COMPREHENSIVE LAND USE PLAN
SANTA CLARA COUNTY

MOFFETT FEDERAL AIRFIELD

Adopted by
SANTA CLARA COUNTY
AIRPORT LAND USE COMMISSION
San Jose, California
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Amended
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Section 1

1 INTRODUCTION AND BACKGROUND

1.1 PURPOSE AND SCOPE

This Comprehensive Land Use Plan (CLUP) is intended to safeguard the general welfare of the inhabitants within the vicinity of Moffett Federal Airfield (also referred to as the "Airport" throughout this report) and the aircraft occupants. This CLUP is also intended to ensure that surrounding new land uses do not affect the Airport's continued operation.

Specifically, the CLUP seeks to protect the public from the adverse effects of aircraft noise, to ensure that people and facilities are not concentrated in areas susceptible to aircraft accidents, and to ensure that no structures or activities adversely affect navigable airspace. The implementation of this CLUP is intended to prevent future incompatible development from encroaching on the Airport and allow for its development in accordance with the current airport master plan.

The aviation activity forecast for the Airport was updated to reflect the existing aviation activity and provide at least a 20-year forecast of activity. The updated aviation activity forecast formed the basis for preparation of 2022 aircraft noise contours. The Airport Layout Plan and updated aviation activity forecast and available aircraft noise contours formed the basis for preparation of this CLUP.

1.2 LEGAL AUTHORITY

The Public Utilities Code of the State of California, Sections 21670 et seq. authorizes each county to establish an Airport Land Use Commission (ALUC) and defines its range of responsibilities, duties and powers. The Santa Clara County Airport Land Use Commission is composed of 7 members, two appointed by the Santa Clara County Board of Supervisors, two appointed by the Santa Clara County City Selection Committee, two appointed by a committee composed of the Aviation Director of San Jose International Airport and the Director of the County Roads and Airports Department and one appointed at large by the ALUC.

Section 21675 requires the ALUC to formulate and maintain a comprehensive land use plan (CLUP) for the area surrounding each public-use airport within Santa Clara County. A CLUP may also be developed for a military airport at the discretion of the ALUC. The County has four public-use airports, San Jose International, Palo Alto Airport, Reid-Hillview Airport and South County Airport, and one federally owned airport used by the military, Moffett Federal Airfield. Moffett Federal Airfield is defined as an Air Carrier Airport for the purposes of this CLUP due to the type of aircraft that use this airport. Section 21675 also specifies that comprehensive land use plans will:

> *(a) provide for the orderly growth of each public airport and the area surrounding the airport within the jurisdiction of the commission, and will safeguard the general welfare of the inhabitants within the vicinity of the airport and the public in general. The commission plan shall include and shall be based on a long-range master plan or an airport layout plan, as determined by the Division of Aeronautics of the Department of Transportation, that reflects the anticipated growth of the airport during at least the next 20 years. In formulating a land use plan, the commission may develop height restrictions on buildings, may specify use of land, and may determine building standards, including soundproofing adjacent to airports, within the planning area. The comprehensive land use plan shall be reviewed as often as necessary in order to accomplish its purposes, but shall not be amended more than once in any calendar year.*

1.3 BACKGROUND AND HISTORY

Legislation passed by the State of California in 1967 mandated the creation of an Airport Land Use Commission in each county that had an airport served by a scheduled airline or operated for use by the general public. In conformance with this legislation the Planning Policy Committee, an existing decision-making body with representation from the 5 cities and the County, was designated to be the Airport Land Use Commission (ALUC) for Santa Clara County by the Board of Supervisors and the Select Committee of Mayors. After certification by the California Secretary of State, the Airport Land Use Commission officially came into existence in Santa Clara County in January of 1971. Their first land use policy plan was adopted on June 28, 1973 but did not include Moffett Field. The Navy completed and issued their Air Installations Compatibility Use Zones (AICUZ) plan for Moffett Field on May 10, 1976.

1.4 CONTENTS OF THE COMPREHENSIVE LAND USE PLAN

The Comprehensive Land Use Plan contains several major elements:

- The existing and planned-for facilities at the Airport that are relevant to preparing the CLUP;
- Appropriate noise, height, and safety restriction policies and land use compatibility standards;
- Specific findings of compatibility or incompatibility with respect to existing land uses, proposed General Plan land uses, or existing zoning controls; and
- Specific actions that need to be taken to make the County of Santa Clara and the cities' General Plans, Specific Plans, Master Plans and/or Zoning Ordinances consistent with the Comprehensive Land Use Plan.

The CLUP establishes an airport land use planning area, referred to as the Airport Influence Area (AIA), which sets the boundaries for application of ALUC Policy. The CLUP contains the relevant policies for land use compatibility and specific findings of compatibility or incompatibility of land uses within the AIA. Of particular interest to the ALUC are areas "not already devoted to incompatible uses" and, more specifically, undeveloped lands within the AIA. The planning effort is focused on identifying these lands because the policies and standards of the plan are intended to control the compatibility of future development in these areas.

The CLUP is not intended to define allowable land use for a specific parcel of land, although the plan establishes development standards or restrictions that may limit or prohibit certain types of uses and structures on a parcel. The CLUP is not retroactive with respect to existing incompatible land uses, but discusses actions to be taken when expansion, replacement or other significant changes are made to incompatible land uses.

The CLUP does not apply to property owned by the federal government (NASA Ames) but may be used as a planning guide for land use development.

1.5 TECHNICAL REFERENCE DOCUMENT

A separate Technical Reference Library is being maintained by the County of Santa Clara. The Technical Reference Library will contain the major reference documents associated with the land use compatibility planning criteria in this CLUP. The documents will be available for review at Santa Clara County Planning Office.

Section 2

2 MOFFETT FEDERAL AIRFIELD AND ENVIRONS

2.1 AIRPORT ROLE

Moffett Federal Airfield is geographically located in the north-central area of Santa Clara County, at the southwest end of San Francisco Bay, adjacent to the cities of Mountain View and Sunnyvale. The Airport is located on 952 acres of land, at an elevation of 32 feet above mean sea level (at the FAA Airport Reference Point). The Airport is owned by the U.S. Government and operated by NASA Ames Research Center. The Airport is surrounded by San Francisco Bay on the north, the City of Sunnyvale on the east and south, and the City of Mountain View on the south and west. The location of the Airport with respect to nearby communities and other airports is illustrated on Figure 1.

Moffett Federal Airfield (the Airport) was a U.S. Naval Air Station until transferred to NASA operational control in 1994. There is still a military presence on the airport with the California Air National Guard based at and operating from the Airport. The remainder of the operations at the Airport is composed of U.S. Coast Guard training flights, NASA test flights, and U.S. government personnel and air cargo flights. There are a limited number of civilian operations at the Airport, which are anticipated to remain the same throughout the study period. Moffett Federal Airfield has aircraft parking/storage facilities, aircraft fueling facilities and aircraft support operations for the aircraft using the airport. The east-side airport terminal and transient parking areas are located within a few blocks of a light rail terminal providing transportation to commercial and industrial areas in Mountain View, Sunnyvale and San Jose.

Moffett Federal Airfield is a U.S. Government airport, and as such is not included under many of the FAA Regulations. Thus Moffett Federal Airfield is not listed in the Federal Aviation Administration's (FAA*) National Plan of Integrated Airport Systems* (NPIAS) (2007-2011) nor included in the *California Aviation System Plan* published by Caltrans, Aeronautics Program.

For the purposes of this CLUP, the Moffett Federal Airfield will be treated as an air-carrier airport, due to the lengths of its runways and the principal type of aircraft operating from the Airport.

Palo Alto Airport, a General Aviation airport, is the nearest airport to Moffett Federal Airfield and is located 4 nautical miles to the northwest. San Jose International Airport is a large regional commercial air-carrier airport and is located approximately 7 nautical miles southeast of Moffett Federal Airfield.

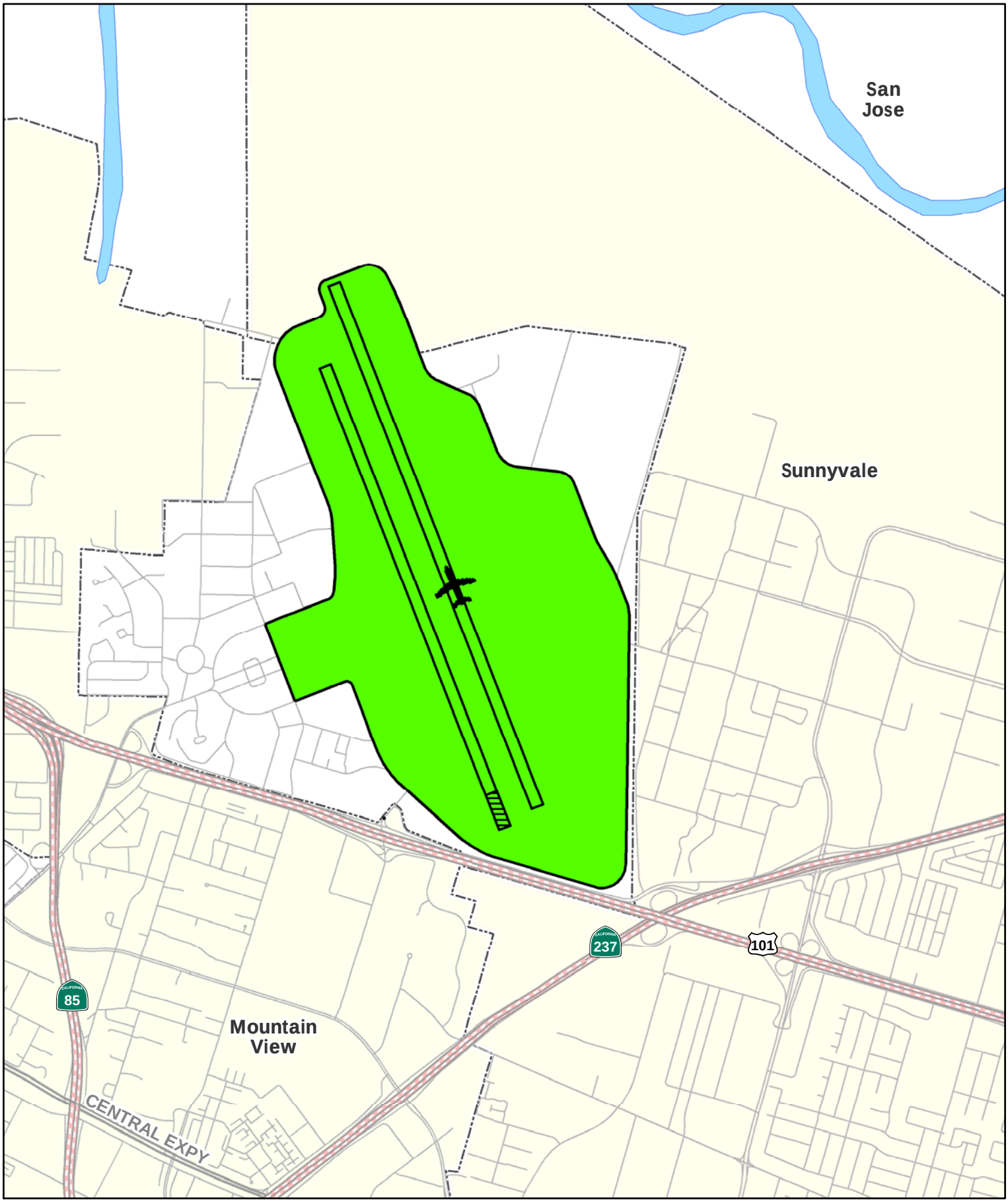
2.2 AIRPORT LAYOUT PLAN

As part of the transition from military administration to NASA administration, an Airport Master Plan (Comprehensive Use Plan) was developed by NASA in 1996. The current Airport Master Plan, a component of the NASA Ames Development Plan, was approved in July 2002. The current Airport Layout Plan (ALP), illustrated on Figure 2, delineates the layout of existing Airport facilities as of December 2009.

As a U.S. Government airport, there is little advantage in having a FAA "approved" or Caltrans approved ALP. The FAA-approved ALP is primarily used by the FAA for FAA airport grants and by Caltrans for Airport Improvement Program (AIP) grants for eligible construction and development projects. These grant funds are only available to public-use airports. The FAA may review an airport ALP and "Accept" it rather than "Approve" it.

Selected data about the existing Airport facilities and information about its planned development are presented in the following paragraphs.

Moffett Federal Airfield



Moffett Federal Airfield
Location Map
Figure 1

0 2,000 4,000 Feet

N

This map created by Santa Clara County Planning Office. The GIS data was compiled from various sources. While deemed reliable, the Planning Office assumes no liability.
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MOFFETT FEDERAL AIRFIELD
Buildings

Building No.	Building Name	Building Use
001	HANGAR ONE	Aircraft
027	SMALL ARMS/PYROTECHNICS MAGAZINE	Mothballed
028	SMALL ARMS/PYROTECHNIC MAGAZINE	Unused
032	NORTH FLOODLIGHT TOWER	Unused
033	SOUTH FLOODLIGHT TOWER	Storage
044	STORAGE FACILITY	Mothballed
045	STORAGE FACILITY	Maintenance
045A	WESTERN SIDE AQUIFER TREATMENT SYSTEM	Office
046	AIRCRAFT MAINTENANCE HANGAR 2	Aircraft
047	AIRCRAFT MAINTENANCE HANGAR 3	Out Grant
055	BOILER HOUSE HANGARS 2 & 3	Maintenance
056	SANITARY SEWER LIFT/PUMP STATION	Maintenance
069	INERT AMMUNITION STORAGE	Mothballed
070	FUSE & DETONATOR MAGAZINE	Out Grant
071	HIGH EXPLOSIVE MAGAZINE	Out Grant
072	HIGH EXPLOSIVE MAGAZINE	Out Grant
073	HIGH EXPLOSIVE MAGAZINE	Out Grant
074	HIGH EXPLOSIVE MAGAZINE	Out Grant
105	AIRFIELD LIGHTING VAULT	Maintenance
120	HAZARDOUS MATERIAL STORAGE COMPOUND	Mothballed
134	HAZARDOUS MATERIAL STORAGE	Mothballed
135	AIRCRAFT READY FUEL STORAGE TANK	Demolished
136	AIRCRAFT READY FUEL STORAGE TANK	Demolished
137	AIRCRAFT FUEL STORAGE TANK	Maintenance
138	AIRCRAFT FUEL STORAGE TANK	Maintenance
139	AIRCRAFT FUEL STORAGE TANK	Maintenance
140	AIRCRAFT FUEL STORAGE TANK	Maintenance
141	TANK TRUCK FILLING RACK	Maintenance
143	HIGH EXPLOSIVE MAGAZINE	Ordnance
147	HIGH EXPLOSIVE MAGAZINE	Ordnance
148	ENLISTED MEN'S BARRACKS	Mothballed
158	AIRFIELD FLIGHT OPERATIONS BUILDING	Office
158A	P3-A MONUMENT	
158B	NAVY VLOCKEED P2-E NEPTUNE MONUMENT	
159	BUS/PERSONNEL SHELTER	Demolished
160	BUS/PERSONNEL SHELTER	Demolished
161	SERVICE STATION/FUEL ISLAND 1 & 2	Maintenance
167	WHARF/FUELING PIER	Mothballed
168	VEHICULAR BRIDGE	Maintenance
169	VEHICULAR BRIDGE	Maintenance
170	LIQUID OXYGEN/NITROGEN FACILITY	Demolished
175	LINE MAINTENANCE SHELTER	Demolished
176	LINE MAINTENANCE SHELTER	Demolished
184	MAINTENANCE STORAGE	Maintenance
191	STORM DRAIN PUMP HOUSE	Maintenance
199	READY AMMUNITION MAGAZINE	Demolished
1A		Storage
328	CONTAMINATED FUEL STORAGE TANK	Maintenance
329	RECEIVER BUILDING	Storage
330	OPEN STORAGE COMPOUND	Maintenance
331	AIRFIELD STORAGE	Storage
342	FUEL FARM STORAGE	Storage
348	FUEL FARM SAMPLING/TEST BUILDING	Office
359	GOLF COURSE GROUNDS MAINTENANCE SHOP	Storage
360	FUEL ADDITIVE STORAGE TANK	Storage
361	CONTAMINATED FUEL STORAGE TANK	Maintenance
372	FUEL LOADING RACK RESTROOM	Storage
382	AIRCRAFT LINE OPERATIONS FACILITY	Aircraft
390	FUEL PARTS STORAGE	Storage
395	TEST CELL STORAGE	Demolished
399	COVERED STORAGE GOLF COURSE LANDSCAPING EQUIP	Storage
400	AIR OPERATIONS STORAGE	Unused
402	BUS/PERSONNEL SHELTER	Unused
409	ABOVE GROUND FUEL DISPENSING TANK	Maintenance
439	AIRCRAFT WASH RACK	Aircraft
439A	EASTERN-SIDE AQUIFER TREATMENT SYSTEM (EATS)	
446	COMMUNICATIONS TACAN FACILITY	Aircraft
455	GOLF CART CHARGING AND MAINTENANCE FACILITY	Storage
464	OPERATIONAL STORAGE	Aircraft
471	HAZARDOUS MATERIAL STORAGE	Maintenance
483	GROUND SUPPORT/EQUIPMENT SHED	Mothballed
484	AIR/UNDERWATER SHOP	Maintenance
485	GUARD & WATCH TOWERS	Support
486	HIGH EXPLOSIVE MAGAZINE	Ordnance
487	HIGH EXPLOSIVE MAGAZINE	Ordnance
488	HIGH EXPLOSIVE MAGAZINE	Ordnance
489	HIGH EXPLOSIVE MAGAZINE	Ordnance
490	HIGH EXPLOSIVE MAGAZINE	Ordnance
491	HIGH EXPLOSIVE MAGAZINE	Ordnance
498	HAZARD WASTE STORAGE AREA	Mothballed
499	GROUND SUPPORT EQUIPMENT SHED	Mothballed
502	GOLF COURSE RESTROOMS	Exchange
511	GUIDED MISSILE INTEGRATION	Mothballed
528	HIGH EXPLOSIVE MAGAZINE	Ordnance
537	GOLF COURSE RESTROOMS	Storage
541	AMID CLASSROOMS	Mothballed
545	FUEL FARM OFFICES	Office
561	MISSILE MAGAZINE	Ordnance
573	FIRE TRAINING BURN PIT	Storage
580	CRASH & STRUCTURAL FIRE STATION	Office
582	ELLIS GATE MARQUEE	Exchange
591	115/12KV MAIN ELECTRICAL SUBSTATION	Maintenance
650	ADMINISTRATION BUILDING	Maintenance
651	BATTERY LOCKERSHOP	Maintenance
653	ADMINISTRATION BUILDING	Office
654	ADMINISTRATION BUILDING	Office
655	MOBILITY WAREHOUSE A	Aircraft
656	129TH RESCUE OPERATIONS	Aircraft
657	WAREHOUSE F	Maintenance
658	WAREHOUSE F	Unused
659	WAREHOUSE G	Storage
660	WAREHOUSE H	Storage
661	WAREHOUSE I	Storage
662	AIRCRAFT MAINTENANCE HANGAR	Out Grant
669	PROPULSION/TRAINING FACILITY	Deactivated
679	CIVIL ENGINEERING WAREHOUSE	
680	ANG HEADQUARTERS	Office
681	BASE SUPPLY EQUIPMENT WAREHOUSE	Storage
682	HAZARDOUS/FLAMMABLE MATERIAL STORAGE FACILITY	Unused
683	ANG CIVIL ENGINEERING	Maintenance
684	GROUND SUPPORT MAINTENANCE	Storage
685	TAC Medical Clinic	Housing
686	PARACHUTE/SURVIVAL GEAR REPAIR SHOP	Office
780	TELEPHONE REMOTE SWITCH	
901	CRYOGENICS FACILITY	Maintenance
934	GOLF COURSE CLUB HOUSE (19TH HOLE)	Office
949	READY ISSUE MAGAZINE	Mothballed
953	AIRCRAFT READY FUEL DAY TANK AND PUMPING STAT	Maintenance
954	AIRCRAFT HONEY BUCKET WASTE DISPOSAL/RESTROOM	Mothballed
956	PARACHUTE LOFT	Mothballed
956A		
N210	FLIGHT SYS.RESEARCH LAB.	Research/Dev
N211	FLIGHT SUPPORT FACILITY	Research/Dev
N212	MODEL DEVELOPMENT BLDG.	Shop/Indust
N213	RESEARCH SUPPORT BUILDING	Research/Dev
N239	LIFE SCIENCES LABORATORY	Laboratory
N239A	LIFE SCI. LAB. HIGH BAY	Laboratory
N242	SYSTEMS DEVELOPMENT FAC.	Research/Dev
N243	FLT.&GUIDANCE SIMULA.LAB.	Laboratory
N248	AIRCRAFT SERVICING FAC.	Aircraft
N248A	GRD.SUPP.EQUIP.BUILDING	Aircraft
N248B	GRD.SUPP.EQUIP.BLDG. No. 2	Aircraft
N248C	ROTORCRAFT MAINTENANCE FACILITY	Aircraft
N248D	AIRCRAFT SVC.STORAGE BLDG	Aircraft
N248E	AIRCRAFT WASH RACK	Aircraft
N259	AIRCRAFT OPERATIONS SUPPORT FACILITY	Research/Dev
NA292	V-TOL PAD	

