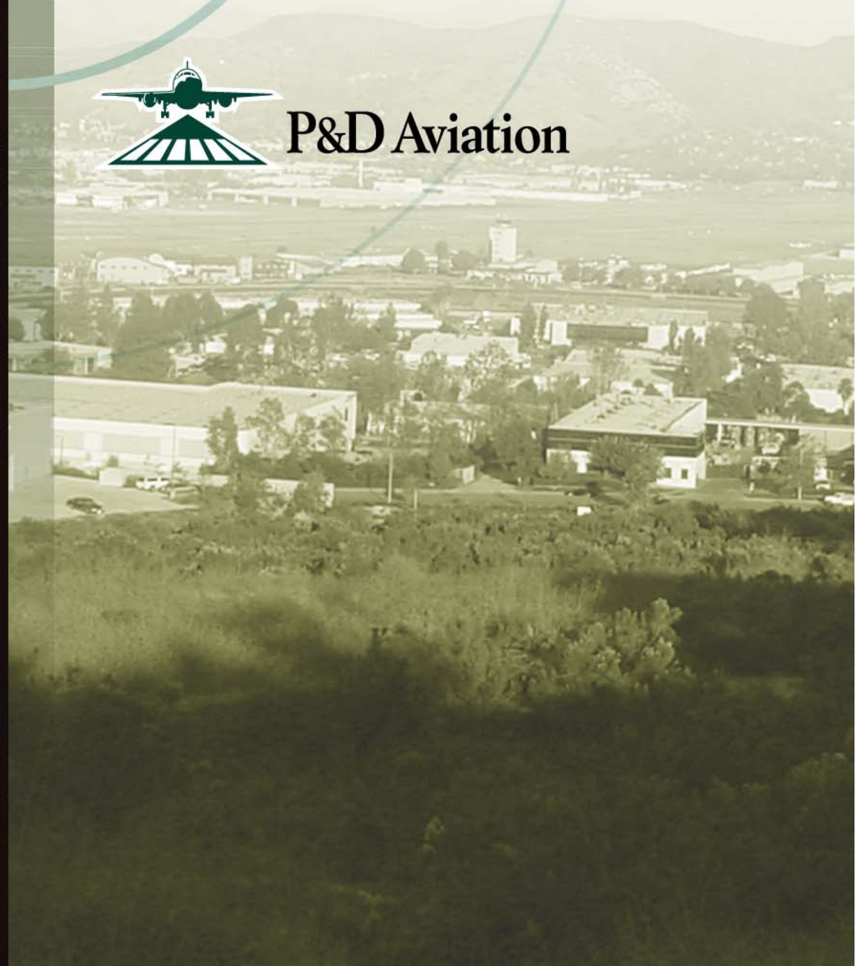
Gillespie Field

Airport Layout Plan Update Narrative Report



P&D Aviation

Gillespie Field
Airport Layout Plan Update

NARRATIVE REPORT

Prepared for:

County of San Diego
Department of Public Works
1960 Joe Crosson Drive
El Cajon, California 92020

Prepared by:

P&D Aviation
A Division of P&D Consultants, Inc.
999 Town & Country Road, 4th Floor
Orange, California 92868
(714) 835-4447

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Chapter 1
Introduction

GENERAL

Gillespie Field is a 757-acre publicly owned facility, serves the aviation needs of the City El Cajon and surrounding cities. The airport is owned by the County of San Diego and operated by the Department of Public Works (DPW). In order to determine the potential of the airport and specific opportunities for improving facilities, the County sponsored an Airport Layout Plan (ALP) Update through a planning grant from the FAA Airport Improvement Program (AIP). In September 2001, a contract was awarded to P&D Aviation, a division of P&D Consultants, Inc. of Orange, California to prepare an Airport Layout Plan Update and Narrative Report for Gillespie Field.

This document comprises the Narrative Report for the airport layout plan update that documents the research, analyses and findings of the study. During the course of the study, an Interim Report was issued which documented the initial elements of the work program including inventory, forecasts and facility requirements. A Draft Final Narrative Report revised and superceded the Interim Report, and together with a set of airport plans, thoroughly documented the entire work program for the ALP Update. This Narrative Report supercedes all prior reports.

PURPOSE AND SCOPE OF STUDY

The main objective of this study is to update the Airport Layout Plan to determine the extent, type and schedule of development needed to accommodate future aviation demand at the airport. The recommended development shall be presented in the following three planning periods: short-term (2005-2009); intermediate-term (2010-2014); and, long-term (2015-2025). The recommended development should satisfy aviation demand, community development and other transportation modes. Above all else, the Plan must be technically sound, practical and economically feasible. The following objectives shall also serve as a guide in the preparation of the study:

- To provide an effective graphic presentation of the ultimate development of the airport.
- To present the pertinent backup information and data which were essential to the development of the Airport Layout Plan Update.
- To describe the various concepts and alternatives which were considered in the establishment of the proposed Plan.
- To provide a concise and descriptive report so that the impact and logic of its recommendations can be clearly understood by the community the airport serves and by those authorities and public agencies that are charged with the approval, promotion and funding of the improvements proposed in the Airport Layout Plan Update.
- To ensure reliability and safety of airport operations.

THE PLANNING PROCESS

A transportation planning study, such as this, is accomplished by following some fundamental, sequential steps that are briefly stated as an overview of the work to be accomplished. The initial step involves taking inventories of existing facilities and systems, documenting existing conditions, and coordinating activities with other agencies. Next, air traffic demand forecasts are prepared and then translated into a listing of required facilities. Once this list is determined it is possible to compare requirements with existing facilities to identify deficiencies. Alternative development concepts that satisfy the deficiencies are then developed and evaluated so that a recommended concept is identified. Once identified, the preferred alternative will then be detailed and examined in terms of a staged development plan. This report documents the basic steps outlined above that were accomplished in updating the airport layout plan.

It is should be noted that the airport layout plan update focuses on the airport and the planning of facilities within its property boundary. The evaluation of off-airport areas is considered to the extent that acquisition of land is required for airport use, or that off-airport areas are impacted by airport noise or height restrictions. The airport layout plan update is not intended as a comprehensive general development plan for the area surrounding the airport or community. However, it can be coordinated or incorporated into other community development programs.

Chapter 2
Executive Summary

INTRODUCTION

The findings, conclusions, and development recommendations of the airport layout plan update are highlighted in this executive summary. It should be noted that the development recommendations contained in this report are based upon projected traffic levels and attainment of these levels. It cannot be overemphasized that where development is recommended based upon demand or traffic levels, it is ***actual***, not forecast, demand that dictates the timing of construction. However, for planning purposes, a schedule must be provided and this schedule is based upon the development concept requirements and the forecasts of traffic presented in Chapter 4.

It is also important to point out that the schedule of improvements proposed in this plan is contingent upon the availability of Federal, State, and local funds and private investment. While improvements will eventually be scheduled for specific years in this airport layout plan update, it must be remembered that it is the programming of the Airport Improvement Program by the FAA that will determine the timing of projects eligible for FAA funding assistance. Development projects at Gillespie Field must be reconciled with the development priorities of other airports in the region. In terms of projects not eligible for FAA monies, the implementation will depend on the availability of local funds and private sources. Thus, the implementation of the recommendations will depend upon FAA programming and funding availability, as well as the attainment of the projected traffic levels.

The following subsections highlight the air traffic forecasts and the sequencing of the major development recommendations of the plan. Details on the various airport layout plan update elements can be found in subsequent chapters of this report. Chapter 3 describes the existing airport and conditions. The forecasts of aviation demand and the translation of the future demand into a list of required facilities can be found in Chapters 4 and 5, respectively. Chapter 6 presents various alternative development concepts that were considered and Chapter 7 contains the recommended development plan. To assist the reader, a glossary and list of abbreviations used in this report has been provided as Appendix A. Appendix B contains an Economic Impact Analysis including an inventory of the businesses located at Gillespie Field. Appendix C is a technical report that deals with the noise contour analysis that was performed as part of the study. Appendix D contains excerpts from state guidelines for compatible land use planning with respect to safety.

FORECASTS OF AVIATION DEMAND

Aviation demand forecasts are projections of air traffic levels at an airport. In the case of Gillespie Field, a general aviation airport, the forecasts focus on the number of aircraft based at the airport, and the number of operations (takeoffs and landings). A range of forecasts was prepared reflecting potential activity based on baseline, high and low growth scenarios.

The forecast of based aircraft is presented in Table 2-1. The forecasts included in this summary chapter represent a "High Growth" scenario. A based aircraft is one that is permanently stationed at an airport or lessee, usually by some form of agreement between the aircraft owner and the airport management. This forecast value is useful in developing projections of aircraft activity, as well as determining future needs of certain airport elements. As seen, the number of based aircraft is projected to increase from 2000 levels (the base year for traffic projections) of 774 to 1,198 in the year 2025.

Aircraft operations are projected to increase from 2000 levels of 187,652 to 293,500 by the year 2025 as presented in Table 2-2. The majority of these operations will be by single engine piston aircraft, accounting for approximately 258,670 operations by 2025, or 88 percent of all operations.

Table 2-1
FORECAST OF BASED AIRCRAFT

Aircraft Type	2000	2007	2012	2025
Single Engine Piston	685	785	863	1,025
Multi Engine Piston	41	48	53	68
Turboprop/Business Jet	11	23	30	45
Rotorcraft	28	32	36	48
Other	9	10	10	11
Total	**774**	**898**	**992**	**1,198**

Source: P&D Aviation analysis.

Table 2-2
FORECAST OF AIRCRAFT OPERATIONS

Type Aircraft/Operation	1998	2007	2012	2025
Single Engine Piston	166,074	188,150	204,372	240,013
Multi Engine Piston	9,940	11,692	13,097	16,359
Turboprop/Business Jet	2,667	8,395	12,410	22,995
Helicopter	6,788	9,425	10,950	11,297
Other	2,182	2,339	2,472	2,837
Total	**187,652**	**220,000**	**243,300**	**293,500**

Source: P&D Aviation analysis.

FACILITY REQUIREMENTS

Chapter 5 presents the projection of facility requirements deemed necessary to accommodate the forecast aviation demand through the year 2025. The "High Growth" forecast has been assumed for planning purposes. Listed below are the major findings and conclusions of the analysis.

Airside

- For this Airport Layout Plan Update the airport is designated as ARC B-II which will ensure that all general aviation aircraft that currently use the airport will be provided adequate facilities. Standards for an ARC of B-I should be applied to the short parallel runway.

- Airfield capacity is sufficient to accommodate forecast operations. However, the planning in the ALP Update should consider capacity enhancements in the ultimate layout of the airfield where practical.

- The ALP should consider extension of Runway 9R-27L to enhance operations to the extent practical. It also appears feasible to displace the threshold of Runway 27R 440 feet (instead of the present 1,306 feet). This will require obstruction removal and coordination with FAA.

- A service road traverses the runway safety area of Runway 27R. A fence penetrates the runway safety area along with a parking lot, which are not on airport property, for Runway 35. These do not meet FAA standards for runway safety areas and should be corrected.

- Replacement of the existing VASI with PAPI at some point during the planning period may be considered as needed. Runway 27L qualifies for the installation of a PAPI system in the short term.

Landside

- In order to accommodate the projected number of based aircraft it will be necessary to develop the 70-acre parcel on the southeast corner of the airport for aviation uses after the present lease expires in August 2005. Interim non-aviation uses may be possible as long as they do not preclude the eventual development of aviation facilities when needed.

- Approximately 384 additional T-hangars and 145,000 square feet of conventional hangar space are projected to be required to meet long term based aircraft storage requirements.

- Approximately 12.6 acres west of Marshall Avenue is not required to meet aeronautical demand. The County may request the release of this property from aeronautical use which will require coordination and approval by FAA.

- An area to consolidate as much as possible future (small) helicopters is proposed to accommodate the projected increase in based helicopters. It is not intended to serve institutional operators with larger helicopters such as law enforcement, aerial fire fighting or medical evacuation/ambulance.

- Approximately 13,720 square feet of general aviation terminal is required. Considering the predominant use of the existing building for County administrative uses suggest that there is even a greater need for general aviation terminal facilities. While commuter service is not foreseen, future terminal facilities should preserve the opportunity to accommodate scheduled air service should it materialize.

- Additional automobile parking is not needed. However, parking should be provided as new aviation facilities are developed. Considering the potential for parking congestion at the administration building, additional parking should be provided for the building.

- Based on the forecast of aircraft operations the airport is anticipated to meet requirements for at least Index 1 by the year 2025. This will require a dedicated facility to house a fire truck.

RECOMMENDED DEVELOPMENT

The Airport Layout Plan, Figure 2-1, delineates the overall development plan for Gillespie Field as recommended in this ALP Update and Narrative Report. Improvements are proposed in three development phases as follows: Phase 1 (2005–2009), Phase 2 (2010–2014), and Phase 3 (2015-2025).

The primary focus of Phase 1 improvements is enhancement of Runway 27R landing capabilities which will require removal of obstructions, and development of a new aviation use area on the 70-acre parcel on the southeast corner of the airport. Land acquisition (in fee) is proposed at each end of Runway 17-35 to address airfield design standards and for future aviation development. Land acquisition through easements is also proposed for areas of Runway Protection Zones not currently protected by easements. Phase 2 development includes continued development of based aircraft facilities on the 70-acre southeast parcel, development of a helicopter area and general aviation terminal/airport administration building. Phase 3 development involves the ultimate build-out of the 70-acre parcel for aviation uses. Table 2-3 summarizes all development recommendations which are more fully described in Chapter 7.

ENVIRONMENTAL ANALYSIS

During the initial phase of the project (FAA grant application and award) the County was advised by the FAA that an environmental analysis was not required for an ALP Update. It is also the County's understanding that a CEQA document is warranted for an ALP Update. The ALP Update and Narrative Report is a planning document that will lead to a master plan including the preparation of an appropriate environmental document in accordance with CEQA. The master plan and environmental analysis will be pursued as a second phase of the planning program.

NOTES:

1. Ground contour elevations are in feet above Mean Sea Level (MSL).
2. California Coordinate System, Zone 6 NAD 83.
3. Air Traffic Contol Tower site to be determined by FAA study.
4. Final displaced threshold to be determined through obstruction surveys and obstruction removal programs. Terrain penetrating threshold siting surface approximately 1.5 miles to the east to be lighted.
5. The airport is part of the Rancho El Cajon and has not been sectioned. The nearest section corner is approximately 3 miles south of the airport.
6. County to request release from aeronautical use.
7. Slurry seal airfield pavements every 8 to 9 years.
8. Ultimate replacement of VASI with PAPI assumed in Phase 3.
9. Enhance runway–taxiway intersections in Phase 2.
10. Instrument approach procedure based on GPS is assumed in Phase 3.
11. Pave Runway 17–35 infield areas (Phase 1).
12. Buildings within ATCT Line of Sight and Building Restriction Line may be restricted based on height.
13. The Building Restriction Line does not encompass TERPS surfaces. TERPS issues should be addressed through FAA Form 7460 process.

ABBREVIATIONS:

ARP	Airport Reference Point
ATCT	Airport Traffic Control Tower
AWOS	Automated Weather Observation System
BRL	Building Restriction Line
(E)	Existing
(F)	Future
MIRL	Medium Intensity Runway Edge Lights
OFZ	Obstacle Free Zone
PAPI	Precision Approach Path Indicator
REIL	Runway End Identifier Lights
ROFA	Runway Object Free Area
RPZ	Runway Protection Zone
RSA	Runway Safety Area
RVZ	Runway Visibility Zone
R/W	Runway
T/W	Taxiway
TDZE	Touch Down Zone Elevation
VASI	Visual Approch Slope Indicator
ULT.	Ultimate

