097.5 provides for the protection of cultural and paleontological resources. Section 5097.5 prohibits the removal, destruction, injury, or defacement of archaeological and paleontological features on any lands under the jurisdiction of State or local authorities.

Paleontological resources are fossilized remains of plants and animals, and associated deposits. CEQA requires that a determination be made as to whether a project could directly or indirectly destroy a unique paleontological resource or site or unique geological feature. If an impact is significant, CEQA requires the identification of feasible measures to minimize the impact. Public Resources Code section 5097.5 also applies to paleontological resources. The Society of Vertebrate Paleontology has identified vertebrate fossils and fossil-containing deposits as significant, non-renewable paleontological resources. Botanical and invertebrate fossils and assemblages may also be considered significant resources.

The first section below describes the methods used to conduct the cultural resources analysis of the proposed project, and is followed by a brief historical overview of the project area. The second

section describes the methods used for the paleontological resources analysis, and is followed by a brief discussion of paleontological conditions in the project area. The third section presents the results of the impacts analysis and provides mitigation measures to reduce impacts, where appropriate, to a less-than-significant level.

1. Cultural Resources

This section describes the methods used to identify the baseline conditions for cultural resources in the project area. Following this is a brief overview of the prehistoric, ethnographic, and historical setting of the project site and its vicinity.

a. Methods. This cultural resources analysis included a records search, a literature review, and consultation with potentially-interested parties. This work was conducted to (1) identify cultural resources and cultural resource studies in or adjacent to the project area; and (2) gather the archaeological, ethnographic, and historical information to describe the baseline conditions for cultural resources.

(1) Records Search. A records search (#08-1510) of the project site and a ¼-mile radius around the site was conducted on June 5, 2009 at the Northwest Information Center (NWIC) of the California Historical Resources Information System, Sonoma State University, Rohnert Park, California. The NWIC, an affiliate of the State of California Office of Historic Preservation, is the official State repository of cultural resource records and reports for Alameda County. As part of the records search, LSA reviewed the following State of California inventories for cultural resources in and adjacent to the project site:

- *California Inventory of Historic Resources*;[1]
- *California Historical Landmarks*;[2]
- *California Points of Historical Interest*;[3]
- *Five Views: An Ethnic Historic Site Survey for California*;[4] and
- *Directory of Properties in the Historic Property Data File*.[5] The directory includes the listings of the National Register of Historic Places, National Historic Landmarks, the California Register of Historical Resources, California Historical Landmarks, and California Points of Historical Interest.

[1] California Department of Parks and Recreation, 1976. *California Inventory of Historic Resources*. California Department of Parks and Recreation, Sacramento.

[2] California Office of Historic Preservation, 1996. *California Historical Landmarks.* California Department of Parks and Recreation, Sacramento.

[3] California Office of Historic Preservation, 1992. *California Points of Historical Interest.* California Department of Parks and Recreation, Sacramento.

[4] California Office of Historic Preservation 1988. *Five Views: An Ethnic Historic Site Survey for California*

[5] California Office of Historic Preservation, 2009. California Department of Parks and Recreation, Sacramento. May 27.

(2) Literature Review LSA reviewed prehistoric, ethnographic, and historical literature and maps for information about the project site. As part of the literature review LSA reviewed the following documents:

- *California Place Names: The Origin and Etymology of Current Geographical Names*;[6]
- *Historic Spots in California*;[7]
- *Handbook of North American Indians, Volume 8: Costonoan*;[8]
- *Handbook of the Indians of California*;[9]
- *Historic Civil Engineering Landmarks of San Francisco and Northern California*.[10]

(3) Consultation. LSA sent letters and maps to potentially-interested parties to solicit concerns regarding any cultural resources that may be affected by the proposed project. No concerns were expressed about the project area. The parties contacted and the results of the contacts are provided below.

- **Native American Heritage Commission**. On June 19, 2009, LSA faxed a letter and map depicting the project site to the Native American Heritage Commission (NAHC) in Sacramento, requesting a review of its sacred lands file for any Native American cultural resources that might be affected by the proposed project. On June 26, 2009, the NAHC responded to LSA's letter by fax and stated that: "A records search of the sacred land file has failed to indicate the presence of Native American cultural resources in the immediate project area."
- **Livermore Heritage Guild**. On June 19, 2009, LSA mailed a letter and a project site map to the Livermore Heritage Guild requesting any information or concerns about cultural resources in the project area. No response to the letter was received.

b. Cultural Resources Overview. This section provides a brief overview of the cultural history of Livermore and the project site from about 12,000 years ago, when Native Americans first entered California, to modern times.

(1) Prehistory and Ethnography. The Paleo-Archaic-Emergent cultural sequence developed by David A. Fredrickson[11, 12] is commonly used to interpret the prehistoric occupation of

[6] Gudde, Erwin G.,1998. *California Place Names: The Origin and Etymology of Current Geographical Names.* Fourth edition, revised and enlarged by William Bright. University of California Press, Berkeley.

[7] Hoover, Mildred Brooke, Hero Eugene Rensch, Ethel Rensch, and William N. Abeloe, 1989. *Historic Spots in California*, Fourth edition, revised by Douglas E. Kyle. Stanford University Press, Stanford, California.

[8] Levy, Richard 1978. Costanoan. In *California*, edited by Robert F. Heizer, pp. 485-495. Handbook of North American Indians, Volume 8, William C. Sturtevant, general editor. Smithsonian Institution, Washington, D.C.

[9] Kroeber, Alfred L., 1925. *Handbook of the Indians of California.* Bureau of American Ethnology Bulletin 78. Smithsonian Institution, Washington, D.C. Reprinted 1976 by Dover Publications, New York.

[10] American Society of Civil Engineers, 1976. *Historic Civil Engineering Landmarks of San Francisco and Northern California.* The History and Heritage Committee, San Francisco Section, San Francisco, California.

[11] Fredrickson, David A., 1974. Cultural Diversity in Early Central California: A View from the North Coast Ranges. *Journal of California Anthropology* 1(1):41-53.

Central California. The sequence consists of three broad periods: the Paleoindian Period (10,000-6000 B.C.); the three-staged Archaic Period, consisting of the Lower Archaic (6000-3000 B.C.), Middle Archaic (3000-500 B.C.), and Upper Archaic (500 B.C.-A.D. 1000); and the Emergent Period (A.D. 1000-1800).

The Paleo Period began with the first entry of people into California. These people probably subsisted mainly on big game, minimally processed plant foods, and had few or no trade networks. However, current research indicates that the native population at this time likely had fewer nomadic characteristics, and conducted more plant processing and trading than previously believed. During the Lower Archaic, milling stones for plant processing were abundant and hunting was less important than obtaining plant foods. Artifacts are predominantly of local materials, suggesting that few if any extensive trade networks were established at this time. During the Middle Archaic, the subsistence base began to expand and diversify with a developing acorn economy, as evidenced by the mortar and pestle, and the growing importance of hunting. Status and wealth distinctions are evidenced in the Upper Archaic archaeological record, and regional trade networks were well established at this time for the exchange of goods and ideas, such as obsidian and Kuksu ceremonial practices involving spirit impersonations. Increasing social complexity continued during the Lower Emergent. Territorial boundaries were well established by this time with regularized inter-group exchanges involving more and varied goods, people, and ideas. Bow and arrow technology was also introduced. By the Upper Emergent, a monetary system based on the clamshell disk bead had been established. The native population reached its peak during this time, as evidenced by high site densities and large village sites in the archaeological record.

Native American occupation of the Livermore-Amador Valley (Valley) area dates from at least the Middle Archaic and continues until the Upper Emergent. Middle Archaic occupation is evidenced at prehistoric archaeological site CA-ALA-483 near Pleasanton, where radiocarbon dates of 1320 B.C. and 3370 B.C. have been obtained.[13] Upper Emergent occupation and use of the Valley is evidenced at sites CA-ALA-28 and CA-ALA-29 near the mouth of Arroyo Mocho and at CA-ALA-483 and CA-ALA-555. Archaeological evidence suggests a regional settlement pattern characterized by occupation focused on exploiting resources associated with Willow Marsh and its feeder drainages.

During the Emergent and Euro-American contact periods, the project area was within territory once occupied by Costanoan – also commonly referred to as Ohlone – language groups. The Ohlone language spoken by groups living in the Livermore Valley area was probably Chochenyo, which was spoken by about 2,000 people.[14] Ohlone settlements were organized according to "tribelets," the basic ethnic and political land-holding units throughout much of California. Within each tribelet's territory were several semi-permanent settlements, along with campsites in outlying areas that were used on a seasonal basis. Settlement locations were chosen for such factors as proximity to water, firewood, food resources, and well-drained soils. Smaller occupation sites were often clustered around a

[12] Fredrickson, David A., 1994. Archaeological Taxonomy in Central California Reconsidered. In *Toward a New Taxonomic Framework for Central California Archaeology*, pp. 91-103. Contributions of the University of California Archaeological Research Facility, Number 52, edited by Richard E. Hughes, Berkeley.

[13] Bard, James C., et al., 1992. *Archaeological Site Testing Report, CA-Ala-483, Laguna Oaks Project, Pleasanton, Alameda County, California*. Basin Research Associates, Inc., San Leandro, California.

[14] Levy, Richard, 1978. In *California*, edited by Robert F. Heizer, pp. 485-495. Handbook of North American Indians, Volume 8, William C. Sturtevant, general editor. Smithsonian Institution, Washington, D.C.

tribelet's principal village, which was the location of the ceremonial roundhouse. The *Seunen* and *Souyen* tribelets occupied the Valley and surrounding areas at the time of Spanish contact.[15]

(2) City History.[16] The City of Livermore was established in 1869 by William Mendenhall, who named the town after his friend Robert Livermore. The original town was laid out between what is now Livermore Avenue to the east, Q Street to the west, Railroad Avenue to the north, and Fifth Street to the south. In its early days, Livermore was primarily an agricultural community. The town also became a station stop for the Central Pacific Railroad after Mendenhall donated land for a depot at L Street and Railroad Avenue. Nearby Pleasanton ended up with a train depot as well, but Livermore was the first stop in the Tri-Valley area for trains coming west and the last stop for trains headed east. Livermore quickly became the hub of the Tri-Valley, and developed into a banking and commerce center for the local agricultural economy. Establishments serving the numerous businessmen coming to the area sprang up around the depot. As the town grew, commercial uses extended east across Livermore Avenue to the McLeod Tract, which became part of the town in 1875. Commercial uses also spilled over to Second Street. However, First Street, between Maple and L emerged as Livermore's Downtown and center.

In Livermore's early days, the lack of transportation and the need to be near the railroad required focused development near the Downtown core, but by the 1930s, the automobile allowed people to live farther from the center. The City began to expand in a low-density pattern. Many of its original farm fields were replaced with residential, shopping, office, and industrial areas, all served primarily by the automobile.

The establishment of Lawrence Livermore Laboratory and other major research facilities in the 1950s affected the character of the area in other ways. The population quadrupled in the first decade after establishment of the laboratories. The population increase was not as extreme in succeeding years, but a high level of growth was maintained and supported a continuing demand for housing. The completion of the interstate freeway system in the 1960s and early 1970s opened unincorporated areas near Livermore to extensive single-family suburban development, and new residents began to migrate to the periphery of the city.

The laboratories and other workplaces on the outskirts of town were followed by more facilities, which pulled jobs away from the center. The development of large office parks helped fuel job growth in the Tri-Valley area during the 1980s. With few sites suitable for such development, office and other large-scale commercial uses abandoned Downtown in favor of the large land parcels available along the I-580 corridor. Shopping centers likewise developed along major transportation corridors.

(3) Airport History. In 1929, an Airport in Livermore was constructed to provide aviation access to the Valley. The private airfield was located off of Rincon Avenue. The U.S. Navy took control of the airfield in 1942 during World War II. The primary role of the airfield during this period was to supplement operations at the Livermore Naval Air Station, which became the Lawrence Livermore National Laboratory. From 1945 through 1953, the City of Livermore leased the airfield

[15] Milliken, Randall, 1995. *A Time of Little Choice: The Disintegration of Tribal Culture in the San Francisco Bay Area, 1769-1810.* Ballena Press, Menlo Park, California.

[16] This section adapted from the *City of Livermore Downtown Specific Plan* (2004).

from the U.S. Navy to maintain aviation access into this part of Alameda County. The City acquired the airfield in November 1953 and continued operations at the Rincon Avenue location until the Airport was relocated to its current location in December 1965.

When the new Airport was constructed, it encompassed 257 acres and had a 4,000-foot asphalt runway with a parallel taxiway. The new Airport also included an aircraft parking apron with 100 tiedowns, a rotating beacon, a lighted wind cone, a segmented circle, and 50 based aircraft. In 1970, aircraft T-hangars and shelters were constructed as well as a control tower in 1973. In 1975, the City commissioned an Airport Master Plan to identify needed facility improvements and assess the growing demand in local aviation at the Airport. Results of that study included the implementation of an instrument landing system that was added to the primary runway in 1979. Since 1985, the Airport has made over $25 million in facility improvements including: construction of a secondary runway in 1985; additional hangars on the south side of the Airport in 1987; an extension of the primary runway to 5,255 feet (an increase of 1,255 feet) in 1989; and property acquisition to enhance the protection of runway approaches.

c. Cultural Resources in the Project Site. LSA conducted a study to identify cultural resources in the project area that could be affected by project implementation.[17] The study identified one previously recorded cultural resource in the project site: prehistoric and historical archaeological site P-01-010526, recorded by LSA Associates in 2002.[18] The site, located in the southwest portion of the project site, is recorded as the remains of a farmstead and a scatter of prehistoric archaeological materials. The historical component consists of a scatter of bricks, concrete fragments, metal fragments, glass fragments, and a shell button. The materials have been displaced over the years due to mechanical tilling. The prehistoric component consists of an obsidian tool and obsidian and basalt waste flakes from stone tool manufacture. The report prepared by LSA Associates speculated that the prehistoric archaeological materials may have been collected from other locations by the inhabitants of the farmstead.

The status of P-01-010526 as a significant cultural resource under CEQA has not been determined. It is not known whether the prehistoric or historical deposits meet the criteria for consideration as a historical resource or unique archaeological resource (Public Resources Code section 21084.1 and §21083.2(g), respectively). No other cultural resources in the project area were identified by the LSA Associates.

2. Paleontological Resources

This section describes the methods used to identify the baseline conditions for paleontological resources in the project area. Following this is a brief summary of the paleontological resources setting of the project area.

a. Methods. Paleontological resource archival and background research included a literature review and fossil locality searches. Background research was conducted to determine if

[17] Greenwald, Alexandra, and Andrew Pulcheon, 2009. *A Cultural and Paleontological Resources Study for the Livermore Municipal Airport General Plan Amendment and Rezoning Project.* LSA Associates, Inc. Point Richmond, California.

[18] McKale, George, and James Allen, 2002. *A Cultural and Paleontological Resources Study of the Livermore Municipal Airport, Livermore, Alameda County, California.* LSA Associates, Inc. Point Richmond, California.

paleontological resources (fossils) and geologic units known to contain fossils are within or adjacent to the project site. This research, which consisted of a fossil locality search and a literature review, was conducted to identify the geologic units, paleontological studies, fossil localities (i.e., locations at which paleontological resources have been documented), and the types of fossils that may be within or adjacent to the project site.

Literature available at LSA Associates was reviewed and a fossil locality search was provided by Dr. Patricia Holroyd of the University of California, Museum of Paleontology (UCMP), Berkeley, on June 11, 2009.

b. Paleontological Resources Setting. The Valley area is predominantly composed of sedimentary and weakly metamorphosed rocks that range in age from 159 million years old to 10,000 years old. The area is filled with Miocene and younger gravel-bearing formations and is bounded on the west by the Calaveras Fault and on the east by the Greenville Fault. The Diablo Range hills adjacent to the Valley consist of Jurassic and Cretaceous sedimentary rocks with Cenozoic sedimentary rocks flanking the sides.[19]

Several fossil-bearing deposits exist in the general area. The following section describes these deposits and indicates the types of fossils they are likely to contain. The project area consists of the following geological units, described in stratigraphic sequence from youngest (top) to oldest (bottom):

(1) Quaternary Deposits. Immediately underlying the project area are Holocene age (10,000 years ago to the present) terrace deposits comprising eroded sedimentary rock.[20] Unnamed Quaternary deposits of Pleistocene (1.8 million to 10,000 years ago) age also occur in the Valley. These deposits consist of loosely consolidated sand and gravel deposited in fluvial (river or stream) systems.[21] Older Pleistocene deposits typically occur as terraces incised by Holocene water courses. The Pleistocene deposits contain boulders and Rancholabrean (10,000 years and older) fossils.[22] Typical Rancholabrean fossils include the remains of camels, mammoths, bison, horses, and ground sloths.

(2) Upper and Lower Livermore Formation. The Pliocene to Pleistocene Upper Livermore Formation, formed between 3 and 1 million years ago, is composed of sandstone and conglomerate deposited in a fluvial environment.[23] Vertebrate fossil localities occur in the Upper Livermore Formation in the general area. The late Miocene to Pliocene Lower Livermore Formation

[19] Barlock, Vincent E., 1988. *Sedimentology of the Livermore Gravels (Miocene-Pleistocene), Southern Livermore Valley, California.* Masters Thesis, Department of Geology, San Jose State University.

[20] Helley, E.J., and Graymer, R.W., 1997. Quaternary geology of Alameda County, and parts of Contra Costa, Santa Clara, San Mateo, San Francisco, Stanislaus, and San Joaquin Counties, California: A digital database: U.S. Geological Survey Open-File Report 97-97.

[21] Helley, E.J, K.R. La Joie, W.E. Spangle, and M.L. Blair, 1979. *Flatland Deposits of the San Francisco Bay Region - their geology and engineering properties, and their importance to comprehensive planning.* Geological Survey Professional Paper 943. U.S. Geological Survey and Department of Housing and Urban Development, Washington, D.C.

[22] Blake, M.C., R. W. Graymer, and D. L. Jones, 2000. *Geologic Map and Database of Parts of Marin, San Francisco, Alameda, Contra Costa, and Sonoma Counties, California.* United States Geological Survey Miscellaneous Field Studies MF-2337, Version 1.0.

[23] Barlock, 1988.

formed about 5.2 to 2.5 million years ago. These loosely consolidated rocks crop out within the Valley plain and to the south and north of the City. Several invertebrate and vertebrate non-marine fossil localities occur in the Lower Livermore Formation. The dominant classes of the conglomerate are sandstone and lithic sandstone, Franciscan Complex greywacke, and fine-grained veined quartz.[24] The Livermore Formation may interfinger with the Sycamore Formation.

(3) Tassajara Formation. The Tassajara Formation dates from the late Miocene to the Pliocene, approximately 8.5 to 2 million years ago, and is composed of nonmarine sandstone, siltstone, shale, conglomerate, and limestone.[25] This formation is mapped at the northern portion of the Valley and the Tassajara Hills. This formation contains extensive vertebrate terrestrial and lacustrine (lake) fossils, including *Lepus* sp. (hare), *Glaucomys* sp. (flying squirrel), *Peromyscus* sp. (deer mice), *Protospermophilus* sp. (squirrel), *Ogmodontomys sawrockensis* (vole), *Scapanus* sp. (mole), *Clemmys marmorata* (western pond turtle), and *Panthera onca* (jaguar).