RUNWAY END DATA

APPROACH END OF RUNWAY			32L	14R	32R	14L
RUNWAY END COORDINATES	Latitude	Existing	37° 24.366900'	37° 25.513833'	37° 24.332500'	37° 25.735500'
		Future	No change	No change	No change	No Change
	Longitude	Existing	122° 02.666000'	122° 03.302667'	122° 02.556167'	122° 03.277000'
		Future	No change	No Change	No Change	No Change
RUNWAY END ELEVATIONS		Existing	32'	0.1'	27.3'	1.2'
		Future	No Change	No Change	No Change	No Change
RUNWAY MARKING		Existing	Nonprecision	Nonprecision	Precision	Precision
		Future	No Change	No Change	No Change	No Change
RUNWAY TOUCH DOWN ZONE ELEVATIONS		Existing	31'	N/A	27'	2'
		Future	No Change	No Change	No Change	No Change
NAVIGATION AIDS		Existing	Tacan	None	ILS/Tacan	Loc/DME
		Future	No Change	No Change	No Change	No Change
VISUAL AIDS		Existing	None	None	ALSF1, TDZL, P4L	PAPI (P4L)
		Future	No Change	No Change	No Change	No Change
APPROACH TYPE (FAR Part 77 Category)		Existing	Nonprecision	Visual	Precision	Nonprecision
		Future	No Change	No Change	No Change	No Change
APPROACH VISIBILITY (Minimums)		Existing	1 Mile	1 Mile	3/4 Mile	1 Mile
		Future	No Change	No Change	No Change	No Change
APPROACH SLOPE (Required/Clear)		Existing	34:1 /34:1	20:1 / 64:1	50:1 /50:1	34:1 / 59:1
		Future	No Change	No Change	No Change	No Change
RUNWAY SAFETY AREA (Width)		Existing	500'	500'	500'	500'
		Future	No Change	No Change	No Change	No Change
RUNWAY SAFETY AREA (Length Beyond Runway End)		Existing	1,000'	1,000'	1,000'	1,000'
		Future	No Change	No Change	No Change	No Change
OBSTACLE FREE ZONE (Width)		Existing	400'	400'	400'	400'
		Future	No Change	No Change	No Change	No Change
OBSTACLE FREE ZONE (Length Beyond Runway End)		Existing	200'	200'	200'	200'
		Future	No Change	No Change	No Change	No Change
RUNWAY OBJECT FREE AREA (Width)		Existing	800'	800'	800'	800'
		Future	No Change	No Change	No Change	No Change
RUNWAY OBJECT FREE AREA (Length Beyond Runway End)		Existing	1,000'	1,000'	1,000'	1,000'
		Future	No Change	No Change	No Change	No Change
HOLD LINE (DISTANCE FROM RUNWAY CL)		Existing	280'	280'	280'	280'
		Future	No Change	No Change	No Change	No Change

NOTES

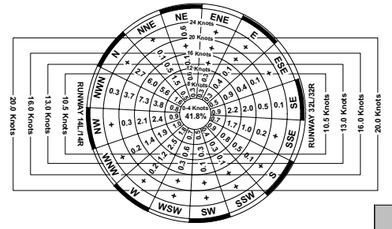
(a) Airport coordinate data source: National Oceanic and Atmospheric Administration (NOAA) Obstruction Chart dated May 4, 1992. Data is NAD 83 and NAVD 88. NOAA's VERTCON program used to convert original NGVD 29 data to NAVD 88.

(b) The airport is in Township 6 South, Range 2 West, Section 14.

(c) Building restriction line (BRL) based on 50' building height.

(d) Nonstandard Conditions: Hangar 001, 046 and 047 building heights are above the FAR Part 77 Transitional Surface.)

(e) Acceptance of these documents by the FAA does not in any way constitute a commitment on the part of the United States to participate in any development depicted herein, nor does it indicate that the proposed development is environmentally acceptable in accordance with appropriate public laws.



CROSSWIND COVERAGE

Runways 14L - 32R AND 14R - 32L

10.5 Knots	95.9%
13.0 Knots	98.6%
16.0 Knots	99.3%
20.0 Knots	99.4%

Source: NOAA observations for 2003 - 2009

AIRPORT DATA

		EXISTING	FUTURE
AIRPORT REFERENCE CODE		D-VI	No Change
AIRPORT REFERENCE POINT	Latitude	N 37° 24.97'	No Change
	Longitude	W 122° 02.95'	No Change
AIRPORT ELEVATION (Above Mean Sea Level)		32'	No Change
MEAN MAX. TEMP. (Hottest Month)		78.4° F (July)	No Change
AIRPORT AND TERMINAL NAVIGATIONAL AIDS		Beacon, VOR/DME	No Change
GPS APPROACH ESTABLISHED		No	No Change
AIRPORT ACREAGE	Fee Simple	952	No Change
	Avigation Easement		No Change
AIRCRAFT PARKING SPACES	Tie downs	18,000	No Change
	Hangar (SF)	950,000	No Change

TAXIWAY DATA

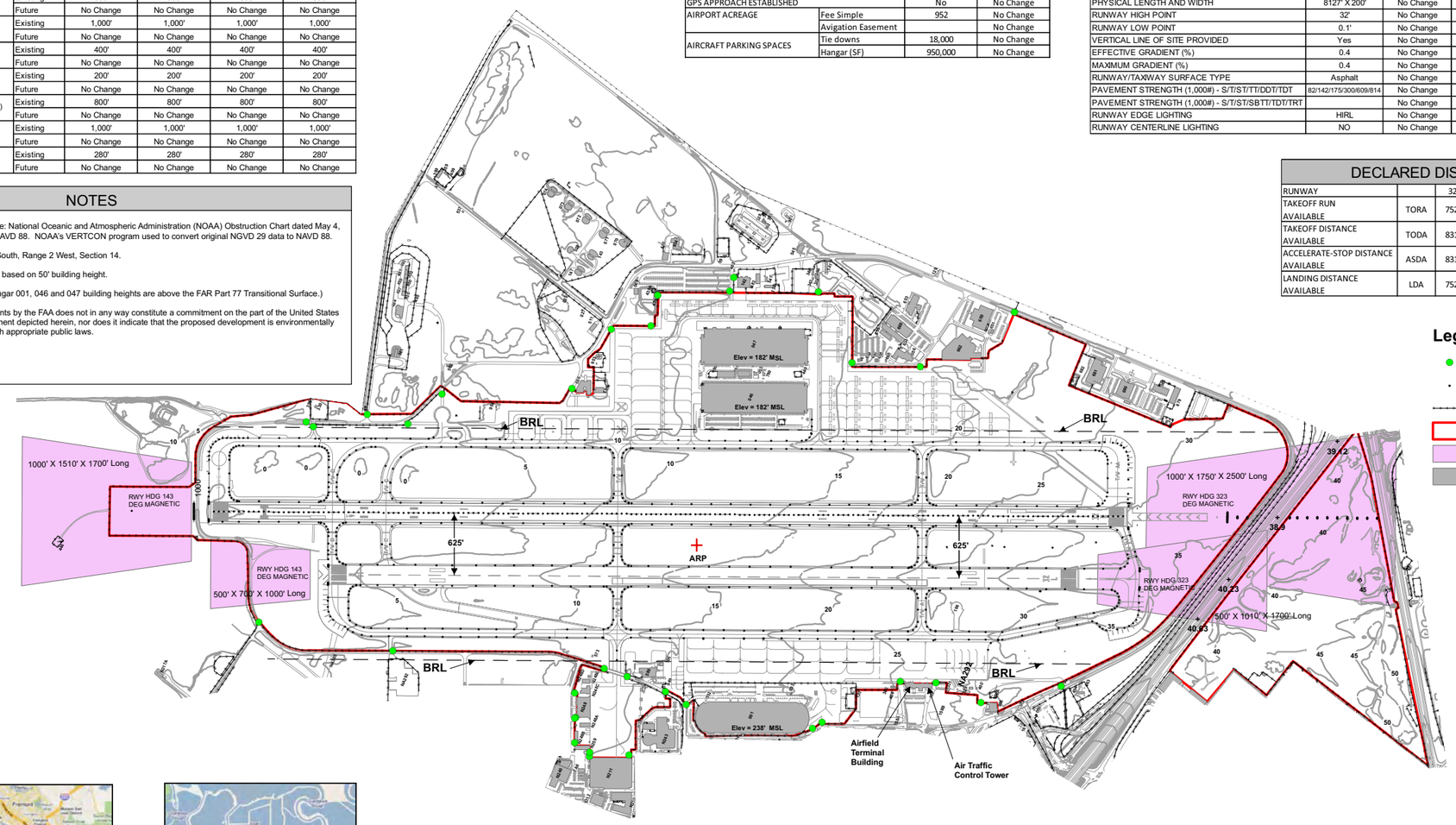
TAXIWAY	DESIGN GROUP		WIDTH		SURFACE TYPE		RWY CL. To TWY CL.		TAXIWAY SAFETY AREA WIDTH		TAXIWAY FREE AREA WIDTH		TWY. CL. to FIXED OR MOVEABLE OBJECT		TAXIWAY WINGTIP CLEARANCE	
EXIT	EXISTING	FUTURE	EXISTING	FUTURE	EXISTING	FUTURE	EXISTING	FUTURE	EXISTING	FUTURE	EXISTING	FUTURE	EXISTING	FUTURE	EXISTING	FUTURE
AA	D - VI	No Change	75'	No Change	Concrete	No Change	N/A	N/A	> 262'	No Change	> 386'	No Change	>193'	No Change	>62'	No Change
A	D - VI	No Change	75'	No Change	Concrete	No Change	N/A	N/A	> 262'	No Change	> 386'	No Change	>193'	No Change	>62'	No Change
B	D - VI	No Change	75'	No Change	Concrete	No Change	N/A	N/A	> 262'	No Change	> 386'	No Change	>193'	No Change	>62'	No Change
C	D - VI	No Change	75'	No Change	Concrete	No Change	N/A	N/A	> 262'	No Change	> 386'	No Change	>193'	No Change	>62'	No Change
D	D - VI	No Change	75'	No Change	Concrete	No Change	N/A	N/A	> 262'	No Change	> 386'	No Change	>193'	No Change	>62'	No Change
PARALLEL																
WEST	D - VI	No Change	75'	No Change	Concrete	No Change	577	No Change	> 262'	No Change	> 386'	No Change	>193'	No Change	>62'	No Change
EAST	D - VI	No Change	75'	No Change	Concrete	No Change	750	No Change	> 262'	No Change	> 386'	No Change	>193'	No Change	>62'	No Change

RUNWAY DATA

		RUNWAY 32L/14R		RUNWAY 32R/14L	
		EXISTING	FUTURE	EXISTING	FUTURE
AIRPORT REFERENCE CODE		D - VI	No Change	D - VI	No Change
CRITICAL AIRCRAFT	AIRCRAFT	B747-400 / AN124	No Change	B747-400 / AN124	No Change
	WINGSPAN	232'	No Change	232'	No Change
	UNDERCARRIAGE WIDTH	41' 9"	No Change	41' 9"	No Change
	APPROACH SPEED (kts.)	154	No Change	154	No Change
	MAX. TAKEOFF WT. (lbs)	930,000	No Change	930,000	No Change
PHYSICAL LENGTH AND WIDTH		8127' X 200'	No Change	9202' X 200'	No Change
RUNWAY HIGH POINT		32'	No Change	27.3'	No Change
RUNWAY LOW POINT		0.1'	No Change	1.2'	No Change
VERTICAL LINE OF SITE PROVIDED		Yes	No Change	Yes	No Change
EFFECTIVE GRADIENT (%)		0.4	No Change	0.3	No Change
MAXIMUM GRADIENT (%)		0.4	No Change	0.3	No Change
RUNWAY/TAXIWAY SURFACE TYPE		Asphalt	No Change	Concrete	No Change
PAVEMENT STRENGTH (1,000#) - S/T/ST/TT/DDT/TDT		82/142/175/300/609/814	No Change		No Change
PAVEMENT STRENGTH (1,000#) - S/T/ST/SBTT/TDT/TRT			No Change	64/110/144/410/528	No Change
RUNWAY EDGE LIGHTING		HIRL	No Change	HIRL	No Change
RUNWAY CENTERLINE LIGHTING		NO	No Change	YES	No Change

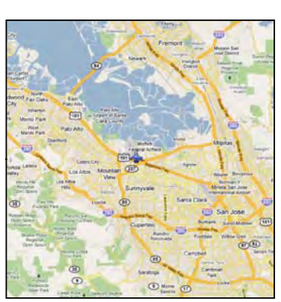
DECLARED DISTANCES

RUNWAY		32L	14R	32R	14L
TAKEOFF RUN AVAILABLE	TORA	7522'	8127'	9202'	9202'
TAKEOFF DISTANCE AVAILABLE	TODA	8312'	8707'	10202'	10392'
ACCELERATE-STOP DISTANCE AVAILABLE	ASDA	8312'	8127'	10202'	10002'
LANDING DISTANCE AVAILABLE	LDA	7522'	8127'	9202'	9202'

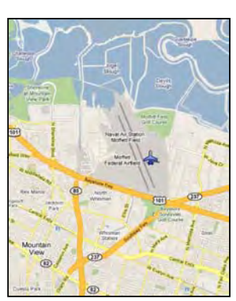


Legend

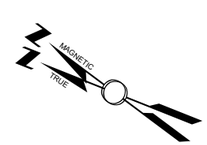
- Access Gate
- Lights
- Security Fence
- Airfield Boundary
- Runway Protection Zone
- Building



Location Map



Vicinity Map



DECLINATION:
14° 5' E
OCTOBER 2009
ANNUAL RATE OF CHANGE
0° 5' W

600 0 600 Feet

SUBMITTED BY:

By _____ Date

FAA Approval Space

No.	Revision	Sponsor	Date

MOFFETT FEDERAL AIRFIELD
MOFFETT, CALIFORNIA
AIRPORT LAYOUT PLAN

DESIGN: | DRAWN BY: Charles Tonda | DATE 04/06/10 | SHEET 1 OF .

ESRI Drawings\Yrenel\Kventer\Airport Layout Plan\Airport Layout Plan.mxd

2.2.1 Existing Airport Facilities

The existing airfield consists of two parallel runways, Runways 32R-14L and 32L-14R. Both Runways have a paved surface. Runway 32R-14L is 9,202 feet long by 200 feet wide. Runway 32L-14R is 8,127 feet long by 200 feet wide. Runway 32L has a 607 foot displaced threshold. Both runways have high intensity runway lights. The existing maximum gross weight for aircraft using the runways is as follows:

Aircraft Maximum Gross Weight (pounds)

Runway	Single-wheel	Double-wheel	Double Tandem	Dual double tandem
32L-14R	82,500	175,000	300,000	814,000
32R-14L	64,000	144,000	253,000	528,000

Federal Aviation Regulations (FAR) Part 77, *Objects Affecting Navigable Airspace*, defines imaginary surfaces that are used to identify obstructions to air navigation. The following tabular data shows the FAR Part 77 approach slopes, compared with existing obstacle/obstruction controlled approach slopes and other information relative to the controlling obstacle/obstructions based on the latest information from airport management.