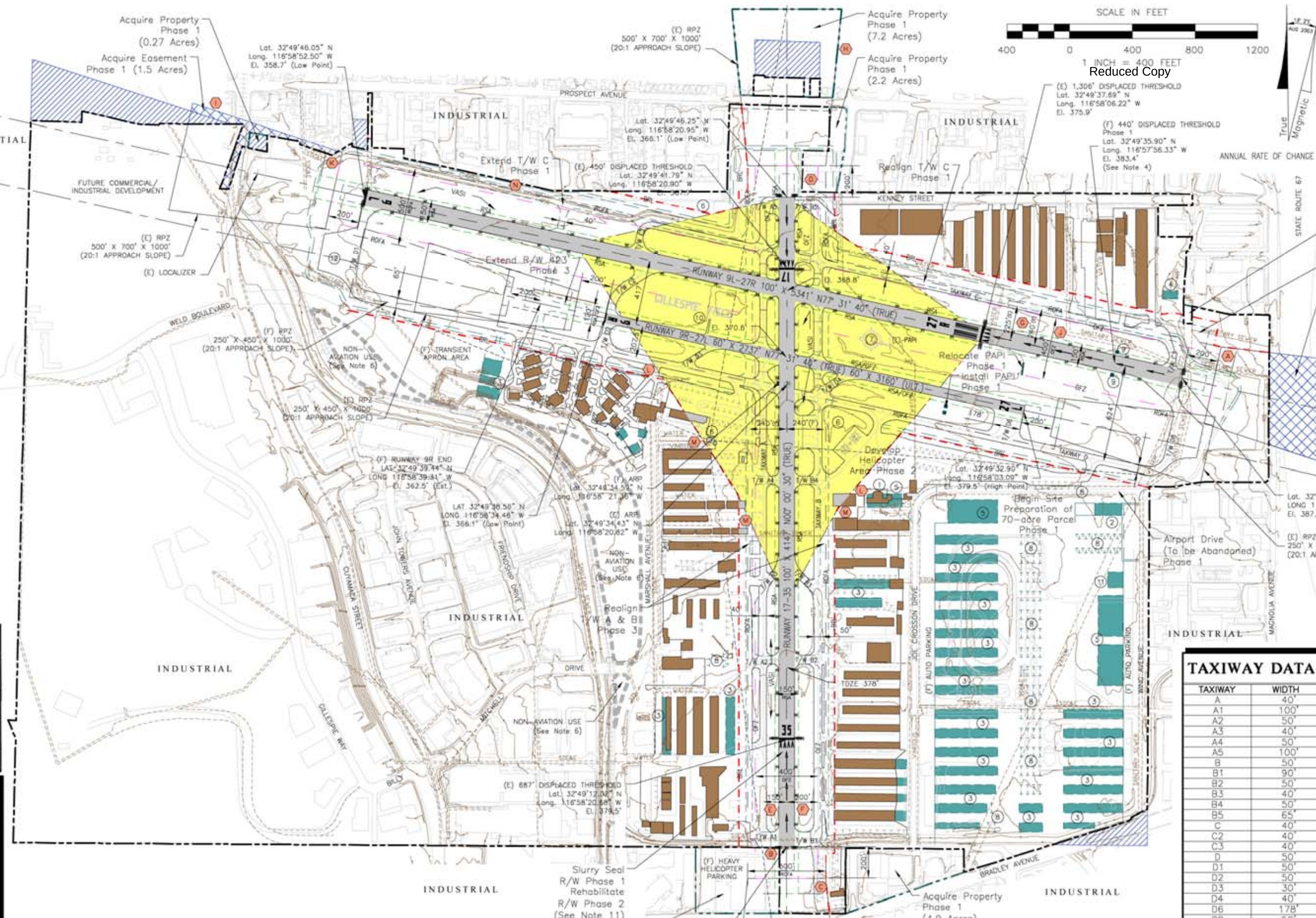
FAA APPROVAL

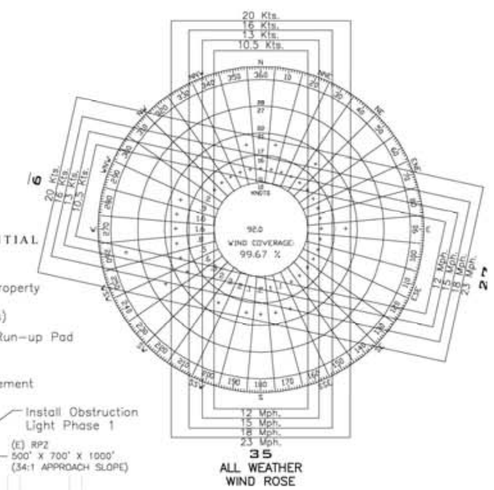
MAY 13 2005

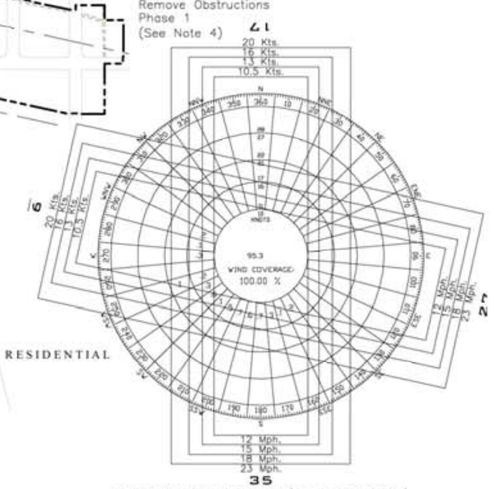
Approved conditionally
Subject to comments contained in our letter dated: May 13, 2005
FEDERAL AVIATION ADMINISTRATION
Western-Pacific Region
By [signature]
Supervisor, Standards Section

AIRPORTS ENGINEER:	[signature] ERIC NELSON	DATE 4/6/05
AIRPORT MANAGER:	[signature] ROGER GRIFFITHS	DATE 4/1/05
DIRECTOR OF AIRPORTS:	[signature] PETER DRINKWATER	DATE 04/06/05
DEPUTY DIRECTOR– PUB. WORKS	[signature] LAWRENCE WATT	DATE 4/6/05

Conditionally approved: Subject to Environmental Review and completion of the Gillespie Field Master Plan.







LOW VISIBILITY WIND ROSE (LESS THAN 1,000' CEILING, LESS THAN 3 MILES VISIBILITY)

RUNWAY	10.5 KNOT CROSS WIND COVERAGE		13 KNOT CROSS WIND COVERAGE	
	ALL WEATHER	LOW VISIBILITY	ALL WEATHER	LOW VISIBILITY
9	43.29%	76.86%	43.54%	77.51%
27	94.61%	90.52%	95.15%	91.44%
17	73.12%	90.03%	74.40%	90.58%
35	60.09%	79.22%	61.48%	79.38%
9/27	98.52%	96.80%	99.31%	98.38%
17/35	93.83%	98.67%	96.50%	99.39%
COMBINED	99.67%	99.64%	99.97%	100.00%

Based on 27,171 observations between 1992 through 2001 taken at Gillespie Field.

TAXIWAY DATA

TAXIWAY	WIDTH
A	40'
A1	100'
A2	50'
A3	40'
A4	50'
A5	100'
B	50'
B1	90'
B2	50'
B3	40'
B4	50'
B5	65'
C	40'
C2	40'
C3	40'
D	50'
D1	50'
D2	50'
D3	30'
D4	40'
D6	178'
D8	50'

BUILDING/FACILITY KEY

#	DESCRIPTION
1	Existing Terminal/Administration Building
2	Future Terminal/Administration Building (Phase 2)
3	Future Hangars (All Phases)
4	Future Aircraft Rescue and Fire Fighting Building (Phase 3)
5	Future Conventional Hangar (All Phases)
6	Potential Air Traffic Control Tower Site (See Note 3) (Phase 3)
7	Segmented Circle
8	Future Tie–downs (All Phases)
9	Future Runway End Identification Lights (Phase 1)
10	Automated Weather Observation System
11	Future Aircraft Maintenance
12	Existing Compass Calibration Pad

LEGEND

	EXISTING	ULTIMATE
AIRFIELD PAVEMENT		
AIRPORT BOUNDARY		
AIRPORT REFERENCE POINT (ARP)		
AVIGATION EASEMENT		
BUILDING RESTRICTION LINE (BRL)		SAME
BUILDINGS (AERONAUTICAL USE AREAS)		
BUILDINGS TO BE REMOVED	NONE	
FENCE		
GROUND CONTOURS	995'	SAME
ATCT LINE OF SIGHT		SAME
OBSTACLE FREE ZONE (OFZ)		
ROAD/VEHICLE PARKING		
RUNWAY LIGHTS		SAME
RUNWAY OBJECT FREE AREA (ROFA)		
RUNWAY SAFETY AREA (RSA)		
RUNWAY VISIBILITY ZONE (RVZ)		SAME

AIRPORT DATA

		EXISTING	ULTIMATE
AIRPORT ELEVATION		387'	SAME
AIRPORT REFERENCE POINT (ARP) COORDINATES (NAD 83)	LATITUDE	32°49'34.43" N	32°49'34.59" N
	LONGITUDE	116°58'20.82" W	116°58'21.36" W
MEAN MAX. TEMP. OF HOTTEST MONTH		88.9° JULY	SAME
AIRPORT AND TERMINAL NAVAIDS		LOCALIZER	SAME
AIRPORT REFERENCE CODE		B–II	SAME
AIRPORT WIND COVERAGE % (13 KNOTS)		99.98%	SAME
MISCELLANEOUS FACILITIES		ATCT, AWOS	SAME, REIL(27R) ARFF
DESIGN AIRCRAFT		FALCON 50	SAME
GPS AT AIRPORT		YES	SAME

RUNWAY END DATA

RUNWAY		EXISTING	ULTIMATE	EXIST. ELEV.	ULT. ELEV.
9L	LATITUDE	32°49'46.05" N	SAME	358.7'	SAME
	LONGITUDE	116°58'52.50" W	SAME		
27R	LATITUDE	32°49'34.99" N	SAME	387.2'	SAME
	LONGITUDE	116°57'51.29" W	SAME		
9R	LATITUDE	32°49'38.56" N	32°49'39.44" N	366.1'	362.5'
	LONGITUDE	116°58'34.46" W	116°58'39.31" W		
27L	LATITUDE	32°49'32.90" N	SAME	379.5'	SAME
	LONGITUDE	116°58'03.09" W	SAME		
17	LATITUDE	32°49'46.25" N	SAME	366.1'	SAME
	LONGITUDE	116°58'20.95" W	SAME		
35	LATITUDE	32°49'05.22" N	SAME	384.8'	SAME
	LONGITUDE	116°58'20.62" W	SAME		

RUNWAY DATA

	RUNWAY 9L–27R		RUNWAY 9R–27L		RUNWAY 17–35	
	EXISTING	ULTIMATE	EXISTING	ULTIMATE	EXISTING	ULTIMATE
AIRPORT REFERENCE CODE	B–II	SAME	B–I (SMALL)	.54	B–II	SAME
EFFECTIVE GRADIENT (IN %)	.53	SAME	.49	.54	.45	SAME
PAVEMENT STRENGTH (000 LBS)	56(S),94(D),190(DT)	SAME	30(S),53(D),87(DT)	SAME	58(S),106(D),195(DT)	SAME
RUNWAY/TAXIWAY PAVEMENT MATERIAL	ASPHALTIC–CONC.	SAME	ASPHALTIC–CONC.	SAME	ASPHALTIC–CONC.	SAME
RUNWAY LIGHTING	MIRL	SAME	NONE	SAME	MIRL	SAME
RUNWAY MARKING	VISUAL	SAME	VISUAL	SAME	VISUAL	SAME
NAVIGATIONAL AIDS	LOC(27R)	SAME	NONE	SAME	NONE	SAME
WIND COVERAGE % (13 KNOTS)	99.77%	SAME	99.77%	SAME	97.20%	SAME
VISUAL AIDS	VASI(9L), PAPI(27R)	SAME, REIL (27R)	NONE	PAPI (27L)	VASI	SAME
APPROACH CATEGORY (FAR PART 77)	VISUAL/NON–PRECISION	SAME	VISUAL/VISUAL	SAME	NON–PRECISION/VISUAL	SAME
APPROACH SURFACES	20:1/34:1	SAME	20:1/20:1	SAME	20:1/20:1	34:1/20:1
MAXIMUM ELEVATION ABOVE MSL	387.2'	SAME	379.5'	SAME	384.8'	SAME
RUNWAY LENGTH	5,341'	SAME	2,737'	3,162'	4,147'	SAME
RUNWAY WIDTH	100'	SAME	60'	SAME	100'	SAME
RUNWAY SAFETY AREA LENGTH/WIDTH	300/150	SAME/SAME	240/120	SAME/SAME	31/150(17) 4/150(35)	SAME/SAME
APPROACH VISIBILITY MINIMUMS	VISUAL/ 1 1/2 MILE	VISUAL/ 1 MILE	VISUAL/VISUAL	SAME	1 1/2 MILE/VISUAL	SAME/SAME

DEVIATIONS FROM FAA DESIGN STANDARDS

#	DESIGN STANDARD	REQUIRED	EXISTING	ACTION
A	RUNWAY OBJECT FREE AREA GRADING	MATCH RSA	+10' OF RSA	TERRAIN PENETRATION TO BE REMOVED
	RUNWAY SAFETY AREA (RSA)	300'	0'	PERIMETER ROAD TO BE RELOCATED AS PART OF AIP PROJECTS 3-06-0212-07 & -08
	OBSTACLE FREE ZONE (OFZ)	FREE OF OBJECTS	TERRAIN	TERRAIN PENETRATION TO BE REMOVED
B	RUNWAY SAFETY AREA (RSA)	300'	4'	ACQUIRE LAND TO ACCOMMODATE RSA
	OBSTACLE FREE ZONE (OFZ)	200'	4'	ACQUIRE LAND TO ACCOMMODATE OFZ
C	RUNWAY PROTECTION ZONE	CLEAR	TIE–DOWNS	TO BE ADDRESSED WHEN LEASE EXPIRES
	RUNWAY OBJECT FREE AREA	300'	47'	
D	OBSTACLE FREE ZONE (OFZ)	200'	29'	ACQUIRE LAND TO ACCOMMODATE OFZ
	RUNWAY OBJECT FREE AREA	300'	29'	ACQUIRE LAND TO ACCOMMODATE ROFA
E	RUNWAY – TAXIWAY SEPARATION	240'	150'	REALIGN TAXIWAY A
F	RUNWAY – TAXIWAY SEPARATION	240'	200'	REALIGN TAXIWAY B
G	RUNWAY – TAXIWAY SEPARATION	240'	225'	REALIGN TAXIWAY C
H	RUNWAY PROTECTION ZONE	NO STRUCTURES	STRUCTURES EXIST	TO BE ACQUIRED
I	RUNWAY PROTECTION ZONE	NO STRUCTURES	STRUCTURES EXIST	TO REMAIN, ACQUIRE AVIGATION EASEMENTS
J	OBSTACLE FREE ZONE (OFZ)	400' WIDE	PENETRATED BY TAXIING AIRCRAFT WITH WINGSPANS > THAN 50' ON T/W C	REALIGN TAXIWAY C
K	RUNWAY OBJECT FREE AREA	300'	210'	TO REMAIN
L	RUNWAY VISIBILITY ZONE	CLEAR	OBSTRUCTED	TO BE ADDRESSED WHEN LEASES EXPIRES
M	BUILDING RESTRICTION LINE	NO BUILDINGS	EXISTING BUILDINGS	TO BE ADDRESSED WHEN LEASES EXPIRES
N	TAXIWAY OBJECT FREE AREA (TOFA)	65.5' TO OBJECT	PROPOSED T/W C PROVIDES 56' TOFA	OBTAIN MODIFICATION TO STANDARD

This is a reduced version of a large size drawing.

Figure 2-1
Airport Layout Plan

Table 2-3
SUMMARY OF RECOMMENDED IMPROVEMENTS

Project	Timing
Phase 1 (2005-2009)	
Relocate R/W 27R Displaced Threshold and Remove and/or Light Obstructions	2005
Improve Runway Safety Areas to Meet FAA Standards	2005/2006
Prepare Master Plan and Environmental Analysis	2005
Prepare Cost Estimate and Financial Plan	2005
Provide SDCRAA Information for CLUP Update	2005
Acquire Property (fee simple)	2005 – 2008
Acquire Avigation Easements	2005
Release Property from Aeronautical Use (west of Marshall Avenue)	2005
Relocate and extend Taxiway C to the West	2005
Reconstruct Existing Transient Ramp	2005
Construct Based Aircraft Storage on Existing Leaseholds	2005 – 2006
Construct Transient Aircraft Ramp south of T/W D at west end of R/W 9L-27R	2006
Slurry Seal Runway 17-35 and Associated Taxiways	2006
Close Airport Drive between Joe Crosson and Wing Avenue	2006
Site Preparation of 70-acre Parcel	2006
Construct Emergency Generator Building	2006
Airfield Lighting Improvements – PAPI R/W 27L	2007
Upgrade Existing Electrical Vault	2007
Construct 48,000 SF Hangar	2007
Construct Based Aircraft Storage Facilities on 70-acre Parcel	2007 – 2009
Construct Airfield Dust Control Improvements (infield areas along R/W 17-35)	2008
Construct Heavy Helicopter Parking Area	2009
Phase 2 (2010 – 2014)	
Runway 17-35 Rehabilitation	Phase 2
Construct Run-up Pad R/W 27R	Phase 2
Enhance Runway/Taxiway Intersections (fillets)	Phase 2
Construct General Aviation Terminal/Airport Administration Building	Phase 2
Construct Helicopter Area	Phase 2
Construct Additional Based Aircraft Storage Facilities	Phase 2
Construct Conventional Hangars (42,000 SF and 10,000 SF)	Phase 2
Phase 3 (2015 – 2025)	
Relocate Taxiways A and B to comply with ARC B-II criteria	Phase 3
Construct 423-foot Extension on West End of R/W 9R-27L	Phase 3
Slurry Seal Runways and Associated Taxiways & Prepare Pavement Management Plan	Phase 3
Construct Additional Based Aircraft Storage Facilities	Phase 3
Construct Conventional Hangar (42,000 SF)	Phase 3
Construct Aircraft Rescue and Fire Fighting (ARFF) Building	Phase 3
Acquire ARFF Vehicle	Phase 3
Relocate/Upgrade Airport Traffic Control Tower (ATCT) Building	Phase 3
Replace Existing VASI with PAPI	Phase 3
Develop Enhanced Instrument Approach Procedure Based on Available Technologies	Phase 3

Source: P&D Aviation

Chapter 3
Inventory

INTRODUCTION

This chapter documents the number, type and general condition of the existing facilities that comprise Gillespie Field (SEE). It is a complete compilation of all systems, including airfield, terminal area, ground access, parking, Navaids, pavement conditions, utilities and the physical characteristics of the airport site.

The purpose of performing a comprehensive inventory of existing facilities is that, in later phases of the work program, the facilities will be assessed as to their capacity to accommodate future traffic volumes. By comparing the capacity of existing facilities with future traffic volumes (demand/capacity analysis), capacity deficiencies may be determined. Once the deficiencies are identified, alternative expansion concepts (capable of accommodating future demand) can be formulated, evaluated and ultimately, a recommended development program is formulated.