(4) Neroly Formation. The late Miocene Neroly Formation of the San Pablo Group, 23 million to 5 million years old, is present in the Valley and eastern foothills, where the San Pablo Group overlies the Great Valley Complex. These rocks contain both marine and non-marine continental sedimentation patterns,[26] and include coarse, pebbly, fossil-containing beds; fine-grained, light gray sandstone; massive siltstone and claystone; arkosic sandstone; and andesitic-pebble conglomerate.[27]

(5) Franciscan Complex. Presumably underlying the Valley area at great depth is the Franciscan Complex, a group of high pressure/low temperature metamorphic rocks formed during the Jurassic and Cretaceous periods (206 million to 65 million years ago).[28] The Franciscan Complex is composed of abundant metamorphosed and unmetamorphosed greywacke; greenstone; conglomerate; serpentinite; blueschist and related schists; and varicolored red and green chert. Most of these rock types occur as blocks with sizes up to thousands of feet in length and width, encased within a sheared melange. Marine fossils, including icthysaurus (a marine vertebrate), and *Belemnoidea*, *Buchia*, and *Inoceramus* (all marine invertebrates), occur in the least-metamorphosed rocks of the Franciscan Complex. Fossils found in the Franciscan Complex within and adjacent to the Valley date to the Tithonian and Turonian ages, between 151 million and 89 million years ago.

c. Paleontological Resources in the Project Area. LSA Associates conducted a study of the project area to identify paleontological resources that could be affected by the project.[29] A database search conducted by Dr. Patricia Holroyd at the UCMP identified eight fossil localities within a 5-

[24] Barlock, 1988.

[25] California Department of Water Resources, 1996. *Livermore Valley Groundwater Basin*. Website: www.dpla2.water.ca.gov/publications/groundwater/bulletin118/basins/pdfs_desc/2-10.pdf. Accessed on June 11, 2009.

[26] California Department of Water Resources, 1966. *Livermore and Sunol Valleys, Evaluation of Ground Water Resources, Appendix A., Geology.* California Department of Water Resources Bulletin 118-2. Sacramento.

[27] Barlock, 1988.

[28] Wakabayashi, John, 1999. Distribution of Displacement on and Evolution of a Young Transform Fault System: The Northern San Andreas Fault System, California. *Tectonics* 18(6).

[29] Greenwald, Alexandra, and Andrew Pulcheon, 2009. *A Cultural and Paleontological Resources Study for the Livermore Municipal Airport General Plan Amendment and Rezoning Project.* LSA Associates, Inc. Point Richmond, California. McKale, George

mile radius of the project area. These fossil localities are from Holocene alluvial terrace deposits, Pleistocene alluvial fans and fluvial deposits, Livermore gravels, and the Tassajara Formation. These fossil localities are representative of Pleistocene Rancholabrean land mammal age fossils.

LSA's literature review indicated that the project area is underlain at depth by Quaternary period Holocene and Pleistocene deposits, the latter of which can contain significant Rancholabrean fossils. The depths of these deposits in the project area are not known, but likely extend for several feet below the ground surface. Below these Quaternary deposits are deposits that date from the Pliocene to the Late Jurassic. These older deposits, while sensitive for significant paleontological resources, are most likely at considerable depths below the ground surface, and would not be encountered by project activities.

3. Impacts and Mitigation Measures

The following section presents a discussion of the impacts related to cultural and paleontoglical resources that could result from implementation of the proposed project. The section begins with the criteria of significance, establishing the thresholds to determine whether an impact is significant. The latter part of this section presents the cultural and paleontoglical resources impacts that could result from the proposed project. Impacts are organized into separate categories based on their significance according to the criteria listed below: less-than-significant impacts, and significant impacts.

a. Criteria of Significance. Implementation of the proposed project would have a significant impact on cultural and/or paleontological resources if it would:

- Cause a substantial adverse change in the significance of a historical resource as defined in *CEQA Guidelines* section 15064.5. Specifically, substantial adverse changes include physical demolition, destruction, relocation, or alteration of the resource or its immediate surroundings such that the significance of the historical resource would be materially impaired;
- Cause a substantial adverse change in the significance of an archaeological resource pursuant to *CEQA Guidelines* section15064.5;
- Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature; or
- Disturb any human remains, including those interred outside of formal cemeteries.

b. Less-than-Significant Impacts. There are no identified unique geologic features that have been identified on the project site. Geologic formations that may contain fossils are addressed under "Significant Impacts," below.

c. Significant Impacts. The proposed project would result in the following significant impacts to cultural and paleontological resources.

(1) Cultural Resources. LSA's study identified prehistoric/historical archaeological site P-01-010526 in the southwest portion of the project site, near the location of planned helicopter and corporate general aviation facilities (see Figure III-4). Therefore, construction in this area could affect archaeological resources. In addition, several prehistoric archaeological sites are recorded within a ¼-mile radius of the site in similar environmental settings, indicating that such deposits may exist in the

project site in areas obscured from view. Due to their age, none of the existing buildings or structures on the project site appears to qualify as a historical resource. Therefore, modification to existing buildings that could occur in the course of project buildout would not be expected to have a significant impact on historic resources.

Impact CULT-1: Ground-disturbing activities associated with site preparation for specific development projects that could occur under buildout of the proposed project could affect archaeological site P-01-010526. (S)

P-01-010526 is a prehistoric/historical archaeological site consisting of the remains of a farmstead and a scatter of stone toolmaking debris. The status of P-01-010526 under CEQA has not been determined, and it is not known whether the prehistoric or historical deposits meet the criteria for consideration as a historical resource or unique archaeological resource (Public Resources Code section 21084.1 and section 21083.2(g), respectively). If P-01-010526 does qualify as a historical or unique archaeological resource, and if it were disturbed by construction, then a substantial adverse change in the site's significance (i.e., damage or destruction) would occur, resulting in a significant impact under CEQA.

The 2002 LSA Associates report prepared for the site recommends that the physical disturbance of archaeological deposits (both prehistoric *and* historical) associated with P-01-010526 be avoided. If such impacts cannot be avoided, it is recommended that the eligibility of P-01-010526 for listing in the California Register be determined. If the resources are eligible, it is recommended that impacts be lessened through project redesign, or mitigated through data recovery excavation. If the resources are not eligible, no further study or protection would be necessary.

The recommendation in the report is presented as a mitigation measure below. The mitigation measure provides for a phased approach to impact identification, evaluation, and mitigation. This is consistent with *CEQA Guidelines* section 15126.4(a)(1)(B), wherein a desired future condition is established as a performance standard, and options are provided to achieve that result. The following mitigation measure shall be implemented to reduce the potential impact to P-01-010526 to a less-than-significant level:

> Mitigation Measure CULT-1: Prior to the implementation of specific development projects on the site, the boundary of P-01-010526 shall be determined and impacts to the resource shall be avoided (e.g., through the relocation of the helicopter and corporate aviation facilities). If impact avoidance is not feasible, the resource's eligibility for listing in the California Register shall be assessed by a qualified archaeologist. If P-01-010526 is not eligible, then no further study or protection is necessary. If P-01-01526 is eligible (and thereby considered a historical resource under Public Resources Code section 21084.1), then impacts to the significant archaeological deposits shall be mitigated through the development and implementation of a data recovery plan pursuant to the requirements of *CEQA Guidelines* section 15126.4(b)(3)(C). The desired future condition for P-01-010526, should it be considered significant under CEQA, would be for the resource to retain those qualities that convey its significance and that justify its status as a historical resource. Such a condition can be achieved through data recovery. (LTS)

Impact CULT-2: Ground-disturbing activities associated with site preparation for specific development projects that could occur under buildout of the proposed project could affect previously unrecorded prehistoric and/or historical archaeological deposits. (S)

There is the possibility that the project site contains prehistoric and/or historical archaeological deposits that have not been identified. Ground-disturbing construction activities in the project site could encounter and disturb such archaeological deposits. If the deposits qualify as historical or unique archaeological resources, then a substantial adverse change in their significance (i.e., damage or destruction) would occur, resulting in a significant impact under CEQA. Should such deposits be encountered, implementation of the following mitigation measure would reduce this potential impact to a less-than-significant level:

> Mitigation Measure CULT-2: If deposits of prehistoric or historical archaeological materials are encountered during the construction of specific development projects on the site, all work within 25 feet of the discovery shall be redirected and a qualified archaeologist shall be contacted to assess the find, consult with agencies as appropriate, and make recommendations for the treatment of the discovery. Project personnel shall not collect or move any archaeological materials or human remains and associated materials. Prehistoric materials can include flaked-stone tools (e.g., projectile points, knives, choppers) or obsidian, chert, basalt, or quartzite toolmaking debris; bone tools; culturally darkened soil (i.e., midden soil often containing heat-affected rock, ash and charcoal, shellfish remains, faunal bones, and other cultural materials); and stone-milling equipment (e.g., mortars, pestles, handstones). Prehistoric archaeological sites often contain human remains. Historical materials can include wood, stone, concrete, or adobe footings, walls, and other structural remains; debris-filled wells or privies; and deposits of wood, glass, ceramics, metal, and other refuse.
>
> Adverse effects to such deposits shall be avoided by project activities. If avoidance is not feasible (as determined by the City, in conjunction with the qualified archaeologist), the archaeological deposits shall be evaluated for their eligibility for listing in the California Register. If the deposits are not eligible, avoidance is not necessary. If the deposits are eligible, avoidance of project impacts on the deposit shall be the preferred mitigation. If adverse effects on the deposits cannot be avoided, such effects must be mitigated. Mitigation can include, but is not necessarily limited to: excavation of the deposit in accordance with a data recovery plan (see *CEQA Guidelines* section 15126.4(b)(3)(C)) and standard archaeological field methods and procedures; laboratory and technical analyses of recovered archaeological materials; production of a report detailing the methods, findings, and significance of the archaeological site and associated materials; and curation of archaeological materials at an appropriate facility for future research and/or display. Public educational outreach may also be appropriate. The City shall ensure that any mitigation involving excavation of the deposit is implemented prior to the resumption of actions that could adversely affect the deposit.
>
> Upon completion of the assessment, the archaeologist shall prepare a brief report documenting the methods and results of the analysis, and provide recommendations for the treatment of the archaeological deposits discovered. The report shall be submitted to the project applicant, the City, and the Northwest Information Center. (LTS)

(2) Paleontological Resources. LSA's literature review indicated that the project area is underlain at depth by Quaternary period Holocene and Pleistocene deposits, the latter of which can contain significant Rancholabrean fossils. The depths of these deposits in the project area are not known, but likely extend for several feet below the ground surface. Below these Quaternary deposits are deposits that date from the Pliocene to the Late Jurassic. These older deposits, while sensitive for significant paleontological resources, are most likely at considerable depths below the ground surface. Eight fossil localities are recorded within 5 miles of the project site, in the same type of formations that occur beneath the project area.

Impact CULT-3: Ground-disturbing activities associated with site preparation for specific development projects that could occur under buildout of the proposed project could affect paleontological resources. (S)

There is the possibility that paleontological resources are present in the geological formations that underlie the project site. Ground-disturbing construction in the project site could encounter and disturb paleontological resources. If such resources qualify as unique paleontological resources, then a substantial adverse change in their significance (i.e., damage or destruction) would occur, resulting in a significant impact under CEQA. Should such resources be encountered, implementation of the following mitigation measure would reduce this potential impact to a less-than-significant level:

> Mitigation Measure CULT-3: If paleontological resources are discovered during the construction of specific development projects, all work within 25 feet of the discovery shall be redirected and a qualified paleontologist shall be contacted to asses the situation, consult with agencies as appropriate, and make recommendations for the treatment of the discovery. Paleontological resources include fossil plants and animals, and evidence of past life such as trace fossils and tracks.[30] Ancient marine sediments may contain invertebrate fossils such as snails, clam and oyster shells, sponges, and protozoa; and vertebrate fossils such as fish, whale, and sea lion bones. Fossil vertebrate land animals may include bones of reptiles, birds, and mammals. Paleontological resources also include plant imprints, petrified wood, and animal tracks.
>
> Adverse effects to paleontological resources shall be avoided by project activities. If avoidance is not feasible (as determined by the City, in conjunction with the qualified paleontologist), the paleontological resources shall be evaluated for their significance. If the resources are not significant, avoidance is not necessary. If the resources are significant, adverse effects on the resources shall be avoided, or such effects shall be mitigated. Mitigation can include, but is not necessarily limited to: excavation of paleontological resources using standard paleontological field methods and procedures; laboratory and technical analyses of recovered materials; production of a report detailing the methods, findings, and significance of recovered fossils; and curation of paleontological materials at an appropriate facility (e.g., the University of California Museum of Paleontology) for future research and/or display. Public educational outreach may also be appropriate. The City shall ensure that any mitigation involving excavation of the resource is implemented prior to project construction or actions that could adversely affect the resource.

[30] Bates, Robert L., and Julia A. Jackson (editors) 1984. *Dictionary of Geological Terms*. Third edition. Prepared by the American Geological Institute. Anchor Books, New York.

Upon completion of the assessment, the paleontologist shall prepare a report documenting the methods and results, and provide recommendations for the treatment of the paleontological resources discovered. This report shall be submitted to the project applicant, the City, and the paleontological curation facility. (LTS)

(3) Human Remains. Construction of specific development projects on the site would require soil excavation and grading for building foundations and utilities. There is no evidence of human remains in the project site, nor is there an expectation that such remains would be encountered during ground disturbing activities on the site. Archaeological site P-01-010526 is not expected to yield human remains because of its composition, probable functional associations, and lack of artifacts.

Impact CULT-4: Ground-disturbing activities associated with site preparation for specific development projects that could occur under buildout of the proposed project could disturb human remains, including those interred outside of formal cemeteries. (S)

There is a remote possibility that human remains are present in the project site. Ground-disturbing construction in the project site could encounter and disturb human remains. Such disturbance would result in a significant impact. Should human remains be encountered, implementation of the following mitigation measure would reduce the potential impact to a less-than-significant level:

Mitigation Measure CULT-4: If human remains are encountered, work within 25 feet of the discovery shall be redirected and the County Coroner notified immediately. At the same time, an archaeologist shall be contacted to assess the situation and consult with agencies as appropriate. The project applicant shall also be notified. Project personnel shall not collect or move any human remains and associated materials. If the human remains are of Native American origin, the Coroner shall notify the Native American Heritage Commission within 24 hours of this identification. The Native American Heritage Commission will identify a Most Likely Descendant (MLD) to inspect the site and provide recommendations for the proper treatment of the remains and associated grave goods. Upon completion of the assessment, the archaeologist shall prepare a report documenting the assessment's methods and results and provide recommendations for the treatment of the human remains and any associated cultural materials, as appropriate and in coordination with the recommendations of the MLD. The project sponsor shall comply with these recommendations. The report shall be submitted to the project applicant, the City, the MLD, and the Northwest Information Center. (LTS)

K. VISUAL RESOURCES

This section evaluates the effects of the proposed project on visual resources in the vicinity of the project site. This analysis also considers the proposed project's consistency with applicable visual resources-related policies. Photographs are included to illustrate the site's visual qualities. As noted in Chapter III, Project Description, future development of the project site due to project implementation is analyzed at a conceptual level, and individual developments within the project site would be subject to additional environmental review, including supplemental visual study, if necessary and required by the City of Livermore.

1. Setting

The following section describes the visual character of the project site and its surroundings, as well as views in the vicinity of the site. For a detailed description of the physical characteristics of the project site, refer to Section V.A, Land Use.

The visual quality of the project site and views from and of the site are heavily influenced by the topography of the area. The 395-acre project site is located on generally flat land in the Livermore-Amador Valley (Valley). The Valley is surrounded by hills or mountains on all sides, which creates a visual sense of enclosure, and a landscape setting where almost all views terminate at steep topography or intermediate development or vegetation. The City's development patterns also influence the aesthetics of the site. The project site is located near the western edge of the City, where residential uses transition to commercial, industrial, and open space uses that create a buffer between the cities of Livermore and Pleasanton. Thus the vicinity of the project site has a more open visual character than areas further to the east, with better visual access to surrounding landscape features than many parts of the City. From a visual perspective, the Airport itself and the runway safety zones to the west and east (which are free from tall buildings) function as open space, allowing for expansive views across the project site to surrounding hillsides.

Figures V.K-1a, -1b, and -1c contain a series of photos illustrating the visual conditions of the project site.

a. Existing Visual Character of the Project Site. The visual character of the project site is influenced largely by the spatial organization of development on the site. In general, structures on the site are concentrated along the northern border of the site and in the southeastern portion of the site. Trees are located in small numbers around the perimeter of the site, mainly near existing buildings and roadways.

Major Airport facilities, including the Federal Aviation Administration (FAA) control tower, Airport administration/terminal building and offices, fire station, and hangars are located in the northern portion of the site, along with open aircraft parking areas. The visual character of the northern part of the site is thus characterized by a moderate level of development (compared to elsewhere in the site), and large expanses of paved area. The terminal building, which is a focal point along Terminal Circle, functions as a visual gateway to the Airport. The building is surrounded by turf and landscaping on all sides, and is linked to Terminal Circle via a sidewalk. Even though the northern portion of the Airport is the most densely developed part of the site, the structures in this area are approximately one story in height and are widely space. Therefore, the visual character of this area is relatively open. However, the northeastern part of the site has a more urban visual character than the northwestern

part of the site because it is bordered to the north by commercial and light industrial development, while the northwestern part of the site is bordered by undeveloped Airport-owned land (including Airport safety zones), and the Las Positas Golf Course.

The portion of the project site to the east of Kitty Hawk Road is completely undeveloped. Therefore, its visual character is characterized by a large continuous swath of flat land that is mainly devoid of vegetation. However, this area is bordered by urban development to the north, east, and south, creating defined visual boundaries in this part of the site.

Development in the southern portion of the site – mainly hangars and associated access ways – is concentrated in the southeast area. The remainder of this area consists of mowed grassland. Because much of this area is undeveloped and is bordered to the south by undeveloped areas, it is characterized by open vistas.

The western and central portions of the site consist of the two Airport runways and mowed grassland in between the runways. There are no structures in this part of the project site. Therefore, the visual quality of this area is characterized by a lack of above-ground visual landmarks, and frequent aircraft activity during normal operating hours at the Airport. Airport operations are themselves an important part of the visual environment of the Airport, and visually convey a sense of place to the site.

b. Views from the Project Site. Views from the project site are less obstructed to the northwest and south, due to the presence of adjacent open space. Views to points around the project site are discussed below.

(1) North of the Project Site. The project site is bordered to the north by Airway Boulevard, adjacent commercial and light industrial development, and Las Positas Golf Course and adjacent open space. From most points, views are limited by existing structures to the northeast. However, views to the northwest extend to the golf course, I-580, and low hillsides to the north of I-580.

(2) East of the Project Site. Residential neighborhoods, consisting primarily of single-family homes, extend beyond Stealth Road to the east of the site. Depending on the viewpoint, views to the east of the site terminate at adjacent development or extend towards Downtown Livermore and the hills around Altamont Pass.

(3) South of the Project Site. Jack London Boulevard marks the southern boundary of the site. Beyond Jack London Boulevard is open space and rock mines, including pits filled with groundwater. Because development to the south of the site is limited, views are expansive and include the steep slopes of the mountains on the southern edge of the Valley. These hills rise to a height of approximately 3,500 feet and are undeveloped.