Controlling Obstacle/Obstruction: Location from Runway Threshold Related to Extended Runway Centerline						
Runway No.	Elevation	FAR Part 77 Slope	Actual Slope	Type of Obstruction	Height Above Runway Threshold	Location
32R	27	50:1	18:1	Trees	83	3648 ft along and 600 feet right of the extended runway centerline
14L	9	34:1	59:1	PG&E Tower	94	5597 ft along the extended runway centerline
32L	32	34:1	19:1	Trees	78	1486 ft along and 153 feet left of the extended runway centerline
14R	0	20:1	64:1	PG&E Tower	103	6653 ft along the extended runway centerline

The FAA establishes Runway Protection Zones off each runway end to enhance the safety of aircraft operations and the protection of people and property on the ground. The following defines the size of the Runway Protection Zones for each runway.

Runway No.	Protection Zone	Length (feet)	Inner Width (feet)	Outer Width (feet)
32R	Precision	2,500	1000	1750
14L	Nonprecision	1,700	1000	1510
32L	Nonprecision	1,700	500	1010
14R	Visual	1,000	500	700

Portions of the Runway Protection Zones for Runway 32L/32R are outside the Airport boundary but are owned by the Airport and leased to the city of Sunnyvale for use as a golf course. Portions of the Runway Protection Zones for Runway 14R/14L are outside the Airport boundary and in the unincorporated area of Santa Clara County over the San Francisco bay. This area is identified as a future wildlife management area.

The main entrance to the airport is from Moffett Blvd. off US Highway 101 on the southeast side of the airfield. An alternate entrance to the airport used during high traffic periods is by way of Ellis Street and a third entrance, not currently in use, is located on the northeast side of the airfield at the intersection of 5th Avenue and Macon Road. The aircraft basing areas are located on both the west side and east side of the runways. The west ramp has approximately 1.2 million square feet of aircraft parking space, the northeast ramp has about 900 thousand square feet of aircraft parking and the southeast ramp has about 1.295 million square feet of aircraft parking. Airport facilities include a control tower, a rotating beacon and a lighted windsock.

2.2.2 Future Airport Facilities

The current Airport Master Plan indicates no changes are planned to the existing airport facilities.

2.3 AVIATION ACTIVITY

The noise impact of an airport is a direct result of the number of aircraft operations at that airport and the types of those aircraft. Given this information, and some other factors such as flight tracks and the distribution of flight operations throughout the day and night, computer models can generate a representation of the noise contours around an airport. The generalized flight tracks for the airport are shown in Figure 3. The noise contours created by the computer model reflect the data provided to the program. Thus the activity data, both current and forecasted, needs to be as accurate as possible.

The aviation activity data is taken from *Aviation Reuse Activities, Moffett Field* and reviewed by Airport Management.

As the CLUP is a 20-year planning document, the existing base year (1992) aviation activity was reviewed and updated aviation activity forecasts were prepared through the year 2022. While the data in the above reference projected aircraft activity only to 2010, it is forecast that there will be no significant changes in activity at the Airport through the period to 2022. A summary of the existing and forecast aviation activity is presented in Table 2-1 and discussed in the following paragraphs.

2.3.1 Based Aircraft

The number of based aircraft at Moffett Federal Airfield is forecast to remain constant at 8 fixed-wing and 11 helicopters as shown in Table 2-1. These data are taken from the recent Moffett Federal Airfield Master Plan and discussions with airport management.

2.3.2 Aircraft Operations

The number of annual aircraft operations at Moffett Federal Airfield, as presented in Table 2-1, is forecast to increase slightly from an estimated 23,577 operations in the year 2002 to an estimated 23,627 operations in the year 2022. These data are taken from *Assessment of Aircraft Noise Conditions at Moffett Airfield.*

Local Operations. Local operations are performed by aircraft (including helicopters) operating in the local traffic pattern and those departing and returning without landing at another airport. These operations include operations by both aircraft based at the Airport and aircraft from other local military airports. Local operations include flight test operations and flight training operations; the activities of based aircraft pilots maintaining their landing skills and activities of itinerant aircraft pilots who come to practice landing under conditions different than those existing at their home airport.

Moffett Federal Airfield

Aircraft Flight Tracks
Figure 3

Flight Tracks

Moffett flight tracks

0 4,000 8,000 Feet

N

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3/16/2010 - Y:\Matt\ALUC\projects\Moffett\NUQ_figure3v4_flightpath.mxd

Table 2 - 1

UPDATED AVIATION ACTIVITY FORECASTS

Moffett Federal Airfield

1992 – 2022

	Base Year	Forecast				
	1992	**2002**	**2007**	**2012**	**2017**	**2022**
BASED AIRCRAFT						
Multi-engine Jet	5	0	0	0	0	0
Single-engine Jet	3	1	1	1	1	1
Multi-engine Turbine	27	7	7	7	7	7
Multi-engine Piston	0	0	0	0	0	0
Single-engine Piston	1	0	0	0	0	0
Helicopter	11	11	11	11	11	11
Total based aircraft	47	19	19	19	19	19
AIRCRAFT OPERATIONS						
Fixed-wing aviation						
-Itinerant	17,250	6,270	6,284	6,294	6,294	6,294
-Local	20,242	7,361	7,377	7,388	7,388	7,388
Subtotal – Fixed-wing operations	37,492	13,631	13,661	13,682	13,682	13,682
Helicopter operations						
-Itinerant	10,478	4575	4,575	4,575	4,575	4,575
-Local	12,300	5,370	5,370	5,370	5,370	5,370
Subtotal – Helicopter operations	22,778	9,945	9,945	9,945	9,945	9,945
Total operations	60,270	23,577	23,607	23,627	23,627	23,627
OPERATIONS PER BASED AIRCRAFT	1282	1240	1242	1244	1244	1244

Source: *Assessment of Aviation and Community Impacts of Moffett Field Transfer, Table III-2; Aviation Reuse Activities, Moffett Field and Airport Management*

Local operations are forecast to remain constant at 54 percent of total aircraft operations and will continue to account for the larger number of aircraft operations.

Itinerant Operations. Itinerant operations are conducted by aircraft that takeoff from one airport and land at another airport, or the reverse. They include the operations of aircraft based at the Airport and flights of other aircraft to and from the Airport. The itinerant operations at the Airport include aircraft based on the airport used for flight tests at another airport, government air cargo, VIP transportation and other government/military related activities involving flights to this airport or from this airport to another airport.

Iterant operations are forecast to remain constant at 46 percent of total aircraft operations over the forecast period and will continue to account for the smaller number of aircraft operations.

2.3.2.1 NASA Operations

NASA operates a wide variety of both fixed-wing aircraft and helicopters for a variety of purposes, such as airborne research, flight-testing, and transportation of government personnel.

2.3.2.2 Military Operations

The two principal military operators at the Airport are the California Air National Guard and the U.S. Coast Guard.

The California Air National Guard primarily operates C-130 fixed-wing aircraft and HH-60 helicopters in about 9480 annual flight operations.

The U.S. Coast Guard primarily operates HH-65 helicopters at the airport, conducting about 4750 flight training and proficiency training operations per year.

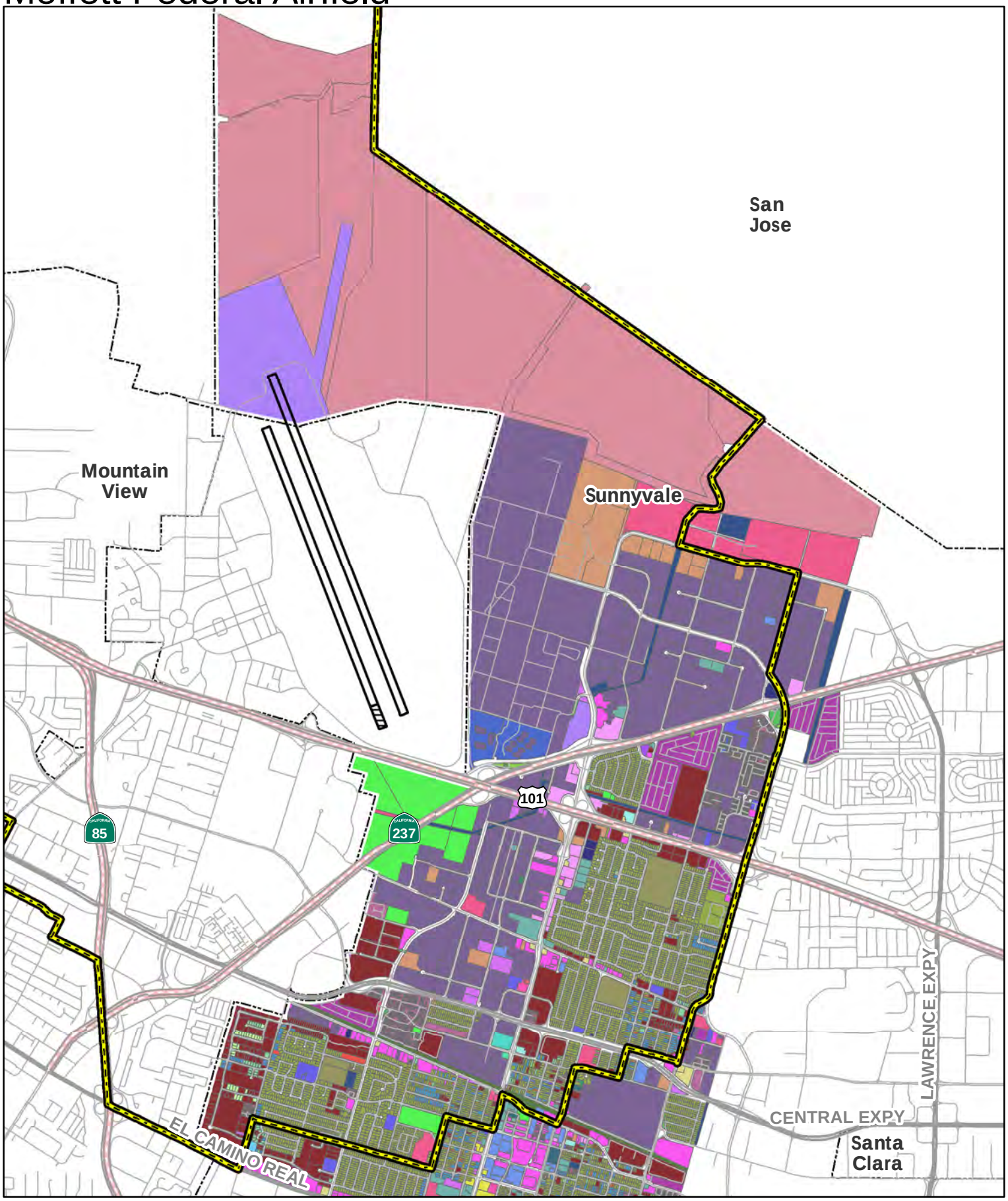
2.3.2.3 Other Operations

The Airport us used by a variety of operators for transportation of government air cargo, transportation of government personnel and the basing and maintenance of law enforcement helicopters.

2.4 AIRPORT ENVIRONS

Figure 4a and 4b present the land use designations within the Airport environs based on the current City of Sunnyvale and City of Mountain View General Plans. The Airport property is surrounded by the city of Sunnyvale and the City of Mountain View. The predominant land uses in the Airport environs are Commercial and Industrial.

Moffett Federal Airfield



Sunnyvale Landuse Designations

- Adult Business Establishments
- Agricultural
- Apartments (5 or more)
- Auto Dealership
- Auto Repair/Service
- Baylands
- Child Care
- Churches with Schools
- Clubhouses/Lodges
- Commercial-Industrial
- Commercial-Residential
- Condominiums
- Creeks/Sloughs
- Duplex
- Finance Institutions
- Fire Station
- Fourplex
- General Industrial
- Hotel / Motel
- Industrial Warehouse
- Light Rail Lines/Stations
- Military Installation
- Mobilehomes
- Office-Residential
- Parking Lots/Structures
- Parks
- Police Station
- Professional or Medical Office
- Public Schools
- Public Service Building
- Railroad Lines/Stations
- Recreation Facilities
- Religious Institutions
- Restaurant
- SRO or Group Quarters not for Seniors
- Senior Housing/Rest Homes
- Shopping Center
- Single Family
- Single Family + ALU
- Streets and Freeways
- Telecommunications Facilities
- Townhouse
- Triplex
- Unknown
- Vacant
- Water, Electric, Phone, Waste Facility

Land Use

Figure 4a

Sunnyvale

0 0.5 1 Miles

N

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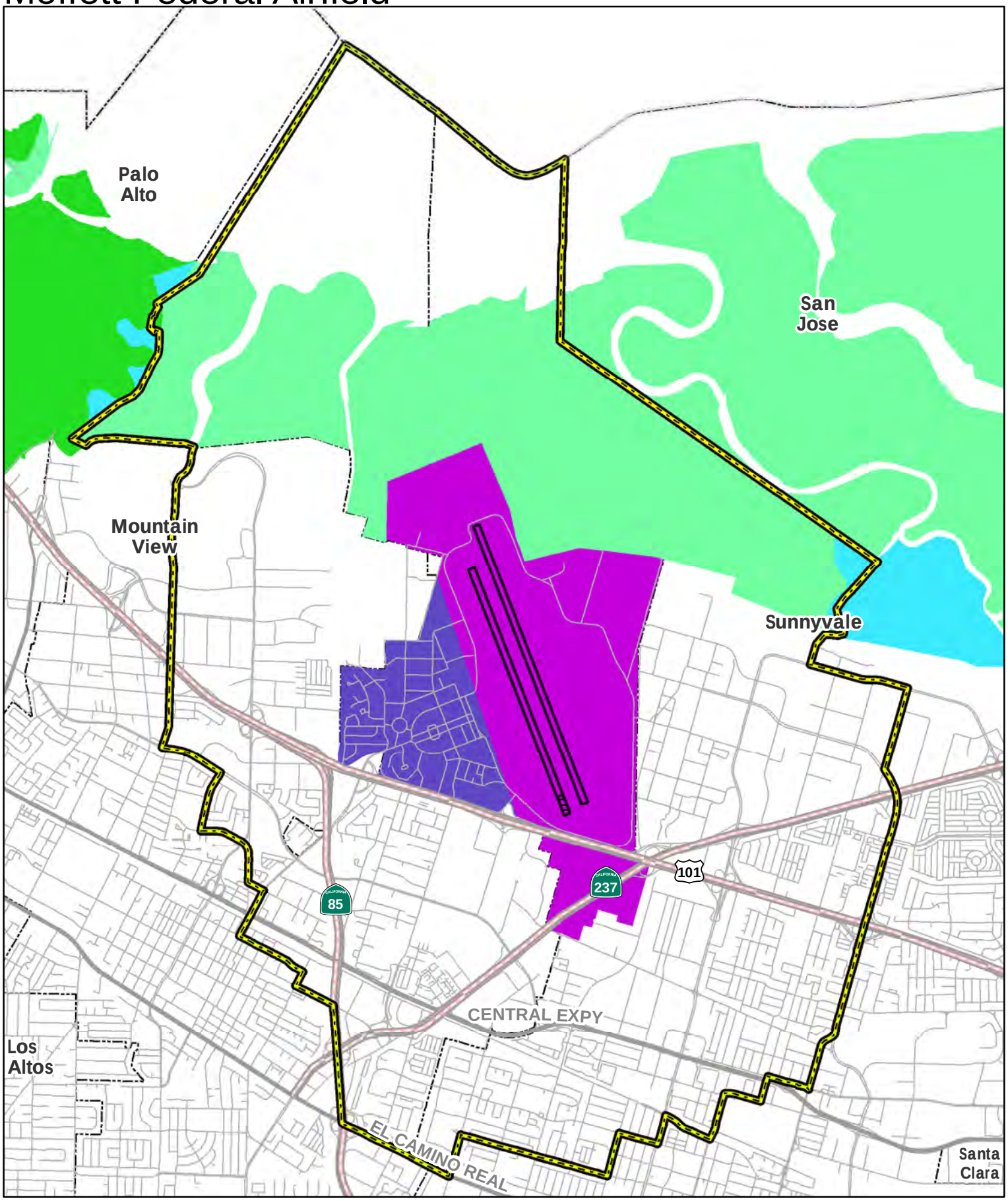
Moffett Federal Airfield



Unincorporated Landuse Designations

- Baylands
- Major Public Facilities
- Other Public Open Lands
- Regional Parks, Existing
- Transportation