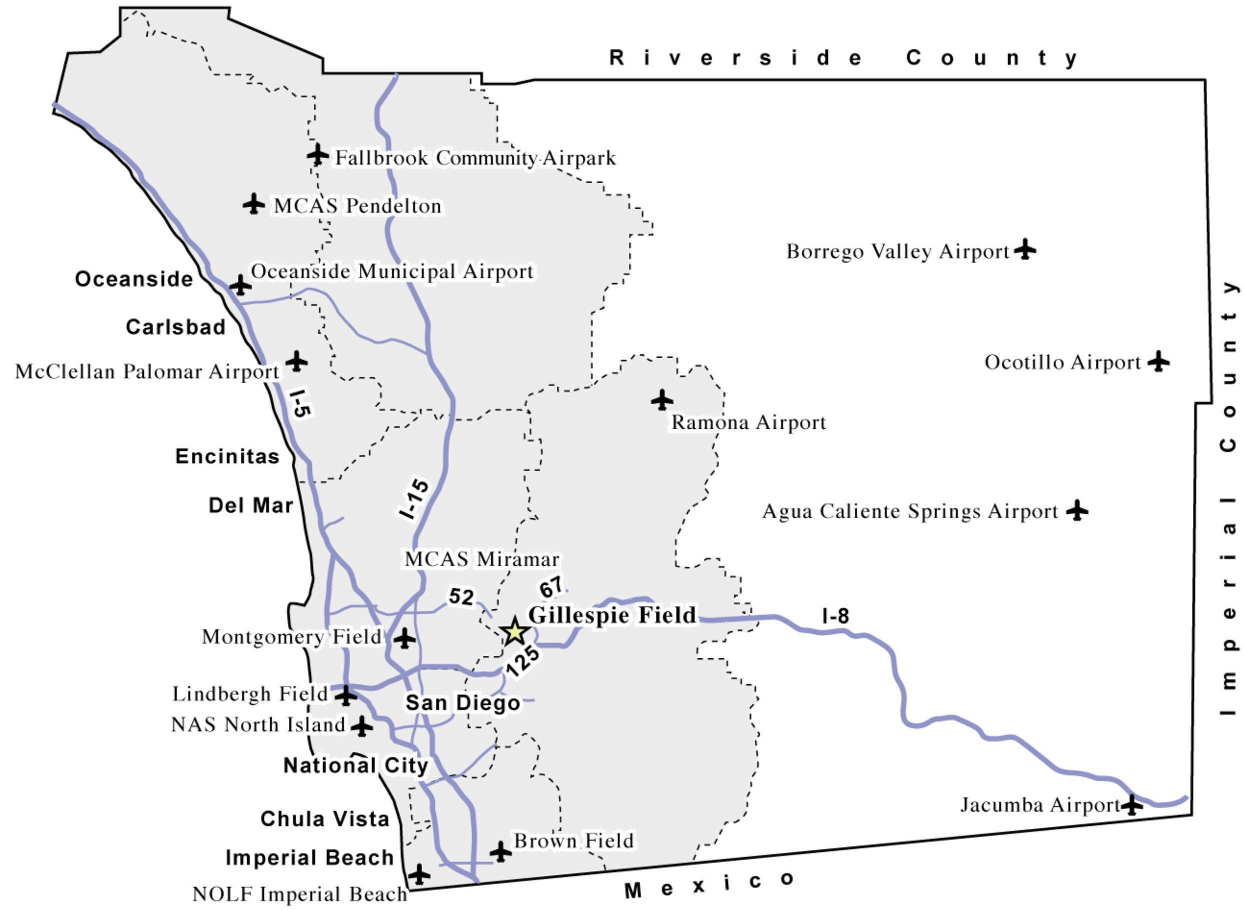
The following subsections document the findings of the facility inventory work including a description of the study area.

STUDY AREA CHARACTERISTICS

The study area that has been adopted for development of demand forecasts in the master plan is in San Diego County. The County is located in the southwestern corner of the state and is bordered by Orange County and Riverside County on the north, the Pacific Ocean on the west, Imperial County on the east and Mexico on the south. The County encompasses approximately 4,200 square miles and includes 18 incorporated cities. The population of the County (as of January 2000) was approximately 2.8 million and represented 8.3 percent of the state population. Figure 3-1 presents a map of the study area, San Diego County and its major neighboring jurisdictions. The market area for Gillespie Field is depicted in Figure 3-1 and is defined as the western six major statistical areas for the County as designated by the San Diego Association of Governments (SANDAG). Figure 3-1 also presents publicly owned and military airports within the County.

The airport is located in the City of El Cajon and borders the City of Santee which are in the southwestern portion of the County. El Cajon is bordered by Santee to the north, San Carlos to the west, La Mesa to the south, and unincorporated areas of the County to the south and east. El Cajon is approximately 15 miles east of the Pacific Ocean. The city is 20 miles north of the Mexican city of Tijuana. El Cajon is the fourth largest city in the County based on population. Historical population for El Cajon, Santee, and San Diego County is shown in Table 3-1. The City of El Cajon has building permit issuance authority for private development of facilities for those portions of Gillespie Field within the city limits.

Access to El Cajon is primarily provided by Interstate 8, which runs through the city. This east-west limited access highway connects with San Diego to the west and Imperial County to the east. State Highway 67 is a north-south highway that serves as a connector from Riverside County. State Route 125 is also a north-south highway that is under construction; currently it ends on the western side of the city.



Shaded areas represent Gillespie Field market area.

Figure 3-1
Study Area

Table 3-1
HISTORICAL POPULATION

Year	El Cajon	Santee	County
1970	52,273	(1)	1,357,854
1980	73,892	(1)	1,861,846
1990	88,693	52,902	2,498,016
2000	94,869	52,975	2,813,833

(1) Unincorporated area prior to 1990 Census.
Source: San Diego Association of Governments December 2000. Census 2000.

EXISTING AIRPORT

As previously mentioned, Gillespie Field is situated in the southwestern portion of the County. The airport is owned by the County of San Diego and administered and operated through its Department of Public Works (DPW). The airport is one of eight airports owned and operated by the San Diego County DPW. The other airports are McClellan-Palomar, Ramona, Borrego Valley, Fallbrook Community Airpark, Ocotillo Airport, Agua Caliente Airstrip and Jacumba Airport. The other public airports within the County operated by agencies other than the County are Brown and Montgomery Fields (City of San Diego), Lindbergh Field (San Diego County Regional Airport Authority) and Oceanside Municipal Airport (City of Oceanside). MCAS Camp Pendelton, MCAS Miramar, NAS North Island, and OLF Imperial Beach are military airports located within San Diego County.

The airport is located within the limits of the City of El Cajon, except for a small portion of property north of Prospect Avenue and a small corner near the end of Runway 17 which are within the City of Santee. Location of the airport with respect to ground access is good with Interstate I-8 approximately four miles to the south. State Route 67 also serves the airport and is located along the eastern property line of the airport. State Route 125 is located approximately three and a half miles to the west of the airport and connects with State Route 52 which provides access to I-15 and I-805 to the west. The location of the airport and the local highway system is graphically presented in Figure 3-2, Vicinity Map.

Gillespie Field is contained in the National Plan of Integrated Airport Systems (NPIAS) and is classified as a reliever (RL) airport, which is a high capacity general aviation airport in a major metropolitan area. Reliever airports provide to general aviation pilots an attractive alternative to using a congested hub (commercial) airport.

The airport is also classified as a Regional-Business/Corporate airport in the California Aviation System Plan (CASP). This is a functional classification developed by the State to categorize airports based on an airport's function, services provided, and role in the aviation system. A Regional Airport is defined as one that provides the same access to other regions and states; is located in an area with a large population base and serves a number of cities or counties with a high concentration of business and corporate flying; accommodates most business, multi-engine and jet aircraft; provides most services for pilots and aircraft including aviation fuel; has a published instrument approach, and may have a control tower.

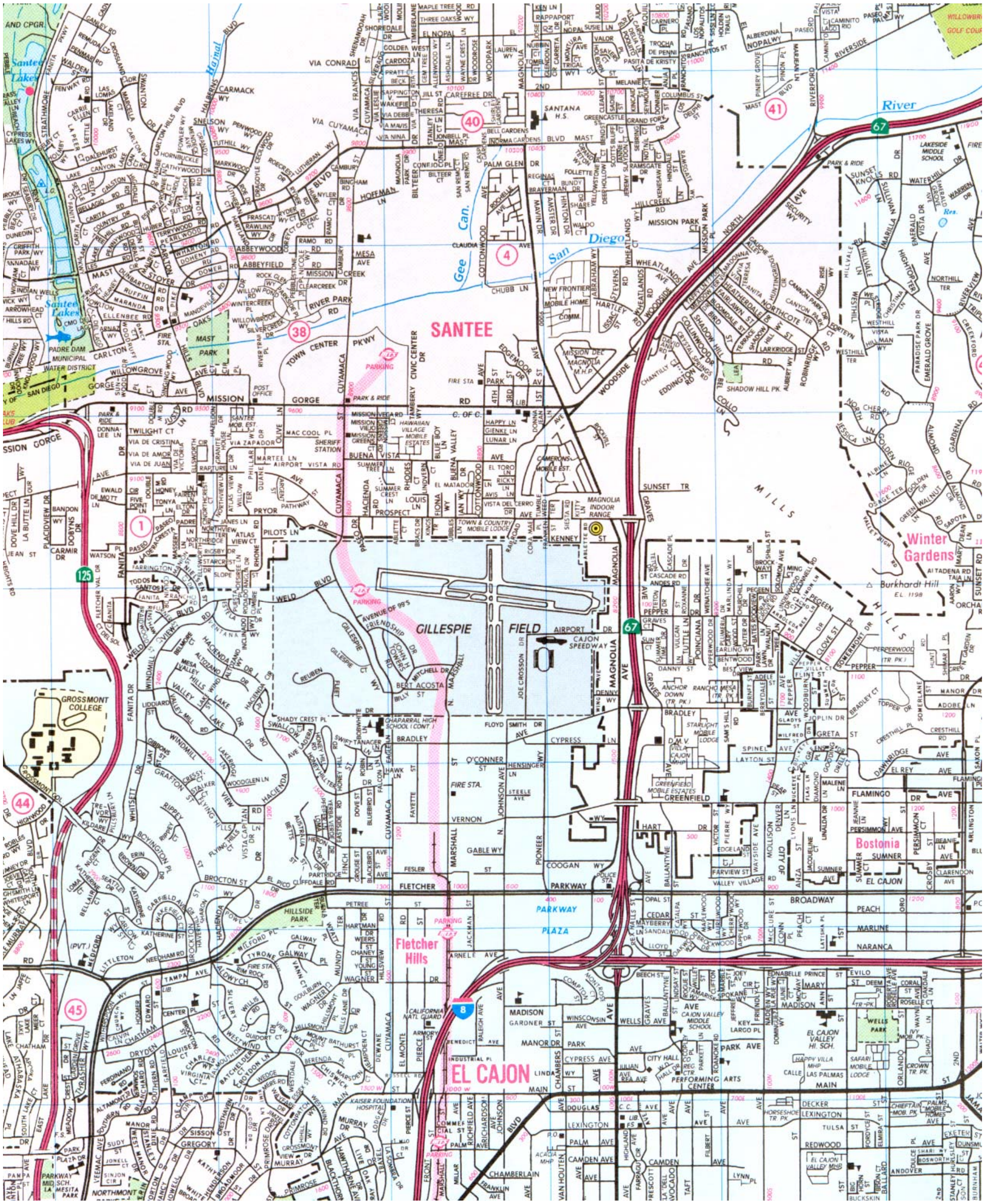


Figure 3-2
Vicinity Map

A Business/Corporate Airport is one that is used by aircraft for transportation required by a business in which the individual is engaged or the use of an airport by aircraft owned or leased by a company to transport its employees and/or property.

Planning standards contained in FAA AC 150/5300-13, Airport Design, will be applied in this study of Gillespie Field and will use standards for Airplane Design Group II aircraft. Design Group II is defined as aircraft with wingspans from 49 feet up to but not including 79 feet. Application of planning and design standards for this aircraft group ensures that all business jet aircraft that could be expected to use the airport will be accommodated by facilities of appropriate design. Guidelines published in the latest *California Airport Land Use Planning Handbook* will be used for land use compatibility issues.

AIRSIDE FACILITIES

The term "airside" as used in this report relates principally to the airfield facilities, or landing area, and includes the runway and taxiway system, the runway approach areas and the associated appurtenances such as airfield lighting, visual and navigation aids. One might argue that the aircraft parking aprons are also part of the airside operating element, however, we prefer to consider aprons as part of the "landside" because apron planning considerations are more intimately associated with passenger terminal or FBO operations which are classified in the landside element. Air traffic control facilities and meteorological considerations are also addressed in this discussion of airside facilities as they can significantly affect aircraft operations into and out of an airport. Existing airside and landside facilities are shown in Figure 3-3, Existing Airport.

Runway/Taxiway System

The airport consists of three runways, designated 9L/27R, 9R/27L, 17/35 and encompasses 757 gross acres. The runways are of asphalt construction. Runway 9L/27R is the primary runway and is 5,341 feet long and 100 feet wide, Runway 9R/27L is 2,737 feet long and 60 feet wide, and Runway 17/35 is 4,147 feet long and 100 feet wide. The true bearing of the Runways 9L/27R and 9R/27L is South 77° 32' East. The centerline-to-centerline separation of Runways 9L-27R and 9R-27L is 417 feet. This allows for simultaneous operations of only small, single engine, propeller-driven aircraft during VFR conditions as stated in FAA Order 7110.65, Air Traffic Control. The landing threshold on 27R is displaced 1,306 feet due to a road (Magnolia Avenue). The landing threshold of Runway 35 is displaced 687 feet due to a fence that limits the extent of runway safety area that can be provided beyond the end of the runway. The landing threshold of Runway 17 is displaced 450 feet due to a fence that limits the extent of runway safety area that can be provided.

The present Airport Reference Point (ARP) is located at 32° 49' 34.43" North latitude and 116° 58' 20.82" West longitude. The established airport elevation, defined as the highest point along any of an airport's runways, is 387 above feet mean sea level (MSL), which is at the end of Runway 27R. Runway coordinates and elevations are based on the latest Obstruction Chart published by the National Oceanic and Atmospheric Administration (OC5402 September 1999). The horizontal data is consistent with digital mapping prepared by the County in 1994 and used as the base map for the Airport Layout Plan. As of January 2002 the magnetic declination was 13.08° East with an annual rate of change of -1 minutes per year.

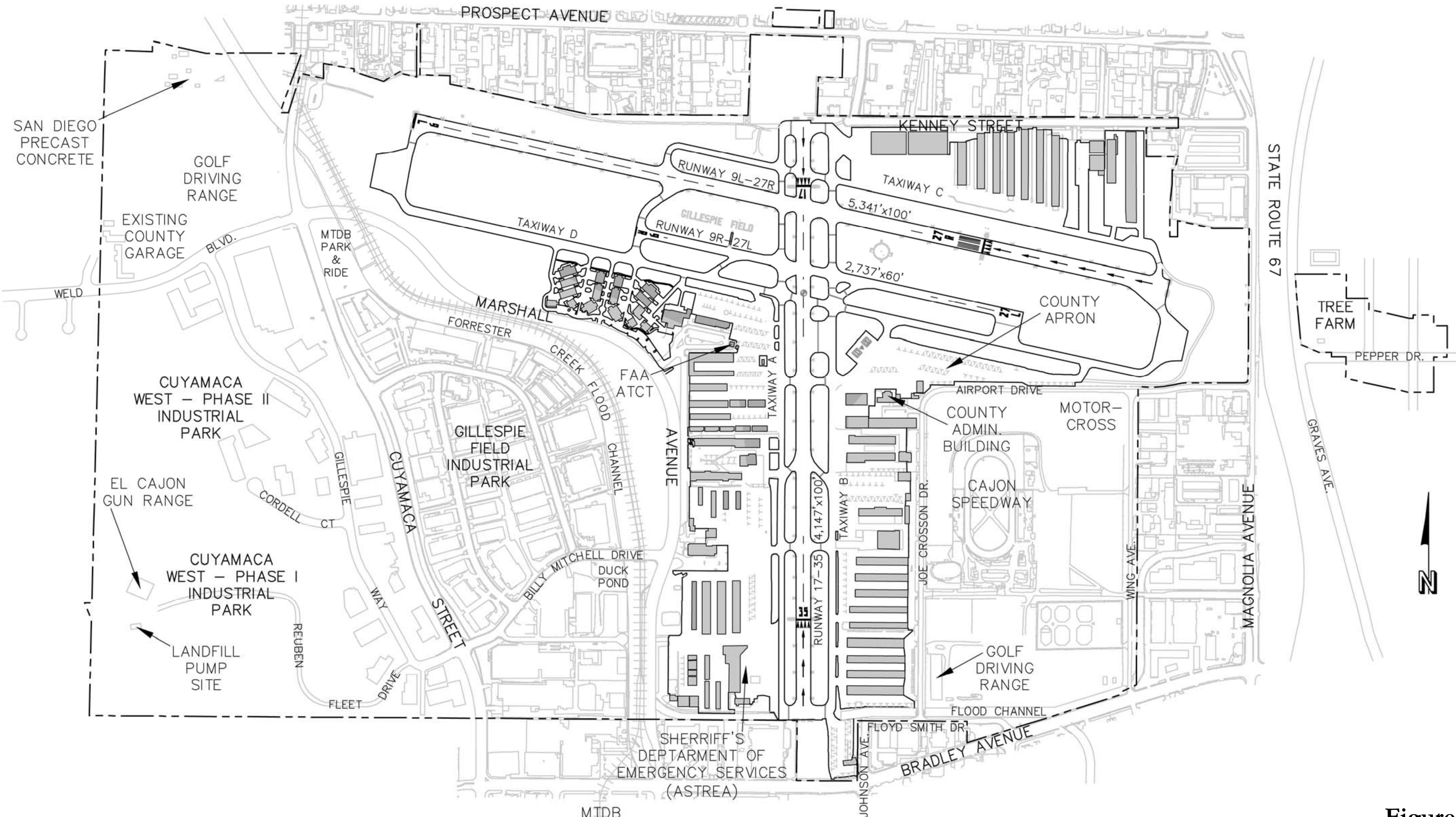


Figure 3-3
Existing Airport

According to a pavement survey conducted by the County Department of Public Works in 1994, the pavement strength rating for Runway 9L-27R is 56,000 pounds for single wheel landing gears, 94,000 pounds for dual wheel landing gears, and 190,000 pounds for dual tandem landing gears. For Runway 9R-27L the pavement strength rating is 30,000 pounds for single wheel landing gears, 53,000 pounds for dual wheel landing, and 87,000 for dual tandem landing gears. The pavement strength rating for Runway 17-35 is 58,000 pounds for single wheel landing gears, 106,000 pounds for dual wheel landing gears, and 195,000 pounds for dual tandem landing gears. Figure 3-4 graphically presents the strengths of various sections of airfield pavements.

The above stated pavement strengths reflect runway sections with the lowest pavement strength ratings for each respective runway. The runway pavements are scheduled for rehabilitation in the near future. The County has obtained a Federal Aviation Administration (FAA) Airport Improvement Program (AIP) grant to construct a two-inch overlay on the short parallel runway (Runway 9R-27L). This project is under construction. The main runway pavement has not received significant rehabilitation for at least twenty years, although it has been maintained with periodic slurry sealing. The County has received an AIP grant for pavement overlay and safety area improvements for Runway 9L-27R, which is currently under design. Runway 17-35 was partially reconstructed in the mid-1970s. A slurry seal of Runway 17-35 and all taxiway pavements is planned by the County for 2004. A one-inch overlay for the County transient ramp area is also being planned. The conditions of the runway pavements are listed as good on the current FAA Form 5010-1, however, for further information the interested reader should consult the Pavement Management System report, which was a separate contract and is completed.