(4) West of the Project Site. The project site is bordered by open space to the west, beyond which is a residential neighborhood on the east side of the City of Pleasanton. Views to the west encompass these neighborhoods and the hills that border the Valley on the west.

c. Views of and Through the Project Site. Key views of and through the project site from surrounding areas to the north, east, south, and west of the site are described below.

(1) Views from the North. Views of the project site from I-580 are obscured by trees and other intervening vegetation on Las Positas Golf Course. During normal Airport operating hours,

The FAA air traffic control tower is one of the most prominent buildings on the site.

Views to the south stretch to the mountains bordering the southern edge of the Livermore-Amador Valley.

LSA

FIGURE V.K-1a

Livermore Municipal Airport General Plan Amendment and Rezoning Project EIR
Representative Photos

SOURCE: LSA ASSOCIATES, INC., 2009

I:\CLV0802 Livermore Airport\figures\Fig_VK1a-VK1c.indd (6/22/09)

The northern portion of the project site is characterized by large expanses of asphalt for airplane tiedowns and airport service facilities.

Views to the north of the site extend to the low hillsides north of I-580, some of which are planted with vineyards.

LSA

FIGURE V.K-1b

Livermore Municipal Airport General Plan Amendment and Rezoning Project EIR

Representative Photos

SOURCE: LSA ASSOCIATES, INC., 2009

I:\CLV0802 Livermore Airport\figures\Fig_VK1a-VK1c.indd (6/22/09)

The South Hangars comprise a major developed area on the south side of the site.

Flight takeoffs and landings are a major visual feature of the project site.

LSA

FIGURE V.K-1c

Livermore Municipal Airport General Plan Amendment and Rezoning Project EIR
Representative Photos

SOURCE: LSA ASSOCIATES, INC., 2009

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Back of V.K-1c

aircraft can regularly be seen departing and landing at the Airport. In addition, the FAA air traffic control tower, and other Airport structures are visible from I-580. The mountains on the south side of the Valley are also clearly visible beyond the Airport to the south.

(2) Views from the East. Stealth Street and Rutan Drive, north-south streets that border the project site and bisect the eastern end of the project site, respectively, provide clear views into the site. Airport operations and some Airport structures are clearly visible from these viewpoints.

(3) Views from the South. There are few public viewpoints to the south of the Airport, although open views of the Airport are visible from Jack London Boulevard. Almost the entire Airport can be seen from points along Jack London Boulevard, particularly mid-way along the southern site boundary, where there are few structures. In addition, portions of I-580 and the hills on the north side of the Valley can be seen from these viewpoints.

(4) Views from the West. The Airport and associated operations can be seen from various points along El Charro Road to the west of the site. However, the distance from El Charro Road to the Airport limits views of Airport structures and the eastern end of the project site. Close-up views of the site are available from Las Positas Golf Course. The south-central portion of the golf course is located immediately adjacent to the northern runway and the northwest apron, offering unobstructed views into the site, including of aircraft operations.

2. Regulatory Context

The key policy documents that protect visual resources in the vicinity of the project site are the applicable FAA regulations (in the Code of Federal Regulations), the Community Character Element of the Livermore General Plan, and Zoning Code, which are discussed below. I-580 is considered an "eligible" scenic highway under the California Scenic Highway Mapping System, but is not considered an officially designated Scenic Highway.

a. FAA Regulations. The FAA limits building height in the vicinity of the Airport via the regulations in 14 Code of Federal Regulations, Part 77. In summary, the height regulations change at various distances from the runway, the terminal obstacle clearance areas, and other Airport operational areas. Building height is limited to 200 feet above ground level (or above the established Airport elevation, whichever is higher), within 3 nautical miles of an Airport.

b. City of Livermore General Plan. The Community Character Element of the City of Livermore General Plan addresses aesthetics-related policy concerns, including areas of historical and cultural value, scenic corridors, and open space preservation – with a focus on maintaining the unique visual features that convey a sense of place in the City. To achieve that objective, the Community Character Element "contains goals, objectives, policies, and actions that will guide private individuals and government officials in preserving and enhancing Livermore's character and unique physical identity." These policies range from the protection of water bodies and steep slopes to ensuring that urban design in the City is of high quality.

Refer to Table IV-1 in Chapter IV, Consistency with Plans and Policies, for a list of the goals, objectives, policies, and actions in the Community Character Element that are relevant to the proposed project and project site. The table also includes an evaluation of the consistency of the project with each applicable policy.

A major policy emphasis of the Community Character Element is the protection of viewsheds around scenic routes. Scenic routes in the vicinity of the site that are designated in Figure 4-1 of the General Plan include I-580, Isabel Avenue (Kitty Hawk Road), and Jack London Boulevard. The I-580 scenic corridor is a focus of viewshed protection efforts in the Community Character Element. As part of the I-580 scenic corridor protection policies, grading is limited within 3,500 feet of the freeway centerline, and development projects in this area must undergo analysis to determine whether they would adversely affect the viewshed. The northern boundary of the project site is located approximately 2,000 feet south of the I-580 centerline.

The I-580 scenic corridor is divided into six subareas, each of which is subject to specific visual resource protection policies and development standards (in addition to policies and standards that apply to the entire scenic corridor). The project site is completely within Subarea 6 (see Figure V.K-2), the northern boundary of which is I-580. The eastern boundary approximately follows the east side of Livermore Downs Park; the west side corresponds to El Charro Road. The southern boundary of the subarea is south of Jack London Boulevard. Subarea 6 is itself divided into three main subparts, which "reflect natural dividing lines using roadways, visual resources, freeway/view relationships and areas of existing development." The project site is located in Subpart 6A (Division 6A-4) and Subpart 6B.

As a general rule, buildings within the scenic corridor cannot intrude into the view planes that are customized for each subarea. The allowable view angles are based on the following criteria:

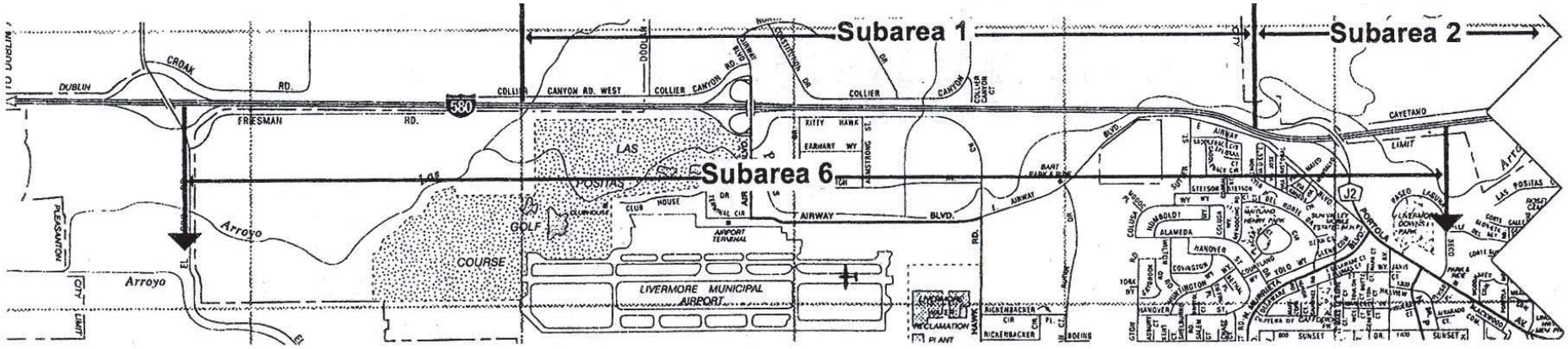
- View points along I-580 are selected at 500-1,000-foot intervals along the frontage of each subpart;
- View direction sight lines from these viewpoints are taken at 90 degrees to I-580 with other directions of view to supplement the 90 degrees as determined necessary.
- The view angle at each point is established as a plane line to the ridge at an elevation point determined appropriate to maintain the view consistent with other subarea objectives.

Buildings on the project site are not permitted to intrude above a 2.2 degree angle from the I-580 viewpoints north of the site. An analysis by Pacific Municipal Consultants in 2001 indicates that the 2.2 degree maximum view angle would allow for maximum building heights on the site of between 78 and 162 feet.[1]

c. City of Livermore Zoning Code. Section 3-05-270.C of the City Zoning Code, "Heights of Buildings and Structures," contains the following aesthetics-related policy that limits building height in the vicinity of the project site:

"Notwithstanding structural limitations found elsewhere in this code, nor exceptions to those height limitations found in this section, the height of structures located within 5,000 feet of any Airport runway shall not exceed 40 feet. (Ord. 1001; Ord. 442 Section 20.80)"

[1] Pacific Municipal Consultants, 2001. *I-580 Scenic Corridor Analysis for the Livermore Municipal Airport Master Plan, Livermore, CA.* August 15.



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NOT TO SCALE

FIGURE V.K-2

Livermore Municipal Airport General Plan Amendment and Rezoning Project EIR

I-580 Scenic Route - Subarea 6

SOURCE: CITY OF LIVERMORE; LSA ASSOCIATES, INC., 2009.

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All parts of the project site are within 5,000 feet of a runway and thus would be required to comply with this provision of the Zoning Code.

3. Impacts and Mitigation Measures

The following section presents a discussion of the impacts related to visual resources that could result from implementation of the proposed project. The section begins with the criteria of significance, establishing the thresholds to determine whether an impact is significant. The latter part of this section presents the visual resources impacts that could result from the proposed project. Impacts are organized into separate categories based on their significance according to the criteria listed below: less-than-significant impacts, and significant impacts.

a. Criteria of Significance. Implementation of the proposed project would have a significant effect on visual resources if it would:

- Result in visual conditions that would conflict with applicable policies and regulations governing aesthetics and community character;
- Have a substantial adverse effect on a scenic vista, or would substantially damage scenic resources, including but not limited to trees, rock outcroppings, and historic buildings;
- Result in the disruption or blocking of existing views or public opportunities to view scenic resources;
- Substantially degrade the existing visual character of the City or specific neighborhoods; or
- Create substantial light or glare which would adversely affect day or nighttime views.

b. Less-than-Significant Visual Resources Impacts. Development of the proposed project would result in the following less-than-significant impacts to visual resources.

(1) Applicable Policies. The proposed project would be generally consistent with City policies related to aesthetic resources, including the policies in the Community Character Element of the General Plan (refer to the consistency analysis in Chapter IV, including Table IV-1). In addition, building height on the project site would be limited to 40 feet, in compliance with Zoning Code Section 3-05-270.C. As discussed in the setting section, an analysis by Pacific Municipal Consultants that was conducted in 2001 indicates that the applicable 2.2 degree maximum view angle for the I-580 scenic corridor would allow for maximum building heights on the site of between 78 and 162 feet. Due to the height restrictions in the Zoning Code, no development on the project site would exceed 78 feet, and scenic views from I-580 would not be compromised. Therefore, the proposed project would be consistent with visual resources-related policies and this impact would be considered less than significant.

(2) Scenic Vistas, Scenic Resources, and Existing Views. I-580 is considered an "eligible" scenic highway under the California Scenic Highway Mapping System, but is not considered an officially designated Scenic Highway. The Community Character Element identifies three scenic routes in the vicinity of the site: I-580, Isabel Avenue, and Jack London Boulevard. As discussed under "Applicable Policies," above, the 40-foot building height limit imposed on the project site by the Zoning Code would ensure that specific development projects on the site do not adversely affect the viewshed south of I-580. Specifically, such buildings would not block views of the mountains to

the south of the site. In addition, flight operations at the Airport would continue to be visible from I-580 after buildout of the project site.

As shown in Figure III-4, development of above-ground structures is not expected to occur adjacent to or within several hundred feet of Isabel Avenue/Kitty Hawk Road as part of the project (because parcels near the road are already developed and/or comprise the runway protection area, where development of above-ground structures would be limited). Therefore, the project would not compromise views from Isabel Avenue/Kitty Hawk Road. The area immediately north of Jack London Boulevard would become more developed as part of the project (see Figure III-4 in Chapter III). However, views from the road would be protected by: 1) the 40-foot height limit imposed by the Zoning Code and 2) landscape strip requirements outlined in the AIR District for areas between a proposed building/parking lot and a road. In addition, some of the development expected in the southern portion of the site would comprise individual storage hangars and corporate aviation facilities. These hangars and corporate aviation facilities would be designed around north/south axes (to reflect the configuration of existing facilities), protecting views into the interior of the site and beyond. Therefore, although new structures could change views from Jack London Boulevard, substantial portions of the view would remain unchanged as part of the project.

Although the site is itself a scenic resource and important element of the landscape character of Livermore, there are no resources on the site, such as creeks, rivers, historic buildings, or significant vegetation that are considered scenic resources based on the Community Character Element of the General Plan. The project, which would allow for the future safe and efficient operation of the Airport by permitting only Airport-related development on the site, would preserve the site as an Airport, and would not adversely affect scenic resources or scenic views of these resources. Therefore, the potential impact of the project on scenic resources, scenic vistas, and other existing views would be considered less than significant.

(3) Visual Character. The proposed project would change the visual character of the project site compared to existing conditions by allowing for additional development, particularly on the south side of the Airport along Jack London Boulevard. However, new development would not change the basic configuration of uses on the site, which is characterized by the clustering of Airport services facilities along the northern and southern boundaries of the site and the preservation of the interior of the site for the runways and undeveloped land needed for take-offs and landings. After the proposed rezoning, the northern and southern portions of the Airport would continue to be used for Airport services and the interior of the site would continue to be reserved primarily for runways. The far eastern part of the project site, to the east of Kitty Hawk Road, would be reserved for Airport operations (including runway safety zones) as part of the project, and no runways would be built in this area. Therefore, the visual character of this undeveloped property would be maintained as a result of the project. The AIR-OP District effectively prohibits the construction of large structures or other features that would interfere with flight operations. Similarly, changes to this part of the site, which would be minor, would not change the character of the mixed-use neighborhood to the east.

New structures could be built in portions of the project site as part of the project. However, these news structures would be of low profile (no more than 40 feet in height), and are expected to be similar in design and use to existing buildings. Landscaping would be required between buildings/parking areas and roadway frontages, which would also ensure that new construction would

not substantially change the character of the Airport. Therefore, the proposed project would not result in substantial changes to the visual character of the site or surrounding neighborhoods.

c. Significant Visual Resources Impacts. Development of the proposed project could result in the following significant impact.

Impact AES-1: Development of specific projects under buildout of the proposed project could create additional sources of day and nighttime light and glare around the Airport. (S)

Specific development projects constructed at the Airport could introduce new sources of light and glare, although light and glare would be reduced because (as part of the proposed AIR District) projects would be required to comply with FAA design guidelines (see Chapter III, Project Description). These design guidelines restrict features that would interfere with flight operations, such as high glare-producing lights or reflective building materials. During nighttime hours, lighting fixtures incorporated into the design of each building could add new sources of light to the nighttime sky. In order to reduce potential light- and glare- related impacts to a less-than-significant level, the following two-part mitigation measure shall be implemented prior to the construction of subsequent development projects:

> Mitigation Measure AES-1a: The specific reflective properties of project building materials shall be assessed by the Airport Manager and City staff during the site plan review process, prior to approval of specific development proposals. This review shall ensure that the use of reflective exterior materials is minimized and complies with all applicable FAA requirements, and that any proposed reflective materials would not create additional daytime or nighttime glare.
>
> Mitigation Measure AES-1b: Specific lighting proposals shall be reviewed by the Airport Manager and City staff during the site plan review process, prior to approval of specific development proposals. This review shall ensure that any outdoor night lighting on the project site is downward facing and shielded so as not to create additional nighttime glare and that lighting conforms to all applicable FAA requirements. (LTS)

VI. ALTERNATIVES

The *CEQA Guidelines* require the analysis of a reasonable range of alternatives to the proposed project, or to the location of the proposed project, which would feasibly attain most of the proposed project's basic objectives and avoid or substantially lessen any of the significant effects of the proposed project. The range of alternatives required in an EIR is governed by a "rule of reason" that requires the EIR to set forth only those alternatives necessary to permit a reasoned choice.[1] CEQA states that an EIR should not consider alternatives "whose effect cannot be ascertained and whose implementation is remote and speculative."

The proposed Livermore Municipal Airport General Plan Amendment and Rezoning project (proposed project) and its objectives are described in detail in Chapter III, Project Description, and the potential environmental effects of implementing the proposed project are analyzed in Chapter V, Setting, Impacts and Mitigation Measures, with an emphasis on significant impacts resulting from the project and mitigation measures recommended to avoid or substantially reduce these impacts to the extent feasible. The following discussion is intended to inform the public and decision-makers of the relative impacts of three potentially feasible alternatives to the proposed project. A discussion of the environmentally superior alternative is also provided.

As stated in Chapter III, Project Description, the objectives of the proposed project are as follows:

- Establish a maximum development level for the Airport that is lower than that identified in the 1975 Airport Master Plan and is based on the 2008 Unconstrained Forecasts.
- Create a zoning district, consistent with the underlying General Plan land use designation, which specifically addresses the unique uses and development limitations for the Airport by identifying permitted and conditionally permitted uses.
- Provide standards for Airport operations and services that would allow for safe and efficient operation as required by federal and State airport design and safety criteria including height limitations, airspace obstructions or hazards, runway protection and instrument approach zones, required setbacks, building restriction lines, and parking requirements.
- Provide areas to accommodate the level of forecasted demand for hangars, fixed base operational facilities and opportunities for aeronautical activities and services as required by federal law and Tri-Valley and regional market demand.
- Establish procedures for City review and evaluation of development proposals that take into consideration both aviation needs and community concerns.
- Amend the General Plan to eliminate references to the rescinded 1975 Airport Master Plan.
- Preserve the current runway configuration to ensure the safe operation of all aircraft that utilize the runways.

[1] *CEQA Guidelines*, 2007. Section 15126.6.

- Provide opportunities for existing aeronautical facilities to utilize space more efficiently by optimizing leasehold configurations.
- Preserve the Airport's role as a key disaster relief air transportation hub for the Tri-Valley area.
- Preserve the Airport's role as a self-sufficient enterprise that provides economic benefits to the City, the Livermore Valley Joint School District, the County, including various County special districts, and the entire Tri-Valley economy, and further enhances the general economy by providing opportunities for aeronautical activities.

The three alternatives to the proposed project that are discussed in this chapter include the following:

- The **No Project alternative** assumes that the existing land use regulations for the project site would not change in the near-term. The General Plan would not be amended and the existing zoning designations on the project site – Education and Institution (E) and Planned Development (PD) – would remain and would not be replaced with the Airport (AIR) Zoning District. Development on the site would occur according to existing land use regulations. This alternative assumes total buildout of all areas identified in the existing Airport Layout Plan (ALP) (shown in Figure VI-1).
- The **Modified Development Scenario alternative** assumes that the proposed General Plan Amendment and rezoning would occur, as under the proposed project. However, this alternative assumes that development on the project site would be more dense and would be reconfigured compared to the proposed project within the Airport Service (AIR-SE) Zoning Subdistrict.
- The **Reduced Development alternative** assumes that the proposed General Plan Amendment and rezoning would occur, as under the proposed project. However, this alternative assumes that development on the project site would be reduced when compared to the proposed project, particularly within the Airport Service (SE) Zoning Subdistrict. While the area that would comprise the AIR-SE Subdistrict would be the same as under the proposed project, the allowable square footage of development would be less.