Land Use
Figure 4b
Unincorporated

Miles
0 0.5 1

N

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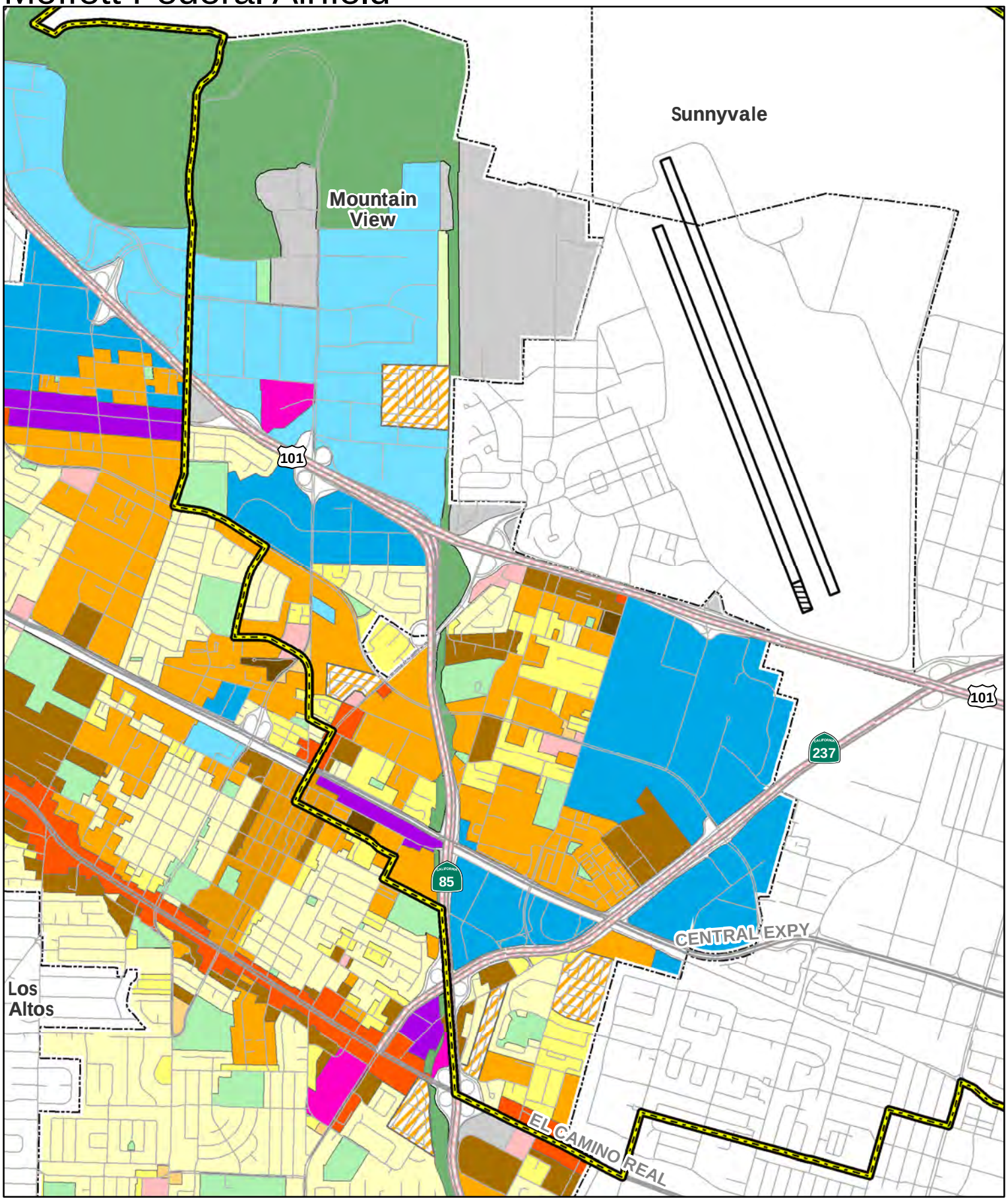
Moffett Federal Airfield



Mountain View Landuse Designations

Residential
- Low Density Residential 1-6 units/acre
- Mobile Home Park 7-14 units/acre
- Medium Low Density Residential 7-12 units/acre
- Medium Density Residential 13-25 units/acre
- Medium High Density Residential 26-35 units/acre
- High Density Residential

Commercial/Office/Industrial
- Neighborhood Commercial
- General Commercial
- Linear Commercial/Residential
- Regional Commercial
- Downtown Commercial
- Office
- General Industrial
- Industrial Park

Open Space/Recreation
- Neighborhood/Community Parks, Schools and Open Space
- Regional Park
- Agriculture

Public Facilities
- Institutional

Land Use
Figure 4c
Mountain View

Miles
0 0.25 0.5 0.75
N

This map created by Santa Clara County Planning Office. The GIS data was compiled from various sources. While deemed reliable, the Planning Office assumes no liability.
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3 LAND USE COMPATIBILITY GUIDELINES

3.1 OVERVIEW

Land use compatibility policies and standards are based on community values, sound technical knowledge, and acceptable analytical methods. These policies and compatibility criteria form the basis for evaluating existing land use compatibility and provide the foundation for the Santa Clara County Airport Land Use Commission (ALUC) policies. These standards focus on the three areas of ALUC responsibility including aircraft noise, the control of objects in navigable airspace, and the safety of persons on the ground and in aircraft. These compatibility criteria are contained in relevant State and Federal statutes and regulations and are discussed in this section.

Federal, State and other local agencies have developed and published guidelines for airport land use compatibility planning. Unfortunately, no civilian or military authority has established regulations or statutes that specify a single methodology for mitigating the incompatibilities between an airport and its environs, nor have such incompatibilities been adequately defined. The enabling legislation for the Santa Clara County Airport Land Use Commission offers some guidance while directing the Commission to provide for the orderly growth of the airports and the areas surrounding the airports, and to safeguard the general welfare of the inhabitants within the vicinity of the airports and the public in general. The legislation further enables the Commission to develop height restrictions on structures, to specify the use of land, to determine building standards, including noise insulation, and to assist local agencies in ensuring compatible land uses in the vicinity of the airports to the extent that the land in the vicinity of the airports is not already devoted to incompatible uses. The Commission is also empowered to coordinate planning at the State, regional and local levels so as to provide for the orderly development of air transportation, while at the same time protecting the public health, safety, and welfare.

3.2 LAND USE COMPATIBILITY CRITERIA

The principal source for airport land use compatibility planning is the January 2002 *California Airport Land Use Planning Handbook* (2002 Handbook) published by the California Department of Transportation, Division of Aeronautics (Caltrans). The 2002 Handbook provides guidelines for formulating compatibility criteria and policies for preparing Comprehensive Land Use Plans (CLUPs). Noise and safety compatibility concepts and issues are presented, and copies of relevant legislation and examples of mitigation measures, such as model noise and avigation easements are included. The 2002 Handbook is available for review at http://www.dot.ca.gov/hq/planning/aeronaut/htmlfile/landuse.html and at the Santa Clara County Planning Department office. Note that a local agency is not precluded from establishing land use policies that are more restrictive than those described in this CLUP

3.3 NOISE RESTRICTION AREA

Airport noise affects many communities. At certain levels, airport noise can interfere with sleep, conversation, or relaxation. It also may disrupt school and work activities. At even higher levels, airport noise may make outdoor activities impossible and may begin to raise health concerns with respect to hearing loss and stress-related problems. However, hearing damage from airport noise may not be a problem for nearby neighbors because noise levels are simply not of sufficient intensity to cause such damage. An exception to this is the exposure a ground crew member receives during the handling of a jet aircraft. Similarly, medical studies are inconclusive on a cause-and-effect relationship for non-auditory health concerns near airport. A more general conclusion is that noise may have an additive effect for some people with anxieties, ulcers, and tension illness.

The amount of annoyance that aircraft noise creates among people living and working in the vicinity of an airport varies on an individual basis. Studies show that a certain percentage of people will continue to be annoyed by aircraft noise at any given noise level, regardless of how low that aircraft noise may be.

All levels of government share responsibility for addressing the airport noise issue. The Federal government establishes noise standards for aircraft as published in Federal Aviation Regulations (FAR)

Part 36, *Noise Standards: Aircraft Type and Airworthiness Certification*, and conducts research on noise abatement techniques and noise compatibility. The preparation of a special airport noise study under the provisions of FAR Part 150, *Airport Noise Compatibility Planning*, provides technical assistance to the airport operator in planning and implementing a noise compatibility program. The State of California also prescribes noise standards for all airports as defined in Title 21, *Airport Noise Standards*, of the California Code of Regulations, and sets noise insulation standards for residential structures as defined in Title 24, *California Building Standards Code*, of the California Building Standards Commission. The airport operator may develop airport noise control programs and enact operational restrictions to control and reduce noise levels in the community. Finally, local governments have the responsibility to limit the exposure of the population to excessive airport noise levels through the land use planning and zoning process.

3.3.1 Airport Noise Descriptors

To adequately address the airport noise issue, local governments need a standard way to measure and describe airport noise and establish land use compatibility guidelines. The County of Santa Clara has identified DNL and CNEL as being equivalent measures of noise. Relative to aviation, it is common to use the Community Noise Equivalent Level (CNEL) for determining land use compatibility in the community environment.

The Community Noise Equivalent Level (CNEL) descriptor is a method of averaging single-event noise levels over a typical 24-hour day and applying penalties to noise events occurring during the evening (7 p.m. to 10 p.m.) and night (10 p.m. to 7 a.m.) hours. CNEL is usually defined in terms of average annual conditions, so that the CNEL measured on a given day may be either less than or greater than the annual average.

The State of California uses the CNEL descriptor to describe land use compatibility with respect to aircraft noise exposures. CNEL is the noise descriptor standard defined in Title 21 of the California Code of Regulations, *Airport Noise Standards*, and the standard specified for evaluation of exterior and interior noise impacts in Title 24 of the California Building Standards Commission, *California Building Standards Code*. The CNEL is identified as one of two noise descriptors used in the preparation of a noise element of a general plan according to guidelines established by the Office of Noise Control, California Department of Health Services (now documented as *General Plan Guidelines*, *Appendix A*).

The Federal Aviation Administration (FAA) recognizes the CNEL as essentially equivalent to the Yearly Day-Night Average Sound Level (DNL), which is the basis for FAA recommendations for land use compatibility with respect to aircraft noise described in FAR Part 150, *Airport Noise Compatibility Planning*.

The decibel (dB) is the unit of measurement for the magnitude of a sound. A decibel is equal to the logarithm of the ratio of the intensity of the sound to the intensity of an arbitrarily chosen standard sound, specifically a sound just barely audible to an unimpaired human ear (e.g., 55, 60, 65, 70 and 75 dB).

3.3.2 Land Use Compatibility Standards – California

Land use compatibility guidelines for airport noise are included in the 2002 Handbook. Amendments to the law enacted in October 1994 mandate the use of these guidelines in the preparation of airport land use plans. These guidelines were originally developed in 1983 after considering State Office of Noise Control (ONC), FAA, and U.S. Department of Housing and Urban Development (HUD) guidelines together with a review of available airport land use plans. Existing Federal and State laws were reviewed as part of the updated 2002 Handbook. The State ONC criteria established the 55 dB CNEL as a residential threshold value to distinguish normally acceptable from conditionally acceptable situations.

The Caltrans guidelines for land use compatibility standards extend below the Federal 65 dB CNEL, as the Federal threshold does not sufficiently explain the annoyance area surrounding general aviation airports. The frequency of operations from some airports, visibility of aircraft at low altitudes and typically lower background noise levels around many general aviation airports are all believed to create a heightened awareness of general aviation activity and potential for annoyance outside of the 65 dB CNEL contour.

At and above the 60 dB CNEL level, the California Building Code, Section 1208A.8.3 requires an acoustical analysis of proposed residential structures, other than detached single-family dwellings, to achieve an indoor noise level of 45 dB CNEL.

The noise attenuating properties of existing types of construction were considered in setting state standards. Typical wood frame construction with drywall interiors provides noise reduction of between 15 and 20 dB. Thus, residential units exposed to outdoors noise in the range between 60 and 65 dB CNEL can be attenuated to achieve the 45 dB CNEL level indoors when built using normal standards of construction.

The 2002 Handbook (see Appendix B herein) urges ALUCs to be conservative when establishing noise contours.

3.3.3 Land Use Compatibility Standards - Santa Clara County

In the *Noise Element* of the 1994 Santa Clara County General Plan, the County identified 55 dB DNL as the normally acceptable standard for residential uses. Above 55 dB DNL, residential uses are conditionally acceptable, however the noise exposure is great enough to be of some concern.

3.3.4 Land Use Compatibility Standards – City of Sunnyvle

The *Noise Sub-Element* of the Sunnyvale General Plan recommends a maximum exterior noise level limit of 50 Ldn or CNEL for auditoriums, concert halls and amphitheaters, a maximum exterior noise level limit of 60 Ldn or CNEL for residences, hotels, motels, schools, libraries, hospitals, personal care facilities, meeting halls and churches, and a maximum exterior noise level limit of 65 Ldn or CNEL for outdoor sports, and recreation, neighborhood parks and playgrounds, and a maximum exterior noise level limit of 70 Ldn or CNEL for office buildings, commercial, professional businesses, industrial, manufacturing, utilities and agriculture. Specified land uses in areas above these noise levels may be permitted only after a detailed analysis of the noise reduction requirements and the needed noise insulation features included in the design.

3.3.5 Land Use Compatibility Standards – City of Mountain View

The City of Mountain View uses Ldn as the measure of noise. The *Noise Element* of the Mountain View 1992 General Plan specifies a maximum exterior noise level limit of 55 Ldn for residential, public and passive open spaces, 60 Ldn for commercial and intensive open spaces, and a maximum exterior noise level limit of 65 Ldn for industrial environments. As a consequence, land uses for a particular parcel may be restricted to those uses having a maximum noise limit greater than the existing noise level in the immediate vicinity of the parcel.

3.3.6 Moffett Federal Airfield Noise Contours

An analysis of annual aircraft operations and related noise levels for Moffett Federal Airfield was made by P&D Technologies to prepare CNEL noise exposure maps for the base year 1992 aircraft operations based on the existing runway configuration and use. These noise contours are assumed to be representative of the noise contours which may exist in the vicinity of the Airport and on which land use planning decisions should be made.

The Federal Aviation Administration's (FAA) Integrated Noise Model (INM) Version 3.9 was used to prepare CNEL noise exposure maps based on the FAA aircraft noise level database and airport operational factors described below. The INM was developed by the FAA and represents the Federally sanctioned and preferred method for analyzing aircraft noise exposure. Version 3.9 was the currently available version of the INM, which incorporated an updated database of aircraft performance parameters and noise levels.

3.3.7 Aircraft Operations

Aircraft operational factors that can significantly affect overall noise levels as described by CNEL include the aircraft fleet mix, the number of daily operations and the time of day when aircraft operations occur. Runway use factors also significantly influence CNEL values. Trip length can also affect aircraft single-event noise levels. An aircraft that is making a local flight may carry less fuel and fewer passengers than that for a long flight and therefore make less noise on departure. The INM applies corrections to air carrier

aircraft takeoff profiles to account for these differences, but makes no corrections to light aircraft takeoff profiles.

Historically Moffett Field has averaged about 60,000 aircraft operations annually on the airfield. (*Final Environmental Assessment, Moffett Field Comprehensive Use Plan*, Pg 82) The 60,000 operations number is used as the 1992 baseline. (Ibid, Appendix B) The forecast operations data is taken from *Assessment of Aircraft Noise Conditions at Moffett Field Airfield*, Table 2 and was based on analyses of airport activity provided by Airport Management. These assumptions are summarized in Tables 3-1 and 3-2.

The analyses included operations by the majority of NASA's aircraft, including some of its more esoteric models (e.g., AV-8 Harrier). However, because the INM did not include some of these aircraft in its database, it was necessary to define substitute aircraft. In these cases every effort was made to select a comparable substitute aircraft in terms of number and type of engines.

Descriptions of aircraft flight tracks were developed for use in the INM through discussions with Airport Management and review of the assumptions used for previous descriptions of aircraft operations at the Airport. Based on these data, generalized flight tracks were prepared for use in the noise modeling process to describe areas with a concentration of aircraft overflights. It is recognized that variations in flight paths occur at the Airport and that the tracks used for this analysis are a general representation of those flight tracks.

3.3.7.1 2022 CNEL Noise Exposure Contours

The Integrated Noise Model (INM) Version 3.9 was used to prepare CNEL noise exposure contours for the Airport based on the aircraft noise level and operational factors described for the base year, 1992. Version 3.9 was the most recent version of the INM and incorporated an updated database of aircraft performance parameters and noise levels.

User inputs to the INM include the following:

- Airport altitude and mean temperature
- Runway configuration
- Aircraft flight track definition
- Aircraft stage length (not applicable to Moffett Federal Airfield)
- Aircraft departure and approach profiles
- Aircraft traffic volume and fleet mix
- Flight track utilization by aircraft types

The INM database includes aircraft performance parameters and noise level data for numerous commercial, military and general aviation aircraft classes. When the user specifies a particular aircraft class from the INM database, the model automatically provides the necessary inputs concerning aircraft power settings, speed, departure profile, and noise levels. INM default values were used for all fixed-wing aircraft types.

After the model had been prepared for the various aircraft classes, INM input files were created containing the number of operations by aircraft class, time of day and flight track for annual average day aircraft operations and future operations.

From these data, the INM produces lines of equal noise levels, i.e. noise contours. The location of these noise contours become less precise with distance from the runway since aircraft do not follow each flight track exactly as defined in the model. However, they are accurate enough to indicate general areas of likely community response to noise generated by aircraft activity and serve as the basis for land use compatibility determinations.

3.3.8 Impacts on Land Use

The 65, 70 and 75 dB CNEL noise contours based on the aircraft operations in the base year 1992 are illustrated on Figure 5 and discussed below.

Table 3 - 1

AIRPORT CONFIGURATION AND RUNWAY USE

Moffett Federal Airfield

2022

Airport Configuration	
Runway Configuration:	32L-14R 32R-14L
Field Elevation: (Runway High Point)	32 feet MSL
Temporal Distribution of Operations:	54 percent Day 43 percent Evening 2 percent Night

Runway Use Factors				
Operations by Aircraft Class	Runway 32L	Runway 14R	Runway 32R	Runway 14L
Takeoffs:				
Fixed Wing Aircraft	46%	4%	46%	4%
Helicopters	23%	2%	69%	6%
Landings:				
Fixed Wing Aircraft	46%	4%	46%	4%
Helicopters	23%	2%	69%	6%

Source: *Assessment of Aircraft Noise Conditions at Moffett Federal Airfield (1999-2010); Final Environmental Assessment, Moffett Field Comprehensive Use Plan, Pg 87, Mitigation Measure NOISE-3 and Airport Management*

Table 3 - 2

ANNUAL AIRCRAFT OPERATIONS

Moffett Federal Airfield

Generalized Aircraft Type (INM Designation)			Year 1992	Year 2022
NASA/Com/Mil Jet				
Antonov	AN-124			26
Boeing	747-8	(747400)		12
Gates	Lear 25D	(LEAR25)	256	
Grumann	F/A-18	(F-18)	4,198	352
Gulfstream	G-III	(GIIB)	110	
Gulfstream	G-IV	(GIV)	110	
Gulfstream	G-V	(GIV)		26
Lockheed	S-3	(S3A&B)		54
Lockheed	U-2	(U2)	256	
Martin	RB-57	(B57E)		44
McDonnell Douglas	AV-8	(AV8B)		80
McDonnell Douglas	C-9A	(C9A)	146	76
McDonnell Douglas	DC-8-50	(DC850)	256	
Northrop	T-38/F5	(T38)		240
Other				585
Total - NASA/Com/Mil Jet			5,332	1,495
Multi Engine Turbine				
Beech	UC-12B	(T44)	5,762	5647
LASC – Georgia	C-141B	(C141A)	512	46
Lockheed	C-5B	(C5A)	548	44
Lockheed	C-130H	(C130HP)	15,402	5066
Lockheed	P-3B	(P3A)	9,636	294
Other				202
Total - Multi Engine Turbine			31,860	11,299
Multi Engine Piston		(BEC58P)	200	226
Single Engine Piston		(COMSEP)	100	580
Helicopter				
Aerospatiale	HH-65C			4750
Bell	AH-1			280
Bell	OH-58			240
Bell	UH-1		1,972	
Sikorsky	HH-60A		18,360	4414
Sikorsky	MH-53E		2,446	
Other				261
Total – Helicopter			22,778	9,945
Dirigible			0	82
Total			60,270	23,627

Source: *Aviation Reuse Activities, Moffett Field; Assessment of Aircraft Noise Conditions at Moffett Federal Airfield and Airport management*

Moffett Federal Airfield

CNEL (dBs)

65 70 75

2022 Aircraft Noise Contours

with AIA

Feet

0 3,000 6,000

N

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Figure 5

3.3.8.1 75 dB CNEL Noise Levels

The 75 dB CNEL aircraft noise contours are completely contained within the Airport boundaries and generally located within the parallel taxiways outboard of the runway.