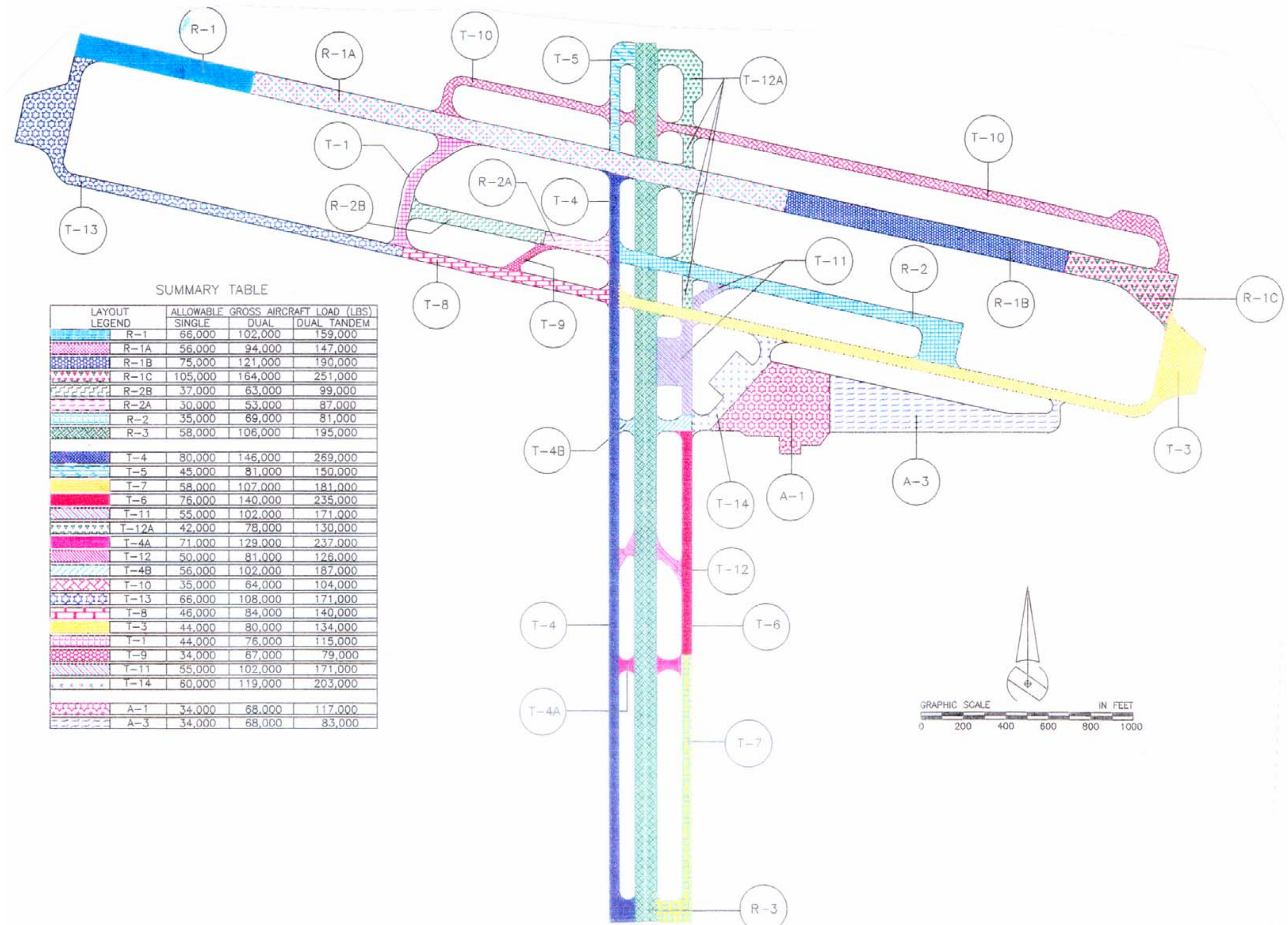
Pertinent data for the existing runway ends is presented below:

Runway	Elevation	Latitude	Longitude
9L	358.7	32º 49' 46.05"	116º 58' 52.50"
27R	387.2	32º 49' 34.99"	116º 57' 51.29"
9R	366.1	32º 49' 38.56"	116º 58' 34.46"
27L	379.5	32º 49' 32.90"	116º 58' 03.09"
17	366.1	32º 49' 46.25"	116º 58' 20.95"
35	384.8	32º 49' 05.22"	116º 58' 20.62"

Source: Gillespie Field Obstruction Chart OC5402, September 1999. NOAA.

All runways except Runway 9R–27L are equipped with medium intensity runway edge lights (MIRL) and each runway end is equipped with threshold lights which indicate the beginning of usable runway. Runway 9R–27L is not lit. All runways are marked with standard visual markings. These include centerline, designator (runway number), and side stripe markings. Markings for Runway 27R also include displaced threshold markings. Runway 9L-27R is equipped with distance remaining signs.

A segmented circle and lighted windsock is located in between approach ends of Runways 27L and 27R and an unlighted short windsock is also located on the approach end of Runway 17. This marking system helps visiting pilots locate wind indicators, as well as indicating



SUMMARY TABLE

LAYOUT LEGEND	ALLOWABLE GROSS AIRCRAFT LOAD (LBS) SINGLE	DUAL	DUAL TANDEM
R-1	66,000	102,000	159,000
R-1A	56,000	94,000	147,000
R-1B	75,000	121,000	190,000
R-1C	105,000	164,000	251,000
R-2B	37,000	63,000	99,000
R-2A	30,000	53,000	87,000
R-2	35,000	69,000	81,000
R-3	58,000	106,000	195,000
T-4	80,000	146,000	269,000
T-5	45,000	81,000	150,000
T-7	58,000	107,000	181,000
T-6	76,000	140,000	235,000
T-11	55,000	102,000	171,000
T-12A	42,000	78,000	130,000
T-4A	71,000	129,000	237,000
T-12	50,000	81,000	126,000
T-4B	56,000	102,000	187,000
T-10	35,000	64,000	104,000
T-13	66,000	108,000	171,000
T-8	46,000	84,000	140,000
T-3	44,000	80,000	134,000
T-1	44,000	76,000	115,000
T-9	34,000	67,000	79,000
T-11	55,000	102,000	171,000
T-14	60,000	119,000	203,000
A-1	34,000	68,000	117,000
A-3	34,000	68,000	83,000

Source: County of San Diego Department of Public Works.
Pavement Survey. October 1994.

Figure 3-4
Airfield Pavement Strengths

nonstandard traffic patterns that may exist.

Weather equipment is owned and operated by the FAA. The County is in the process of installing Automated Weather Observation Station (AWOS III) equipment in the control tower with a pilot viewing terminal in the public lobby of the Administration Building. This AWOS weather sensors are located northeast of the FAA Air Traffic Control Tower (ATCT), south of the Gillespie Field marking, between Runways 9L-27R and 9R-27L and west of Runway 17-35.

Runway 9L-27R has a partial parallel taxiway on the north side, Taxiway C, which serves approximately three quarters of the runway length and provides direct access to the end of Runway 27R. This taxiway provides access for operators located on the north side of the airport. The runway centerline to taxiway centerline separation is 225 feet. The runway is served on the south side by a parallel taxiway (Taxiway D), which also serves the short parallel Runway 9R-27L. Runway 27R is served by an angled exit taxiway (D2) located approximately 2,200 feet from the landing threshold. This taxiway connects with the end of Runway 9R and Taxiway D. The County has a Capital Improvement Project planned to extend Taxiway C to the end of Runway 9L to enhance operations and access to the north side of the airport. The extension of Taxiway C would eliminate the need to cross Runway 9R and would provide safer taxiing operations to east, west and north Fixed Base Operators. Taxiways A and B are parallel taxiways serving Runway 17-35, and also function as midfield exits for Runway 9L.

As stated above, Taxiway D also serves as a parallel taxiway for Runway 9R-27L. The runway-taxiway centerline-to-centerline separation is 207.5 feet. Runway 27L is served by two angled exit taxiways on the south side of the runway, Taxiways D3 and D4. Taxiways A and B also served as runway exits. The entrance taxiway for Runway 27L (D6) is approximately 180 feet wide and provides a bypass and run-up capability.

Runway 17-35 is served by parallel taxiways along both sides of the runway. Taxiway A is located on the west and Taxiway B on the east. These taxiways provide airfield access to aircraft tie-downs and hangar areas located along the runway. The centerline of Taxiway A is separated from the runway centerline by 150 feet. The runway centerline to taxiway centerline separation of Taxiway B is 200 feet. This runway is very well served by several (seven) runway exits on both sides of the runway (including the parallel runways).

The taxiway system described above is included in Figure 3-3. The entire parallel and exit taxiway system is lighted with low intensity taxiway edge lights (LITL). Taxiway D1 (the entrance taxiway for Runway 9L) is marked with a compass calibration pad (compass rose). This provides an area for calibrating an aircraft compass. Lighted taxiway signs have been installed on the airfield.

A drainage ditch is located within the extended runway safety area beyond the end of Runway 27R. The ditch is located north of a service road and approximately 15 feet off the end of the runway and 85 feet north of the runway centerline. A drainage ditch is also located west of Taxiway C. At the south end of Runway 35 a fence is located approximately four feet from the edge of the runway. The fence is located approximately 40 feet west of the runway centerline. Hangars are located approximately 480 feet south of the Runway 9R-27L centerline. It is reported that these hangars block the line-of-sight from the control tower and impede visibility of Taxiway D east of Taxiway D1 and west of Taxiway D2.

As stated in FAA AC 150/5300-13, the building restriction line (BRL) is used to identify suitable building area locations on airports and should encompass the runway protection zones, the runway object free area, the runway visibility zone, NAVAID critical areas, areas required for terminal instrument procedures, and airport traffic control tower clear line of sight. The present BRL do not comply with these criteria. These criteria will be applied in the planning process. The existing BRL depicted on the current Airport Layout Plan for Runway 17-35 is 250 feet from the runway centerline on the west side and 300 feet from the runway centerline on the east side. Runway 9R-27L has an existing BRL that is 300 feet from the runway centerline to the south. The existing BRL for Runway 9L-27R is located 375 feet north of the runway centerline.

At night the lights at the motor cross track, which is located south of Airport Drive, have raised complaints from pilots landing on Runway 9L-27R.

Helicopter Operating Areas

Location

The County operates two concrete lighted helipads, which are located next to each other on the apron near the terminal building (County transient ramp). Other helipads are located on leaseholds as follows. Mercy Air and the County Sheriff's ASTREA (Aerial Support Team Regional Enforcement Agency) have designated helicopter operating areas on the airport that have been approved by Caltrans. ASTREA has six helipads (with one dedicated to a California Department of Forestry helicopter). Clark operates a helipad that has not been registered with the state. Royal Jet, Inc. also has a helipad on its transient aircraft apron that has not been registered with Caltrans and is currently used by Mercy Air while using Royal Jet's wash rack. None of the helipads are served by Navaids. The County helipads are lit with a traffic loop that flashes when a helicopter is parked on Helipad 1 or 2.

Mercy Air operates a Bell 222A which is based at the Sky Harbor Hangar leasehold (FBO). ASTREA and Clark both operate Hughes MD 500D helicopters that are based at the airport. Clark also operates Aerospatiale Lama helicopters. A news media helicopter operates from Safari Aviation East.

Helicopter Operations

Currently there are no helicopter traffic patterns for noise abatement. Helicopter training is provided at the airport, however, training routes are not designated. There is not a designated area for auto-rotation training. There is a 5,000 pound weight limit currently in place at the airport for helicopter training operations. Annual helicopter operations were estimated at approximately 6,700 for the base year 2000.

Meteorological Considerations

Meteorological considerations for this ALP Update will be based on weather observations taken at Gillespie Field as obtained from the National Climatic Data Center. This consists of 27,171 weather observations taken at the airport over the period 1992 through 2001. The weather observations are those recorded by the control tower and therefore the analysis of weather data pertains to those periods when the tower is open (i.e., 0700 to 2100). The analysis will result in the preparation of wind roses which will be contained on the Airport Layout Plan.

The existing runway configuration provides 99.92 percent coverage for a 10.5 knot crosswind, and 99.98 percent coverage for a 13 knot crosswind. FAA states in AC 150/5300-13 that the allowable crosswind is 13 knots for Airport Reference Codes A-II and B-II. The coverage meets the FAA recommendation of 95 percent crosswind coverage, thus additional runways for improved crosswind coverage are not required. The existing coverage provided by Runways 9-27 are 99.71 and 99.77 percent respectively, for 10.5 and 13 knot crosswinds. Runway 17-35 provides 93.90 and 97.20 percent coverage for 10.5 and 13 knot crosswinds, respectively.

The average wind speed is 5 knots and calm wind conditions (less than 4 knots) prevail approximately 39.5 percent of the time. Wind speeds of 17 knots (19 mph) and greater are infrequent and occur approximately 0.1 percent of the time.

Based on the data provided by the NCDC, Instrument Flight Rules (IFR) weather conditions occur 4.1 percent of the time. These are periods when cloud ceilings are less than 1,000 feet above ground and/or visibility less than 3 miles. Periods of IFR are most likely to occur during January (7.3 percent), September (5.0 percent) and October (4.7 percent). February, March and June are also months when IFR conditions exist more than 4 percent of the time.

The airport reference temperature, which is defined as the mean maximum temperature of the hottest month is 88.9° and occurs in August. The average total annual precipitation at Gillespie Field is 12.67 inches.

Airspace and Navigational Aids

Airspace

The existing system of enroute airways, navigational aids, and airports located within a 25 nautical mile (nm) radius of Gillespie Field is depicted on Figure 3-5. The low altitude airways which traverse the area serve those enroute aircraft flying below 18,000 feet MSL. Including Gillespie Field, there are 15 airports within 25 nautical miles of the airport which are shown on Figure 3-5. Two of these are located in Mexico. Table 3-2 lists the 13 U.S. airports within the 25 nautical mile radius and presents a summary of facilities and services. These are a mix of public, military and privately owned, private use airports (not open to the public).

Commercial aircraft operations associated with Lindbergh Field (a major hub) form a large portion of air traffic in the area, and as such, much of the airspace in the vicinity of Gillespie Field is categorized Class B. While there are three neighboring military airfields, there are no restricted areas, military operation areas or military training routes within 25 nautical miles of the airport. However, there are a number of different controlled airspace areas in the vicinity of the airport.

Controlled airspace means an area in which some or all aircraft may be subject to air traffic control. It is a generic term that covers the different classification of airspace (Class A, Class B, etc.) and defined dimensions within which air traffic control service is provided to IFR and VFR flights in accordance with the airspace classification. The various controlled airspace areas found in the vicinity of Gillespie Field are discussed below.

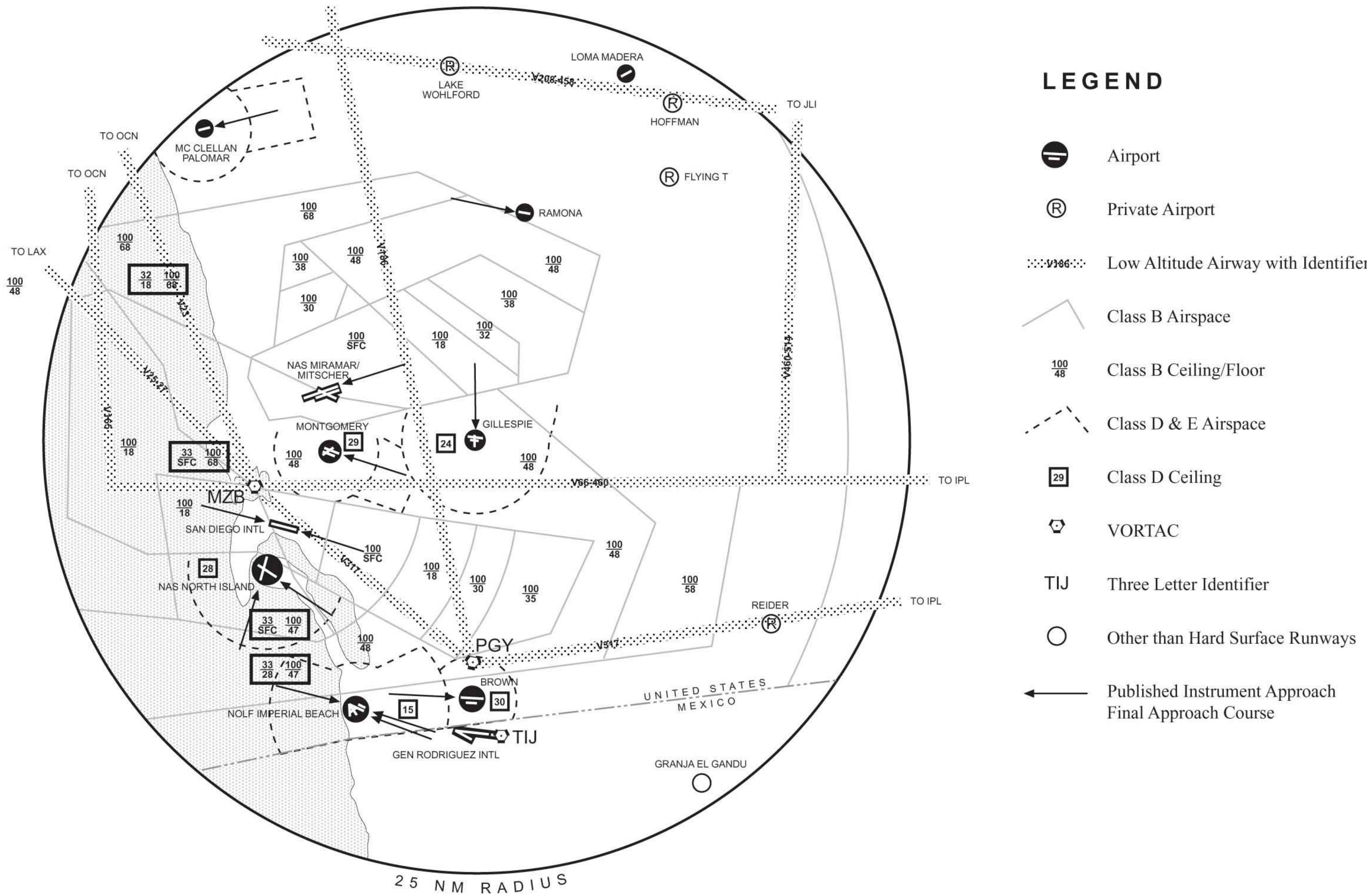
- **Class B Airspace.** Generally, that airspace from the surface to 10,000 feet MSL surrounding the nation's busiest airports in terms of airport operations or passenger enplanements. The configuration of each Class B airspace area is individually tailored and consists of a surface area and two or more layers, and is designed to contain all published instrument procedures once an aircraft enters the airspace. An ATC clearance is required for all aircraft to operate in the area, and all aircraft that are so cleared receive separation services within the airspace. The San Diego Class B airspace for Lindbergh Field encompasses a significant portion of the airspace within 25 nautical miles of Gillespie Field. The ceilings and floors of various sections of the San Diego Class B airspace are shown on Figure 3-5.