For each alternative, a brief discussion of its principal characteristics is followed by an analysis of anticipated environmental impacts. The emphasis of the analysis is on the alternative's relative adverse effects compared to the proposed project and a determination of whether or not the alternative would reduce, eliminate, or create new significant impacts. Flight operations, which would increase independent of development of the project site, would be the similar for each of the three alternatives.

A. NO PROJECT ALTERNATIVE

1. Principal Characteristics

The No Project alternative assumes that the existing land use regulations for the project site would not change in the near-term. The General Plan would not be amended (to remove all references to the Master Plan, reduce the desired number of annual aircraft operations and the number of stored/parked aircraft at the Airport); and the existing zoning designations on the project site – Education and Institution (E) and Planned Development (PD) – would remain and would not be replaced with the Airport (AIR) Zoning District. Development on the site would occur according to existing land use regulations. This alternative assumes total buildout of all areas identified in the existing Airport Layout Plan (ALP) (shown in Figure VI-1).

AIRPORT BUILDING LIST

NO.	DESCRIPTION
1	TERMINAL/ADMINISTRATION BUILDING
2	FAA AIR TRAFFIC CONTROL TOWER
3	SIERRA ACADEMY
4	AHART AVIATION
5	FUEL FARM
6	FBO HANGAR AND/OR OFFICE
7	T-HANGARS
8	CORPORATE HANGARS
9	FUEL ISLAND
10	POWER VAULT
11	HELICOPTER PARKING
12	NONAVIATION COMMERCIAL BUILDINGS
13	GOLF COURSE PRO SHOP & RESTAURANT
14	GOLF COURSE EQUIPMENT YARD
15	OFF-AIRPORT RESTAURANT
16	ATTITUDE AVIATION
17	REMOTE TRANSMITTER/RECEIVER ANTENNA
18	LOCALIZER ANTENNA
19	GLIDE SLOPE ANTENNA
20	RUNWAY APPROACH LIGHTS (MALSR)
21	VASI (V4L)
22	PAPI (P4R)
23	ASOS
24	LIGHTED WIND CONE & SEGMENTED CIRCLE
25	BARN/FARM BUILDING
26	ILS HOLD LINE
27	FIRE STATION
28	COMPASS ROSE
29	ROTATING BEACON
30	RUNWAY END INDICATOR LIGHTS (REILS)

AIRPORT DATA TABLE

	Existing	Future
Airport Elevation (MSL)	399.9'	No change
Airport Reference Point (LAT/LONG)	N 37°41'36.24" W 121°45'13.27"	No change
Mean Maximum Temperature *	89.5°F	No change
Combined Wind Coverage (10.5 Kts)	97.79%	No change
Magnetic Declination (08/20/2007) **	14°28'E Changing 0°5W/Year	
Airport Reference Code (ARC)	B-II	No change
NPIAS Service Level	Reliever	No change
Taxiway Lighting	MITL	No change
Taxiway Marking	Centerline	No change
Airport and Terminal Navaids	Localizer (25R), Glideslope (25R), Rotating Beacon, GPS	No change

* Source: Western Region Climate Center (WRCC) Period from 1930-2006
** Source: U.S. National Geophysical Data Center (NGDC)

NON-STANDARD CONDITIONS

	Distance	Location	Existing	Future	Required	Disposition
1	Parallel Runway Separation	Runways 7L/R-25R/L	500 ft.	500 ft.	700 ft.	No change - operations not independent
2	Parallel Taxiway to Runway Distance	Taxiway A to Runway 7L-25R	250 ft.	250 ft.	300 ft.	No change - infrequent use by Design Group II airplanes (existing equals standard for Group I)
3	Hold Lines	North side of Runway 7L-25R	175 ft.	175 ft.	250 ft.	No change - location dictated by parallel taxiway location
4	Runway OFA Setback	Golf course fence at northwest corner of Runway 7L-25R	350 ft.	350 ft.	400 ft.	No change - fence not a significant factor
5	RPZ and Extended Runway OFA	Hangar east of Runway 25R approach end	350 ft.	450 ft.	-	Removal of building desirable, but not required by FAA standards
6	Approach Surface Penetration	Hangar on edge of Runway 25R Approach Zone	18:1	18:1	50:1	No change unless adverse affect on ILS documented
7	RSA Length	Approach end of Rwy 7L	540'	540'	600'	No change unless localizer is replaced or removed.

LEGEND

	EXISTING	FUTURE	ULTIMATE
AIRPORT PROPERTY BOUNDARY			
FENCE	— X —		— XX —
RUNWAY PROTECTION ZONE			
BUILDINGS			
AIRFIELD PAVEMENT			
ROAD			
DRIVEWAY/GATE	G	G	
CONTOURS			
ROFA/RPZ BOUNDARY			
ILS CRITICAL AREA			
LEASED PROPERTY			
FUTURE ISABEL AVE ROW-EASEMENT			

RUNWAY END COORDINATES

	Existing	Future
Runway 7L Lat./Long.	37°41'38.17"N 121°49'45.84"W	NO CHANGE
Runway 25R Lat./Long.	37°41'37.65"N 121°48'40.50"W	NO CHANGE
Runway 7R Lat./Long.	37°41'33.11"N 121°49'30.31"W	NO CHANGE
Runway 25L Lat./Long.	37°41'32.84"N 121°48'56.74"W	NO CHANGE

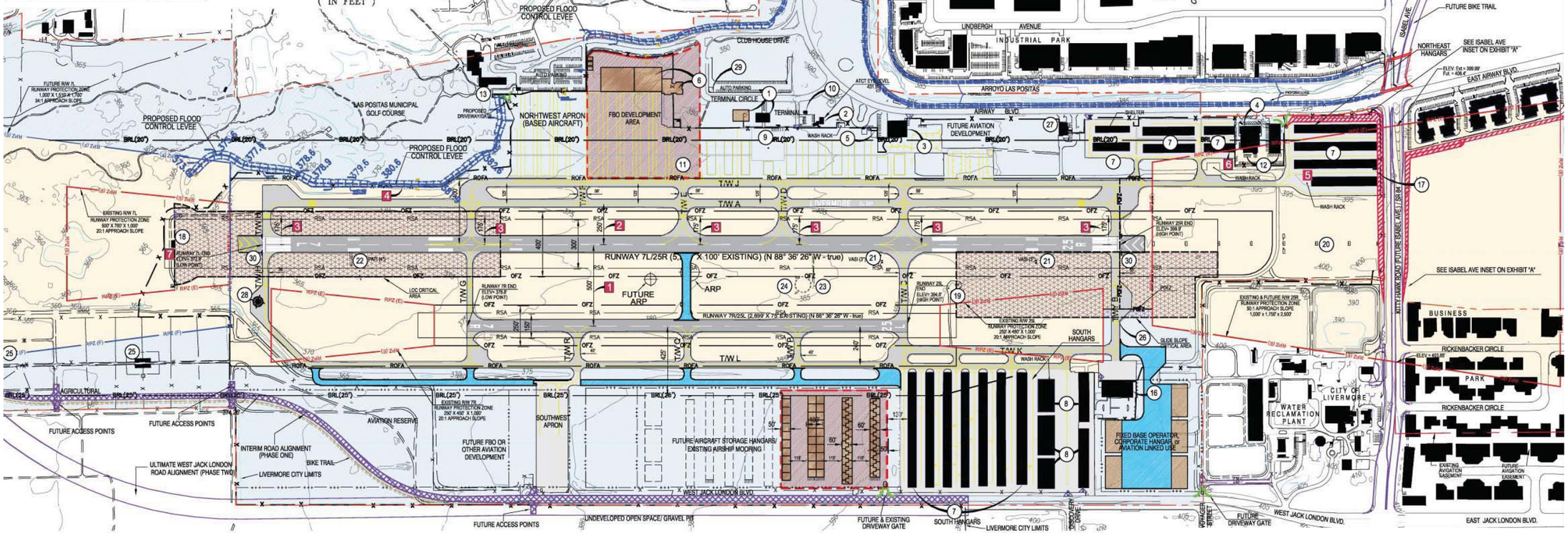
RUNWAY DATA TABLE

	Runway7L/25R(Ext/*Fut*)	Runway 7R/25L (Ext/*Fut*)
Approach Visibility Minimums	Visual (7L) > 3/4 mile (Fut) / 1/2 mile (25R)	Visual
FAR Part 77 Approach Slope (CAT A & B)	20:1 34:1 (Fut) (7L) / 50:1 (25R)	20:1 (EXT/F)
Runway Width & Length	5253' x 100'	2,699' x 75' (Ext)
Pavement Type	Asphalt	Asphalt
Pavement Design Strength (lbs.) - Ext / Fut		
Single Wheel Gear (SWG)	45,000	12,500
Dual Wheel Gear (DWG)	60,000	N/A
Dual Tandem Gear (DTG)	N/A	N/A
Runway Lighting	MIRL	NONE (Ext) / MIRL (Fut)
Runway Marking	Precision	Basic-Visual
Percent Gradient	0.51%	0.58%
Max. Grade Within Runway Length	0.65%	0.71%
Line of Sight Requirements Met	Yes	Yes
Percent Wind Coverage		
Visual Approach Aids	7L-PAPI(4 Box), REIL 25R - MALSR, REIL, VASI	7R - NONE 25L - PAPI (Fut)
Instrument Approach Aids	7L - GPS (Fut) / 25R- GS/LOC/GPS	None
Runway Airport Reference Code	B-II	B-I (Ext)
Critical Aircraft	Falcon 900B	Beech C99 (Ext)
Wingspan (Ft)	63'5"	45'10" (Ext)
Approach Speed (Kts)	115	98 (Ext)
Max. T.O. Weight (Lbs)	45,500 lbs.	12,500 lbs.
Critical Aircraft >60K lbs Length of Haul	N/A	N/A
Runway Safety Area (RSA) Width	300' (Ext & Fut)	120' (Ext & Fut)
RSA Length Beyond Runway Ends	600' (Ext & Fut)	240' (Ext & Fut)
Runway Object Free Area (ROFA) Width	800' (Ext & Fut)	400' (Ext & Fut)
ROFA Length Beyond Runway Ends	600' (Ext & Fut)	240' (Ext & Fut)
Runway Obstacle Free Zone (OFZ) Width	400' (Ext & Fut)	400' (Ext & Fut)
OFZ Length Beyond Runway End	200' (Ext & Fut)	200' (Ext & Fut)
Runway Elevations		
Existing Runway End	7L - 372.9' / 25R - 399.9'	7R - 378.8' / 25L - 394.6'
Future Runway End	NO CHANGE	NO CHANGE
Existing Touchdown Zone	7L - 386.0' / 25R - 399.9'	
Future Touchdown Zone	NO CHANGE	

NOTES:
1. RUNWAY ELEVATIONS PER NOAA OBSTRUCTION SURVEY CONDUCTED APRIL, 2003. (NAVD 88)
2. BUILDING ELEVATIONS PER AERIAL PLANIMETRIC SURVEY, SPRING OF 2007. BUILDING AND FLOOD CONTROL LEVEE ELEVATIONS ADJUSTED FROM NGVD 27 TO NAVD 88 USING AN INCREASE OF 2.64'.
3. TOPOGRAPHIC CONTOURS SHOWN IN NGVD 27 DATUM.
4. ALL HYDROMODIFICATION BASINS (HMBs) TO DRAIN IN 48 HOURS OR LESS.

14°28'E
N
DATE: 8/20/07
ANNUAL RATE OF CHANGE: 0°5'W
SOURCE: NGDC

GRAPHIC SCALE
300 0 300 600
(IN FEET)



AIRPORT LAYOUT PLAN

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FIGURE VI-1

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0 300 600
FEET

Livermore Municipal Airport General Plan
Amendment and Rezoning Project EIR
No Project Alternative

SOURCE: COFFMAN ASSOCIATES
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Back of Figure VI-1

This alternative assumes that development on the project site would occur according to the existing land use regulations identified above. In addition, buildout that could occur under this alternative would generate 305 jobs on the project site, or 43 more jobs than under the proposed project; expected development under this alternative would total 1,923,680 square feet, compared to 1,418,680 under the proposed project. As shown in Figure VI-1, development that would occur on the project site under this alternative would include the same types of land uses as the proposed project, albeit at a slightly higher density. Future flight operations would not be expected to change compared to the proposed project.

The No Project alternative would achieve the following objective for the proposed project:

- Preserve the current runway configuration to ensure the safe operation of all aircraft that utilize the runways.
- Preserve the Airport's role as a key disaster relief air transportation hub for the Tri-Valley area.

The No Project alternative would not achieve the following objectives for the proposed project:

- Establish a maximum development level for the Airport that is lower than that identified in the 1975 Airport Master Plan and is based on the 2008 Unconstrained Forecasts.
- Create a zoning district, consistent with the underlying General Plan land use designation, which specifically addresses the unique uses and development limitations for the Airport by identifying permitted and conditionally permitted uses.
- Provide standards for Airport operations and services that would allow for safe and efficient operation as required by federal and State airport design and safety criteria including height limitations, airspace obstructions or hazards, runway protection and instrument approach zones, required setbacks, building restriction lines, and parking requirements.
- Provide areas to accommodate the level of forecasted demand for hangars, fixed base operational facilities and opportunities for aeronautical activities and services as required by federal law and Tri-Valley and regional market demand.
- Establish procedures for City review and evaluation of development proposals that take into consideration both aviation needs and community concerns.
- Amend the General Plan to eliminate references to the rescinded 1975 Airport Master Plan.
- Provide opportunities for existing aeronautical facilities to utilize space more efficiently by optimizing leasehold configurations.
- Preserve the Airport's role as a self-sufficient enterprise that provides economic benefits to the City, the Livermore Valley Joint School District, the County, including various County special districts, and the entire Tri-Valley economy, and further enhances the general economy by providing opportunities for aeronautical activities.

2. Analysis of the No Project Alternative

The potential impacts of the No Project alternative are described below. This discussion emphasizes the comparison of this alternative's impacts to the proposed project's expected impacts.

a. Land Use. As under the proposed project, implementation of the No Project alternative would result in the development of new facilities on the project site that are expected to be consistent with existing uses on the site. However, under this alternative, development applications for specific projects that may not be Airport-related could be proposed for City review. Nevertheless, new non-Airport-related land uses would likely not be introduced and existing land uses would continue to be compatible with surrounding uses. As previously noted, development that would occur on the project site under this alternative would be expected to include the same types of land uses as would be developed under the proposed project, albeit at a higher density, which would not be expected to result in significant land use impacts. Therefore, the No Project alternative would result in the same land use impacts as the proposed project. All impacts would be less than significant.

b. Transportation, Circulation and Parking. Implementation of this alternative would not cause a substantial increase in traffic over existing conditions. The traffic conditions for this alternative are described in the existing conditions section of Section V.B, Transportation, Circulation, and Parking. As described in this section, the No Project alternative would result in 610 more daily trips than the proposed project. However, this higher number of trips would not result in new significant traffic impacts (see Table V.B-7). As under the proposed project, development occurring under the No Project alternative would result in less-than-significant construction-period impacts to local circulation.

c. Air Quality and Global Climate Change. Implementation of the No Project alternative would not cause a substantial increase in air pollution. As previously noted, the No Project alternative would result in 610 more daily trips than the proposed project; therefore, this alternative would generate more operational carbon monoxide (CO) emissions when compared to the proposed project. However, this higher amount of emissions would not be expected to result in new significant impacts; as discussed in Section V.E, Air Quality and Global Climate Change, the proposed project would not result in significant impacts related to emissions. Similar to the proposed project, the No Project alternative would not be expected to substantially increase odor concentrations, carbon monoxide (CO) concentrations, or regional emissions that could exceed Bay Area Air Quality Management District (BAAQMD) standards, nor would it expose sensitive receptors to toxic emissions. As under the proposed project, development occurring under the No Project alternative could result in significant construction-period air quality impacts; however, implementation of Mitigation Measure AIR-1, which would reduce this impact for the proposed project to a less-than-significant level, would also be expected to reduce this impact to a less-than-significant level under the No Project alternative. Because future flight operations would not be expected to change compared to the proposed project, the No Project alternative would be associated with similar aviation-related pollutant emissions as the proposed project. In addition, global climate change impacts would likely be almost identical to those associated with the proposed project.

d. Noise. The noise conditions for this alternative are described in section V.D, Noise. As previously noted, the No Project alternative would result in 610 more daily vehicle trips than the proposed project; therefore, traffic-related noise impacts would be slightly higher than under the proposed project. However, as under the proposed project, increases in noise levels associated with auto traffic for the No Project alternative would be less than significant. Because future flight operations would not be expected to change compared to the proposed project, the No Project alternative would be associated with similar aviation-related noise patterns as the proposed project. As under the project, flight operations under the No Project alternative would result in an increased

exposure of residential uses to exterior noise levels in excess of 60 dBA CNEL. Implementation of Mitigation Measure NOISE-1 would reduce this impact to a less-than-significant level.

e. Hydrology and Water Quality. Similar to the proposed project, development that could occur under the No Project alternative could degrade water quality, deplete groundwater resources and reduce groundwater recharge, and increase erosion and flooding due to alteration of drainage patterns and increases in impervious surfaces. As previously noted, this alternative would allow for approximately 505,000 square feet more development than land use regulations under the proposed project, and would therefore result in more impervious surfaces on the project site; however, this small increase would not require mitigation beyond that required for the proposed project. Implementation of Mitigation Measures HYD-1a, HYD-1b, HYD-1c, HYD-2, and HYD-3, which would reduce hydrology and water quality impacts for the proposed project to a less-than-significant level, would also be expected to reduce the No Project alternative's hydrology and water quality impacts to a less-than-significant level.

f. Geology, Soils and Seismicity. The No Project alternative's geology, soils and seismicity impacts would be the same as those for the proposed project. As under the proposed project, development on the project site that could occur under the No Project alternative could be adversely affected by seismically-induced ground shaking, as well as expansive and/or corrosive soils. Implementation of Mitigation Measures GEO-1 and GEO-2, which would reduce these impacts to a less-than-significant level under the proposed project, would also be expected to reduce impacts to a less-than-significant level under this alternative.

g. Hazards and Hazardous Materials. As under the proposed project, development that could occur on the site under the No Project alternative could result in the accidental release of hazardous materials, and could result in exposure to hazardous materials in soil and building materials; however, implementation of Mitigation Measures HAZ-1 and HAZ-2, which would reduce these impacts to a less-than-significant level under the proposed project, would also be expected to reduce these impacts to a less-than-significant level under the No Project alternative. Hazards and hazardous materials impacts under the No Project alternative would be similar to the proposed project.

h. Public Services, Utilities and Recreation. Similar to the proposed project, development that could occur under the No Project alternative would increase the demand for the following public services: police services; fire and emergency medical services; and parks and recreational facilities. The increased capacity for development under this alternative, when compared to the proposed project, could result in a slightly higher demand for public services. However, approximately 505,000 square feet of FBO and hangar space and 43 more jobs (when compared to buildout under the proposed project) would not be expected to result in adverse physical impacts associated with maintenance of service standards. Therefore, the No Project alternative, like the proposed project, would be expected to result in less-than-significant impacts on police services, fire and emergency medical services, and parks and recreational facilities.