3.3.8.2 70 dB CNEL Noise Level

The 70 dB CNEL aircraft noise contour is generally contained within NASA owned property and submerged bay lands but overlays a small area of industrial area in the vicinity of Clyde Ave west of the Sunnyvale Golf Course and north of the West Maude Ave and Mary Ave intersection.

3.3.8.3 65 dB CNEL Noise Level

The 65 dB CNEL aircraft noise contour is generally contained within the area bounded by the intersections of Mary Ave and West Maude Ave, Mathilda Ave and Evelyn Ave, Evelyn Ave and Sunnyvale Ave, and the Highway 101/Highway 237 interchange. The majority of this area is commercial and industrial but the area principally southeast of Central Expressway is predominently single and multi unit residences.

3.4 HEIGHT RESTRICTION AREA

Airport vicinity height limitations are required to protect the public safety, health, and welfare by ensuring that aircraft can safely fly in the airspace around an airport. This protects both those in the aircraft and those on the ground who could be injured in the event of an accident. In addition, height limitations are required to protect the operational capability of airports, thus preserving an important part of National and State aviation transportation systems.

Federal Aviation Regulations (FAR) Part 77, *Objects Affecting Navigable Airspace*, establishes imaginary surfaces for airports and runways as a means to identify objects that are obstructions to air navigation. Each surface is defined as a slope ratio or at a certain altitude above the Airport elevation.

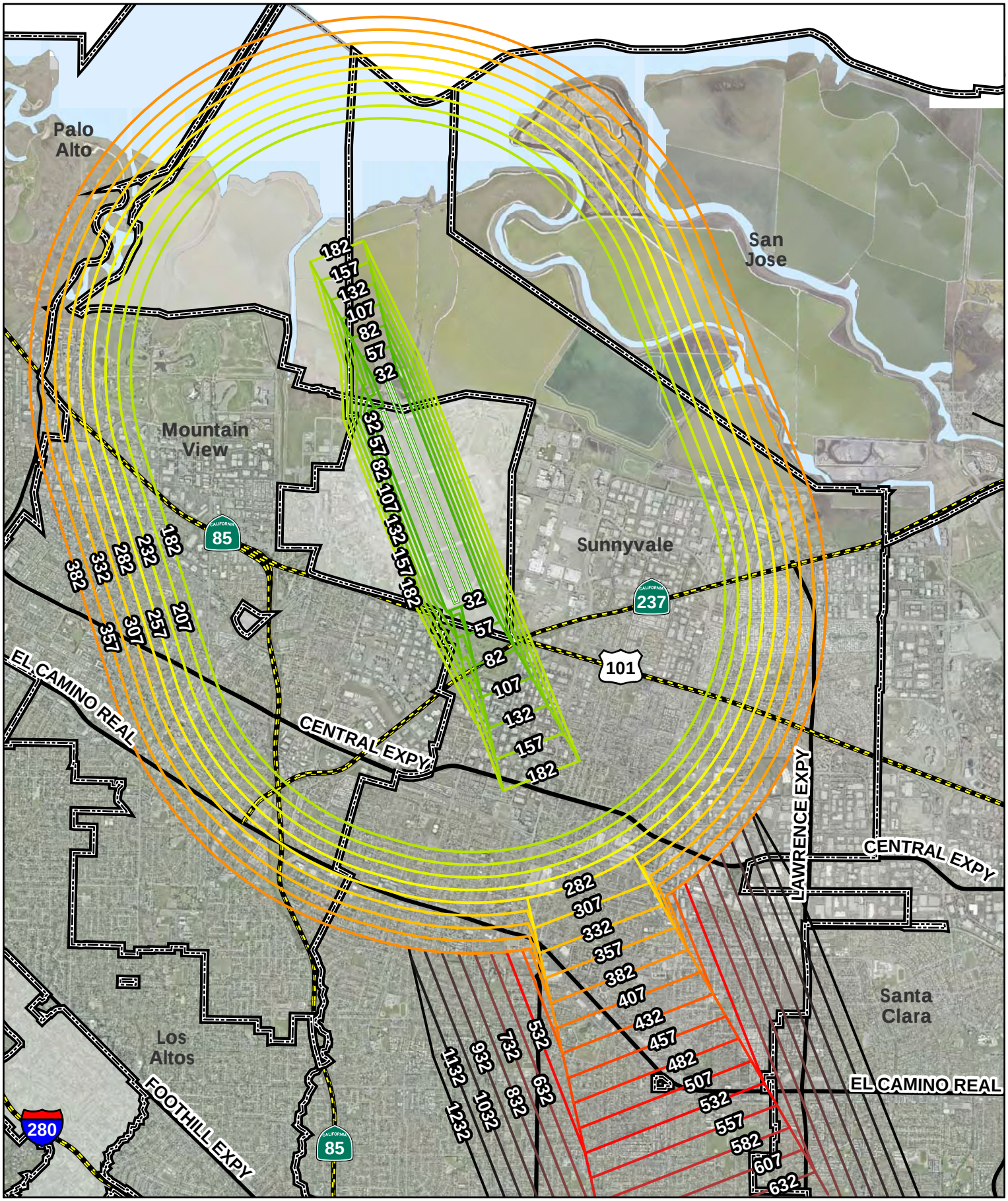
FAA uses FAR Part 77 obstructions standards as elevations above which structures may constitute a safety hazard. Any penetrations of the FAR Part 77 surface are subject to review on a case-by-case basis by the FAA. The FAA evaluates the penetration based on the published flight patterns for the airport, as they exist at that time. If a safety problem is found to exist, the FAA may issue a determination of a hazard to air navigation. The FAA does not have the authority to prevent the encroachment, however California law can prevent the encroachment if the FAA has made a determination of a hazard to air navigation. The local jurisdiction can establish and enforce height restrictions.

The dimensions of the imaginary surfaces vary depending on the type of approach to a particular runway as illustrated on Figure 6 for the Airport based on the ultimate dimensions shown on the Airport Layout Plan. Nonprecision runways generally have larger surfaces and flatter approach slopes than visual runways. Table 3-3 tabulates the imaginary surfaces described below.

3.4.1 Primary Surface

A surface longitudinally centered along a runway, and extending 200 feet beyond the end of each instrument runway. For Runway 32L-14R the width is 500 feet and the primary surface extends 200 feet beyond the ends of the runway. For Runway 32R-14L the width is 1000 feet and the primary surface extends 200 feet beyond the ends of the runway. The two parallel runways are separated by 625 feet, from centerline to centerline.

Moffett Federal Airfield



Maximum Structure Height (feet above MSL)

Runway	132	257	382	507	632	1132
32	157	282	407	532	732	1232
57	182	307	432	557	832	
82	207	332	457	582	932	
107	232	357	482	607	1032	

FAR Part 77 Surfaces

Figure 6

0 2,000 4,000 8,000 Feet

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Table 3 - 3

FAR PART 77 DIMENSIONS

Moffett Federal Airfield

	Runway			
	32R	14L	32L	14R
Runway Type	Precision	Nonprecision	Nonprecision	Visual
Primary Surface				
Length (feet)	9602	9602	8,527	8,527
Width (feet)	1000	1000	500	500
Approach Surface				
Slope	50:1*	34:1	34:1	20:1
Length (feet)	10,000*	10,000	10,000	5,000
Inner Width	1000	1000	500	500
Outer Width	16,000	3,500	3,500	1,500
Transitional Surface				
Slope	7:1	7:1	7:1	7:1
Horizontal Surface				
End Radius (feet)	10,000	10,000	10,000	5,000
Elevation (feet MSL)	182	182	182	182
Conical Surface				
Slope	20:1	20:1	20:1	20:1
Width (feet)	4,000	4,000	4,000	4,000

* Beyond 10,000 feet, the slope decreases to 40:1 for another 40,000 feet.

Source: Federal Aviation Regulations, Part 77

3.4.2 Approach Surface

A surface longitudinally centered on the extended runway centerline, extending outward and upward from each end of the primary surface. An Approach Surface is applied to each end of each runway based upon the type of approach available or planned for that runway end. The inner edge of the Approach Surface is the same width as the Primary Surface for the applicable runway. For runway 32L, the Approach Surface extends outward for a distance of 10,000 feet at a slope of 50:1, and an additional 40,000 feet at a slope of 40:1. The outer width is 16,000 feet. For runway 14L, the Approach Surface extends outward for a distance of 10,000 feet and has an outer width of 3,500 feet. For runway 32R, the Approach Surface extends outward for a distance of 10,000 feet and has an outer width of 3,500 feet. For runway 14R, the Approach Surface extends outward for a distance of 5,000 feet and has an outer width of 1,500 feet.

3.4.3 Transitional Surface

A surface extending outward and upward from the sides of the Primary Surface and from the sides of the Approach Surfaces at a slope of 7 to 1.

3.4.4 Horizontal Surface

A horizontal plane 150 feet above the established airport elevation (the highest point of an airport's usable landing area measured in feet above mean sea level), the perimeter of which is constructed by swinging arcs 10,000 feet out for Runway 32L and for Runway 32R-14L and 5000 feet out for Runway 14R, from the center of each end of the Primary Surface of each runway and connecting the arcs with tangent lines.

3.4.5 Conical Surface

A surface extending outward and upward from the periphery of the Horizontal Surface at a slope of 20 to 1 for a horizontal distance of 4,000 feet.

3.4.6 Summary

Where imaginary surfaces overlap, such as in the case where the Approach Surface penetrates and continues upward and outward from the Horizontal Surface, the lowest surface is used to determine whether or not an object would be an obstruction to air navigation.

Any proposed new construction or expansion of existing structures that would penetrate any of the FAR Part 77 imaginary surfaces of the Airport is considered an incompatible land use, unless either the FAA has determined that the proposed structure does not constitute a hazard to air navigation or the Caltrans Aeronautics Program has issued a permit allowing construction of the proposed structure. The FAA has established minimum standards for the determination of hazards or obstructions to aviation. The FAA permits local agencies such as the ALUC to establish more restrictive criteria for determining if the height of a structure creates a safety hazard to aircraft operations. A determination by the FAA or Caltrans that a project does not constitute a hazard to air navigation does not limit the ALUC from determining that a project may be inconsistent under the policies of this CLUP.

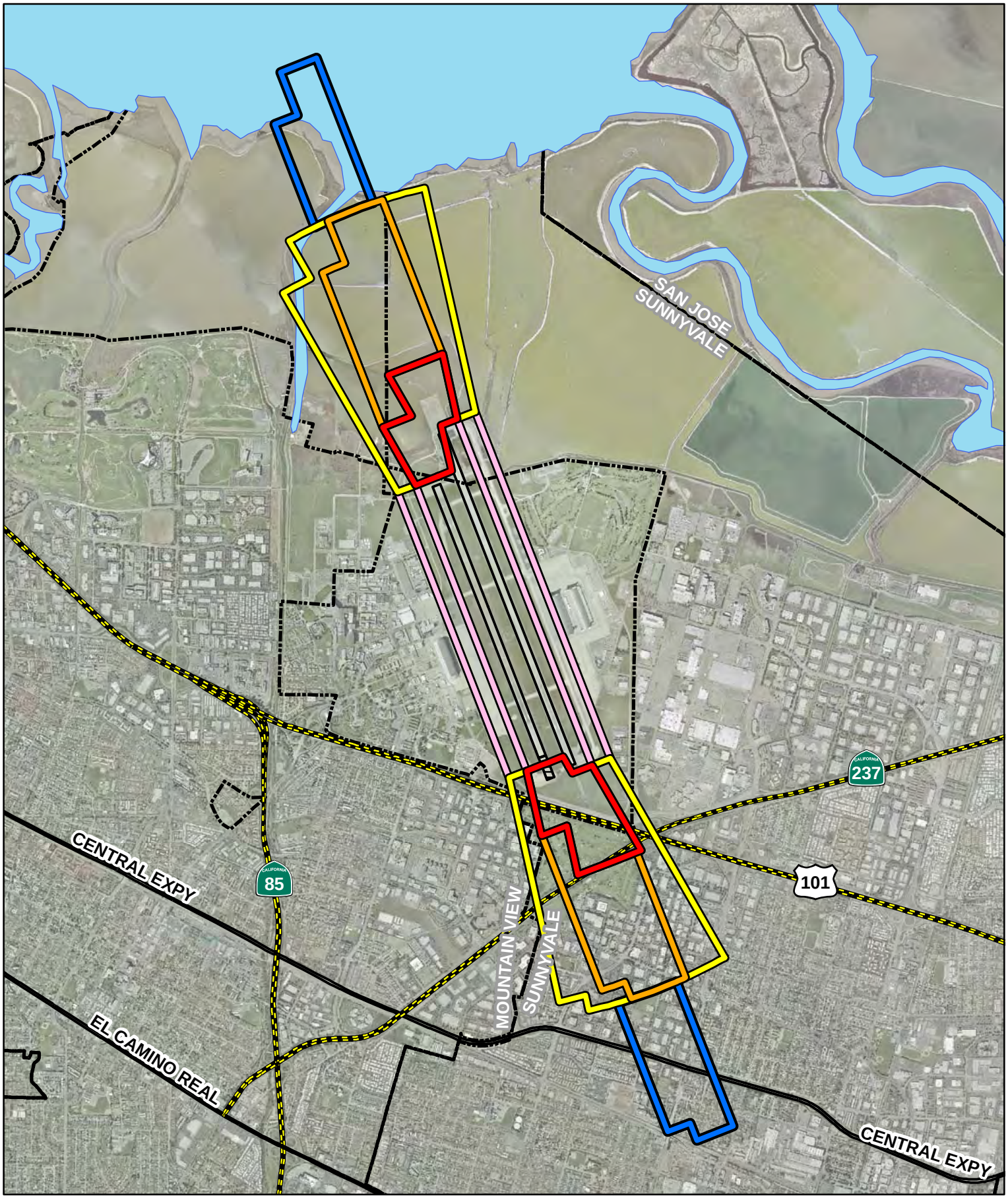
3.5 SAFETY RESTRICTION AREA

Safety of people on the ground and in the air and the protection of property from airport-related hazards are among the responsibilities of the Airport Land Use Commission. The 2002 Handbook presents guidelines for the establishment of airport safety areas in addition to those established by the FAA.

Airport safety zones are established to minimize the number of people exposed to potential aircraft accidents in the vicinity of the Airport by imposing density and use limitations within these zones. Figure 7 illustrates the airport safety zones for Runways 32R-14L and 32L-14R at the Airport. The safety zones are related to runway length and expected use. Aircraft flight tracks are also shown on Figure 3.

In addition, the survivability of aircraft occupants in the event of an emergency landing has been shown to increase significantly if the aircraft is able to reach the ground under control of the pilot. As a result, open area requirements are established for the safety zones in addition to density and use requirements.

Moffett Federal Airfield



Safety Zones

- Runway
- Displaced Threshold
- Runway Protection Zone
- Inner Safety Zone
- Turning Safety Zone
- Outer Safety Zone
- Sideline Safety Zone

Airport Safety Zones
Figure 7

0 1,500 3,000 6,000 Feet

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Exposure to potential aircraft accidents diminishes with distance from the airport runways. The safety zones shown below are in descending order of exposure to potential aircraft accidents, with the Runway Protection Zone (RPZ) having the highest exposure followed by the Inner Safety Zone (ISZ), Turning Safety Zone (TSZ), Outer Safety Zone (OSZ) and Sideline Safety Zone (SSZ), with the Traffic Pattern Zone (TPZ) having the lowest level of exposure.

The safety zones defined for the Airport are a composite based on the 2002 Handbook guidelines. The safety zones for the two runways are based on the diagram for a Large Air Carrier Airport. Safety zones are exclusive in their coverage, and do not overlay each other. Thus land in the RPZ is only in the RPZ, and is not also in the ISZ or TSZ. The order of precedence is, from highest to lowest: RPZ, ISZ, TSZ, OSZ, SSZ and TPZ. If a development project spans more than one safety zone, each part of the project must meet the requirements for the safety zone in which the land for that portion of the project is located. Thus a single building that extends over two safety zones may have differing height and density-of-use requirements for the two parts of the same physical structure. The following safety zones apply to Moffett Federal Airfield based on information presented in the 2002 Handbook:

3.5.1 Runway Protection Zone

The function of the Runway Protection Zone (RPZ) is to enhance the protection of people and property on the ground and aircraft occupants. RPZs should be clear of all structures and activities. The RPZ begins at the end of the Primary Surface, 200 feet out from the runway threshold. It is a trapezoidal area centered on the extended runway centerline. The size is related to the expected aircraft use and the visibility minimums for that particular runway.