- **Class D Airspace** (this classification was formerly referred to as an Airport Traffic Area – ATA). This is generally airspace from the surface to 2,500 feet above the airport elevation surrounding those airports that have an operational control tower. The area is generally defined as all area within five statute miles (4.3 nautical miles) of the airport, however, the circular configuration can be tailored when instrument approach procedures are published for an airport. There are six Class D Airspace areas (including Gillespie Field) in the vicinity of the airport. They are located at Montgomery Field, NAS North Island, Brown Field, NOLF Imperial Beach, and McClellan-Palomar. Gillespie Field is located within a Class D airspace area and two-way radio communication must be established with the Gillespie Field control tower prior to entering the Class D airspace, and maintained with the control tower while in the Class D area. No separation services are provided to VFR aircraft in the Class D airspace area. It should be noted that a new control tower was recently commissioned at Ramona Airport.

- **Class E Airspace.** There are four areas within 25 miles of Gillespie Field that are Class E airspace. These are between Gillespie Field Class D airspace and Montgomery Field Class D airspace, an area adjacent to Gillespie Field Class D airspace on the north side, an area adjacent to the Class D airspace on the northern side for NOLF Imperial Beach, and an area adjacent to the east and northwest sides of McClellan-Palomar Class D airspace. Class E airspace is controlled airspace, but is the least stringent controlled airspace classification in terms of pilot certification, aircraft equipment, entry requirements, etc. No separation services are provided to VFR aircraft in the Class E airspace area.

Low altitude Federal Airways in the vicinity of the airport include the following:

- V66-460 – is an east-west airway. V66 is defined by the 76-degree radial of the Mission Bay VORTAC. V460 is defined by the 268-degree radial of the Imperial VORTAC. The V460 airway intersects the V460-514 airway approximately 18 miles east of Gillespie Field. This airway is a north-south airway that is defined by the 170-degree radial of the Julian VORTAC.



Source: Los Angeles Sectional Aeronautical Chart, December 2001. P&D Aviation analysis.

Figure 3-5
Airspace Environment And Adjacent Airports

Table 3-2
AIRPORTS IN THE VICINITY OF GILLESPIE FIELD
(Radius of 25 nautical miles)

Airport	Distance from Gillespie	Runways	Runway Surfaces	Ownership	Based Aircraft	T-Hangars	Conv. Hangars	Fuel	Maint.	Admin/ Terminal Building
Gillespie Field	-	9L-27R (5,340')	Asphalt	Public	790	Yes	No	80/100LL/Jet A	Major	Yes
		9R-27L (2,737')	Asphalt							
		17-35 (4,147')	Asphalt							
Montgomery Field	9	5-23 (3,402')	Asphalt	Public	630	Yes	Yes	100LL/Jet A	Major	Yes
		10L-28R (4,577')	Asphalt							
		10R-28L (3,399')	Asphalt							
MCAS Miramar	9	6L-24R (12,000')	Concrete	U.S. Navy	NA	NA	NA	NA	NA	NA
		6R-24L (8,000')	Concrete							
		10-28 (6,000')	Concrete							
San Diego International	12	9-27 (9,400')	Asphlt-Conc	Public	7	Yes	Yes	100LL/Jet A	Minor	Yes
Ramona	14	9-27 (4,000')	Asphalt	Public	214	Yes	No	100LL/Jet A	Major	No
NAS North Island	15	11-29 (7,500;)	Concrete	U.S. Navy	NA	NA	NA	NA	NA	NA
		18-36 (8,000')	Concrete							
Brown Field	15	8L-26R (7,999')	Asphlt-Conc	Public	146	Yes	No	100LL/Jet A	Major	Yes
		8R-26L (3,257')	Asphalt							
NOLF Imperial Beach	17	8-26 (1,720')	Concrete	U.S. Navy	NA	NA	NA	NA	NA	NA
		9-27 (5,000')	Concrete							
Flying T	19	3-21 (2,000')	Dirt	Private	2	DNA	DNA	DNA	No	No
Reider	20	16-34 (2,080')	Dirt	Private	2	DNA	DNA	DNA	No	No
Lake Wohlford	22	3-21 (1,345')	Dirt	Private	27	DNA	DNA	DNA	No	No
Hoffman	23	11-29 (1,400')	Asphalt	Private	1	DNA	DNA	DNA	No	No
Loma Madera	23	6-24 (2,300')	Asphalt	Private	1	DNA	DNA	DNA	No	No
McClellan-Palomar	24	6-24 (4,897')	Asphalt	Public	426	Yes	No	100LL/Jet A	Major	Yes

Note: NA = Not applicable. DNA = data not available.

Source: P&D analysis of FAA Form 5010-1

- V186 – is a north-south airway defined by the 336-degree radial of the Poggi VORTAC that intersects the Oceanside VORTAC to the north.

- V317 – a northwest-southeast airway between the Poggi VORTAC (immediately north of San Diego Brown Field) and the Mission Bay VORTAC (north of San Diego Lindbergh). V317 also traverses as an east-west airway that connects the Poggi VORTAC and Imperial VORTAC.

- V23 – is a north-south airway between the Poggi VORTAC and Oceanside VORTAC.

- V25-27 – is a north-south airway between the Poggi VORTAC and Los Angeles VORTAC. V25 is defined by the 310-degree radial of the Poggi VORTAC. V27 is defined by the 84-degree radial of the Santa Catalina VORTAC. These airways intersect approximately 48 miles northwest of Gillespie Field.

- V165 – is a connecting airway between the Poggi VORTAC and Mission Bay VORTAC. V25 is defined by the 225-degree radial of the Poggi VORTAC and the 162-degree radial of the Mission Bay VORTAC.

- V460-514 – is a north-south airway between V66-460 and the Julian VORTAC. This airway intersects V66-460 approximately 18 miles east of Gillespie Field. V460-514 intersects with V514 at the Julian VORTAC which is approximately 27 miles northeast of Gillespie Field.

- V208-458 – is an east-west airway between the Oceanside VORTAC and Julian VORTAC. V208 is defined by the 83-degree radial of the Oceanside VORTAC and the 263-degree radial of the Julian VORTAC. V208-458 intersects with the V458 airway at the Julian VORTAC, which is approximately 27 miles northeast of Gillespie Field.

There are two published instrument approach procedures for the airport, with both procedures being classified as non-precision instrument approaches. An instrument approach procedure is a series of predetermined maneuvers for the orderly transfer of an aircraft under instrument flight conditions from the beginning of the initial approach to a point where a landing may be made visually. The procedure provides protection from obstacles that could jeopardize safety of aircraft operations by providing a specific clearance over obstacles. There are two types of procedures - precision and non-precision instrument approaches. A precision approach procedure is one in which an electronic glide slope is provided that gives the pilot glide path, or specific descent profile guidance. A non-precision approach is a procedure in which no electronic glide slope is provided. In this case the pilot is provided with directional, or azimuth, guidance only. The tabulation below summarizes the instrument approaches and navigational aids for the airport and shows the Navaid, location of the Navaid, type of procedure and lowest landing minima.

NAVAID	Location	Procedure	Lowest Minima
Gillespie Localizer	On-airport	Circling	2400'/1 ¼ mile
GPS	Satellite	GPS R/W 17	1100'/1 ¼ mile

Plan and profile views of both approaches are presented in Figures 3-6 and 3-7. Published instrument approaches are provided at five of the public airports within 25 miles of Gillespie Field. These are presented in Table 3-3. There is a published noise abatement touch-and-go pattern for Runway 27L. This is shown in Figure 3-8.

Navigational Aids

The airport is a controlled airport in that there is an airport traffic control tower (ATCT) on the airfield. The tower is operated by the FAA and provides air traffic control services to aircraft operating at and in the vicinity of the airport. The ATCT authorizes aircraft to takeoff and land at Gillespie Field and transit the Class D airspace (in this case all airspace up to 2,400 feet MSL). The tower operates between the hours of 7 AM and 9 PM.

The Los Angeles Air Route Traffic Control Center (ARTCC) has delegated an approach control area to the Southern California Terminal Radar Approach Control (SOCAL TRACON) facility. The TRACON has responsibility for all IFR arrivals, departures and over flights within this area. Gillespie Field lies within the area of responsibility of the TRACON and as such all IFR operations at Gillespie are controlled by it. The function of the TRACON is basically to sequence arriving traffic transitioning from the enroute phase of flight (controlled by the ARTCC) to the airport, and vice versa. In this case arriving aircraft will be controlled by the ARTCC (or other adjacent TRACON), then the SOCAL TRACON, then finally the Gillespie Field control tower for final approach clearance and landing.

Table 3-3
INSTRUMENT APPROACHES AT AIRPORTS WITHIN
25 NAUTICAL MILES OF GILLESPIE FIELD

Airport	Approach Procedure	Lowest Minimums
Montgomery Field	ILS 28R	200-½
	NDB/GPS 28R	1000-¾
San Diego International – Lindbergh Field	ILS 9	400-1
	RNAV (GPS) 9	600-1
	RNAV (GPS) 27	800-1
	LOC 27	700-1
	NDB/GPS 9	700-1
	NDB/GPS 27	1200-1 ¼
Ramona	RNAV (GPS) 9	900-1
	VOR/DME/GPS Circling	1200-1 ¼
Brown Field	GPS 8L	400-1
	VOR/GPS Circling	700-2 ¾
McClellan-Palomar	ILS 24	200-¾
	RNAV (GPS) 24	500-¾
	VOR/GPS Circling	1000-1 ¼

Source: U.S. Terminal Procedures October 2003.

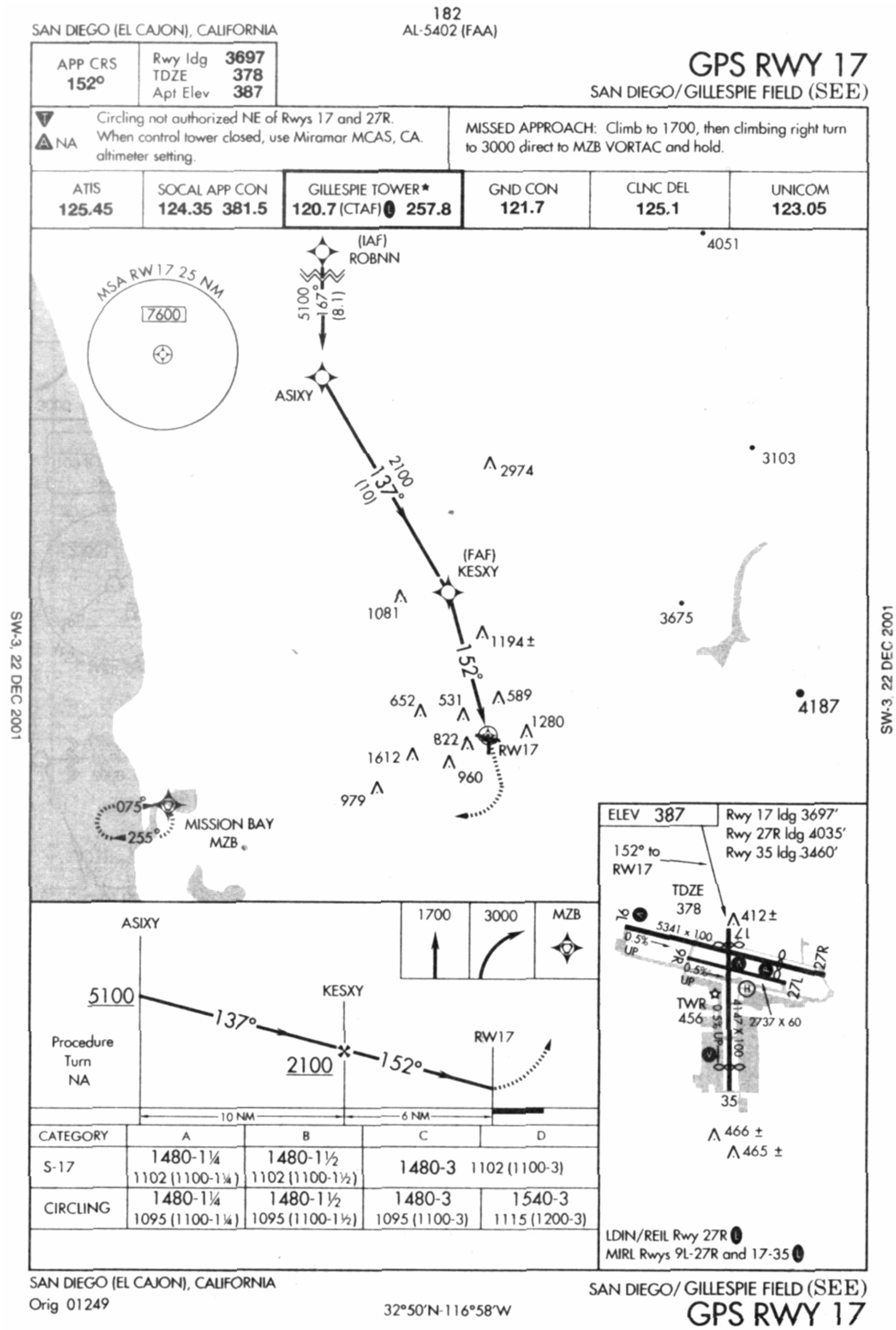
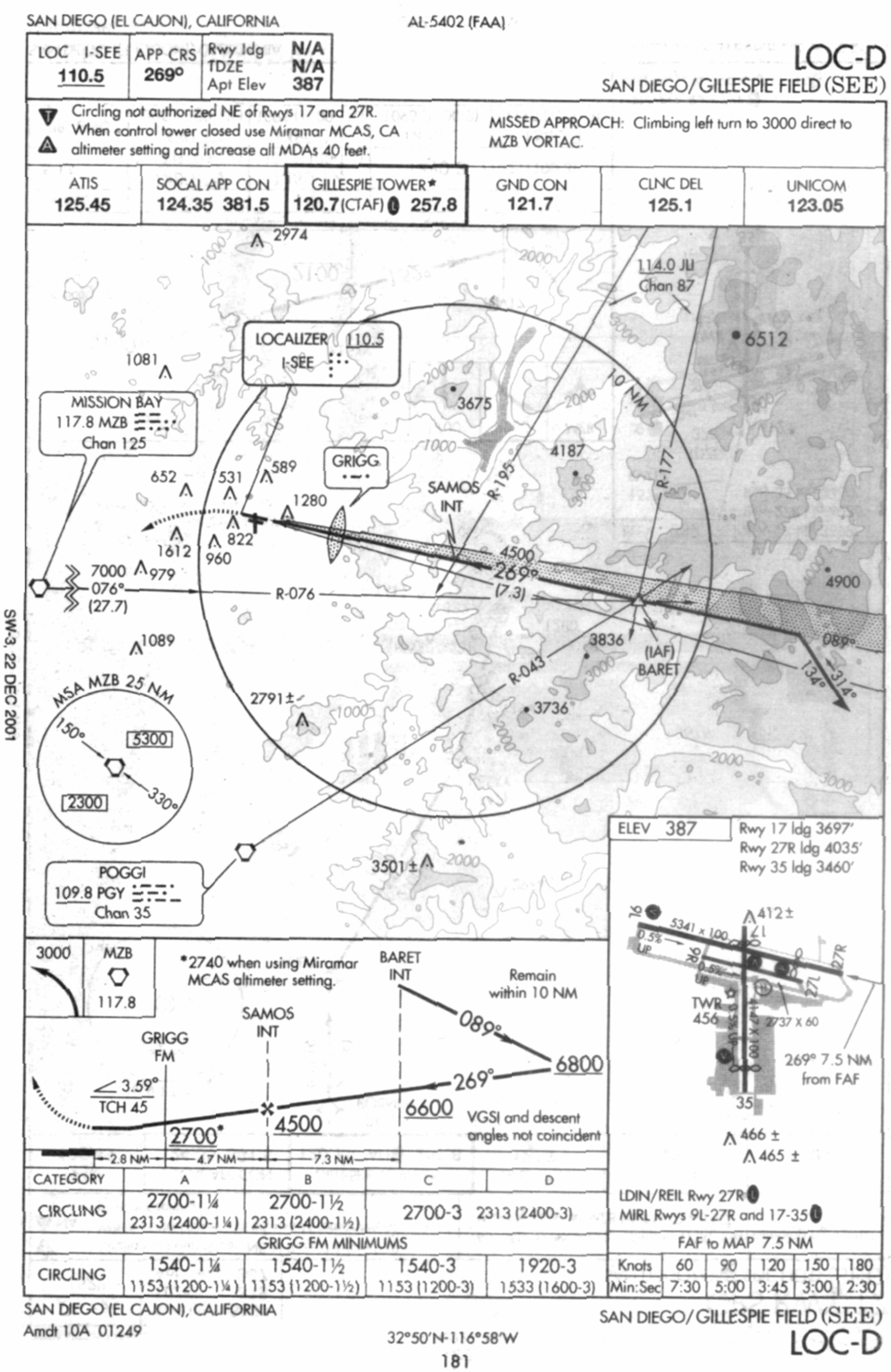


Figure 3-6
Runway 17 GPS Approach



CATEGORY	A	B	C	D
CIRCLING	2700-1¼ 2313 (2400-1¼)	2700-1½ 2313 (2400-1½)	2700-3 2313 (2400-3)	
GRIGG FM MINIMUMS				
CIRCLING	1540-1¼ 1153 (1200-1¼)	1540-1½ 1153 (1200-1½)	1540-3 1153 (1200-3)	1920-3 1533 (1600-3)