Similar to the proposed project, development that could occur under the No Project alternative could contribute to flooding at Arroyo Las Positas during storm events. As previously noted, this alternative would allow more development than land use regulations under the proposed project, and would therefore result in slightly more impervious surfaces on the project site. However, this increase and would not require mitigation beyond that required for the proposed project. Implementation of

Mitigation Measure UTIL-1 (which requires implementation of Mitigation Measure HYD-1C), which would reduce contributions to flooding at Arroyo Las Positas during storm events to a less-than-significant level under the proposed project, would also reduce this impact to a less-than-significant level under the No Project alternative.

As under the proposed project, the No Project alternative would result in less-than-significant impacts to water services (supply, treatment, and distribution) and wastewater services (collection, treatment, and disposal). Although the No Project alternative would allow approximately 505,000 square feet of FBO and hangar space and 43 more jobs than the proposed project, these increases would not be expected to result in a comparably substantial increase in demand for water and wastewater services. The City has sufficient water and wastewater conveyance, treatment, and disposal capacity to serve projected growth under General Plan buildout. Therefore, the No Project alternative (which would result in a development envelope within that assumed for General Plan buildout) would result in less-than-significant impacts to utilities.

i. Biological Resources. The No Project alternative would have similar biological resources impacts as the proposed project. As under the proposed project, construction that could occur on the project site under the No Project alternative could result in the removal or disturbance of habitat for western burrowing owls, occupied bird nests, and occupied bat roosts. However, implementation of Mitigation Measures BIO-1, BIO-2, and BIO-3, which would reduce these impacts to a less-than-significant level for the proposed project, would also be expected to reduce these impacts to a less-than-significant level for the No Project alternative.

j. Cultural and Paleontological Resources. Impacts to cultural and paleontological resources would be expected to be the same under the No Project alternative as under the proposed project. As under the proposed project, ground-disturbing activities associated with site preparation for specific development projects under the No Project alternative could result in significant impacts to previously unrecorded prehistoric and/or historical archaeological deposits, paleontological resources, and human remains. However, implementation of Mitigation Measures CULT-2, CULT-3, and CULT-4, which would reduce these impacts to a less-than-significant level for the proposed project, would also be expected to reduce these impacts to a less-than-significant level for the No Project alternative.

In addition, as under the proposed project, ground-disturbing activities associated with site preparation for specific development projects under the No Project alternative could affect a known archaeological site: site P-01-010526, a prehistoric/historical archaeological site consisting of the remains of a farmstead and a scatter of stone toolmaking debris. Implementation of Mitigation Measure CULT-1, which would reduce this impact to a less-than-significant level for the proposed project, would also be expected to reduce this impact to a less-than-significant level for the No Project alternative.

k. Visual Quality. The No Project alternative would be expected to result in similar impacts to the local visual environment as the proposed project. The No Project alternative, which would preserve the site as an Airport (as under the proposed project), would not be expected to result in significant impacts to scenic vistas, scenic resources, or existing views, nor would it substantially degrade the visual character of the project site or surrounding neighborhoods, because development that would occur under the No Project alternative would be consistent with General Plan policies and Zoning Code regulations intended to preserve views of hillsides surrounding the project site. Building heights

would be required to be under the maximum allowed height established to preserve view corridors, as discussed in Section V.K, Visual Resources, and thus would preserve scenic views from I-580. However, as under the proposed project, the No Project alternative could result in additional sources of day and nighttime light and glare around the Airport; implementation of Mitigation Measure VIS-1a and VIS-1b, which would reduce this impact to a less-than-significant level for the proposed project, would also be expected to reduce this impact to a less-than-significant level for the No Project alternative.

3. Summary

As previously noted, the No Project alternative would not achieve most of the objectives for the proposed project. This alternative would allow for a greater amount of development on the project site. However, impacts would be expected to be similar to those under the proposed project, and recommended mitigation measures for the proposed project would reduce all impacts to a less-than-significant level.

B. MODIFIED DEVELOPMENT SCENARIO ALTERNATIVE

1. Principal Characteristics

Under the Modified Development Scenario alternative, as under the proposed project, the General Plan would be amended to reflect the desired maximum number of annual aircraft operations and the number of stored/parked aircraft at the Airport and to remove all references to the 1975 Airport Master Plan, and the project site would be rezoned from Education and Institution (E) and Planned Development (PD) to a new Airport (AIR) Zoning District. However, this alternative assumes that development on the project site would be more dense and would be reconfigured compared to the proposed project, particularly within the Airport Service (AIR-SE) Zoning Subdistrict. This alternative is a modified version of how development could occur at the project site under the land use regulations that would be put in place under the proposed project.

As shown in Figure VI-2, development under the Modified Development Scenario alternative would include the same types of land uses as the proposed project, though the spatial arrangement of these uses would be modified; individual storage hangars would replace the helicopter facility in the southwestern corner of the site, while corporate hangars and the FBO on the south side of the site would be moved further to the east. In addition, expected development under this alternative would total 1,625,382 square feet, which would be more than the 1,418,680 square feet of development that could occur under the proposed project and less than the 1,923,680 square feet of development under the No Project alternative. Buildout that could occur under this alternative would generate 246 jobs on the project site, or 16 fewer jobs than under the proposed project. The Modified Development Scenario alternative would achieve the project objectives, but to a lesser extent than the proposed project. In particular, the alternative may not fully accommodate the level of forecasted demand for aeronautical activities and services as required by federal law and Tri-Valley and regional market demand because it would not include a helicopter facility.

2. Analysis of the Modified Development Scenario Alternative

The potential impacts of the Modified Development Scenario alternative are described below. This discussion emphasizes the comparison of this alternative's impacts to the proposed project's impacts.

a. Land Use. As under the proposed project, implementation of the Modified Development Scenario alternative would result in the development of new facilities on the project site that are similar to existing uses on the site; land uses would also be similar to those under the proposed project because the Airport (AIR) Zoning District would be in place, which lists allowed and conditional uses. New types of land uses would not be introduced and existing land uses would continue to be compatible with surrounding uses. Land uses changes that would occur as part of the project would not result in significant land use impacts, and the Modified Development Scenario alternative would be expected to result in the same land use impacts as the proposed project.

b. Transportation, Circulation and Parking. Implementation of the Modified Development Scenario alternative would not be expected to cause a substantial increase in traffic over existing conditions. This alternative would be expected to result in a similar number of trips as the proposed project (due to the 16 fewer jobs that would be created), and fewer trips than the No Project alternative. Therefore, these trips would not be expected to result in significant impacts associated with traffic. Similar to the proposed project, development occurring under the Modified Development Scenario alternative would result in less-than-significant construction-period impacts to local circulation.

c. Air Quality and Global Climate Change. Implementation of the Modified Development Scenario alternative would not be expected to cause a substantial increase in air pollution. As previously noted, the Modified Development Scenario alternative would result in similar number of trips as the proposed project (but fewer trips than the No Project alternative); therefore, this alternative would generate more operational CO emissions when compared to the proposed project. However, this higher amount of emissions would not result in new significant impacts not identified for the proposed project. Similar to the proposed project, the Modified Development Scenario alternative would not be expected to substantially increase odor concentrations, CO concentrations, or regional emissions that could exceed Bay Area Air Quality Management District (BAAQMD) standards, nor would it be expected to expose sensitive receptors to toxic emissions. As under the proposed project, development occurring under the Modified Development Scenario alternative could result in significant construction-period air quality impacts; however, implementation of Mitigation Measure AIR-1, which would reduce this impact for the proposed project to a less-than-significant level, would also be expected to reduce this impact to a less-than-significant level under the Modified Development Scenario alternative. Because future flight operations would not be expected to change compared to the proposed project, the Modified Development Scenario alternative would be associated with similar aviation-related pollutant emissions as the proposed project. In addition, global climate change impacts would likely be almost identical to those associated with the proposed project.

d. Noise. As previously noted, the Modified Development Scenario alternative would be expected to result in a similar amount of trips as the proposed project (but fewer than the No Project alternative); therefore, traffic-related noise levels would be expected to similar to the less-than-significant impacts identified for proposed project. Because future flight operations would not be expected to change compared to the proposed project, the Modified Development Scenario alternative would be expected to produce similar aviation-related noise as the proposed project. As under the project, flight operations under the Modified Development alternative would result in an increased exposure of residential uses to exterior noise levels in excess of 60 dBA CNEL. Implementation of Mitigation Measure NOISE-1 would reduce this impact to a less-than-significant level.

AIRPORT BUILDING LIST

NO.	DESCRIPTION
1	TERMINAL/ADMINISTRATION BUILDING
2	FAA AIR TRAFFIC CONTROL TOWER
3	SIERRA ACADEMY
4	AHART AVIATION
5	FUEL FARM
6	FBO HANGAR AND/OR OFFICE
7	T-HANGARS
8	CORPORATE HANGARS
9	FUEL ISLAND
10	POWER VAULT
11	HELICOPTER PARKING
12	NONAVIATION COMMERCIAL BUILDINGS
13	GOLF COURSE PRO SHOP & RESTAURANT
14	GOLF COURSE EQUIPMENT YARD
15	OFF-AIRPORT RESTAURANT
16	ATTITUDE AVIATION
17	REMOTE TRANSMITTER/RECEIVER ANTENNA
18	LOCALIZER ANTENNA
19	GLIDE SLOPE ANTENNA
20	RUNWAY APPROACH LIGHTS (MALSR)
21	VASI (V4L)
22	PAPI (P4R)
23	ASOS
24	LIGHTED WIND CONE & SEGMENTED CIRCLE
25	BARN/FARM BUILDING
26	ILS HOLD LINE
27	FIRE STATION
28	COMPASS ROSE
29	ROTATING BEACON
30	RUNWAY END INDICATOR LIGHTS (REILS)

AIRPORT DATA TABLE

	Existing	Future
Airport Elevation (MSL)	399.9'	No change
Airport Reference Point (LAT/LONG)	N 37°41'36.24" W 121°49'13.27"	No change
Mean Maximum Temperature *	89.5°F	No change
Combined Wind Coverage (10.5 Kts)	97.79%	No change
Magnetic Declination (08/20/2007) **	14°28'E Changing 0°5'W/Year	
Airport Reference Code (ARC)	B-II	No change
NPIAS Service Level	Reliever	No change
Taxiway Lighting	MITL	No change
Taxiway Marking	Centerline	No change
Airport and Terminal Navaids	Localizer (25R), Glideslope (25R), Rotating Beacon, GPS	No change

* Source: Western Region Climate Center (WRCC) Period from 1930-2005
** Source: U.S. National Geophysical Data Center (NGDC)

NON-STANDARD CONDITIONS

	Distance	Location	Existing	Future	Required	Disposition
1	Parallel Runway Separation	Runways 7L/R-25R/L	500 ft.	500 ft.	700 ft.	No change - operations not independent
2	Parallel Taxiway to Runway Distance	Taxiway A to Runway 7L-25R	250 ft.	250 ft.	300 ft.	No change - infrequent use by Design Group II airplanes (existing equals standard for Group I)
3	Hold Lines	North side of Runway 7L-25R	175 ft.	175 ft.	250 ft.	No change - location dictated by parallel taxiway location
4	Runway OFA Setback	Golf course fence at northwest corner of Runway 7L-25R	350 ft.	350 ft.	400 ft.	No change - fence not a significant factor
5	RPZ and Extended Runway OFA	Hangar east of Runway 25R approach end	350 ft.	450 ft.	-	Removal of building desirable, but not required by FAA standards
6	Approach Surface Penetration	Hangar on edge of Runway 25R Approach Zone	18:1	18:1	50:1	No change unless adverse affect on ILS documented
7	RSA Length	Approach end of Rwy 7L	540'	540'	600'	No change unless localizer is replaced or removed.

NOTES:
1. RUNWAY ELEVATIONS PER NOAA OBSTRUCTION SURVEY CONDUCTED APRIL, 2003. (NAVD 88)
2. BUILDING ELEVATIONS PER AERIAL PLANIMETRIC SURVEY, SPRING OF 2007. BUILDING AND FLOOD CONTROL LEVEE ELEVATIONS ADJUSTED FROM NGVD 27 TO NAVD 88 USING AN INCREASE OF 2.64'.
3. TOPOGRAPHIC CONTOURS SHOWN IN NGVD 27 DATUM.
4. ALL HYDROMODIFICATION BASINS (HMBs) TO DRAIN IN 48 HOURS OR LESS.

14°28'E
N
DATE: 8/20/07
ANNUAL RATE OF CHANGE: 0°5'W
SOURCE: NGDC

GRAPHIC SCALE
300 0 300 600
(IN FEET)

LEGEND
- Planned Facilities
- Future Structures
- Future Airfield Pavement
- Future Roads/Parking

LEGEND

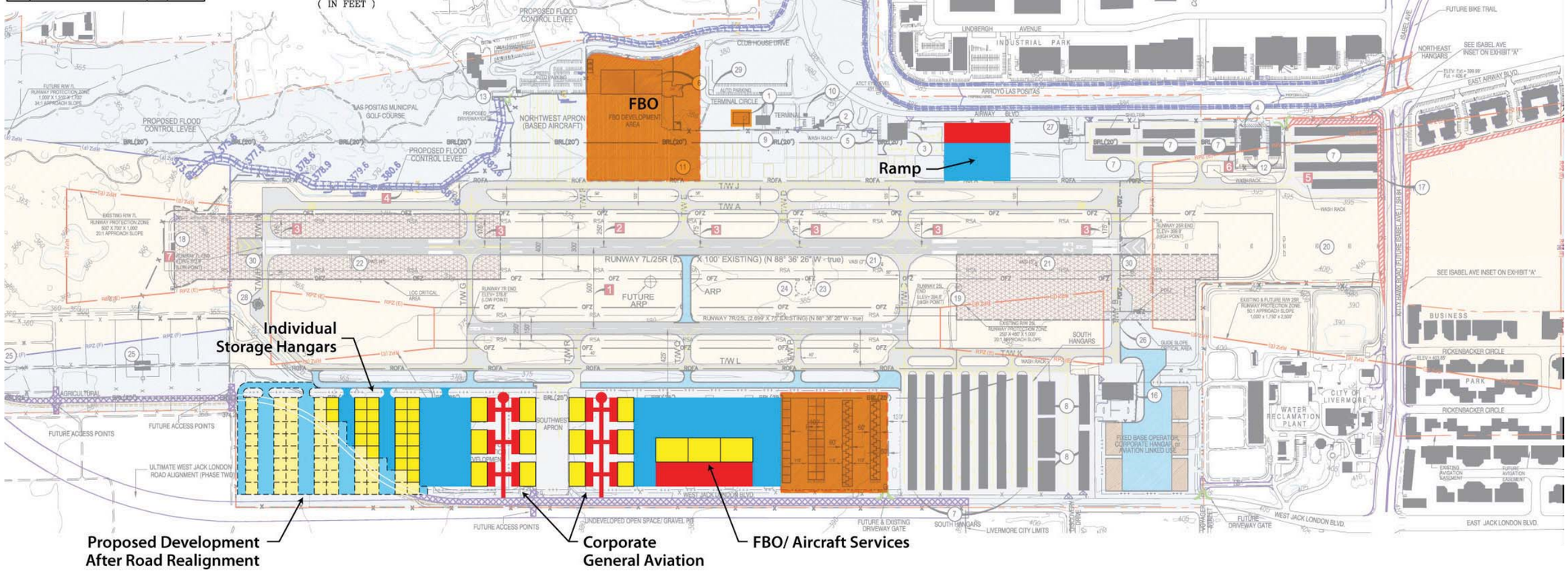
	EXISTING	FUTURE	ULTIMATE
AIRPORT PROPERTY BOUNDARY			
FENCE			
RUNWAY PROTECTION ZONE			
BUILDINGS			
AIRFIELD PAVEMENT			
ROAD			
DRIVEWAY/GATE			
CONTOURS			
ROFA/RPZ BOUNDARY			
ILS CRITICAL AREA			
LEASED PROPERTY			
FUTURE ISABEL AVE ROW-EASEMENT			

RUNWAY END COORDINATES

	Existing	Future
Runway 7L Lat./Long.	37°41'58.17"N 121°49'45.84"W	NO CHANGE
Runway 25R Lat./Long.	37°41'37.65"N 121°48'40.50"W	NO CHANGE
Runway 7R Lat./Long.	37°41'33.11"N 121°49'30.31"W	NO CHANGE
Runway 25L Lat./Long.	37°41'32.84"N 121°48'56.74"W	NO CHANGE

RUNWAY DATA TABLE

	Runway7L/25R(Ext/Fut)	Runway 7R/25L (Ext/Fut)
Approach Visibility Minimums	Visual (7L) > 3/4 mile (Fut) / 1/2 mile (25R)	Visual
FAR Part 77 Approach Slope (CAT A & B)	20:1 34:1(Fut) (7L) / 50:1 (25R)	20:1 (BOTH)
Runway Width & Length	5253' x 100'	2,699' x 75' (Ext)
Pavement Type	Asphalt	Asphalt
Pavement Design Strength (lbs.) - Ext / Fut		
Single Wheel Gear (SWG)	45,000	12,500
Dual Wheel Gear (DWG)	60,000	N/A
Dual Tandem Gear (DTG)	N/A	N/A
Runway Lighting	MIRL	NONE (Ext) / MIRL (Fut)
Runway Marking	Precision	Basic-Visual
Percent Gradient	0.51%	0.58%
Max. Grade Within Runway Length	0.65%	0.71%
Line of Sight Requirements Met	Yes	Yes
Percent Wind Coverage		
Visual Approach Aids	7L-PAPI(4 Box), REIL 25R - MALSR, REIL, VASI	7R - NONE 25L - PAPI (Fut)
Instrument Approach Aids	7L- GPS (Fut) / 25R- GS/LOC/GPS	None
Runway Airport Reference Code	B-II	B-I (Ext)
Critical Aircraft	Falcon 900B	Beech C99 (Ext)
Wingspan (Ft)	63'5"	45'10" (Ext)
Approach Speed (Kts)	115	98 (Ext)
Max. T.O. Weight (Lbs)	45,500 lbs.	12,500 lbs.
Critical Aircraft >60K lbs Length of Haul	N/A	N/A
Runway Safety Area (RSA) Width	300' (Ext & Fut)	120' (Ext & Fut)
RSA Length Beyond Runway Ends	600' (Ext & Fut)	240' (Ext & Fut)
Runway Object Free Area (ROFA) Width	800' (Ext & Fut)	400' (Ext & Fut)
ROFA Length Beyond Runway Ends	600' (Ext & Fut)	240' (Ext & Fut)
Runway Obstacle Free Zone (OFZ) Width	400' (Ext & Fut)	400' (Ext & Fut)
OFZ Length Beyond Runway End	200' (Ext & Fut)	200' (Ext & Fut)
Runway Elevations		
Existing Runway End	7L - 372.9' / 25R - 399.9'	7R - 378.8' / 25L - 394.8'
Future Runway End	NO CHANGE	NO CHANGE
Existing Touchdown Zone	7L - 386.0' / 25R - 399.9'	
Future Touchdown Zone	NO CHANGE	



LSA

FIGURE VI-2

Livermore Municipal Airport General Plan
Amendment and Rezoning Project EIR
Modified Development Scenario Alternative

SOURCE: COFFMAN ASSOCIATES
I:\CLV0802 Livermore Airport\Figures\Fig_VI2-11x17.ai (8/11/09)

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e. Hydrology and Water Quality. Similar to the proposed project, development that could occur under the Modified Development Scenario could degrade water quality, deplete groundwater resources and reduce groundwater recharge, and increase erosion and flooding due to alteration of drainage patterns and increases in impervious surfaces. As previously noted, this alternative would allow for slightly more development (206,702 square feet) than the proposed project (though slightly less development than the No Project alternative), and would therefore result in slightly more impervious surfaces on the project site; however, this expected small increase in impervious surfaces would not be expected to require mitigation beyond that required for the proposed project. Implementation of Mitigation Measures HYD-1a, HYD-1b, HYD-1c, HYD-2, and HYD-3, which would reduce hydrology and water quality impacts for the proposed project to a less-than-significant level, would also be expected to reduce the Modified Development Scenario alternative's hydrology and water quality impacts to a less-than-significant level.

f. Geology, Soils and Seismicity. The Modified Development Scenario alternative's geology, soils and seismicity impacts would be expected to be the same as those for the proposed project. As under the proposed project, development on the project site that could occur under the Modified Development Scenario alternative could be adversely affected by seismically-induced ground shaking, as well as expansive and/or corrosive soils. Implementation of Mitigation Measures GEO-1 and GEO-2 would be expected to reduce these impacts to a less-than-significant level under the proposed project and also this alternative.

g. Hazards and Hazardous Materials. As under the proposed project, development that could occur on the site under the Modified Development Scenario alternative could result in the accidental release of hazardous materials, and could result in exposure to hazardous materials in soil and building materials; however, implementation of Mitigation Measures HAZ-1 and HAZ-2, which would reduce these impacts to a less-than-significant level under the proposed project, would also be expected to reduce these impacts to a less-than-significant level under the Modified Development Scenario alternative. Hazards and hazardous materials impacts under the Modified Development Scenario alternative would be expected to be the same as under the proposed project.

h. Public Services, Utilities and Recreation. Similar to the proposed project, development that could occur under the Modified Development Scenario alternative would increase the demand for the following public services: police services; fire and emergency medical services; and parks and recreational facilities. The increased capacity for development under this alternative, when compared to the proposed project, could result in a slightly higher demand for public services (though not as high as under the No Project alternative). However, approximately 206,702 square feet of FBO and hangar space, and 16 fewer jobs (when compared to buildout under the proposed project) would not be expected to result in adverse physical impacts associated with maintenance of service standards. Therefore, the Modified Development Scenario, like the proposed project, would result in less-than-significant impacts on police services, fire and emergency medical services, and parks and recreational facilities.