- Runway 32R-14L: The RPZ for Runway 32R is 2,500 feet long, with an inner width of 1000 feet and an outer width of 1,750 feet. The RPZ for Runway 14L is 1,700 feet long, with an inner width of 1000 feet and an outer width of 1,510 feet.

- Runway 32L-14R: The RPZ for Runway 32L is 1,700 feet long, with an inner width of 500 feet and an outer width of 1010 feet. The RPZ for Runway 14R is 1,000 feet long, with an inner width of 500 feet and an outer width of 700 feet.

3.5.2 Turning Sector Defined

Some of the safety zones are bounded by a geometric feature defined as a “Turning Sector”. There are four Turning Sectors for this airport, one for each end of each runway. These features are constructed as follows:

3.5.2.1 Runways 32L-14R and 32R-12L Turning Sectors

Each runway end has a sector, which is bounded on the inside by the extended runway centerline. The radius of these sectors is 12667 ft, with the center point located 6667 ft along the runway centerline from the outer end of the primary surface, towards the opposite end of the runway. The arc for the sector is swung to the side opposite from the other runway. The interior angle of the sector is 8.53 degrees from the extended runway centerline.

The Turning Sector is defined as the outside bounds of the feature constructed above. .

3.5.3 Inner Safety Zone

The Inner Safety Zone (ISZ) is located within the Turning Sector boundary described above. The ISZ represents the approach and departure corridors that have the second highest level of exposure to potential aircraft accidents. The ISZ is centered on the runway centerline and extends from the outer edge of the Runway Protection Zone (RPZ) to the outer edge of the Turning Sector boundary. The length of the runway determines the dimensions.

- The ISZ for both ends of Runway 32R-14L and 32L-14R is an area 1,500 feet wide, centered on the runway and contained within the Turning Safety Zone.

3.5.4 Turning Safety Zone

The Turning Safety Zone (TSZ) represents the approach and departure areas that have the third highest level of exposure to potential aircraft accidents. The Turning Safety Zones are defined below.

- The TSZ for both ends of runways 32L-14R and 32R-14L are the areas inside the Turning Sector that do not include the RPZ or the ISZ.

- The Turning Safety Zone areas do not include the RPZ or the ISZ.

3.5.5 Outer Safety Zone

The Outer Safety Zone (OSZ) extends out from the TSZ. The OSZ is a rectangular area centered along the extended runway centerline starting at the outer end of the TSZ. The length of the runway determines the dimensions.

- The OSZ for both ends of runway 32R-14L and 32L-14R is a rectangular area 1000 feet wide and 4000 feet long at the center, centered on the extended runway centerline, starting at the outer edge of the TSZ and ISZ and extending outward from the runway threshold.

3.5.6 Sideline Safety Zone

The Sideline Safety Zone (SSZ) is an area along the length of the outside the Primary Surface intersecting the Turning Safety Zone. Aircraft do not normally over fly this area, except by aircraft losing directional control on takeoff (especially multi-engine aircraft).

- The SSZ for both runways 32R-14L and 32L-14R is 1000 feet from the runway centerline to the outside of the runways and extends to intercept the Turning Zone boundary.

3.5.7 Traffic Pattern Zone

The Traffic Pattern Zone (TPZ) is that portion of the airport area that are routinely overflown by aircraft. The potential for aircraft accidents is relatively low and the need for land use restrictions is minimal. For this airport no TPZ has been designated due to the limited aircraft traffic at this airport.

3.6 OVERFLIGHT RESTRICTION AREA

All areas within the Airport Influence Area (AIA) should be regarded as potentially subject to aircraft overflights. Although sensitivity to aircraft overflights will vary from one person to another, overflight sensitivity is particularly important within residential land uses and certain agricultural uses (open-air turkey farming, etc.).

3.7 AIRPORT INFLUENCE AREA

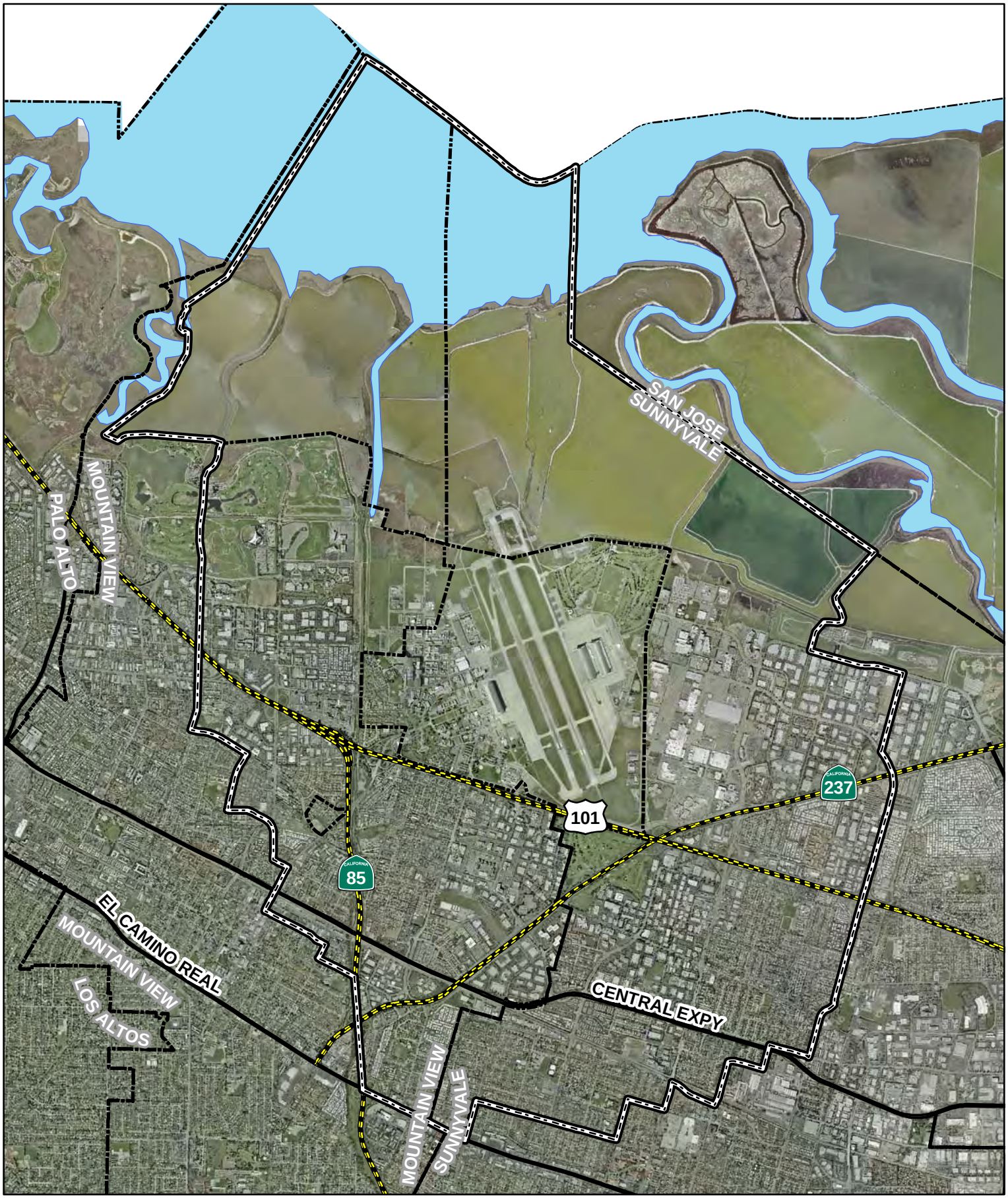
The Airport Influence Area (AIA) is a composite of the areas surrounding the Airport that are affected by noise, height, and safety considerations. The AIA is defined as a feature-based boundary around the Airport within which all actions, regulations and permits must be evaluated by local agencies to determine how the Airport Comprehensive Land Use Plan policies may impact the proposed development. This evaluation is to determine that the development meets the conditions specified for height restrictions, and noise and safety protection to the public. [A.B. 332 (Stats. 2003) to be codified in Public Utilities Code 21674.7(b)].

The Airport Influence Area (Figure 8) is defined as the area bounded by Evelyn Avenue on the south, west to Mathilda Ave., south to Washington Ave., west to Pastoria Ave., south to Iowa Ave., west to Bernardo Ave., south to El Camino Real, west to Highway 85, north to Dana Street, west to Calderon Ave., north to Villa Street, west to Castro Street, north to Moffett Blvd, north to Central Ave, west to Stierlin Road, north to Montecito Ave., west to San Pierre Way, north to Middlefield Road, west to Permanente Creek, north to the Mountain View City boundary, west and north to the Santa Clara County boundary, east to the San Jose City boundary, south to Moffett Channel, south to North Mathilda Ave, east to East Caribbean Ave., east to

Crossman Ave., south to East Java Drive, east to Fairoaks Ave., south to Arques Ave., west to Morse Ave., south to California Ave., west to Sunnyvale Ave., south to Evelyn Ave.

The compatibility of land uses within the AIA should be preserved to the maximum extent feasible with particular emphasis on the preservation of existing agricultural and open space uses. The conversion of land from existing or planned agricultural, industrial, or commercial use to residential uses should be the subject of careful consideration of the potential impacts of aircraft overflights.

Moffett Federal Airfield



AIA

NUQ

Airport Influence Area
Figure 8

0 1,500 3,000 6,000 Feet

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4 LAND USE COMPATIBILITY POLICIES

4.1 LAND USE PLANNING ISSUES

The land use planning criteria for the individual land use planning issues applicable to the Airport are discussed in Section 3.0. Figure 8 presents a composite of the land use planning categories and the criteria that establishes the Airport Influence Area (AIA). The Santa Clara County Airport Land Use Commission (ALUC) and the Comprehensive Land Use Plan (CLUP) for the Airport address policies based on the following criteria:

- **Noise Restriction Area.** The Noise Restriction Area is defined as the 65 dB CNEL contour (see figure 5), inside which an acoustical analysis is required by the local agency with land use jurisdiction demonstrating how low-density, single-family, multi-family and mobile home dwelling units and schools have been designed to meet an interior noise level of 45 dB CNEL.

- **Height Restriction Area.** The Height Restriction Area is to protect the airspace around the Airport. The Horizontal Surface is 150 feet above the Airport elevations, the perimeter of which is constructed by swinging arcs out from the ends of the Primary Surface. The radius of the arc is 10,000 feet for this airport. The Conical Surface extends outward and upward from the periphery of the Horizontal Surface at a slope of 20 to 1 for a horizontal distance of 4,000 feet. The Height Restriction Area is defined as the lowest of the Approach Surfaces plus the Transitional Surfaces plus the Horizontal Surface plus the Conical Surface and is defined in Section 3.4 and presented on Figure 6.

- **Safety Restriction Area.** The Safety Restriction Area is to provide land use safety with respect to people and property on the ground and the occupants of aircraft. The safety zones applicable to the Airport are defined in Section 3.5 and presented on Figure 7.

- **Overflight Restriction Area.** The Overflight Restriction Area is a composite of the areas surrounding the Airport that are areas affected by noise, height, and safety considerations. All areas within the AIA (Figure 8) should be regarded as potentially subject to aircraft overflights as discussed in Section 3.6.

4.2 JURISDICTIONAL RESPONSIBILITIES

The policies set forth in this section contain criteria intended to prevent future conflicts between airport operations and surrounding land uses. Implementation of these criteria requires action by the local jurisdictions that have control over the land uses in the Airport Influence Area (AIA) presented on Figure 8.

The jurisdictional responsibilities for implementation of the CLUP are described below. In addition, actions that are available to the local jurisdictions are also presented.

Implementation of the CLUP will be the responsibility of the County of Santa Clara and the cities of Mountain View and Sunnyvale for those areas within the AIA under their jurisdiction. Note that Policies T-1 and T-2 extend countywide. The Santa Clara County Airport Land Use Commission (ALUC) will provide policy direction, advice, and technical assistance to the County and the Cities of Sunnyvale and Mountain View as needed to facilitate implementation of the CLUP.

4.2.1 Santa Clara County Airport Land Use Commission

The Santa Clara County Airport Land Use Commission shall:

- Adopt the airport land use policies and the AIA boundary maps. The CLUP and its planning boundary maps shall, upon adoption, be subject to annual review by the ALUC and be updated as required.

  Amendments to the CLUP document are limited to no more than once per calendar year.

- Review the General Plan and applicable Specific Plans for the County of Santa Clara and the cities of Mountain View and Sunnyvale to determine if such plans and regulations are consistent with the policies of this CLUP.

  Until the ALUC has determined that the General Plans and Specific Plans of the County and cities are consistent, or until the County or associated city has overridden the ALUC's determination, all actions, regulations and permits within the AIA shall be referred to the ALUC for a consistency determination.

- Review all proposed amendments to the General Plans, Specific Plans, and zoning and building regulations that may affect land use in the AIA.

  The ALUC shall determine if the proposed amendments are consistent or inconsistent with this CLUP.

- Review proposed changes to the Airport Master Plan or Airport Layout Plan or modifications to the aircraft flight tracks, new aircraft noise contours, or any other development that would alter the land use compatibility issues addressed in Section 3.0.

  The ALUC shall determine if the proposed changes are consistent with this CLUP or if the CLUP requires an amendment.

- Review the plans, regulations and other actions where there is a conflict with ALUC plans and policies. A review of land use issues within the AIA relating to ALUC policies may be requested by any member of the ALUC, or by the owner/operator of the Airport.

- Coordinate off-airport land use planning efforts of the cities within the county, the County of Santa Clara and Federal and State agencies concerned with airport land use.

- Gather and disseminate information relating to airport land use and aircraft noise, height and safety factors that may affect land use.

4.2.1.1 Review of Development Projects

Once the ALUC has determined that a local jurisdiction's General Plan and applicable Specific Plans are consistent with the CLUP (or the local jurisdiction has overruled the ALUC and made the required findings of consistency with the purposes stated in Public Utilities Code section 21670), to the extent that these are not mandated referrals the ALUC encourages the local jurisdictions to submit referrals to the ALUC for the following proposed developments:

- Any project that requires use of the Infill policies or Reconstruction policy R-3 in order to be deemed consistent with this CLUP.

- Proposed residential development, including land divisions, consisting of five or more dwelling units or parcels within the AIA.

- Major infrastructure development or improvements (e.g., water, sewer, roads) that would promote urban development within the AIA.

- Proposed land acquisition by any entity for the purpose of developing a school, hospital, nursing home, library, outdoor theater, or other high-density or low-mobility uses within the AIA.

- Any proposal anywhere in the County for construction or alteration of a structure (including antennas) higher than 200 feet above ground level, to verify compliance with FAR 77.13 and ALUC policies.

- Any proposed land use action by a city or County planning agencies involving a question of compatibility with the Airport's activities. For example, creation of a landfill within the AIA would generally meet all height and density requirements, however the tendency of landfills to attract bird activity may create a safety hazard for airport operations.

- Any project within the AIA that is voluntarily referred to the ALUC for review by the local agency.

4.2.1.2 Project Submittals

When review of a land use development proposal is required under this CLUP, the referring agency shall provide the following information to the ALUC in addition to the information required by the city or County:

- A map, drawn to an appropriate scale, showing the relationship of the project to the Airport's boundaries and runways, airport safety zones, airport noise contours and the FAA Part 77 Surfaces for the airport.

- A detailed site plan showing ground elevations, location of structures, open spaces and the heights of structures and landscaping.

- A description of permitted or proposed land uses and restrictions on the uses.

- An indication of the potential or proposed number of dwelling units per acre for residential uses.

- The maximum number of people potentially occupying the total site or portions of the site at any one time.

- Any project submitted for airport land use compatibility review for reasons of height-limit issues shall include a copy of the Federal Aviation Administration's evaluation and reply to proponent's notification to the FAA using FAA Form 7460-1, *Notice of Proposed Construction or Alteration*.

4.2.1.3 Review Process

The proposed actions referred to in Section 4.2.1.1 shall be referred to the ALUC at the earliest possible time but no later than the time allowed in the applicable statutes and regulations, in order that the ALUC's findings may be considered by the local agency prior to finalizing the proposed action.

The ALUC must find a proposal either 1) consistent with the CLUP or 2) inconsistent with the CLUP. Additionally, the ALUC can provide recommendations for changes that would enhance the project's compatibility with the CLUP or the ALUC can state under which conditions the proposal would be consistent.

The ALUC must take action on a request for a consistency determination within 60 days of the referral. If the proponent desires to request a delay in determination, the proponent must withdraw the project from consideration and reapply at a later date. If the determination is not made within 60 days (or as extended by proponent's request), the proposal shall be considered consistent with the CLUP.

The ALUC may, at the request of the local jurisdiction or interested party, provide an interpretation of any of the policies found in this CLUP.

4.2.2 Affected Local Agencies

To bring their General Plan and Specific Plans into conformity with this CLUP, the ALUC recommends that the affected agencies consider the following:

- Adopt the ALUC policies and the AIA boundary maps.

- Incorporate the adopted ALUC policies, boundary maps, and land use recommendations into the local agency's General and/or Specific Plan and Zoning Ordinances.

- Provide ongoing review of land uses within the AIA to ensure that land use changes are compatible with ALUC policies and plans. The affected local agency shall work closely with ALUC staff to establish and carry out review coordination with the ALUC.

- Incorporate the AIA boundary maps into the local agency's geographic information system (GIS).

4.2.2.1 Overrule Notification Process

The affected local agencies, after January 1, 2004, shall:

- Notify the ALUC at least 45 days in advance, of their intent to overrule any ALUC non-consistency determination including a copy of their proposed decision and specific findings..

- Notify the ALUC if and when the local agency overrules any ALUC non-consistency determinations.

4.2.3 Airport Owner/Operator Responsibilities

To ensure that the ALUC is able to fulfill its statutory responsibilities, Moffett Federal Airfield should:

- Notify the ALUC of operational or physical changes at the Airport, such as aircraft flight tracks, airfield configuration, structural development, relocation of facilities, and proposed new and/or updates to planning documents.

- Notify the ALUC of any changes that may affect Federal Aviation Regulations (FAR) Part 77 height restriction surfaces or CNEL aircraft noise contours.