FAF to MAP 7.5 NM

Knots	60	90	120	150	180
Min:Sec	7:30	5:00	3:45	3:00	2:30

Figure 3-7
Localizer Approach

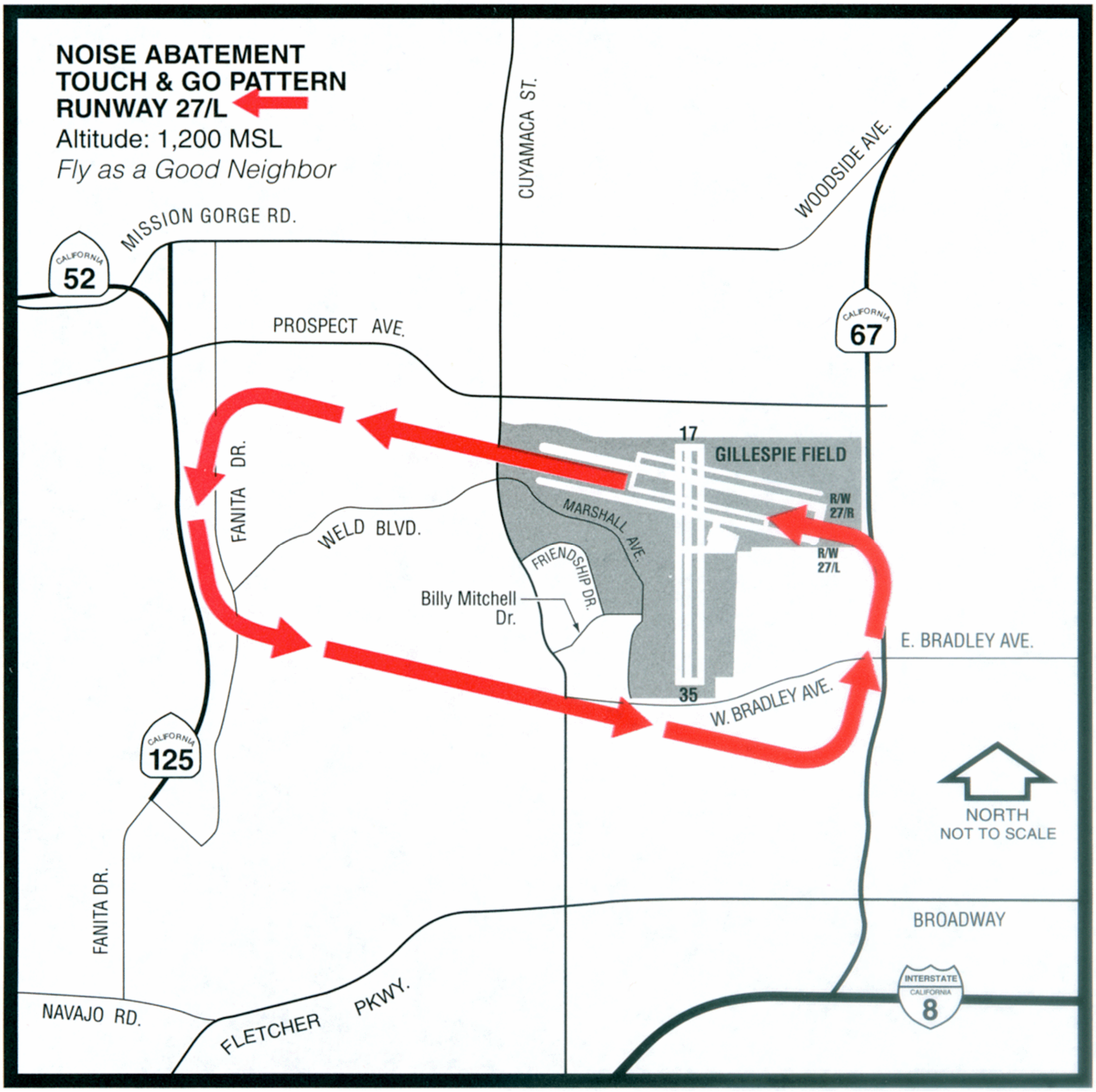


Figure 3-8
Runway 27L Noise Abatement Pattern

A UNICOM is maintained at the airport. This service provides local traffic pattern advisories but is not used for air traffic control purposes. Additionally, an Automatic Terminal Information Service (ATIS) is available to pilots and provides a continuous broadcast of recorded noncontrol information. An AWOS III was commissioned by FAA in April 2004 but has not yet been placed in service.

An inventory of the navigational aids and air traffic services available at the airport is as follows:

- Airport Traffic Control Tower (ATCT) – The tower is the central operations facility in the Gillespie Field air traffic control system. Air/ground communications, visual signaling and other devices are used to provide safe and expeditious movement of all air traffic. Additionally, ground movement of aircraft and vehicles on the runway/taxiway system is also under tower control.

- Airport Surveillance Radar (ASR) - Used in the control of air traffic within a 40 to 60 mile radius of San Diego Lindbergh Field. The ASR, which is located at MCAS Miramar scans through 360 degrees of azimuth and presents target information on radar display equipment located in the Gillespie tower and TRACON. There is no coverage below approximately 1,600 feet MSL in the Gillespie area due to terrain. The airfield elevation is 387 feet MSL.

- Localizer – The localizer (LOC) provides course guidance to Runway 27R and is a component of an Instrument Landing System (ILS). The localizer signal is used by the pilot to establish and maintain the aircraft's azimuth direction until visual contact is made with the runway. The localizer antenna array is located approximately 800 feet on the extended centerline of Runway 9L inside the perimeter fence along Cuyamaca Street.

- Very High Frequency Omni-Directional Range/Tactical Air Navigation (VORTAC). This navigational aid provides azimuth (direction) and distance information to the pilot. The Mission Bay (MZB) VORTAC is located approximately 13 miles west of the airport. It is used for enroute navigation as there are no published instrument approaches for the airport. The MZB facility is designated as a "H" (High Altitude) facility which means it is usable from altitudes of 1,000 to 60,000 feet above the ground. Up to altitudes of 14,500 feet MSL the facility is usable within 40 nautical miles of the station. At altitudes of 14,500 to 18,000 feet MSL the facility is usable within 100 nautical miles of the station, and at altitudes of 18,000 to 45,000 feet MSL the facility is usable within 130 miles of the station. The Poggi (PGY) VORTAC is also located approximately 13 nautical miles southwest of the airport. This is designated as a "L" (Low Altitude) facility which means it is usable from altitudes of 1,000 to 18,000 feet within 40 miles of the station.

Assistance from the Flight Service Station (FSS) is available to pilots in the Gillespie Field area through the San Diego FSS. This facility is located at Montgomery Field. The services which are provided by the FSS include:

- Issuance of Notices to Airmen (NOTAM's)
- Dissemination of Pilot Reports (PIREP's) to interested parties
- Issuance of weather data
- VFR advisory service
- Direction finding assistance to "lost" aircraft

- Pilot briefing service
- Flight plan assistance

In addition to the above navigational aids, ATC, and advisory services, the airport is equipped with the following visual aids. These are provided to assist pilots in locating the runway at night or during periods of reduced visibility.

- Visual Approach Slope Indicator (VASI) - provides vertical visual glide path information to approaching pilots and consists of a two light bars located on the left side of the runway. The VASI systems can usually be seen for three to five miles during the day and up to 20 miles at night. Runways 9L, 17, and 35 are equipped with VASI systems. For Runway 9L the approach angle is set at a non-standard 3.5 degrees. The VASI for Runways 17 and 35 are also set at non-standard angles of 4 degrees.

- Precision Approach Path Indicator (PAPI) – also provides vertical visual glide path information to approaching pilots and replaces the older VASI systems. It consists of a row of either two or four light units located perpendicular to the runway. Runway 27R is equipped with a 4 unit PAPI that is set at a non-standard angle of 4.5 degrees.

- Runway End Identifier Lights (REIL) – are two synchronized flashing lights, one on each side of the runway threshold, which provide rapid and positive identification of a runway end to approaching pilots. Runway 27R is equipped with REIL, however, they are inoperative and AIP funds have been requested to install new REIL.

- Lead-in lighting (LDIN) – Runway 27R is equipped with a non-standard combination REIL and LDIN. However, they are inoperative and will be demolished as part of the current pavement rehabilitation project for Runway 9L-27R.

- Rotating Beacon - a visual aid that indicates the location of an airport. Alternating white and green beams indicate an airport and the beacons are located either on or close to an airport. The beacon for Gillespie Field is located on top of the air traffic control tower (ATCT), and was installed in the early 1990s and meets current FAA specifications.

LANDSIDE FACILITIES

The landside facilities consist of those airport elements that support the various activities of the airport except for the navigation and maneuvering of aircraft. The exception to this categorization is the aircraft parking apron, which due to its relation with passenger terminals and FBOs is considered a landside component. At Gillespie Field the landside facilities include aircraft parking aprons, hangars, fuel facilities, wash racks, auto parking, terminal buildings, restaurant and airport support buildings. The landside facilities at the airport are located north of Runway 9L-27R, south of Runway 9R-27L, and on both the east and west sides of Runway 17-35 on the southern end of the runway. As shown in Figure 3-3 landside facilities at Gillespie Field are accessible by Kenney Street to the north, Joe Crosson Drive to the east and Marshall Avenue to the west.

Terminal/Administration Building

The terminal building is located on Joe Crosson Drive east of Runway 17-35 and south of Runway 9R-27L and houses a public lobby/waiting area, public rest rooms, airport management and County real estate offices. There is a Flight Service phone available outside of the building. A recent increase in offices within the building has caused the employee break room to be moved to the maintenance building. There are no facilities provided for large meetings other than the public lobby/waiting area. The building totals approximately 10,500 square feet and is approximately 50 years old and is in fair condition. Automobile parking next to the terminal has 41 spaces, 3 of which are designated for the physically challenged. The parking is accessible from Joe Crosson Drive and Airport Drive. This parking area also serves Safari Aviation East leasehold tenant vehicles.

Aircraft Parking Apron

Aircraft parking is available in the terminal building apron area. There are a total of 70 paved aircraft tie-downs on the south side of Runway 9R-27L north of the terminal. Eight tie downs are located next to the public viewing area north of Airport Drive. There are also two County owned helicopter pads on the apron north of the terminal building. An environmentally approved wash rack is also located on the apron east of the terminal building and north of the public viewing area on Airport Drive.

Fixed Base Operators

Gillespie Field has 13 Fixed Base Operators (FBOs) located on the airport. The locations and names of businesses are shown on Figure 3-9. These FBOs provide hangars, tie-downs and office space. Some FBOs have facilities such as fuel facilities, wash racks and helicopter pads, and are noted below. This information is compiled from a hangar and tie-down survey completed by San Diego Aircraft in 2001 and updated by a phone survey and field verification performed by P&D Aviation (2002).

Aircraft Storage Spaces

Aircraft Storage Spaces (Number 1 shown on Figure 3-9) is located on the east side of Runway 17-35 and is accessible from Joe Crosson Drive. There are 44 standard 42 x 32 feet T-hangars, four non-standard 47 x 32 feet T-hangars, two 50 x 50 feet square hangars, two 50 x 60 square hangars, and one 60 x 80 square hangar present. Aircraft Storage Spaces also has 10 tail-in tie-downs and 12 taxi-thru tie-downs. There is 6,000 square feet of office space at Aircraft Storage Spaces. There are no hangars or office space available. The operator recently completed construction of new “For Sale” hangars on their leasehold and added a wash rack.

Classic Hangars

Classic Hangars (Number 2 shown on Figure 3-9) occupies the northeastern corner of airport property, north of Runway 9L-27R and is accessed from Kenney Street. Classic Hangars has one 60 x 72 square hangar, four 49 x 36 square hangars, 20 46 x 36 square hangars, and six 48 x 41 square hangars. There are also four single tie-downs. Currently there are no hangar or tie-down spaces available. All hangars on this leasehold are privately owned by individuals and are managed under an association board.

MUSEUMS

⚠	Name
16	San Diego Aerospace Museum
17	Commemorative Air Force
18	Allen Airway Museum

FUEL

#	Name
A1 A2	San Diego Aircraft Sales/Wayne Breise Inc. subleased to Golden State Aviation
B	Royal Jet, Inc. Fuel Farm

FIXED BASE OPERATORS

#	Name
1	Aircraft Storage Spaces
2	Classic Hangars
3	El Cajon Flying Service
4	Gillespie Air Center
5	Gillespie Field Partners
6	Golden State Aviation
7	Royal Jet Inc.
8	Safari Aviation (West)
9	Safari Aviation (East)
10	Safari Aviation (North)
11	Wayne Breise Inc.
12	Sky Harbor Hangars
13	Southern Cal. Aircraft Repair
14	San Diego Aircraft Inc.
15	La Jolla Investments Inc./Allen Airways

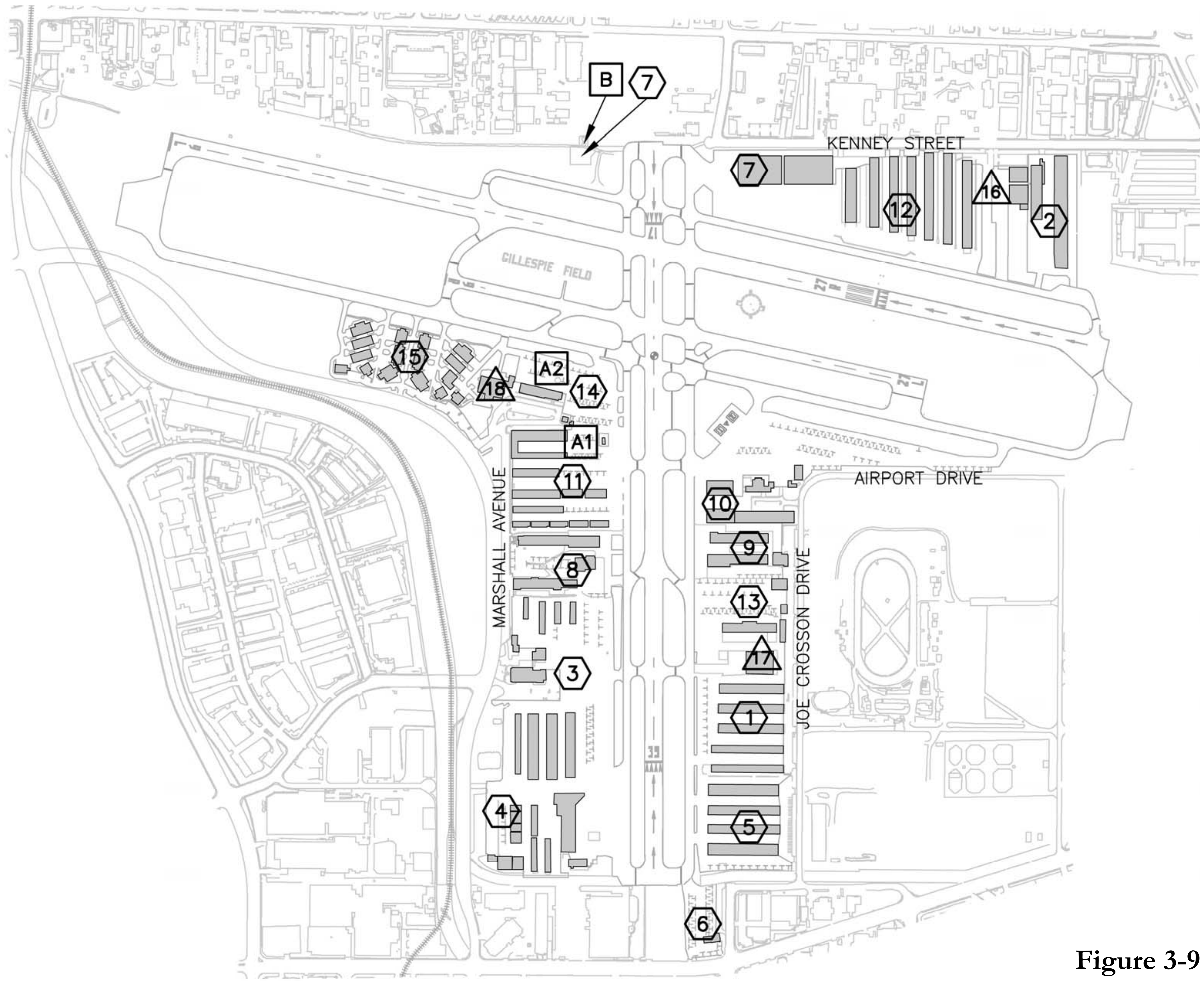


Figure 3-9
Location of Fuel and Fixed Base Operators (FBOs)

El Cajon Flying Service

El Cajon Flying Service (Number 3 shown on Figure 3-9) is located on the west side of Runway 17-35 and east of Marshall Avenue, which provides access to El Cajon Flying Service. There are (14) 40 x 30 foot T-hangars, 12 smaller T-hangars, 30 tail in tie-downs, (32) 42 x 32 foot T-hangars and eight new 45 x 45 foot commercial hangars. El Cajon Flying Service has no hangars or tie-downs available. The Cessna parts dealership is a major aircraft part shipping business for southern California.

Gillespie Air Center

Gillespie Air Center (Number 4 shown on Figure 3-9) is located on the southwestern portion of the apron on the west side of Runway 17-35. Gillespie Air Center is accessible from Marshall Avenue. There are (12) 40 x 30 foot T-hangars, four 40 x 32 foot T-hangars with bathrooms. Shop space is provided in various buildings and there are six tie-downs. Gillespie Air Center has no hangars, tie-downs or shop space available.

Gillespie Field Partners

Gillespie Field Partners (Number 5 shown on Figure 3-9) is located east of Runway 17-35 and is accessible by Joe Crosson Drive. Gillespie Field Partners has 40 standard 40 x 30 foot T-hangars, (35) 45 x 39 foot Multi-engine T-hangars, and 10 tail-in tie-downs. There are currently no hangars or tie-downs available on this leasehold. The operator is currently negotiating hangar development on the leasehold.

Golden State Aviation

Golden State Aviation (Number 6 shown on Figure 3-9) is located on the southeast corner of the airport property south of the end of Runway 35. Golden State Aviation has one 40 x 32 foot T-hangar that is used for maintenance. Their maintenance hangar is currently occupied. Golden State Aviation sells 80 octane, 100 octane Avgas, and Jet A fuels. These are stored in three 12,000-gallon underground fuel storage tanks subleased from San Diego Aircraft Inc. The fuel is sold at the fuel island located south of Runway 9R-27L and west of Runway 17-35 (Symbols A1 and A2 shown on Figure 3-9). Fuel is also delivered to aircraft customers via fueling trucks upon request.