Similar to the proposed project, development that could occur under the Modified Development Scenario alternative could contribute to flooding at Arroyo Las Positas during storm events. As previously noted, this alternative would allow slightly more development than under the proposed project, and would therefore result in slightly more impervious surfaces on the project site (though not as much as under the No Project alternative). However, this small increase would not be expected

to require mitigation beyond that required for the proposed project. Implementation of Mitigation Measure UTIL-1 (which requires implementation of Mitigation Measure HYD-1c), which would reduce contributions to flooding at Arroyo Las Positas during storm events to a less-than-significant level under the proposed project, would also be expected to reduce this impact to a less-than-significant level under the Modified Development Scenario alternative.

As under the proposed project, the Modified Development Scenario alternative would be expected to result in less-than-significant impacts to water services (supply, treatment, and distribution) and wastewater services (collection, treatment, and disposal). Although the Modified Development Scenario alternative would allow slightly more development (206,702 square feet) on the project site than under the proposed project (though not as much as under the No Project alternative), these increases would not be expected to result in a comparably substantial increase in demand for water and wastewater services. The City has sufficient water and wastewater conveyance, treatment, and disposal capacity to serve projected growth under General Plan buildout; as under the proposed project, development that could occur on the site under this alternative would not be expected to exceed planned development for the site taken into account when the City prepared demand forecasts for water and wastewater services for General Plan buildout. Therefore, the Modified Development Scenario alternative would be expected to result in less-than-significant impacts to utilities.

i. Biological Resources. The Modified Development Scenario alternative would be expected to have similar biological resources impacts as the proposed project. As under the proposed project, construction that could occur on the project site under the Modified Development Scenario alternative could result in the removal or disturbance of habitat for western burrowing owls, occupied bird nests, and occupied bat roosts. However, implementation of Mitigation Measures BIO-1, BIO-2, and BIO-3, which would reduce these impacts to a less-than-significant level for the proposed project, would also be expected to reduce these impacts to a less-than-significant level for the Modified Development Scenario alternative.

j. Cultural and Paleontological Resources. Impacts to cultural and paleontological resources would be expected to be the same under the Modified Development Scenario alternative as under the proposed project. As under the proposed project, ground-disturbing activities associated with site preparation for specific development projects under the Modified Development Scenario alternative could result in significant impacts to previously unrecorded prehistoric and/or historical archaeological deposits, paleontological resources, and human remains. However, implementation of Mitigation Measures CULT-2, CULT-3, and CULT-4, which would reduce these impacts to a less-than-significant level for the proposed project, would also be expected to reduce these impacts to a less-than-significant level for the Modified Development Scenario alternative.

In addition, as under the proposed project, ground-disturbing activities associated with site preparation for specific development projects under the Modified Development Scenario alternative could affect a known archaeological site: site P-01-010526, a prehistoric/historical archaeological site consisting of the remains of a farmstead and a scatter of stone toolmaking debris. Implementation of Mitigation Measure CULT-1, which would reduce this impact to a less-than-significant level for the proposed project, would also be expected to reduce this impact to a less-than-significant level for the Modified Development Scenario alternative.

k. Visual Quality. The Modified Development Scenario alternative would be expected to result in similar impacts to the local visual environment as the proposed project. The Modified Development Scenario alternative, which would preserve the site as an Airport (as under the proposed project), would not be expected to result in significant impacts to scenic vistas, scenic resources, or existing views, nor would it be expected to substantially degrade the visual character of the project site or surrounding neighborhoods, because development that would occur under the Modified Development Scenario alternative would be expected to be consistent with General Plan policies and Zoning Code regulations intended to preserve views of hillsides surrounding the project site. Building heights would be required to be under the maximum allowed height established to preserve view corridors, as discussed in Section V.K, Visual Resources, and thus would preserve scenic views from I-580. However, as under the proposed project, the Modified Development Scenario alternative could result in additional sources of day and nighttime light and glare around the Airport; implementation of Mitigation Measure VIS-1a and VIS-1b, which would reduce this impact to a less-than-significant level for the proposed project, would also be expected to reduce this impact to a less-than-significant level for the Modified Development Scenario alternative.

3. Summary

As previously noted, the Modified Development scenario would achieve all of the objectives for the proposed project, although to a lesser extent than the proposed project (because it would not include a helicopter facility). This alternative would allow for slightly more development at a similar scale and with similar land uses as the proposed project, though uses on the site would be reconfigured. However, impacts would be expected to be similar to those under the proposed project, and recommended mitigation measures for the proposed project would reduce all impacts to a less-than-significant level.

C. REDUCED DEVELOPMENT ALTERNATIVE

1. Principal Characteristics

Under the Reduced Development alternative, as under the proposed project, the General Plan would be amended to reflect the desired maximum number of annual aircraft operations and the number of stored/parked aircraft at the Airport, and to remove all references to the 1975 Airport Master Plan. In addition, the project site would be rezoned from Education and Institution (E) and Planned Development (PD) to a new Airport (AIR) Zoning District. However, this alternative assumes that development on the project site would be reduced compared to the proposed project, particularly within the Airport Service (SE) Zoning Subdistrict. While the area that would comprise the AIR-SE Subdistrict would be the same as under the proposed project, the allowable square footage would be less. This reduction in development intensity would be achieved through the inclusion of buildout/development limits in the AIR Zoning Ordinance (see italicized text):

> 2-71-110 Lot development regulations.
> Any site or property zoned AIR (Airport) may be developed or utilized in accordance with applicable regulations as established in this Chapter. Lots within the AIR district shall be developed in conformance with the regulations set forth below, plus any additional regulations imposed as a condition of approval of a conditional use permit. The Airport's Minimum Standards for Commercial Aeronautical Activities establish the minimum facility size required for such activities. *Total development shall be limited to 1,365,480 square feet of building space.*

As shown in Figure VI-3, development under the Reduced Development alternative would include generally the same arrangement of land uses within the AIR-SE Subdistrict as the Modified Development Alternative, though at a lower density when compared to this alternative, as well as the proposed project. In addition, expected development under this alternative would total approximately 1,365,480 square feet, which would be less than the 1,625,382 square feet under the Modified Development Scenario, the 1,418,680 square feet under the proposed project, and the 1,923,680 square feet under the No Project alternative. The Reduced Development alternative would generate approximately 195 jobs, when compared to 262 jobs under the proposed project, 246 jobs under the Modified Development Scenario alternative, and 305 jobs under the No Project alternative. The Reduced Development Scenario alternative would achieve all the objectives for the proposed project, although these objectives would be achieved to a lesser extent. The development that would be permitted under this alternative may not accommodate the level of forecasted demand for hangars, fixed base operational facilities and opportunities for aeronautical activities and services as required by federal law and Tri-Valley and regional market demand.

2. Analysis of the Reduced Development Alternative

The potential impacts of the Reduced Development alternative are described below. This discussion emphasizes the comparison of this alternative's impacts to the proposed project's expected impacts.

a. Land Use. As under the proposed project, implementation of the Reduced Development alternative would result in the development of new facilities on the project site that are similar to existing uses on the site; land uses would also be similar to those that could be developed under the proposed project because the Airport (AIR) Zoning District would be in place, which lists allowed and conditional uses. New types of land uses would not be introduced and existing land uses would continue to be compatible with surrounding uses. Land uses changes that would occur as part of the project would not result in significant land use impacts, and the Reduced Development alternative would be expected to result in the same land use impacts as the proposed project.

b. Transportation, Circulation and Parking. Implementation of the Reduced Development alternative would not be expected to cause a substantial increase in traffic over existing conditions. This alternative would be expected to generate fewer trips than the proposed project (due to the approximately 62 fewer jobs that would be created); like the proposed project, these trips would not be expected to result in significant impacts associated with traffic. Similar to the proposed project, development occurring under the Reduced Development alternative would result in less-than-significant construction-period impacts to local circulation.

c. Air Quality and Global Climate Change. Implementation of the Reduced Development alternative would not be expected to cause a substantial increase in air pollution. As previously noted, the Reduced Development alternative would result in fewer trips than the proposed project; therefore, this alternative would generate less operational CO emissions when compared to the proposed project, and impacts related to these emissions would be less-than-significant. Similar to the proposed project, the Reduced Development alternative would not be expected to substantially increase odor concentrations, CO concentrations, or regional emissions that could exceed Bay Area Air Quality Management District (BAAQMD) standards, nor would it be expected to expose sensitive receptors to toxic emissions. As under the proposed project, development occurring under the Reduced Development alternative could result in significant construction-period air quality impacts; however,

AIRPORT BUILDING LIST

NO.	DESCRIPTION
1	TERMINAL/ADMINISTRATION BUILDING
2	FAA AIR TRAFFIC CONTROL TOWER
3	SIERRA ACADEMY
4	AHART AVIATION
5	FUEL FARM
6	FBO HANGAR AND/OR OFFICE
7	T-HANGARS
8	CORPORATE HANGARS
9	FUEL ISLAND
10	POWER VAULT
11	HELICOPTER PARKING
12	NONAVIATION COMMERCIAL BUILDINGS
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14	GOLF COURSE EQUIPMENT YARD
15	OFF-AIRPORT RESTAURANT
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18	LOCALIZER ANTENNA
19	GLIDE SLOPE ANTENNA
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22	PAPI (P4R)
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25	BARN/FARM BUILDING
26	ILS HOLD LINE
27	FIRE STATION
28	COMPASS ROSE
29	ROTATING BEACON
30	RUNWAY END INDICATOR LIGHTS (REILS)

AIRPORT DATA TABLE

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Magnetic Declination (08/20/2007) **	14°28'E Changing 0°5'W/Year	
Airport Reference Code (ARC)	B-II	No change
NPIAS Service Level	Reliever	No change
Taxiway Lighting	MITL	No change
Taxiway Marking	Centerline	No change
Airport and Terminal Navaids	Localizer (25R), Glideslope (25R), Rotating Beacon, GPS	No change

* Source: Western Region Climate Center (WRCC) Period from 1930-2005
** Source: U.S. National Geophysical Data Center (NGDC)

NON-STANDARD CONDITIONS

	Distance	Location	Existing	Future	Required	Disposition
A	Parallel Runway Separation	Runways 7L/R-25R/L	500 ft.	500 ft.	700 ft.	No change - operations not independent
B	Parallel Taxiway to Runway Distance	Taxiway A to Runway 7L-25R	250 ft.	250 ft.	300 ft.	No change - infrequent use by Design Group II airplanes (existing equals standard for Group I)
C	Hold Lines	North side of Runway 7L-25R	175 ft.	175 ft.	250 ft.	No change - location dictated by parallel taxiway location
D	Runway OFA Setback	Golf course fence at northwest corner of Runway 7L-25R	350 ft.	350 ft.	400 ft.	No change - fence not a significant factor
E	RPZ and Extended Runway OFA	Hangar east of Runway 25R approach end	350 ft.	450 ft.	-	Removal of building desirable, but not required by FAA standards
F	Approach Surface Penetration	Hangar on edge of Runway 25R Approach Zone	18:1	18:1	50:1	No change unless adverse affect on ILS documented
G	RSA Length	Approach end of Rwy 7L	540'	540'	600'	No change unless localizer is replaced or removed.

LEGEND

	EXISTING	FUTURE	ULTIMATE
AIRPORT PROPERTY BOUNDARY			
FENCE			
RUNWAY PROTECTION ZONE			
BUILDINGS			
AIRFIELD PAVEMENT			
ROAD			
DRIVEWAY/GATE			
CONTOURS			
ROFA/RPZ BOUNDARY			
ILS CRITICAL AREA			
LEASED PROPERTY			
FUTURE ISABEL AVE ROW-EASEMENT			

RUNWAY END COORDINATES

	Existing	Future
Runway 7L Lat./Long.	37°41'38.17"N 121°49'45.84"W	NO CHANGE
Runway 25R Lat./Long.	37°41'37.66"N 121°48'40.50"W	NO CHANGE
Runway 7R Lat./Long.	37°41'33.11"N 121°49'30.31"W	NO CHANGE
Runway 25L Lat./Long.	37°41'32.84"N 121°48'56.74"W	NO CHANGE

RUNWAY DATA TABLE

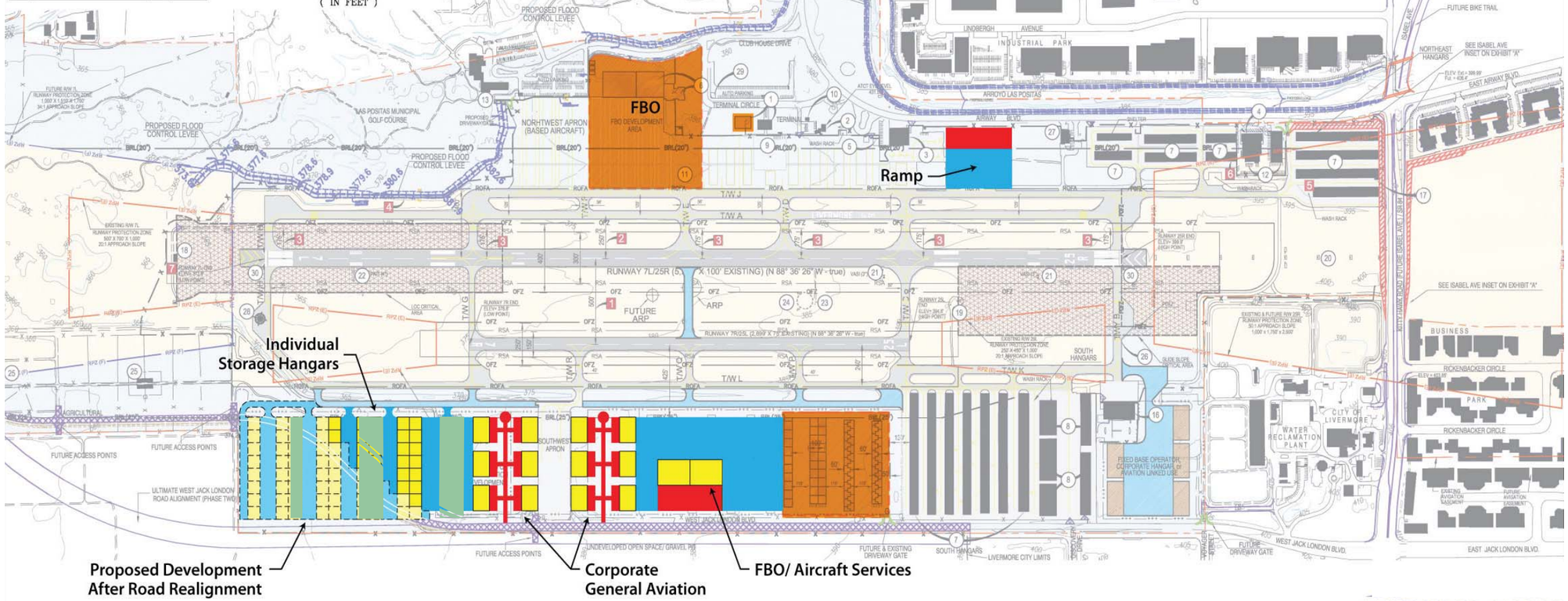
	Runway7L/25R(Ext/*Fut*)	Runway 7R/25L (Ext/*Fut*)
Approach Visibility Minimums	Visual (7L) > 3/4 mile (Fut) / 1/2 mile (25R)	Visual
FAR Part 77 Approach Slope (CAT A & B)	20:1 34:1(Fut) (7L) / 50:1 (25R)	20:1 (BOTH)
Runway Width & Length	5253' x 100'	2,699' x 75' (Ext)
Pavement Type	Asphalt	Asphalt
Pavement Design Strength (lbs.) - Ext / Fut		
Single Wheel Gear (SWG)	45,000	12,500
Dual Wheel Gear (DWG)	60,000	N/A
Dual Tandem Gear (DTG)	N/A	N/A
Runway Lighting	MIRL	NONE (Ext) / MIRL (Fut)
Runway Marking	Precision	Basic-Visual
Percent Gradient	0.51%	0.58%
Max. Grade Within Runway Length	0.65%	0.71%
Line of Sight Requirements Met	Yes	Yes
Percent Wind Coverage		
Visual Approach Aids	7L-PAPI(4 Box), REIL 25R - MALSR, REIL, VASI	7R - NONE 25L - PAPI (Fut)
Instrument Approach Aids	7L- GPS (Fut) / 25R- GS/LOC/GPS	None
Runway Airport Reference Code	B-II	B-I (Ext)
Critical Aircraft	Falcon 900B	Beech C99 (Ext)
Wingspan (Ft)	63'5"	45'10" (Ext)
Approach Speed (Kts)	115	98 (Ext)
Max. T.O. Weight (Lbs)	45,500 lbs.	12,500 lbs.
Critical Aircraft >60K lbs Length of Haul	N/A	N/A
Runway Safety Area (RSA) Width	300' (Ext & Fut)	120' (Ext & Fut)
RSA Length Beyond Runway Ends	600' (Ext & Fut)	240' (Ext & Fut)
Runway Object Free Area (ROFA) Width	800' (Ext & Fut)	400' (Ext & Fut)
ROFA Length Beyond Runway Ends	600' (Ext & Fut)	240' (Ext & Fut)
Runway Obstacle Free Zone (OFZ) Width	400' (Ext & Fut)	400' (Ext & Fut)
OFZ Length Beyond Runway End	200' (Ext & Fut)	200' (Ext & Fut)
Runway Elevations		
Existing Runway End	7L - 372.9' / 25R - 399.9'	7R - 378.8' / 25L - 394.6'
Future Runway End	NO CHANGE	NO CHANGE
Existing Touchdown Zone	7L - 386.0' / 25R - 399.9'	
Future Touchdown Zone	NO CHANGE	

NOTES:
1. RUNWAY ELEVATIONS PER NOAA OBSTRUCTION SURVEY CONDUCTED APRIL, 2003. (NAVD 88)
2. BUILDING ELEVATIONS PER AERIAL PLANIMETRIC SURVEY, SPRING OF 2007. BUILDING AND FLOOD CONTROL LEVEE ELEVATIONS ADJUSTED FROM NGVD 27 TO NAVD 88 USING AN INCREASE OF 2.64'.
3. TOPOGRAPHIC CONTOURS SHOWN IN NGVD 27 DATUM.
4. ALL HYDROMODIFICATION BASINS (HMBs) TO DRAIN IN 48 HOURS OR LESS.