- Provide CNEL noise contour data including the most recent actual data as well as forecasts covering at least twenty years in to the future.

4.3 COMPATIBILITY POLICIES

The compatibility of land uses in the vicinity of the Airport will be evaluated for each of the potential land use impact categories in terms of the compatibility policies established for each category of concern. The graphic illustrations of each area of concern presented in this CLUP are to be included in the evaluation. The following compatibility policies will be used for ALUC consistency review.

4.3.1 General Compatibility

4.3.1.1 Policies

G-1 In the case of conflicting policies, the most restrictive policy shall be applied.

G-2 If a project falls into an area within two or more Airport Influence Areas (AIA), the most restrictive conditions from each separate airport shall apply to the project.

G-3 The Airport is exempt from the policies of this CLUP for the development of projects on airport property.

G-4 Local jurisdictions should encourage the conversion of land uses that are currently incompatible with this CLUP to uses that are compatible, where feasible.

G-5 Where legally allowed, dedication of an avigation easement to the United States Government shall be required to be offered as a condition of approval on all projects located within an Airport Influence Area, other than reconstruction projects as defined in paragraph 4.3.7. All such easements shall be similar to that shown as Exhibit 1 in Appendix A.

G-6 Any proposed uses that may cause a hazard to aircraft in flight are not permitted within the AIA. Such uses include electrical interference, high intensity lighting, attraction of birds (certain agricultural uses, sanitary landfills), and activities that may produce smoke, dust, or glare. This policy requires the height at maturity of newly planted trees to be considered to avoid future penetration of the FAA FAR Part 77 Surfaces.

G-7 All new exterior lighting or large video displays within the AIA shall be designed so as to create no interference with aircraft operations. Such lighting shall be constructed and located so that only the intended area is illuminated and off-site glare is fully controlled. The lighting shall be arrayed in such a manner that it cannot be mistaken for airport approach or runway lights by pilots.

4.3.2 Noise Compatibility

The objective of noise compatibility criteria is to minimize the number of people exposed to frequent and/or high levels of aircraft noise.

4.3.2.1 Policies

N-1 The Community Noise Equivalent Level (CNEL) method of representing noise levels shall be used to determine if a specific land use is consistent with the CLUP.

N-2 In addition to the other policies herein, the Noise Compatibility Guidelines presented in Table 4-1 shall be used to determine if a specific land use is consistent with this CLUP.

N-3 Noise impacts shall be evaluated according to the Aircraft Noise Contours presented on Figure 5.

N-4 No residential or transient lodging construction shall be permitted within the 65 dB CNEL contour boundary unless it can be demonstrated that the resulting interior sound levels will be less than 45 dB CNEL and there are no outdoor patios or outdoor activity areas associated with the residential portion of a mixed use residential project of a multi unit residential project. (Sound wall nose mitigation measures are not effective in reducing noise generated by aircraft flying overhead.)

N-5 All property owners within the 65 dB CNEL contour boundary who rent or lease their property for residential use shall include in their rental/lease agreement with the tenant, a statement advising that they (the tenants) are living within a high noise area and the exterior noise level is predicted to be greater than 65 dB CNEL in a manner that is consistent with current state law including AB2776 (2002).

N-6 Residential construction will not be permitted in the area between the 60 dB CNEL contour boundary and the 65 dB CNEL contour boundary unless it can be demonstrated that the resulting interior sound level will be no greater than 45 dB CNEL.

N-7 Noise level compatibility standards for other types of land uses shall be applied in the same manner as the above residential noise level criteria. Table 4-1 presents acceptable noise levels for other land uses in the vicinity of the Airport.

N-8 Single-event noise levels (SENL) from single aircraft overflights are to be considered when evaluating the compatibility of highly noise-sensitive land uses such as schools, libraries, outdoor theaters, and mobile homes. Single-event noise levels are especially important in the areas regularly overflown by aircraft, but which may not produce significant CNEL contours, such as the down-wind segment of the traffic pattern, and airport entry and departure flight corridors.

4.3.3 Height Compatibility

The objective of height compatibility criteria is to avoid development of land uses, which, by posing hazards to flight, can increase the risk of an accident occurring.

4.3.3.1 Policies

H-1 Any structure or object that penetrates the Federal Aviation Regulations Part 77, Objects Affecting Navigable Airspace, (FAR Part 77) surfaces, as presented in Table 3-3 and illustrated on Figure 6 will be considered an incompatible land use.

H-2 Any project that may exceed a FAR Part 77 surface must notify the Federal Aviation Administration (FAA) as required by FAR Part 77, Subpart B on FAA Form 7460-1, *Notice of Proposed Construction or Alteration*. (Notification to the FAA under FAR Part 77, Subpart B, is required even for certain proposed construction that does not exceed the height limits allowed by Subpart C of the FARs).

Table 4 - 1

NOISE COMPATIBILITY POLICIES

Moffett Federal Airfield

LAND USE CATEGORY	CNEL					
	55-60	60-65	65-70	70-75	75-80	80-85
Residential – low density Single-family, duplex, mobile homes	*	**	****	****	****	****
Residential – multi-family, condominiums, townhouses	*	**	****	****	****	****
Transient lodging - motels, hotels	*	*	**	****	****	****
Schools, libraries, indoor religious assemblies, hospitals, nursing homes	*	***	****	****	****	****
Auditoriums, concert halls, amphitheaters	*	***	***	****	****	****
Sports arena, outdoor spectator sports, parking	*	*	*	**	***	****
Playgrounds, neighborhood parks	*	*	***	****	****	****
Golf courses, riding stables, water recreation, cemeteries	*	*	*	**	***	****
Office buildings, business commercial and professional, retail	*	*	**	***	****	****
Industrial, manufacturing, utilities, agriculture	*	*	*	***	***	****
* Generally Acceptable	Specified land use is satisfactory, based upon the assumption that any buildings involved are of normal conventional construction, without any special noise insulation requirements. Mobile homes may not be acceptable in these areas. Some outdoor activities might be adversely affected.					
** Conditionally Acceptable	New construction or development should be undertaken only after a detailed analysis of the noise reduction requirements is made and needed noise insulation features included in the design. Outdoor activities may be adversely affected. <u>Residential:</u> Conventional construction, but with closed windows and fresh air supply systems or air conditioning will normally suffice.					
*** Generally Unacceptable	New construction or development should be discouraged. If new construction or development does proceed, a detailed analysis of the noise reduction requirements must be made and needed noise insulation features included in the design. Outdoor activities are likely to be adversely affected.					
**** Unacceptable	New construction or development should not be undertaken.					

Source: Based on General Plan Guidelines, Appendix C (2003), Figure 2 and Santa Clara County ALUC 1992 Land Use Plan, Table 1

4.3.4 Tall Structure Compatibility

Structures of a height greater than 200 feet above ground level can be a special hazard to aircraft in flight.

4.3.4.1 Policies

T-1 The applicant for any proposed project anywhere in the County for construction or alteration of a structure (including antennas) higher than 200 feet above ground level shall submit to the FAA a completed copy of FAA Form 7460-1, *Notice of Proposed Construction or Alteration.* A copy of the submitted form shall be submitted to the Santa Clara County ALUC as well as a copy of the FAA's response to this form.

T-2 Any proposed project anywhere in the County for construction or alteration of a structure (including antennas) higher than 200 feet above ground level shall comply with FAR 77.13(a)(1) and shall be determined inconsistent if deemed to be a hazard by the FAA or if the ALUC determines that the project has any impact on normal aircraft operations or would increase the risk to aircraft operations.

4.3.5 Safety Compatibility

The objective of safety compatibility criteria is to minimize the risks associated with potential aircraft accidents. These include the safety of people on the ground and the safety of aircraft occupants. Land uses of particular concern are those in which the occupants have reduced effective mobility or are unable to respond to emergency situations.

4.3.5.1 Policies

S-1 These policies and the Safety Zone Compatibility Policies presented in Table 4-2 shall be used to determine if a specific land use is consistent with the CLUP. Safety impacts shall be evaluated according to the Airport Safety Zones presented on Figure 7.

S-2 Schools, hospitals, nursing homes, and other uses in which the majority of occupants are children, elderly, and/or disabled shall be prohibited within the Runway Protection Zones (RPZs), Inner Safety Zones (ISZs), Turning Safety Zones (TSZs), Sideline Safety Zones (SSZs), and Outer Safety Zones (OSZs) presented in Table 3-2. These uses should also be discouraged in the Traffic Pattern Zones (TPZs).

S-3 Amphitheaters, sports stadiums and other very high concentrations of people shall be prohibited within the Runway Protection Zones (RPZs), Inner Safety Zones (ISZs), Turning Safety Zones (TSZs), Sideline Safety Zones (SSZs), Outer Safety Zones (OSZs) and Traffic Pattern Zones (TPZs) presented in Figure 7.

S-4 Storage of fuel or other hazardous materials shall be prohibited in the Runway Protection Zone. Above ground storage of fuel or other hazardous materials shall be prohibited in the Inner Safety Zone and Turning Safety Zone. Beyond these zones, storage of fuel or other hazardous materials not associated with aircraft use should be discouraged.

S-5 In addition to the requirements of Table 4-2, open space requirements, for sites which can accommodate an open space component, shall be established at the general plan level for each safety zone where feasible as determined by the local jurisdiction, as individual parcels may be too small to accommodate the minimum-size open space requirement. To qualify as open space, an area must be free of buildings, and have minimum dimensions of at least 75 feet wide by 300 feet ling along the normal direction of flight. The clustering of development and provision of contiguous landscaping and parking areas will be encouraged to increase the size of open space areas.

Table 4 - 2

SAFETY ZONE COMPATIBILITY POLICIES

Moffett Federal Airfield

Safety Zone	**Maximum Population Density**	**Open Space Requirements**	**Land Use**
Runway Protection Zone – RPZ	-0- (No people allowed)	100 percent (No structures allowed)	Agricultural activities, roads, open low-landscaped areas. No trees, telephone poles or similar obstacles. Occasional short-term transient vehicle parking is permitted.
Inner Safety Zone – ISZ	Nonresidential, maximum 120 people per acre (includes open area and parking area required for the building's occupants and one-half of the adjacent street area)	30 percent of gross area open. No structures or concentrations of people within 100 feet of the extended runway centerlines.	No residential. Nonresidential uses should be activities that attract relatively few people. No shopping centers, restaurants, theaters, meeting halls, stadiums, multi-story office buildings, labor-intensive manufacturing plants, educational facilities, day care facilities, hospitals, nursing homes or similar activities. No hazardous material facilities (gasoline stations, etc.).
Turning Safety Zone - TSZ	Nonresidential, maximum 200 people per acre (includes open area and parking area required for the building's occupants and one-half of the adjacent street area)	20 percent of gross area Minimum dimensions: 300 ft by 75 ft parallel to the runways.	Residential – if non-residential uses are not feasible, allow residential infill to existing density. No regional shopping centers, theaters, meeting halls, stadiums, schools, day care centers, hospitals, nursing homes or similar activities. No hazardous material facilities (gasoline stations, etc.).
Outer Safety Zone – OSZ	Nonresidential, maximum 300 people per acre (includes open area and parking area required for the building's occupants and one-half of the adjacent street area)	20 percent of gross area	Residential - if non-residential uses are not feasible, allow residential infill to existing density. No regional shopping centers, theaters, meeting halls, stadiums, schools, large day care centers, hospitals, nursing homes or similar activities. No above ground bulk fuel storage.
Sideline Safety Zine - SSZ	Nonresidential, maximum 300 people per acre (includes open area and parking area required for the building's occupants and one-half of the adjacent street area)	30 percent of gross area	Residential - if non-residential uses are not feasible, allow residential infill to existing density. No regional shopping centers, theaters, meeting halls, stadiums, schools, large day care centers, hospitals, nursing homes or similar activities. No above ground bulk fuel storage.

Source: Based on 2002 *Airport Land Use Planning Handbook* prepared by the California Department of Transportation, Division of Aeronautics

S-6 The principal means of reducing risks to people on the ground is to restrict land uses so as to limit the number of people who might gather in areas most susceptible to aircraft accidents. A method for determining the concentration of people for various land uses is presented in Section 5.0, Implementation.

S-7 The following uses shall be prohibited in all Airport Safety Zones:

- Any use which would direct a steady light or flashing light of red, white, green, or amber colors associated with airport operations toward an aircraft engaged in an initial straight climb following takeoff or toward an aircraft engaged in a straight final approach toward a landing at an airport, other than an FAA-approved navigational signal light or visual approach slope indicator.

- Any use that would cause sunlight to be reflected towards an aircraft engaged in an initial straight climb following takeoff or towards an aircraft engaged in a straight final approach towards a landing at an airport.

- Any use which would generate smoke or water vapor, or which would attract large concentrations of birds, or which may otherwise negatively affect safe air navigation within the area.

- Any use which would generate electrical interference that may be detrimental to the operation of aircraft and/or aircraft instrumentation, communication or navigation equipment.

S-8 Buildings that would interfere with an aircraft gliding to an emergency landing in a safety zone open area are not permitted.

S-9 In unique cases an exception can be granted, at the discretion of the ALUC, on the basis of mitigation measures proposed by the applicant which would result in the final project improving the overall safety in the safety zones in comparison to the situation existing prior to the project. An example of such a possible mitigation is the removal of existing incompatible structures in exchange for constructing less incompatible structures. The following conditions must be met for this variance to be granted:

a. There must be a clear, demonstrable net improvement in safety.

b. The mitigation must provide a permanent improvement in safety. For instance, in the example above, the removed structures could not be replaced by other structures at a later date.

4.3.6 Overflight

The objective of the overflight compatibility criteria is to assist those persons who are highly annoyed by overflights or have an above-average sensitivity to aircraft overflights to avoid living in locations where these impacts may occur.

4.3.6.1 Policies

O-1 All new projects within the AIA that are subject to discretionary review and approval shall be required to dedicate an avigation easement to the County of Santa Clara. The avigation easement shall be similar to that shown as Exhibit 1 in Appendix A.

(In September of 2002 Assembly Bill AB2776 was signed into law and is to become effective on January 1, 2004. This statute requires that as part of the real estate transfer process, the purchaser be informed if the property is in an Airport Influence Area and if so, the purchaser is to be informed of the potential impacts resulting from the associated airport.)

4.3.7 Reconstruction

Reconstruction as used in this CLUP is the rebuilding of a legally established structure in any of the safety zones, to its original conditions (typically due to a fire or earthquake damage or destruction). “Original conditions” means the same or lesser footprint, height and intensity of use. Reconstruction projects may be approved under the following policies:

4.3.7.1 Policies

R-1 Reconstruction projects that are not subject to a previous avigation easement shall not be required to provide an avigation easement as a condition for approval.

R-2 Residential reconstruction projects must include noise insulation to assure interior noise levels of less than 45 dB CNEL.

R-3 An application for reconstruction increasing the structure's internal square footage, footprint square footage, height, and/or intensity of use may be approved if the local agency determines that such increase will have no adverse impact beyond that which existed with the original structure. However, a project approved under this policy shall require the property owner to offer and the local agency shall accept an avigation easement to the County of Santa Clara, similar to Exhibit 1 in the Appendix.

4.3.8 Infill

Infill as used in this CLUP is defined as the development of vacant or underutilized residential properties located in a safety zone, of less than 0.25 acres in size, in areas that are already substantially developed with uses not ordinarily permitted by the CLUP compatibility criteria. In some circumstances, infill projects may be acceptable if the following criteria are met.

Redevelopment is defined as land that previously contained a building that was removed or demolished with the intent of replacing the building with a new building for a different use. Redevelopment is not considered Infill.

4.3.8.1 Policies

I-1 Infill projects must comply with paragraph 4.3.5 and Table 4-2 of this CLUP with the exception of the land use density requirements.

I-2 Infill projects may be approved if all of the following conditions are met:

a) The total contiguous undeveloped land area at this location is less than 0.25 acres in size. Note that this means the total contiguous undeveloped land area, not just the land area being proposed for development. Lots larger than 0.25 acres shall not be considered for infill.

b) The site is already surrounded on three sides and a street, or two sides and two streets, by the same land use as that being proposed.

c) The ALUC determines that the project will create no adverse safety impacts beyond those that already exist due to the existing incompatible land uses.

d) The property owner shall offer and the local agency shall accept an avigation easement to the County of Santa Clara, similar to Exhibit 1 in the Appendix.

5 IMPLEMENTATION

5.1 CONSISTENCY WITH LOCAL PLANS AND ZONING

The California State Aeronautics Act {Public Utilities Code: Division 9, Part 1, Chapter 4, Article 3.5, Section 21670 et seq} places the responsibility for implementing and enforcing this Comprehensive Land Use Plan (CLUP) on the local governmental agencies responsible for land use planning within each airport's Airport Influence Area (AIA).

Once the ALUC has adopted a revised (or new) CLUP, and transmitted that CLUP to an affected local agency that local agency is mandated to incorporate the CLUP's provisions into its General and/or Specific Plan(s) within 180 days {Government Code 65302.3(b)}. Implicitly, the local agency is then encouraged to adopt zoning ordinance(s) that implement the policies of their General/Specific Plan(s).

If a local agency decides not to incorporate the CLUP policies verbatim in its General and/or Specific plans, it may overrule portions (or all of) the CLUP if it finds that its General and/or Specific Plans are consistent with the State Aeronautics Acct, PUC 21670 et seq. The overrule process requires a two-thirds vote of the local agency's governing body, supported by specific findings which demonstrate that the plan(s) satisfy the purposes of the State Aeronautics Act {PUC 21670 et seq} and guidance of the state's Airport Land Use Planning Handbook.

During the amendment process and subsequent to adoption of revised General and/or Specific Plan(s) by a local agency, the ALUC is required to promptly review both the draft and final Plan(s) for a CLUP consistency determination {PUC 21676}.

5.2 LAND USE DESIGNATIONS

The most fundamental means of assuring compatibility between an airport and surrounding land uses is by the designation of appropriate land uses in local general plans, specific plans, and zoning ordinances. Even with the designation of appropriate land uses, the long-term maintenance of airports and land use compatibility is often difficult to achieve.