Royal Jet, Inc

Royal Jet Inc. (Number 7 shown on Figure 3-9) is located on the north side of Runway 9L-27R, east of Runway 17-35 and is accessible from Kenney Street. Royal Jet Inc. is the primary FBO for business jets at the airport. They have one 201 x 165 foot hangar, one 270 x 160 foot hangar and four tie-downs. A 2-story office building totaling 9,240 square feet is on this leasehold. There is a wash rack on Royal Jet's leasehold, which is available to the flying public for a fee. Also on the property is a fuel farm with two 12,000-gallon underground fuel tanks (24,000-gallon total capacity). One tank stores Jet A and the other is used for 100 octane Avgas. Royal Jet is currently constructing a 24-hour full service fuel island on the southwest end of their leasehold. Occasionally the ramp is used for transient parking and fuel is delivered to aircraft customers via fueling trucks when requested.

Safari Aviation West, East and North

Safari Aviation (Numbers 8, 9 and 10 shown on Figure 3-9) East and West is located along both sides of Runway 17-35 south of Runway 9R-27L. Safari West is accessible from Marshall Avenue, Safari East and North are accessible from Joe Crosson Drive. Safari North tenants use the vehicle parking adjacent to the terminal building. There are three 46 x 40 foot T-hangars, (35) 42 x 32 foot T-hangars, two 44 x 44 foot square hangars, and 12 maintenance hangars ranging in sizes with the largest being 40 x 65 feet. Also on Safari Aviation be 25 tail-in tie-downs and 4,800 square feet of office space. As of this writing there are no hangars or tie-downs available. There is only 1,200 square feet of office space available. A wash rack exists on Safari Aviation North for their leasehold tenants.

Sky Harbor Hangars

This FBO is located north of Runway 9L-27R east of Runway 17-35 between Royal Jet, Inc. and Classic Hangars (Number 12 shown on Figure 3-9). Sky Harbor Hangars is accessible from Kenney Street. There are (88) 40 x 32 foot T-hangars, (22) 42 x 32 foot T-hangars, ten 50 x 50 foot T-hangars, and four 60 x 75 foot square hangars. All of the hangars are currently occupied.

Southern Cal. Aircraft Repair

Southern Cal. Aircraft Repair (Number 13 shown on Figure 3-9) is located east of Runway 17-35 and south of Runway 9R-27L. This FBO is accessible from Joe Crosson Drive and operates a major aircraft maintenance facility. They also provide FAA A&P mechanic certifications. This lessee is currently negotiating with the County to construct “For Sale” hangars on their leasehold.

San Diego Aircraft, Inc. and Wayne Breise, Inc.

San Diego Aircraft, Inc. and Wayne Breise, Inc. (Numbers 11 and 14 and Letters A1 and A2 shown on Figure 3-9) are located south of Runway 9R-27R west of Runway 17-35. Both are accessible from Marshall Avenue. The two FBOs combined have four 46 x 36 foot T-hangars, (24) 40 x 30 foot T-hangars, four square hangars, 36 tail-in tie-downs and 35 taxi-thru tie-downs are at San Diego Aircraft, Inc. and are owner occupied. As of this writing a total of five tie-downs are available.

La Jolla Investment Inc./Allen Airways

La Jolla Investment Inc. (Number 15 shown on Figure 3-9) is located south of Runway 9R-27L, west of Runway 17-35 and west of the control tower. La Jolla Investment Inc. has 23 residential hangars on their leasehold, and are currently planning three new hangars.

County Sheriff Facility

The County Sheriff occupies approximately 3.6 acres located southwest of the displaced threshold of Runway 35. The site houses the Office of Emergency Services building, the Aerial Support Team Regional Enforcement Agency (ASTREA), and California Department of Forestry Regional Fire Suppression helicopter base. The site includes a hangar/office building that supports these functions.

Museums

Gillespie Field has three museums located on airport property (Numbers 16, 17 and 18 shown on Figure 3-9). San Diego Aerospace is located north of Runway 9L-27R, east of Runway 17-35 and is accessible from Kenney Street. The Commemorative Air Force museum is accessed via Joe Crosson Drive and is located east of Runway 17-35 and south of Runway 9R-27L. Allen Airways Museum is situated south of 9R-27L, west of 17-35, and west of the control tower and can be accessed from Marshall Avenue.

Automobile Parking

The existing auto parking facilities total approximately 625 as shown below. Additionally, aircraft owners will park their automobiles in T-hangar spaces when they are flying their aircraft.

Location	Number of Spaces
Administration Building	41
Aircraft Storage Spaces	95
Classic Hangars	29
El Cajon Flying Service	60
Gillespie Air Center	40
Gillespie Field Partners	25
Golden State Aviation	20
Royal Jet, Inc.	50
Safari Aviation (West)	42
Safari Aviation (East)	44
Safari Aviation (North)	33
Wayne Breise, Inc.	25
Sky Harbor Hangars	70
Southern Cal. Aircraft Repair	25
San Diego Aircraft, Inc.	25
Total	624

Airport Support Facilities

The electrical vault is located near the FAA Airport Traffic Control Tower (ATCT) south of Runway 9R-27L and west of Runway 17-35.

EXISTING UTILITIES

Water for domestic and fire-fighting purposes is provided by the City of El Cajon through a 14-inch water line that runs along Kenney Street and across the airfield to Joe Crosson Drive. Cuyamaca Street also has a 14-inch water line and a 12-inch water line is underneath Marshall Avenue. There is a 68-inch City of San Diego water main and a 48-inch Helix Water District main located in a 50-foot wide easement running diagonally through the 70-acre site that encompasses the El Cajon Speedway. There is a Padre Dam water easement which runs across Airport Drive (South to North) and across the east end of Runway 9L-27R runup area.

Fire protection is provided by the City of El Cajon Fire Department. The nearest fire station location is on Marshall Avenue which is responsible for the airport. Response times to a call at the airport would be three minutes or less. Mutual aid, when requested, is provided by Santee Fire Department. Figure 3-10 shows existing fire hydrant locations. The City of El Cajon Fire Department also provides protection to the industrial park and non-aviation use parcels within the airport property.

Sewage is handled via sewer lines that flow into the City of El Cajon's 33 inch V.C. outfall sewer main. An eight-inch sewer line runs from the terminal area to a 15-inch sewer line underneath Marshall Avenue, which connects to the outfall sewer main. An eight-inch line also provides service to the Airport Traffic Control Tower and connects to the 15-inch sewer main underneath Marshall Avenue also. The parcel with the El Cajon Speedway is served by an eight sewer line that flows west under Runway 17-35 and connects to the 15-inch sewer main under Marshall Avenue. The industrial park is well served by the 15-inch sewer main line under Marshall Avenue.

San Diego Gas and Electric (SDG&E) provides electricity to the airport by underground and overhead means to the terminal area, airfield and the Airport Traffic Control Tower area respectively. SDG&E also provides natural gas to the airport. Electricity is provided to the industrial park and the El Cajon Speedway Parcel is served by overhead lines only. These should be placed underground when the lease expires and the parcel is developed for aviation uses.

Pacific Bell Telephone Company provides telephone service to the airport at the terminal area and Airport Traffic Control Tower area. Overhead wires supply the terminal area and the Airport Traffic Control Tower area is provided by underground conduit. Telephone lines to the industrial park and the El Cajon Speedway are provided by overhead and underground lines respectively. These should also be placed underground when the parcel is developed for aviation uses.

AIRPORT OPERATIONS

Historical Aviation Activity

This subsection summarizes the recent historical levels of aviation activities at the airport in terms of based aircraft and aircraft operations. The general aviation industry experienced a major decline in the 1980s and early 1990s. This was due to a number of reasons including high interest rates, past recession, high product liability costs, loss of the GI Bill for aircraft training and increasing aircraft operating costs. Recently, the industry has displayed strong growth in terms of new aircraft deliveries (including single engine piston aircraft). The active pilot population also increased in 1998 for the first time in the 1990s which was in sharp contrast to previous years. The downward trend has thus appeared to halt.

A based aircraft is one that is permanently stationed at an airport or lessee, usually through some form of agreement between the aircraft owner and the airport management. Historical information of based aircraft at Gillespie Field was compiled from data provided by the County and the FAA Terminal Area

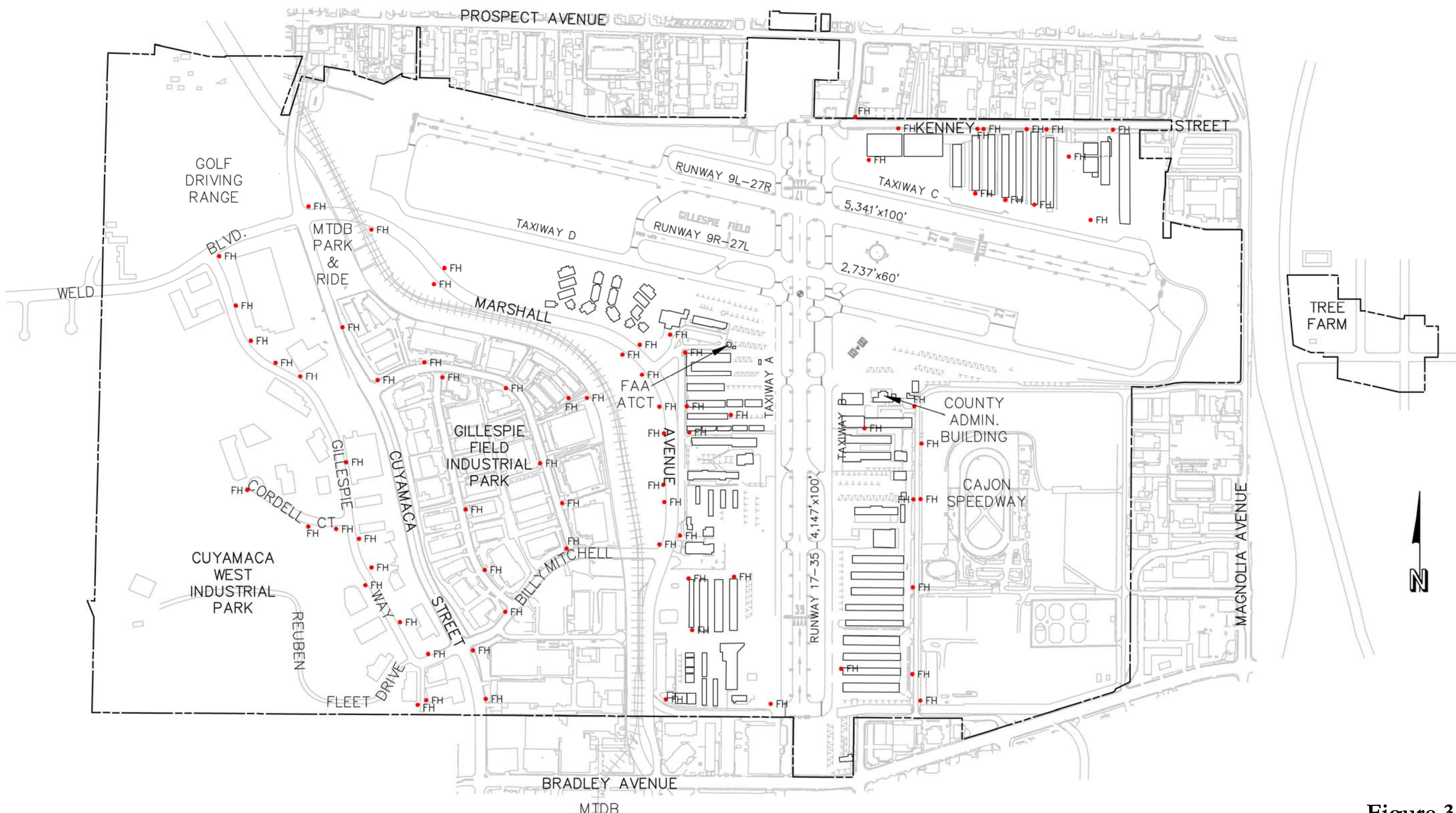


Figure 3-10
Fire Hydrant Locations

Forecast. Table 3-4 presents a history of based aircraft for the period 1980 to 2004. County data is reflected except for those years in which data was not available.

The number of based aircraft at Gillespie Field has varied over time, with some years showing noticeable increases, while others have shown noticeable decreases. As seen in Table 3-4, the overall change in based aircraft between 1980 and 2000 is 42, or six percent[1]. However, during the twenty-five year period the number of based aircraft were as high as 858 and as low as 636. The number of based aircraft in the base year 2000 was 774, which is approximately 13 percent less than the peak number of based aircraft (858) recorded in 1995.

An aircraft operation, or movement, is defined as either a takeoff or landing with each operation being categorized as either local or itinerant. A local operation is one that is performed by aircraft that: 1) operate in the local traffic pattern or within sight of the airport; 2) are known to be departing for or arriving from flights in local practice areas located within a 20-mile radius of the airport; or 3) execute simulated instrument approaches or low passes at the airport. Itinerant operations are all operations other than local. Aircraft operations for the years 1976-2003 are shown in Table 3-5. The data is based on the FAA Terminal Area Forecast and FAA Air Traffic Activity Data System as they provide a breakdown between local and itinerant operations for the 28-year period shown in Table 3-5.

BUSINESS INVENTORY

The scope of work for the Airport Layout Plan Update included an inventory of businesses located at Gillespie Field. This included aviation as well as non-aviation businesses. The business inventory provides the basis for an airport economic impact estimate and land-use market analysis that was prepared as part of this project. The inventory of Gillespie Field businesses is contained in Appendix B.

[1] The year 2000 was used as the base year for traffic forecasts.

Table 3-4
HISTORY OF BASED AIRCRAFT

Year	Single Engine	Multi Engine	Jet	Helicopter	Other	Total
1980	632	58	0	12	0	702
1981*	634	74	0	12	0	720
1982*	635	89	0	12	0	736
1983*	635	89	0	12	0	736
1984*	635	89	0	12	0	736
1985	698	67	4	35	7	811
1986*	697	67	0	35	0	799
1987	579	55	21	30	5	671
1988*	697	67	0	35	0	799
1989	587	24	1	22	2	636
1990	640	33	1	28	0	702
1991	606	84	3	35	3	731
1992	732	58	2	28	5	824
1993	753	54	1	32	4	844
1994*	753	54	1	32	4	844
1995	769	52	1	33	3	858
1996	690	49	3	23	4	769
1997	686	18	1	20	6	731
1998*	690	49	3	23	4	769
1999	677	43	13	23	9	765
2000	685	41	11	28	9	774
2001	685	41	11	28	9	774
2002	754	21	19	23	4	821
2003	754	21	19	23	4	821
2004	682	54	24	26	4	790

Sources: County of San Diego. FAA Terminal Area Forecast for those years indicated by (*).

Table 3-5
ANNUAL AIRCRAFT OPERATIONS

Year	Itinerant	Local	Total
1976	115,337	117,825	233,162
1977	122,670	122,593	245,263
1978	132,617	140,734	273,351
1979	145,342	158,240	303,582
1980	129,009	141,992	271,001
1981	113,296	137,376	250,672
1982	96,807	104,707	201,514
1983	93,034	107,281	200,315
1984	100,624	96,511	197,135
1985	104,724	96,110	200,834
1986	96,679	91,998	188,677
1987	95,502	97,873	193,375
1988	93,603	84,417	178,020
1989	87,199	92,502	179,701
1990	94,062	94,678	188,740
1991	89,041	82,933	171,974
1992	93,832	102,606	196,438
1993	94,322	99,073	193,395
1994	92,015	97,127	189,142
1995	89,002	99,397	188,399
1996	84,335	91,131	175,466
1997	83,192	95,338	178,530
1998	91,532	107,053	198,585
1999	99,609	117,517	217,126
2000	88,112	99,540	187,751
2001	79,487	95,905	175,392
2002	82,484	100,661	183,145
2003	79,191	101,558	180,749

Sources: FAA Terminal Area Forecast; Air Traffic Activity Data System.

Chapter 4
Aviation Demand Forecasts

INTRODUCTION

This chapter presents aviation demand forecasts for Gillespie Field. Prudent planning for the physical development of an airport requires a well-documented forecast of aviation activity at the subject facility. Once the forecasting tasks of the planning process have been completed, the airport planner can then translate the projected activity levels into required facilities. The forecast then serves as a basis for determining the phased development of the facility components for the short, intermediate and long-range planning periods.

The forecast developed for this study covers the period between 2000 and 2025. Intermediate year forecasts are also presented for 2007 and 2012. It is important to note that the forecasts presented herein represent unconstrained potential or "market-driven" demand, without consideration of the physical, safety, noise, regulatory, institutional, or political constraints that may preclude development of facilities to fully serve the demand.

Forecasts have been prepared for the following elements:

- Based aircraft: total and by aircraft type.
- Aircraft movements: total, by aviation category (air carrier, general aviation, military, etc.), by aircraft type, local versus itinerant, instrument, and time of day.

It is important to note that due to the uncertainties in the long-range aviation outlook, long-term forecasting is approximate in nature. However, an indication of trends is important since estimates can be made of facility costs, social costs and environmental impacts, which an airport creates on the surrounding area. Thus, the purpose of the forecasting effort is to identify activity levels, which then serve as planning tools.

FORECAST OF BASED AIRCRAFT

A based aircraft is one that is permanently stationed at an airport, usually by some form of agreement between the aircraft owner and airport management. This forecast value is used in developing projections of aircraft activity, as well as determining facility requirements for airport elements such as aprons and hangars.

The approach used to forecast based aircraft at Gillespie Field involved the following steps: (i) project total based aircraft in the Gillespie Field Competitive Market Area (CMA); (ii) forecast the share of based aircraft in the CMA served at Gillespie; (iii) project the fleet mix of aircraft based at Gillespie. The methodology and assumptions used in each step are described in the following subsections.

Total Based Aircraft in Gillespie Field Competitive Market Area

Gillespie Field competes as a location for based aircraft with other public use airports in western San Diego County, including Fallbrook Airport, Oceanside Municipal Airport, McClellan Palomar Airport, Ramona Airport, Montgomery Field, Lindbergh Field, and Brown Field. The airport is located in the City of El Cajon and borders the City of Santee, which are in the southwestern portion of the County.