14°28'E
N
DATE: 8/20/07
ANNUAL RATE OF CHANGE: 0°5'W
SOURCE: NGDC

GRAPHIC SCALE
300 0 300 600
(IN FEET)

LEGEND
- Planned Facilities
- Future Structures
- Future Airfield Pavement
- Future Roads/Parking
- Open Space



LSA

FIGURE VI-3

N
0 300 600
FEET

Livermore Municipal Airport General Plan Amendment and Rezoning Project EIR
Reduced Development Alternative

SOURCE: COFFMAN ASSOCIATES
I:\CLV0802 Livermore Airport\Figures\Fig_VI3-11x17.ai (8/12/09)

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implementation of Mitigation Measure AIR-1, which would reduce this impact for the proposed project to a less-than-significant level, would also be expected to reduce this impact to a less-than-significant level under the Reduced Development alternative. Because future flight operations would not be expected to change compared to the proposed project, the Modified Development Scenario alternative would be associated with similar aviation-related pollutant emissions as the proposed project. In addition, global climate change impacts would likely be almost identical to those associated with the proposed project.

d. Noise. As previously noted, the Reduced Development alternative would be expected to result in fewer trips than the proposed project; therefore, traffic-related noise levels are expected to be reduced when compared to the less-than-significant impacts identified for proposed project. Because future flight operations would not be expected to change compared to the proposed project, the Reduced Development Scenario alternative would be expected to produce similar aviation-related noise as the proposed project. As under the project, flight operations under the Reduced Development alternative would result in an increased exposure of residential uses to exterior noise levels in excess of 60 dBA CNEL. Implementation of Mitigation Measure NOISE-1 would reduce this impact to a less-than-significant level.

e. Hazards and Hazardous Materials. As under the proposed project, development that could occur on the site under the Reduced Development alternative could result in the accidental release of hazardous materials, and could result in exposure to hazardous materials in soil and building materials; however, implementation of Mitigation Measures HAZ-1 and HAZ-2, which would reduce these impacts to a less-than-significant level under the proposed project, would also be expected to reduce these impacts to a less-than-significant level under the Reduced Development alternative. Hazards and hazardous materials impacts under the Reduced Development alternative would be expected to be the same as under the proposed project.

f. Hydrology and Water Quality. Similar to the proposed project, development that could occur under the Reduced Development alternative could degrade water quality, deplete groundwater resources and reduce groundwater recharge, and increase erosion and flooding due to alteration of drainage patterns and increases in impervious surfaces. As previously noted, this alternative would allow for less development (a total of approximately 1,365,480 square feet) than the proposed project, and could therefore result in less impervious surfaces coverage on the project site. Implementation of Mitigation Measures HYD-1a, HYD-1b, HYD-1c, HYD-2, and HYD-3, which would reduce hydrology and water quality impacts for the proposed project to a less-than-significant level, would also be expected to reduce the Reduced Development alternative's hydrology and water quality impacts to a less-than-significant level.

g. Geology, Soils and Seismicity. The Reduced Development alternative's geology, soils and seismicity impacts would be expected to be the same as those for the proposed project. As under the proposed project, development on the project site that could occur under the Reduced Development alternative could be adversely affected by seismically-induced ground shaking, as well as expansive and/or corrosive soils. Implementation of Mitigation Measures GEO-1 and GEO-2 would be expected to reduce these impacts to a less-than-significant level under the proposed project and also this alternative.

h. Public Services, Utilities and Recreation. Similar to the proposed project, development that could occur under the Reduced Development alternative would increase the demand for the following public services: police services; fire and emergency medical services; and parks and recreational facilities. The decreased capacity for development under this alternative, when compared to the proposed project, could result in a slightly lower demand for public services. As under the project, this alternative would not be expected to result in adverse physical impacts associated with maintenance of service standards. Therefore, the Reduced Density alternative, like the proposed project, would result in less-than-significant impacts on police services, fire and emergency medical services, and parks and recreational facilities.

Similar to the proposed project, development that could occur under the Reduced Development alternative could contribute to flooding at Arroyo Las Positas during storm events. As previously noted, this alternative would allow less development than under the proposed project, and could therefore result in less impervious surfaces on the project site. Implementation of Mitigation Measure UTIL-1 (which requires implementation of Mitigation Measure HYD-1c), which would reduce contributions to flooding at Arroyo Las Positas during storm events to a less-than-significant level under the proposed project, would also be expected to reduce this impact to a less-than-significant level under the Reduced Development alternative.

As under the proposed project, the Reduced Development alternative would be expected to result in less-than-significant impacts to water services (supply, treatment, and distribution) and wastewater services (collection, treatment, and disposal). The City has sufficient water and wastewater conveyance, treatment, and disposal capacity to serve projected growth under General Plan buildout; as under the proposed project, development that could occur on the site under this alternative would not be expected to exceed planned development for the site taken into account when the City prepared demand forecasts for water and wastewater services for General Plan buildout. Therefore, the Reduced Development alternative would be expected to result in less-than-significant impacts to utilities.

i. Biological Resources. The Reduced Development alternative would be expected to have similar biological resources impacts as the proposed project. As under the proposed project, construction that could occur on the project site under the Reduced Development alternative could result in the removal or disturbance of habitat for western burrowing owls, occupied bird nests, and occupied bat roosts. However, implementation of Mitigation Measures BIO-1, BIO-2, and BIO-3, which would reduce these impacts to a less-than-significant level for the proposed project, would also be expected to reduce these impacts to a less-than-significant level for the Reduced Development alternative.

j. Cultural and Paleontological Resources. Impacts to cultural and paleontological resources would be expected to be the same under the Reduced Development alternative as under the proposed project. As under the proposed project, ground-disturbing activities associated with site preparation for specific development projects under the Reduced Development alternative could result in significant impacts to previously unrecorded prehistoric and/or historical archaeological deposits, paleontological resources, and human remains. However, implementation of Mitigation Measures CULT-2, CULT-3, and CULT-4, which would reduce these impacts to a less-than-significant level for the proposed project, would also be expected to reduce these impacts to a less-than-significant level for the Reduced Development alternative.

In addition, as under the proposed project, ground-disturbing activities associated with site preparation for specific development projects under the Reduced Development alternative could affect a known archaeological site: site P-01-010526, a prehistoric/historical archaeological site consisting of the remains of a farmstead and a scatter of stone toolmaking debris. Implementation of Mitigation Measure CULT-1, which would reduce this impact to a less-than-significant level for the proposed project, would also be expected to reduce this impact to a less-than-significant level for the Reduced Development alternative.

k. Visual Quality. The Reduced Development alternative would be expected to result in similar impacts to the local visual environment as the proposed project. The Reduced Development alternative, which would preserve the site as an Airport (as under the proposed project), would not be expected to result in significant impacts to scenic vistas, scenic resources, or existing views, nor would it be expected to substantially degrade the visual character of the project site or surrounding neighborhoods, because development that would occur under the Reduced Development alternative would be expected to be consistent with General Plan policies and Zoning Code regulations intended to preserve views of hillsides surrounding the project site. Building heights would be required to be under the maximum allowed height established to preserve view corridors, as discussed in Section V.K, Visual Resources, and thus would preserve scenic views from I-580. However, as would occur under the proposed project, the Reduced Development alternative could result in additional sources of day and nighttime light and glare around the Airport; implementation of Mitigation Measure VIS-1a and VIS-1b, which would reduce this impact to a less-than-significant level for the proposed project, would also be expected to reduce this impact to a less-than-significant level for the Reduced Development alternative.

3. Summary

As previously noted, the Reduced Development scenario would achieve all of the objectives for the proposed project, although to a lesser extent. The development that would be permitted under this alternative may not accommodate the level of forecasted demand for hangars, fixed base operational facilities and opportunities for aeronautical activities and services as required by federal law and Tri-Valley and regional market demand.

This alternative would allow for less development at a similar scale and with similar land uses as the proposed project, though uses on the site would be reconfigured (similar to the Modified Development Scenario alternative). However, impacts would be expected to be similar to those under the proposed project, and recommended mitigation measures for the proposed project would reduce all impacts to a less-than-significant level.

D. ALTERNATIVES CONSIDERED BUT ULTIMATELY REJECTED

No off-site alternative to the proposed project was considered because the Airport is already currently established in its existing location. In addition, as discussed in Chapter III, Project Description, future aviation operations would change independent of the project because aviation demand is a function of economic and demographic factors rather than the construction of new Airport facilities.[2] None of the project alternatives would result in changes in runway configurations.

[2] Coffman Associates, Inc., 2008. *"Unconstrained" Forecasts; Airport Rezoning Project, Livermore Municipal Airport*. October 10.

Upon accepting federal grants to construct the Airport, the City assured the federal government under Title 49, United States Code, that it would agree to several grant assurances, including making the Airport available to the public on reasonable terms without unjust discrimination to all types, kind and classes of aeronautical activities, including commercial aeronautical activities offering services to the public at the airport.[3] The assurances permit the Airport to "prohibit or limit any given type, kind or class of aeronautical use of the airport," but only "if such action is necessary for the safe operation of the airport or necessary to serve the civil aviation needs of the public." There is currently no safety issue or civil aviation need that would support local restriction of aeronautical activities at the Airport. The federal government could also permit local limitations on aeronautical activities through a federal procedure based on noise impacts. However, the City does not qualify for use of that procedure as its noise impacts do not exceed federal limitations. Therefore, the Airport is obliged to accommodate reasonable demand for aviation at the Airport, and alternatives involving limits to future aviation operations were rejected.

In particular, a "no development alternative" (or other substantially reduced development alternative) was rejected from detailed consideration because such an alternative would not allow the Airport to make reasonable accommodation to meet expected aviation demand.

In addition, a no development alternative would not meet the following project objectives:

- Create a zoning district, consistent with the underlying General Plan land use designation, which specifically addresses the unique uses and development limitations for the Airport by identifying permitted and conditionally permitted uses.
- Provide areas to accommodate the level of forecasted demand for hangars, fixed base operational facilities and opportunities for aeronautical activities and services as required by federal law and Tri-Valley and regional market demand.
- Establish procedures for City review and evaluation of development proposals that take into consideration both aviation needs and community concerns.
- Provide opportunities for existing aeronautical facilities to utilize space more efficiently by optimizing leasehold configurations.
- Preserve the Airport's role as a self-sufficient enterprise that provides economic benefits to the City, the Livermore Valley Joint School District, the County, including various County special districts, and the entire Tri-Valley economy, and further enhances the general economy by providing opportunities for aeronautical activities.

E. ENVIRONMENTALLY SUPERIOR ALTERNATIVE

CEQA requires the identification of the environmentally superior alternative in an EIR, which is in this case the Reduced Development alternative. As previously discussed and as shown in Table VI-2, this alternative would have virtually the same impacts as the proposed project, though some impacts would be lessened; these impacts include demand for utilities and public, impacts on local circulation,

[3] Livermore, City of, 2009. Livermore Municipal Airport Website: www.ci.livermore.ca.us/airport/faqs.html. June 30.

and traffic-related air quality/global climate change and noise impacts. However, it should be noted that the environmental impacts of the project are very similar those of the environmentally superior alternative, and the Reduced Density alternative would achieve the project objectives to a lesser extent than the proposed project.

Table VI-2: Comparison of Project Alternatives

	Proposed Project	No Project Alternative	Modified Development Scenario Alternative	Reduced Development Alternative
Meets objectives for the proposed project?	Yes	Would not meet most objectives.	Yes, but to a lesser extent than the proposed project.	Yes, but to a lesser extent than the proposed project.
Impacts (Level of Significance after mitigation)[a]				
Impact AIR-1: Demolition and construction period activities associated with specific development projects could generate significant dust, exhaust, and organic emissions.	LTS	LTS	LTS	LTS
Impact NOISE-1: In the cumulative condition, flight operations would result in an increased exposure of sensitive receptors to exterior noise levels in excess of 60 dBA CNEL.	LTS	LTS	LTS	LTS
Impact HYD-1: Construction of specific development projects that could occur under buildout of the proposed project could degrade water quality due to erosion and sedimentation, inadvertent hazardous materials releases, and groundwater discharges during construction and operation activities.	LTS	LTS	LTS	LTS
Impact HYD-2: Construction of specific development projects that could occur under buildout of the proposed project could deplete groundwater resources or reduce groundwater recharge.	LTS	LTS	LTS	LTS
Impact HYD-3: Construction of specific development projects that could occur under buildout of the proposed project could increase erosion and flooding due to alteration of drainage patterns or an increase in impervious surfaces.	LTS	LTS	LTS	LTS
Impact GEO-1: Seismically-induced ground shaking and liquefaction in the area of the proposed project could result in injuries, fatalities, and/or property damage.	LTS	LTS	LTS	LTS
Impact GEO-2: Structures or improvements could be adversely affected by expansive and/or corrosive soils.	LTS	LTS	LTS	LTS
Impact HAZ-1: Construction of specific development projects that could occur under buildout of the proposed project could result in the accidental release of hazardous materials.	LTS	LTS	LTS	LTS
Impact HAZ-2: Construction of specific development projects that could occur under buildout of the proposed project could result in exposure to hazardous materials in soil and building materials.	LTS	LTS	LTS	LTS

Table VI-2 *Continued*

	Proposed Project	No Project Alternative	Modified Development Scenario Alternative	Reduced Development Alternative
Impact UTIL-1: Construction of specific development projects that could occur under buildout of the proposed project would increase impervious surfaces on the project site, and contribute to flooding at Arroyo Las Positas during storm events.	LTS	LTS	LTS	LTS
Impact BIO-1: Ground-disturbing activities associated with development of specific projects that could occur under buildout of the proposed project could result in the removal or disturbance of occupied western burrowing owl burrows.	LTS	LTS	LTS	LTS
Impact BIO-2: Ground-disturbing activities associated with development of specific projects that could occur under buildout of the proposed project could result in the removal or disturbance of occupied bird nests.	LTS	LTS	LTS	LTS
Impact BIO-3: Ground-disturbing activities associated with development of specific projects that could occur under buildout of the proposed project could result in the removal or disturbance of occupied bat roosts.	LTS	LTS	LTS	LTS
Impact CULT-1: Ground-disturbing activities associated with site preparation for specific development projects that could occur under buildout of the proposed project could affect archaeological site P-01-010526.	LTS	LTS	LTS	LTS
Impact CULT-2: Ground-disturbing activities associated with site preparation for specific development projects that could occur under buildout of the proposed project could affect previously unrecorded prehistoric and/or historical archaeological deposits.	LTS	LTS	LTS	LTS
Impact CULT-3: Ground-disturbing activities associated with site preparation for specific development projects that could occur under buildout of the proposed project could affect paleontological resources.	LTS	LTS	LTS	LTS
Impact CULT-4: Ground-disturbing activities associated with site preparation for specific development projects that could occur under buildout of the proposed project could disturb human remains, including those interred outside of formal cemeteries.	LTS	LTS	LTS	LTS

Table VI-2 *Continued*

	Proposed Project	No Project Alternative	Modified Development Scenario Alternative	Reduced Development Alternative
Impact AES-1: Development of specific projects under buildout of the proposed project could create additional sources of day and nighttime light and glare around the Airport.	LTS	LTS	LTS	LTS

[a] Levels of significance are categorized as follows: SU = Significant and Unavoidable and LTS = Less-than-Significant after mitigation.
Source: LSA Associates, Inc., 2009

VII. CEQA-REQUIRED ASSESSMENT CONCLUSIONS

As required by CEQA, this chapter discusses the following types of impacts that could result from implementation of the proposed project: growth-inducing impacts; significant irreversible changes; unavoidable significant effects; effects found not to be significant; and cumulative impacts.

A. GROWTH INDUCEMENT

A project is considered growth-inducing if it would directly or indirectly foster substantial economic or population growth, or the construction of additional housing.[1] Examples of projects likely to have significant growth-inducing impacts include extensions or expansions of infrastructure systems beyond what is needed to serve project-specific demand, and development of new residential subdivisions or industrial parks in areas that are currently only sparsely developed or are undeveloped.

Implementation of the proposed project, which includes amending the General Plan and rezoning the project site – which is intended to clarify the nature and extent of development at the Airport – would not result in direct population growth because the project would not result in the development of new housing units. As described in Chapter III, Project Description, development that could occur on the project site as a result of the project could generate 127 new jobs on the site. The creation of these new jobs could cause new employees to move to the City, thereby indirectly inducing population growth. If all 127 new employees lived outside the City and relocated to Livermore – a highly unlikely scenario – this increase would represent less than 2 tenths of a percent of the City's 2009 population and 1 tenth of a percent of the projected 2030 population. Indirect population growth associated with the proposed project would not be considered to be substantial in the context of the population growth projected to occur in the City. As such, the proposed project would not induce substantial growth.

In addition, because the project would restrict development on the site to Airport-related uses, it would reduce the development potential of the site. Under the No Project conditions (described in Chapter VI, Alternatives), approximately 1,923,680 square feet of building space would likely be developed on the site. However, under the proposed project, only approximately 1,418,680 square feet of building space would likely be developed on the site.[2] Therefore, the proposed project would limit the development potential of the site and reduce the potential for future growth compared to the projected growth under the existing development regulations.

Lastly, the development that could occur as a result of the proposed project would occur within the project site, which is already developed with Airport-related facilities. As such, the project would not require the extension of utilities or roads into undeveloped areas, and would not directly or indirectly

[1] *CEQA Guidelines*, 2007. §15126.2(d).