Land use designations can be limited in the degree of restrictiveness that can be applied. Overly restrictive land use regulations may raise constitutional questions to the taking of private property without just compensation. This is particularly applicable in areas near the ends of the runways where such extreme restrictions may be appropriate. For this reason airport owners/operators are encouraged to purchase an interest in the land containing the most restrictive safety zones in order to affect the purposes of this Plan.

Land use designations for an area for different uses than already exist may encourage change in the long term, but it may not eliminate existing incompatible uses. Other actions such as fee simple acquisition may be necessary to bring about the changes.

5.2.1 Airport Overlay Zones

One way of achieving aviation-oriented land use designations is adoption of an overlay or combining zone. An overlay zone supplements local land use designations by adding specific noise and, often more importantly, safety criteria (e.g., maximum number of people on the site, site design, and open space criteria, height restrictions, etc.) applicable to future development in the AIA.

An airport overlay zone has several important benefits. Most importantly, it permits the continued utilization of the majority of the design and use policies contained in the existing zones. At the same time, it provides a mechanism for implementation of restrictions and conditions that may apply to only a few types of land uses within a given land use category or zoning district. This avoids the need for a large number of discrete zoning districts. It also enables local jurisdictions to use the policies provided in the CLUP, rather than through redefinition of existing zoning district descriptions.

The County and cities should consider the following for inclusion in the Airport Overlay District Zone (Airport Safety Overlay Zone):

- **Noise Insulation Standards** - In areas that will potentially be impacted by noise, the Airport Overlay District Zone could be used to assure compliance with the State statutes regarding interior noise levels. The Overlay District Zone could specify the construction techniques necessary to meet the requirements.

- **Height Limitations** - Restrictions on the height of buildings, antennas, trees, and other objects near the Airport, as defined by Federal Aviation Regulations (FAR) Part 77, Subpart C, and regulated by the California Aeronautics Law, can be implemented as part of the Airport Overlay District Zone.

- **FAA Notification Requirements** - The Airport Overlay District Zone also can be used to assure that project developers are informed about the need for compliance with the notification requirements of FAR Part 77. Subpart B of the regulations requires that the proponent of any project that exceeds a specified set of height criteria submit a FAA Form 7460-1 *Notice of Proposed Construction or Alteration* to the FAA prior to commencement of construction. The height criteria associated with this notification requirement are lower than those in FAR Part 77, Subpart C, which define airspace obstructions. The purpose of the notification is to determine if the proposed construction would constitute a potential hazard or obstruction to flight. Notification is not required for proposed structures that would be shielded by existing structures or by natural terrain of equal or greater height, where it is obvious that the proposal would not adversely affect air safety.

- **Maximum Densities** - The principal noise and safety compatibility standards in the CLUP are expressed in terms of dwelling units per acre for residential uses and people per acre for other land uses. These standards can either be included as is in the Airport Overlay District Zone or used to modify the underlying land use designations. For residential land uses, the correlation between the compatibility criteria and land use designations is direct. For other land uses, the implications of the density limitations are not as clear. One step that can be taken by local governments is to establish a matrix indicating whether specific types of land uses are or are not compatible with each of the four compatibility zones. To be useful, the land use categories will need to be more detailed than typically provided by general plan or zoning ordinance land use designations.

- **Open Space Requirements** - CLUP criteria regarding AIA open space suitable for emergency aircraft landings can be implemented by the Airport Overlay District Zone. These criteria are most effectively carried out by planning at the general or specific plan level, but may also need to be addressed in terms of development restrictions on large parcels.

5.2.2 Avigation Easements

Avigation easements are another type of land use control measure available to local jurisdictions. Historically, avigation easements have been used to establish height limitations, prevent other flight hazards, and prevent noise impacts. More recently, they have been used as a form of buyer awareness - the recording of an easement against a property ensures that prospective buyers of the property are informed about the Airport impacts. (See the Appendix for a typical Avigation Easement).

An avigation easement applies only to the specific property to which it is attached and it is binding on all subsequent owners of the property. Avigation easements can be obtained either by purchase or by required dedication.

- **Purchase** - Acquisition of avigation easements for a monetary amount is usually done by the Airport owner, which may or may not be the same as the local land use jurisdiction. In most instances, the purchase of avigation easements is limited to property within Runway Protection Zones or elsewhere very close to the Airport's boundaries where some significant degree of restriction or impact is involved.

- **Dedication** - Required dedication of avigation easements is sometimes set as a condition for local jurisdiction approval of a proposed land use development, especially a residential development, in the vicinity of an Airport. Generally, when avigation easements are obtained in this manner, they are primarily intended to serve as a comprehensive and stringent form of a buyer awareness measure.

A standard avigation easement conveys the following property rights from the owner of the property to the holder of the easement:

- **Overflight** - A right-of-way for free and unobstructed passage of aircraft through the airspace over the property at any altitude above a surface specified in the easement (in accordance with Federal Aviation Regulations Part 77 and/or criteria for terminal instrument procedures).

- **Impacts** - A right to subject the property to noise, vibration, fumes, dust, and fuel particle emissions associated with airport and aircraft activity.

- **Height Limits** - A right to prohibit the construction or growth of any structure, tree, or other object that would penetrate the acquired airspace.

- **Access and Abatement** - A right-of-entry onto the property, with appropriate advance notice, for the purpose of removing, marking, or lighting any structure or other object that enters the acquired airspace.

- **Other Restrictions** - A right to prohibit electrical interference, glare, misleading light sources, visual impairments, and other hazards to aircraft from being created on the property.

Easements that convey only one or more of these rights are common. An easement containing only the first two rights is usually referred to as an overflight or noise easement. The latter three rights are often collectively called a height-limit or airspace easement. Overflight easements are useful in locations sufficiently distant from an airport where height limits and other restrictions are not a concern. Height-limit easements have most frequently been obtained by purchase of properties close to an airport where restrictions on the height of objects are necessary. Because height-limit easements do not include the overflight easement rights, there is little apparent advantage to obtaining them rather than a complete avigation easement.

5.2.3 Buyer Awareness Measures

Buyer awareness is an umbrella category for types of airport/land use compatibility measures whose objective is to ensure that prospective buyers of property in the vicinity of an airport are made aware of the airport's existence and the impacts that the airport activity has on surrounding land uses. Avigation easements are the most definitive form of a buyer awareness measure. Buyer awareness can also be successfully implemented through other types of programs. Two primary methods are deed notices and real-estate disclosure statements.

- **Deed Notices.** Deed notices are statements, attached to the deed to a property, disclosing that the property is subject to routine overflights and associated noise and other impacts by aircraft operating at a nearby airport. An ideal application of deed notices is as a condition of approval for development of residential land use in airport-vicinity locations where neither noise nor safety are significant factors, but frequent aircraft overflights may be annoying to some people. In addition to being recorded with the deed to a property, the notices should be included on parcel maps and any tentative or final subdivision maps. (See the Appendix for a typical Deed Notice).

  Deed notices are similar to avigation or other aviation-related easements in that they become part of the title to a property and thus are a permanent form of buyer awareness. The distinguishing difference between deed notices and avigation easements is that deed notices only serve as a disclosure of potential overflights, whereas avigation easements convey an identified set of property rights. In locations where height limitations or other land use restrictions are unnecessary, deed notices have the advantage of being less cumbersome to define. Also, they have less appearance of having a negative effect on the value of the property.

- **Real Estate Disclosure Statements.** A more comprehensive form of buyer awareness program is to require that information about an Airport Influence Area be disclosed to prospective buyers of all airport-vicinity properties prior to the transfer of title. The advantage of this type of program is that it applies to previously existing land uses as well as to new development.

  This type of program can be implemented through adoption of a local ordinance requiring real estate disclosure upon the transfer of title or it can be established in conjunction with the adoption of an airport overlay zone. Notification describing the zone and discussing its significance could be formally sent to all local real-estate brokers and title companies. The brokers would be obligated by State law to pass it along to prospective buyers after receiving this information.

  At a minimum, the area covered by a real estate disclosure program should include the Airport Influence Area as established in the CLUP. The boundary also could be defined to coincide with the boundaries of an airport overlay zone.

5.2.4 Methods of Calculating Density and Building Occupancy

The Safety Compatibility Policies for non-residential uses limit the persons per acre in certain safety zones. Determining the maximum number of persons likely to occupy a structure is not an exact science, however, the following methods are available to provide a reasonable estimate of how many persons will use a proposed facility.

Parking Ordinance. Most jurisdictions have parking regulations, which specify how many parking spaces are required for particular types of uses. Once an assumption is made regarding the number of persons per vehicle, an estimate can be made of the maximum number of persons that could occupy the structure. The assumption of persons per vehicle must be based on the type of use.

Number of Seats. If the proposed use provides seating for its patrons, such as a restaurant, it is relatively easy to determine the maximum number of people that could occupy the structure.

Uniform Building Code. The Uniform Building Code (UBC) specifies a certain number of square feet per occupant that are required for certain uses. This number can be determined through contact with the city or County Building Department.

Similar Uses. Certain uses may require an estimate based on a survey of similar uses. This method is more difficult but is appropriate for uses, which because of the nature of the use, cannot be reasonably estimated based on parking or square footage.

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7 APPENDIX A

Sample Implementation Documents

Some ALUC approvals may require the dedication of Avigation Easements or use of Deed Notices in selected areas around the Airport. Examples might be the dedication of Avigation Easements for any development within the Traffic Pattern Zone, especially within the Safety Zones and Runway Protection Zones. Deed Notices might be more appropriate for development outside the Traffic Pattern Zone but within the Airport Influence Area.

Examples of these documents are presented on the following pages.

Exhibit 1 – Avigation Easement

Exhibit 2 – Deed Notice

Exhibit 1
Sample Avigation Easement

This indenture made this ____ day of _____20 __, between _____ herein after referred to as Grantor, and the County of Santa Clara a political subdivision in the State of California hereinafter referred to as Grantee.

The Grantor, for good and valuable consideration, the receipt and sufficiency of which are hereby acknowledged, does hereby grant to the Grantee, its successors and assigns, a perpetual and assignable easement over the following described parcel of land in which the Grantor holds a fee simple estate. The property which is subject to this easement is described as _____on "Exhibit A" attached and is more particularly described as follows:

[Insert legal description of real property]

The easement applies to the airspace above an imaginary plane over the real property. The plane is described as follows:

> The imaginary plane above the hereinbefore described real property, as such plane is defined by Part 77 of the Federal Aviation Regulations and consists of a plane [describe approach, transition, or horizontal surface]: the elevation of said plane being based upon the official _____ Airport runway end elevation of _____ feet Above Mean Sea Level (AMSL), as determined by [insert name and date of survey or Airport Layout Plan that determines the elevation], the approximate dimensions of which said plane are described and shown on Exhibit A attached hereto and incorporated herein by reference.

The aforesaid easement and right-of-way includes, but is not limited to:

(1) For the use and benefit of the public, the easement and continuing right to fly, or cause or permit the flight by any and all persons, or any aircraft, of any and all kinds now or hereafter known, in, through, across, or about any portion of the Airspace hereinabove described; and

(2) The easement and right to cause or create, or permit or allow to be caused or created within all space above the existing surface of the hereinabove described real property and any and all Airspace laterally adjacent to said real property, such noise, vibration, currents and other effects of air, illumination and fuel consumption as may be inherent in, or may arise or occur from or during the operation of aircraft of any and all kinds, now or hereafter known or used, for navigation of or flight in air; and

(3) A continuing right to clear and keep clear from the Airspace any portions of buildings, structures, or improvements of any kinds, and of trees or other objects, including the right to remove or demolish those portions of such buildings, structures, improvements, trees, or other things which extend into or above said Airspace, and the right to cut to the ground level and remove, any trees which extend into or above the Airspace; and

The right to mark and light, or cause or require to be marked or lighted, as obstructions to air navigation, any and all buildings, structures, or other improvements, and trees or other objects which extend into or above the Airspace; and

(5) The right of ingress to, passage within, and egress from the hereinabove described real property, for the purposes described in subparagraphs (3) and (4) above at reasonable times and after reasonable notice.

For and behalf of itself, its successors and assigns, the Grantor hereby covenants with the County of Santa Clara, for the direct benefit of the real property constituting the _____ Airport hereinafter described, that neither the Grantor, nor its successors in interest or assigns will construct, install, erect, place or grow in or upon the hereinabove described real property, nor will they permit to allow, any building structure, improvement, tree or other object which extends into or above the Airspace or which constitutes an obstruction to air navigation, or which obstructs or interferes with the use of the easement and rights-of-way herein granted.

The easements and rights-of-way herein granted shall be deemed both appurtenant to and for the direct benefit of that real property which constitutes the _____ Airport, in the County of Santa Clara, State of California; and shall further be deemed in gross, being conveyed to the Grantee for the benefit of the Grantee and any and all members of the general public who may use said easement or right-of-way in landing at, taking off from or operating such aircraft in or about the _____ Airport, or in otherwise flying through said Airspace.

Grantor, together with its successors in interest and assigns, hereby waives its right to legal action against Grantee, its successors, or assigns for monetary damages or other redress due to impacts, as described in Paragraph (2) of the granted rights of easement, associated with aircraft operations in the air or on the ground at the airport, including future increases in the volume of changes in location of said operations. Furthermore, Grantor, its successors, and assigns shall have no duty to avoid or mitigate such damages through physical modifications of airport facilities or establishment or modification of aircraft operational procedures or restrictions. However, this waiver shall not apply if the airport role or character of its usage (as identified in an adopted airport master plan for example) changes in a fundamental manner which could not reasonably have been anticipated at the time of the granting of this easement and which results in a substantial increases in the impacts associated with aircraft operations. Also, this grant of easement shall not operate to deprive the Grantor, its successors or assigns, of any rights which may from time to time have against any air carrier or private operator for negligent or unlawful operation of aircraft.

These covenants and agreements run with the land and are binding upon the heirs, administrators, executors, successors and assigns of the Grantor, and, for the purpose of this instrument, the real property firstly hereinabove described is the servient tenement and said _____ Airport is the dominant tenement.

DATED: _____ _____

_____

STATE OF CALIFORNIA }
ss
COUNTY OF SANTA CLARA }

On _____, before me, the undersigned, a Notary Public in and for said County and State, personally appeared _____, and _____ known to me to be the persons whose names are subscribed to the within instrument and acknowledged that they executed the same.

WITNESS my hand and official seal.

_____
Notary Public

Exhibit 2

Sample Deed Notice

The following statement should be included on the deed and recorded by the County for any property located within the Airport Influence Area. This statement should also be included on any parcel map, tentative map or final map for subdivision approval for any property within the Airport Influence Area.

> The *Santa Clara County Airport Comprehensive Land Use Plan* identifies Airport Influence Areas. Properties within these areas are routinely subject to overflights by aircraft using the associated airport and, as a result residents may experience inconvenience, annoyance or discomfort arising from the noise or sight of such operations. State law (Public Utilities code sections 21670 et. Seq.) establishes the importance of public use airports to protection of the public interest of the people of the State of California. Residents of property near such airports should therefore be prepared to accept the inconvenience, annoyance or discomfort from normal aircraft operations. Residents also should be aware that the current volume of aircraft activity may increase in the future in response to government needs, Santa Clara County population and/or economic growth. Any subsequent deed conveying this parcel or subdivisions there of shall contain a statement in substantially this form.

8 APPENDIX B

Selected Excerpts
California Airport Land Use Planning Handbook (January 2002)

Establishing Noise Compatibility Policies

[Page Summary-8]
"Compatibility plans should be based upon the noise contours for the time frame that results in the greatest noise impacts. Usually, this time frame is the long-range future (at least 20 years), but sometimes can be the present or a combination of the two. Also, for busy airports, the capacity of the runway system may be the best representation of potential long-range future activity levels."

[Pages 7-18,19]
"State statutes specify that airport land use compatibility plans must be based upon an airport development plan "that reflects the anticipated growth of the airport during at least the next 20 years." Forecasts having the required 20-year time horizon are normally included in airport master plans. The FAA, the Division of Aeronautics, and some regional planning agencies also prepare individual airport forecasts, some extending to 20 years.

For the purposes of compatibility planning, however, 20 years may be shortsighted. For most airports, a lifespan of more than 20 years can reasonably be presumed. Moreover, the need to avoid incompatible land use development will exist for as long as an airport exists. Once development occurs near an airport, it is virtually impossible or at least very costly and time consuming to change the land uses to ones which would be more compatible with airport activities

In conducting noise analyses for compatibility plans, the long-range time frame is almost always of greatest significance. Barring vast improvements in aircraft noise reduction technology, the growth in aircraft operations expected at most airports will result in larger noise contours. A possible exception to this trend is that, at some airports, planned changes in runway configuration or approach procedures could result in reduction of noise impacts in some portions of the airport environs. In these instances, a combination of current and future noise contours may be the appropriate basis for compatibility planning.

Past improvements in aircraft noise reduction technology or, more to the point, the elimination of older, noisier aircraft from the fleet have caused noise contours at some airports to shrink. One result of shrinking contour sizes during the late 1990s was pressure to allow residential and other noise-sensitive development closer to airports. Allowing such development might be reasonable in situations where no potential exists for the contours to expand back to their former size (for example, where policies to limit contour sizes have been adopted). However, whether future technology will again enable significant reduction in noise impacts is uncertain. Thus, looking to the long-range future, the scenario which has the greatest land use planning implications for most airports is that anticipated future growth in airport activity will result in expansion of noise contours.

G U I D A N C E
The "at least" phrase in the statutory guidelines deserves emphasis. The 20-year time frame should be considered a minimum for compatibility plans. Noise impacts (as well as other compatibility concerns) should be viewed from the longest practical time perspective."

NUQ CLUP
CHANGE DOCUMENT
11/2/12 to 11/18/16
WBW

Cover page: Added "Amended 11/18/16",

Page 4-4, Section 4.3.1.1, Policy G-5 Deleted "County of Santa Clara" and added "United States Government".

Page 4-4, Section 4.3.1.1, Policy G-6 Added the following sentence to the end of this paragraph: "This policy requires the height at maturity of newly planted trees to be considered to avoid future penetration of the FAA FAR Part 77 Surfaces."

Page 4-5, Section 4.3.1.1, Policy G-7 Added the phrase "or large video displays" in the first sentence.