[2] Coffman Associates, Inc., 2008. *"Unconstrained" Forecasts; Airport Rezoning Project, Livermore Municipal Airport*. October 10.

lead to the development of greenfield sites; the open space area directly west of the project site would remain undeveloped because it is designated as a "Runway Protection Zone" on the Airport Layout Plan.[3] The open space designations of land to the north, south, and west of the project site – specifically, Parks, Trail Ways, Recreation Corridors, and Protected Areas (OSP) to the north, OSP/Sand and Gravel (OSP/S&G) to the south, and Limited Agriculture (LDAG) to the west – are unlikely to change in the near future such that increased development would be permitted adjacent to the project site. Therefore, the growth that would occur as a result of project implementation would not be considered substantial or adverse.

B. SIGNIFICANT IRREVERSIBLE CHANGES

An EIR must identify any significant irreversible environmental changes that could result from implementation of a proposed project. These may include current or future uses of non-renewable resources, and secondary or growth-inducing impacts that commit future generations to similar uses. CEQA dictates that irretrievable commitments of resources should be evaluated to assure that such current consumption is justified.[4] The *CEQA Guidelines* describe three distinct categories of significant irreversible changes: 1) changes in land use that would commit future generations; 2) irreversible changes from environmental actions; and 3) consumption of non-renewable resources.

1. Changes in Land Use Which Would Commit Future Generations

The proposed project, which is intended to clarify the nature and extent of development at the Airport, would not introduce new land uses to the project site. Development that could occur on the site under the project would be consistent and complementary to land uses already present on the site, including hangars, office uses, and fixed-base operations (FBOs). The proposed AIR Zoning District would allow for a range of Airport-related uses to be developed on the site; therefore, the project would not result in changes in land use that would commit future generations to a poor use of resources.

2. Irreversible Changes From Environmental Actions

No significant irreversible environmental damage, such as what could occur as a result of an accidental spill or explosion of hazardous materials, is anticipated due to activities associated with implementation of the project. Compliance with federal, State and local regulations, and the mitigation measures identified in Section V.G, Hazards and Hazardous Materials, would reduce to a less-than-significant level the possibility that hazardous substances within the project site would cause significant environmental damage.

Beyond the potential irreversible effects of accidental hazardous substances releases, there are no other design or operational features of the proposed project, or development that could occur on the site under the project, that would lead to irreversible changes on the site.

[3] Livermore, City of, 2009. *Airport Layout Plan*.

[4] *CEQA Guidelines*, 2007. §15126.2(c).

3. Consumption of Nonrenewable Resources

Consumption of nonrenewable resources includes conversion of agricultural lands, loss of access to mining reserves, and use of non-renewable energy sources. The project site is located at the edge of the urbanized area of Livermore. No agricultural lands exist on the project site; therefore none would be converted to non-agricultural uses. In addition, the site does not contain known mineral resources and does not serve as a mining reserve. Open, graded land owned by the Airport west of the project site is zoned Open Space-Agriculture (OS-A) and its General Plan land use designation is Limited Agriculture (LDAG). The area directly west of the project site is undeveloped because it is designated as a "Runway Protection Zone" on the Airport Layout Plan.[5] In addition, gravel quarries are located south and southwest of the site. However, as previously noted, development that could occur as a result of the project would be within the existing envelope of developed areas on the project site; the project would not affect access to mining reserves south of the site, nor would it prevent land west of the site from being used for agricultural purposes in the future.

Development that could occur as a result of the project would increase the use of electricity, natural gas, and possibly other forms of energy. However, the volume of such consumption would be typical for this type of Airport-related facilities, and would not be considered excessive or significant. With compliance with State Title 24 energy efficiency standards, the proposed project would not result in a significant increase in the consumption of nonrenewable resources, including energy supplies.

C. SIGNIFICANT UNAVOIDABLE IMPACTS

Per the analysis of environmental topics contained in Chapter V, the proposed project would not result in significant and unavoidable impacts.

D. EFFECTS FOUND NOT TO BE SIGNIFICANT

The City released a Notice of Preparation (NOP) on October 28, 2008, and an amended NOP on May 14, 2009 to solicit comments from the public and agencies about the scope of this EIR. Written comments received in response to both NOPs (included in Appendix A of this document) were considered in the preparation of the final scope for this document and evaluation of the proposed project. The environmental topics analyzed in Chapter V, Setting, Impacts and Mitigation Measures, represent those topics that generated the greatest potential controversy and expectation of adverse impacts. The following topics were considered but not addressed in detail in this EIR because it was determined that these topics would not be associated with significant environmental impacts: agricultural resources, population and housing, schools and libraries, and solid waste. These topics are each briefly discussed below.

1. Agricultural Resources

The project site is developed with runways, hangars, and Airport services buildings and associated facilities. As previously noted, open, graded land owned by the Airport west of the project site is zoned Open Space-Agriculture (OS-A) and its General Plan land use designation is Limited

[5] Livermore, City of, 2009. op. cit.

Agriculture (LDAG), and the area directly west of the project site is undeveloped because it is designated as a "Runway Protection Zone" on the Airport Layout Plan.[6] Development that could occur as a result of the project would be within the existing envelope of developed areas on the project site; the project would not convert farmland to urbanized uses, nor would it prevent land west of the site from being used for agricultural purposes in the future. Therefore, the project would not result in impacts to agricultural resources.

2. Population and Housing

The proposed project is intended to clarify the nature and extent of development at the Airport. The project does not include the construction of housing, and would therefore not directly generate residential population on the site. As previously discussed in this chapter, indirect population growth that could occur as a result of employment growth related to the project would not be substantial in the context of the City's current and projected future population growth. Therefore, the project would not have significant population and housing impacts.

3. Schools and Libraries

As previously noted, the project does not include the construction of housing, and would therefore not directly generate new school-age children that would attend schools in Livermore. Possible indirect population growth in Livermore that could occur as a result of employment growth related to the project would not be substantial in the context of the City's current and projected future population growth, and would result in a small number of new school-age children. A small number of new students would not increase enrollment at local public schools such that new school facilities would be required. In addition, increased demand for libraries resulting from indirect population growth in Livermore associated with the project would be small, and would not require the construction of new libraries. Therefore, the project would not have significant impacts on schools and libraries.

4. Solid Waste

The City has entered into a franchise agreement with Waste Management of Alameda County for the exclusive right to collect, transport, process, and dispose of solid waste, recyclable materials, and compostable materials; these services are currently available at the project site. Waste Management transports solid waste from Livermore to the Vasco Road Sanitary Landfill for disposal. The Vasco Road Sanitary Landfill is designated as a Class III disposal site that permits the disposal of municipal solid waste, with separate disposal areas required for asbestos and auto-shredder waste. The landfill has a permitted capacity of 31,942,205 cubic yards, and has a remaining capacity of 9,870,704 cubic yards (30.9 percent).[7] The landfill has a daily permitted capacity of 2,250 tons and is estimated to have capacity to accept solid waste until the year 2015.[8] Solid waste from the City is also transported to the Altamont Landfill and Resource Recovery Facility in Livermore, which is projected to have

[6] Ibid.

[7] California Integrated Waste Management Board, 2009. *Active Landfills Profile for Vasco Road Sanitary Landfill*. Website: www.ciwmb.ca.gov/Profiles/Facility/Landfill/Default.asp?VW=JSELECT&MTYPE=Landfill. July 6.

[8] Ibid.

capacity until 2029,[9] as well as other landfills around the state. These landfills would accept waste from the project site after the Vasco Road Sanitary Landfill is expected to run out of capacity in 2015.

Development that could occur as a result of the proposed project would increase solid waste generation on the project site compared to baseline conditions. However, as shown in Table III-3 in the Project Description, the vast majority of new uses associated with buildout of the project would be hangars and FBOs, which would not be expected to generate substantial amounts of solid waste. As described in Section V.H, Public Services and Utilities, development that could occur under the project is projected to increase office uses on the site by 32,489 square feet; the solid waste generated by this amount of new office uses could be accommodated by the Vasco Road Sanitary Landfill, which has a remaining capacity of 9,870,704 cubic yards. Therefore, the project would not result in significant impacts related to solid waste.

E. CUMULATIVE IMPACTS

CEQA defines cumulative impacts as "two or more individual effects which, when considered together, are considerable, or which can compound or increase other environmental impacts." Section 15130 of the *CEQA Guidelines* requires that an EIR evaluate potential environmental impacts when the project's incremental effect is cumulatively considerable. "Cumulatively considerable" means that the incremental effects of an individual project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects. These impacts can result from a combination of the proposed project together with other projects causing related impacts. The cumulative impact from several projects is the change in the environment which results from the incremental impact of the project when added to other closely related past, present, and reasonably foreseeable probable future projects.

1. Methodology

When evaluating cumulative impacts, CEQA allows the use of either a list of past, present, and probable future projects, including projects outside the control of the lead agency, or a summary of projections in an adopted planning document, or a thoughtful combination of the two. Cumulative conditions in this EIR are assumed to reflect buildout of the City of Livermore General Plan, as well as growth in surrounding jurisdictions, such as the cities of Dublin and Pleasanton.

2. Cumulative Effects of the Proposed Project

Potentially significant cumulative impacts to which the proposed project may contribute are discussed below for each topic evaluated in Chapter V, Setting, Impacts, and Mitigation Measures. The project's consistency with applicable plans and policies, including the City of Livermore General Plan, Livermore Planning and Zoning Code, Livermore Airport Master Plan, Alameda County Airport Land Use Policy Plan, California Airport Land Use Planning Handbook, and Federal Aviation Administration grant assurances would be the same under cumulative conditions as discussed in Chapter IV, Consistency with Plans and Policies.

[9] California Integrated Waste Management Board, 2009. *Active Landfills Profile for Altamont Landfill & Resource Recovery Facility*. Website: http://www.ciwmb.ca.gov/Profiles/Facility/Landfill/LFProfile1.asp?COID=1&FACID=01-AA-0009. August 12..

a. Land Use. For cumulative impacts, land use compatibility can be discussed in terms of short-term and long-term impacts. Short-term impacts occur during construction of specific development projects and primarily affect existing sensitive land uses, such as hospitals, schools, and residential development near the construction site. These impacts include the noise and dust generated by grading and excavation activities and the use of heavy machinery, and the use of hazardous materials such as solvents. These specific impacts are discussed in greater detail in Sections V.G, Hazards and Hazardous Materials; V.F, Noise; and V.E, Air Quality and Global Climate Change, of this EIR.

Locating incompatible land uses within close proximity of one another also creates the potential for long-term conflicts between various types of land uses. The proposed project, which is intended to clarify the nature and extent of development at the Airport, would not introduce new land uses to the project site. As noted in Section V.A, Land Use, development that could occur as a result of the project would not result in land use conflicts. As such, the project would not result in long-term land use impacts in conjunction with other planned development in the vicinity of the site. Projects included in the cumulative analysis would all be required to conform to General Plan policies and to applicable design guidelines that are intended to minimize land use conflicts, including policies intended to prevent encroachment of incompatible uses near the Airport (see discussion in Chapter IV, Consistency with Plans and Policies). Therefore, the project would not result in cumulatively considerable land use conflicts.

b. Hydrology and Water Quality. Development that could occur as a result of the proposed project, in combination with other development in the vicinity of the site, could degrade water quality, deplete groundwater resources and reduce groundwater recharge, and increase erosion and flooding due to alteration of drainage patterns and increases in impervious surfaces. As discussed in Section V.B, Hydrology and Water Quality, implementation of Mitigation Measures, HYD-1a, HYD-1b, HYD-1c, HYD-2, and HYD-3 would reduce hydrology and water quality impacts associated with implementation of the proposed project to a less-than-significant level. The El Charro Specific Plan, which covers an area directly northwest of the Airport, also includes water quality and flood control design improvements, including bioswales, perforated curbs, and permeable paved surfaces. Project-specific mitigation measures for other development projects in the vicinity of the site would be incorporated into the design and operation of these projects so as to reduce hydrology and water quality impacts to a less-than-significant level. New development in the vicinity of the project site would be required to comply with the City of Livermore Municipal Code and the Countywide NPDES Permit (Water Quality Order No. R2-2003-0021). In addition, the City requires all new development and redevelopment projects to consider implementing infiltration-based site design features. No significant unavoidable impacts related to hydrology and water quality would result from development that could result from the proposed project, and the project would not make a significant contribution to any cumulative hydrology and water quality impacts.

c. Geology, Soils and Seismicity. Development on the project site that could occur under the proposed project could be adversely affected by seismically-induced ground shaking, as well as expansive and/or corrosive soils. Implementation of Mitigation Measures GEO-1 and GEO-2 would reduce these impacts to a less-than-significant level. Implementation of the proposed project, in conjunction with other cumulative development, would increase the number of individuals that could be exposed to regional seismic risks in the seismically active San Francisco Bay Area. In addition, new structures could be built on areas of man-made fill, unstable soil, expansive soil, and corrosive soil. However, these impacts are generally confined to specific development sites and are not

expected to be significant once incorporation of standard geotechnical mitigation measures are implemented. Therefore, the proposed project would not result in cumulatively considerable geology, soils, or seismicity impacts.

d. Transportation, Circulation and Parking. Please refer to Section IV.D, Transportation, Circulation and Parking, for a discussion of the cumulative effects of the project on transportation facilities. As described in this section, development occurring as a result of the proposed project would not result in significant cumulative impacts associated with transportation, circulation and parking..

e. Air Quality and Global Climate Change. Please refer to Section IV.E, Air Quality and Global Climate Change, for a more detailed discussion of the project's anticipated less-than-significant cumulative effects on air quality. As described in the air quality section, development occurring as a result of the proposed project could result in significant construction-period air quality impacts; however, implementation of Mitigation Measure AIR-1 would reduce this impact to a less-than-significant level. Therefore, the project would not make a significant contribution to construction period emissions, which would also be generated by other development projects in the vicinity of the site. In addition, the project would not make a significant contribution to a cumulatively considerable operational air quality impact, including global climate change impacts, such as would result from increased vehicle trips generated by project development or aviation activity.

f. Noise. Please refer to Section IV.F, Noise, for a discussion of the cumulative effects on noise. As described in the noise section, increases in noise levels associated with traffic would be less than significant. Cumulative increases in aviation noise levels (i.e., increased exposure of residential uses to exterior noise levels in excess of 60 dBA CNEL) would be significant before mitigation, but less than significant after implementation of Mitigation Measure NOISE-1.

g. Hazards and Hazardous Materials. As discussed in Section V.G, Hazards and Hazardous Materials, development that could occur on the site as a result of the proposed project could result in the accidental release of hazardous materials, and could result in exposure to hazardous materials in soil and building materials; however, implementation of Mitigation Measures HAZ-1 and HAZ-2 would reduce these impacts to a less-than-significant level. Cumulative projects within the vicinity of the site could also result in potentially significant impacts related to exposure to hazardous materials; however, implementation of standard mitigation measures regulating construction practices and requirements for individual site assessments and abatement activities, where necessary, as well as compliance with federal, State, and local requirements for managing hazardous materials, would ensure that hazardous materials releases occurring during construction periods – or project operation – would not combine to create a cumulatively considerable effect.

h. Public Services and Utilities. The proposed project would increase the demand for the following public services: police services; fire and emergency medical services; and parks and recreational facilities. As discussed in Section V.H, Public Services and Utilities, the proposed project would result in less-than-significant impacts upon each of these services. These services are subject to annual budgeting processes during which service priorities are established and service levels monitored, allowing for adjustments where needed. No cumulative impacts to the above-mentioned services are anticipated that would result in adverse physical impacts associated with the maintenance of service standards.

The project could result in a potentially significant impact to stormwater infrastructure (i.e., flooding at Arroyo Las Positas, directly north of the project site); however, implementation of Mitigation Measure UTIL-1 would reduce this impact to a less-than-significant level. The El Charro Specific Plan, which covers an area directly northwest of the Airport, also includes water quality and flood control design improvements, including bioswales, perforated curbs, and permeable paved surfaces. Incorporation of similar mitigation would ensure that development in the vicinity of the site would not result in cumulative impacts to local stormwater infrastructure. In addition, the project would result in less-than-significant impacts to water services (supply, treatment, and distribution) and wastewater services (collection, treatment, and disposal). The City has sufficient water and wastewater conveyance, treatment, and disposal capacity to serve projected growth under General Plan buildout (which includes buildout of the Airport lands under the existing 1975 Master Plan). Therefore, the project would not result in a cumulatively considerable impact to utilities.

i. Biological Resources. As discussed in Section V.I, Biological Resources, construction that could occur on the project site as a result of the proposed project could result in the removal or disturbance of habitat for western burrowing owls, occupied bird nests, and occupied bat roots; however, implementation of Mitigation Measures BIO-1, BIO-2, and BIO-3 would reduce these impacts to a less-than-significant level. Other development projects in the vicinity of the project site could also result in impacts to nesting birds and bat roots; however, implementation of pre-construction surveys and incorporation of other precautionary measures similar to those identified in the above mitigation measures would help reduce these impacts to a less-than-significant level. Therefore, the proposed project, when combined with other development projects in the vicinity of the project site, would not result in cumulatively considerable impacts to biological resources site (assuming these projects incorporate similar mitigation measures as the ones identified above).

j. Cultural and Paleontological Resources. As discussed in Section V.J, Cultural and Paleontological Resources, ground-disturbing activities associated with site preparation for specific development projects could result in significant impacts to previously unrecorded prehistoric and/or historical archaeological deposits, paleontological resources, and human remains. However, implementation of Mitigation Measures CULT-2, CULT-3, and CULT-4 would reduce these impacts to a less-than-significant level, and would ensure that these impacts would not contribute to a cumulatively considerable impact when combined with other planned development in the vicinity of the project site (assuming these projects incorporate similar mitigation measures as the ones identified above).

In addition, ground-disturbing activities associated with site preparation for specific development projects could affect a known archaeological site: site P-01-010526, a prehistoric/historical archaeological site consisting of the remains of a farmstead and a scatter of stone toolmaking debris. Implementation of Mitigation Measure CULT-1 would reduce this impact to a less-than-significant level. This impact would not contribute to a cumulatively considerable effect for the following reasons: 1) P-01-010526 appears to be a common archaeological site type that is well represented by many other similar examples in the Livermore Valley; and 2) implementation of Mitigation Measure CULT-1 would ensure that any substantial adverse change in the significance of P-01-010526 (should it qualify as a historical or unique archaeological resource) would be offset through the recovery of its scientifically consequential information, thereby rendering the project's contribution less than

significant. Therefore, the proposed project would not result in cumulatively considerable impacts to cultural and paleontological resources.

k. Visual Resources. As discussed in Section V.K, Visual Resources, the proposed project, which would preserve the site as an Airport, would not result in significant impacts to scenic vistas, scenic resources, or existing views, nor would it substantially degrade the visual character of the project site or surrounding neighborhoods. In addition, the project would be consistent with General Plan policies and Zoning Code regulations intended to preserve views of hillsides surrounding the project site. The project could result in additional sources of day and nighttime light and glare around the Airport; however, implementation of Mitigation Measure VIS-1a and VIS-1b would reduce this impact to a less-than-significant level. Although the proposed project and future projects in the vicinity of the site could increase light and glare in the area, these projects would be required to adhere to the City's General Plan that includes goals and policies related to design review, which govern the use of reflective materials and outdoor lighting. Also, projects within and adjacent to the Airport would be required to adhere to FAA restrictions on glare-producing materials. With implementation of Mitigation Measure VIS-1, the proposed project would not make a cumulatively considerable contribution to light and glare.

VIII. REPORT PREPARATION

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