The market area for Gillespie Field is depicted in Figure 4-1 and is defined as the western six major statistical areas for the County as designated by the San Diego Association of Governments (SANDAG). Figure 4-1 also presents publicly owned airports within the County.

Over past 10 years, based aircraft in the CMA increased by a total of 3.5 percent, from 2,346 in 1990 to 2,427 in 2000 (see Table 4-1). Annual changes in the number of based aircraft in the CMA were variable with some years experiencing increases and others experiencing declines. Over the period, total aircraft based at these airports have varied from a low of 2,260 in 1995 to a high of 2,427 in 2000.

Due to a variety of factors mentioned in Chapter 3, it is anticipated that the market for general aviation aircraft will increase in the CMA. For purposes of projecting the number of based aircraft in the CMA, future demand for general aviation based aircraft was tied to regional trends projected by the FAA 2001 Terminal Area Forecast (TAF). FAA forecasts, rather than socioeconomic growth in the CMA, were used to forecast future demand because changes in regional based aircraft have not historically been related to socioeconomic activity. For example, while population and employment in the CMA grew by 18 percent and 14 percent, respectively, between 1990 and 2000, total based aircraft in the CMA increased by only three percent. Further, within the period, there is little relationship between annual changes in based aircraft and changes in population and employment. Using this approach, the total number of based aircraft in the CMA is forecast to increase from 2,427 in 2000 to 3,156 in 2025 (see Table 4-2).

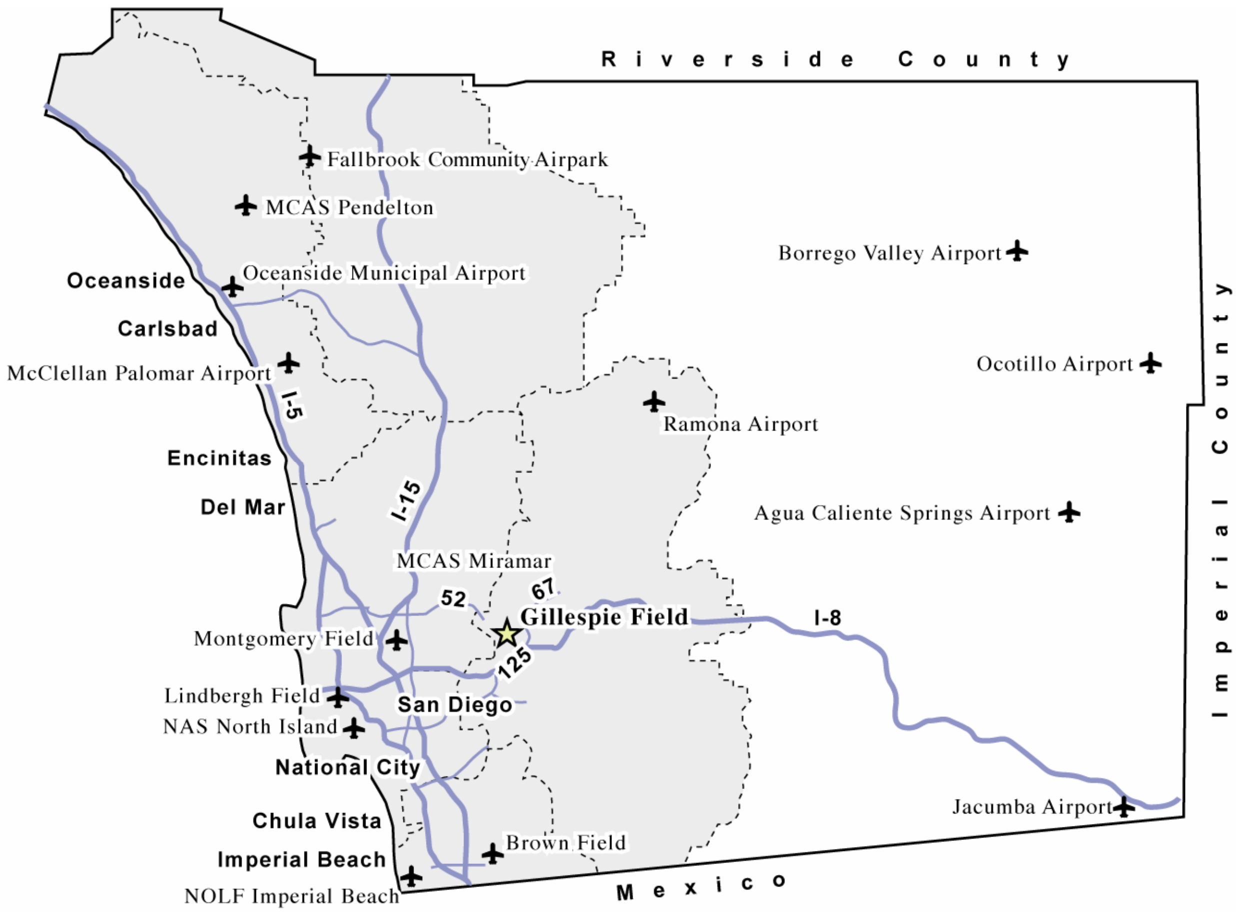
Total Based Aircraft at Gillespie Field

Historically, Gillespie Field has hosted an average of 33.1 percent of the general aviation aircraft based in the CMA. This rate has varied from a low of 29.9 percent to as much as 38 percent, as may be noted in Table 4-1.

A range of forecasts was developed based on the following assumptions (scenarios) regarding Gillespie's future share of the based aircraft market in the CMA:

- Baseline Forecast: Gillespie's future market capture will increase from 31.9 percent in 2000 to the average historic rate (33.1 percent) by 2025. This scenario reflects a condition where Gillespie Field's competitive position in the market remains similar to historic circumstances.

- High Growth Forecast: Gillespie's future market capture will increase from 31.9 percent in 2000 to the high point over the past 10 years (38 percent) by 2025. This scenario reflects a condition where Gillespie Field becomes more competitive in the market area.



Shaded areas represent Gillespie Field competitive market area.

Figure 4-1
Gillespie Field Competitive Market Area

Table 4-1
BASED AIRCRAFT IN THE GILLESPIE FIELD CMA, 1990 - 2000

Year	McClellan Palomar	Fallbrook	Montgomery Field	Oceanside Municipal	Ramona	Lindbergh Field	Brown Field	Gillespie Field	Total
Total Based Aircraft									
1990	447	95	545	173	133	21	230	**702**	2,346
1991	351	96	545	128	217	11	218	**731**	2,297
1992	351	96	521	128	206	11	218	**824**	2,355
1993	351	96	521	128	206	11	218	**806**	2,337
1994	292	111	521	78	205	20	203	**844**	2,274
1995	292	100	521	72	205	10	202	**858**	2,260
1996	465	100	558	72	206	2	202	**769**	2,374
1997	496	100	546	66	206	11	202	**731**	2,358
1998	496	100	546	66	191	11	202	**731**	2,343
1999	480	100	630	66	191	11	169	**765**	2,412
2000	480	100	630	72	191	11	169	**774**	2,427
Percent Total Based Aircraft (Market Share)									
1990	19.1%	4.0%	23.2%	7.4%	5.7%	0.9%	9.8%	**29.9%**	100.0%
1991	15.3%	4.2%	23.7%	5.6%	9.4%	0.5%	9.5%	**31.8%**	100.0%
1992	14.9%	4.1%	22.1%	5.4%	8.7%	0.5%	9.3%	**35.0%**	100.0%
1993	15.0%	4.1%	22.3%	5.5%	8.8%	0.5%	9.3%	**34.5%**	100.0%
1994	12.8%	4.9%	22.9%	3.4%	9.0%	0.9%	8.9%	**37.1%**	100.0%
1995	12.9%	4.4%	23.1%	3.2%	9.1%	0.4%	8.9%	**38.0%**	100.0%
1996	19.6%	4.2%	23.5%	3.0%	8.7%	0.1%	8.5%	**32.4%**	100.0%
1997	21.0%	4.2%	23.2%	2.8%	8.7%	0.5%	8.6%	**31.0%**	100.0%
1998	21.2%	4.3%	23.3%	2.8%	8.2%	0.5%	8.6%	**31.2%**	100.0%
1999	19.9%	4.1%	26.1%	2.7%	7.9%	0.5%	7.0%	**31.7%**	100.0%
2000	19.8%	4.1%	26.0%	3.0%	7.9%	0.5%	7.0%	**31.9%**	100.0%

Source: FAA 2001 Terminal Area Forecast; Airport records.

- Low Growth Forecast: Gillespie's future market capture will decrease from 31.9 percent in 2000 to the low point over the past 10 years (29.9 percent) by 2025. This scenario reflects a condition where Gillespie Field becomes less competitive in the market area.

Applying these assumptions to the total number of based aircraft forecast for the CMA results in the projections of based aircraft at Gillespie Field shown in Table 4-2.

Table 4-2
BASED AIRCRAFT FORECAST
GILLESPIE FIELD 1990 - 2025

Year	Market Area	Based Aircraft					
		Baseline		High Growth		Low Growth	
		Total	% Market	Total	% Market	Total	% Market
Actual							
1990	2,346	702	29.9%	702	29.9%	702	29.9%
1995	2,260	858	38.0%	858	38.0%	858	38.0%
2000	2,427	774	31.9%	774	31.9%	774	31.9%
Forecast							
2007	2,640	853	32.3%	898	34.0%	824	31.2%
2012	2,795	912	32.6%	993	35.5%	858	30.7%
2025	3,156	1,046	33.1%	1,198	38.0%	944	29.9%

Source: P&D Aviation.

As may be noted, under the Baseline Forecast based aircraft at Gillespie Field increase from 774 in 2000 to 1,046 by 2025. Under the Low Growth and High Growth Scenarios, based aircraft at the airport reach 944 and 1,198, respectively.

Fleet Mix of Aircraft Based at Gillespie

The forecast of the fleet mix of based aircraft at Gillespie Field was based on the existing 2000 fleet mix, modified to reflect future trends shown in the FAA's 2000 Terminal Area Forecast.[1]

Business jet activity has experienced significant growth at Gillespie Field which was not reflected by the FAA's 2000 Terminal Area Forecast (TAF). For projecting future based business jets the following assumptions (scenarios) were applied. For the Low Growth Forecast based business jets were assumed to reflect the trend suggested by the FAA TAF. For the Baseline Forecast, business jet activity was assumed to increase approximately three times the trend suggested by the FAA TAF. For the High Growth Forecast, business jet activity was assumed to grow such that the long-term number of business jets at Gillespie Field was comparable to the number of business jets presently based at McClellan-Palomar Airport. (another County owned airport that has experienced significant growth in business jet activity).

[1] Based aircraft fleet mix is not currently available in the 2001 TAF. Therefore, the 2000 TAF was used instead.

When applied to the total number of based aircraft forecast to locate at the airport these assumptions result in the forecast of based aircraft by type shown in Tables 4-3 through 4-5. Single engine piston aircraft are expected to be the predominant type of based aircraft located at Gillespie, followed by multi-engine piston, helicopter, jet and other.

Table 4-3
BASELINE FORECAST
BASED AIRCRAFT BY TYPE
GILLESPIE FIELD 1990 - 2025

Type	Actual					
	1990	1995	2000	2007	2012	2025
Single Engine	640	690	685	752	804	906
Multi Engine	33	49	41	45	49	60
Jet	1	3	11	16	17	29
Helicopter	28	23	28	30	33	42
Other	-	4	9	9	9	10
Total	702	769	774	853	912	1,046

Source: P&D Aviation.

Table 4-4
LOW GROWTH FORECAST
BASED AIRCRAFT BY TYPE
GILLESPIE FIELD 1990 - 2025

Type	Actual					
	1990	1995	2000	2007	2012	2025
Single Engine	640	690	685	731	760	829
Multi Engine	33	49	41	44	46	54
Jet	1	3	11	11	12	15
Helicopter	28	23	28	29	31	38
Other	-	4	9	9	9	9
Total	702	769	774	824	858	944

Source: P&D Aviation.

Table 4-5
HIGH GROWTH FORECAST
BASED AIRCRAFT BY TYPE
GILLESPIE FIELD 1990 - 2025

	Actual					
Type	**1990**	**1995**	**2000**	**2007**	**2012**	**2025**
Single Engine	640	690	685	785	863	1,025
Multi Engine	33	49	41	48	53	68
Jet	1	3	11	23	30	45
Helicopter	28	23	28	32	36	48
Other	-	4	9	10	10	11
Total	702	769	774	898	993	1,198

Source: P&D Aviation.

Comparison with Other Forecasts

Two other recent forecasts of based aircraft have been prepared for Gillespie Field. These forecasts, the 2001 Terminal Area Forecast (TAF) prepared by the FAA[2] and the 1999 Statewide Forecasts prepared by the California Department of Transportation (CALTRANS)[3], are summarized in Table 4-6.

As may be noted, the FAA 2001 TAF is approximately six percent lower than the Baseline Forecast by the year 2015 (the last year of the TAF). However, the lower forecast is due to a lower 2000 based aircraft estimate, and the overall growth trends between the two forecasts are similar over the projection period. The 1999 CASP is approximately 23 percent higher than the Baseline Forecast by the year 2020. Again, this is largely due to a higher 2000 based aircraft estimate, and the overall growth trends between the two forecasts are similar. Therefore, when differences in the 2000 based aircraft estimates are accounted for, the two alternative forecasts anticipate similar growth trends as reflected in the Baseline Forecast.

[2] FAA, *2001 Terminal Area Forecast Database*, December 2001.
[3] CALTRANS Aeronautics Program, *1999 Statewide Forecasts, The California Aviation System Plan*, September 1999.

Table 4-6
COMPARISON OF BASELINE FORECAST
OF BASED AIRCRAFT
WITH FAA 2001 TAF AND 1999 CASP
GILLESPIE FIELD, 2000 - 2020

	Forecast			% Difference from Baseline	
Year	**Baseline**	**2001 TAF**	**1999 CASP**	**2001 TAF**	**1999 CASP**
Total Based Aircraft					
2000	774	726	930	-6.2%	20.2%
2005	830	780	1,018	-6.0%	22.7%
2010	888	834	1,088	-6.1%	22.5%
2015	949	888	1,152	-6.4%	21.4%
2020	1,006	NA	1,238	NA	23.1%
Percent Annual Change					
2000 - 2015	1.4%	1.4%	1.4%		
2000 - 2020	1.3%	NA	1.4%		

Source: P&D Aviation; FAA 2001 TAF, 1999 CASP.

FORECAST OF AIRCRAFT OPERATIONS

An aircraft operation, or movement, is defined as either a takeoff or landing with each operation being categorized as either local or itinerant. A local operation is one that is performed by aircraft that: 1) operate in the local traffic pattern or within sight of the airport; 2) are known to be departing for or arriving from flights in local practice areas located within a 20-mile radius of the airport; or 3) execute simulated instrument approaches or low passes at the airport. Itinerant operations are all operations other than local.

Annual Operations

Aircraft operations for the years 1990 to 2000 are shown in Table 4-7.

Table 4-7
ANNUAL AIRCRAFT OPERATIONS
GILLESPIE FIELD, 1990 - 2000

Calender Year	Itinerant				Local		Total
	Commercial						
	Air Carrier	Air Taxi	General Aviation	Military	General Aviation	Military	
1990	-	22	94,864	333	93,158	156	188,533
1991	-	327	86,335	368	84,354	231	171,615
1992	-	535	95,251	146	105,539	226	201,697
1993	-	589	92,976	164	99,064	182	192,975
1994	8	195	89,909	143	95,200	112	185,567
1995	29	157	87,050	79	96,889	87	184,291
1996	7	124	82,729	148	89,908	64	172,980
1997	-	306	84,594	367	99,488	76	184,831
1998	51	51	95,844	42	113,978	6	209,972
1999	-	27	98,988	94	111,040	36	210,185
2000	-	25	88,112	45	99,540	29	187,751

Source: FAA control tower records.

Annual aircraft operations at Gillespie Field between 1990 and 2000 ranged from a low of 171,000 in 1991 to a high of 210,000 in 1999. Operations in 2000 declined to 187,800, and totaled 175,400 in 2001.[4]

The technique used to develop the forecast of operations was to first project the total number of operations, and then divide operations by type (local versus itinerant, and instrument, and general aviation aircraft type). The projected total annual general aviation operations were based on the historic average ratio of 245 aircraft operations per based aircraft at Gillespie. For business jets, the number of annual operations in the year 2025 (High Growth Forecast) was assumed to reach a comparable level that is currently experienced at McClellan-Palomar Airport. For the Baseline Forecast, the number of annual business jet operations reflected an average of the historic ratio and High Growth Forecast assumption. Helicopter operations for the interim forecast years for the Baseline and High Growth Forecasts reflect actual activity trends since 2004. Military and commercial aircraft operations were developed based on historic trends experienced at the airport.

The breakdown of local and itinerant operations and instrument operations were based on historic rates experienced at the airport, which were assumed to continue into the future. Operations by type of aircraft were based on the projected based aircraft fleet mix.

[4] Due to the terrorist attack in September 2001 and the subsequent restrictions on general aviation flights, the traffic counts for 2001 are considered to be an anomaly. Aircraft operations at most general aviation airports, including Gillespie Field, have returned to pre-September 11 levels.

The results of the Baseline, High Growth and Low Growth forecast are shown in Table 4-8 and Table 4-9. As may be noted, under the Baseline Forecast, total annual aircraft operations at Gillespie are projected to increase from 187,800 in 2000 to almost 257,000 by 2025. Under the High Growth Scenario, total annual operations reach 294,000 by 2025; under the Low Growth Scenario, annual operations total almost 231,000 movements by 2025.

Under all forecast scenarios, local operations are expected to account for just over one-half of total operations. Single-engine aircraft are forecast to account for the largest share of operations, followed by multi-engine, helicopter, jet, and other operations.

Comparison with Other Forecasts

The 2001 Terminal Area Forecast (TAF) and the 1999 Statewide Forecasts also provide recent forecasts of aircraft operations for the airport. As may be noted in Table 4-10, the 2001 TAF is consistent with the Baseline Forecast, varying by approximately five percent by the year 2015. While the 1999 CASP forecast is almost 14 percent higher than the Baseline by 2020, when the differences in the 2000 operations are accounted for, the growth trends reflected in the two forecasts are similar. Therefore, it appears that the growth trends anticipated in the Baseline Forecast are supported by other recent forecasts of aviation activity at Gillespie Field.

Aircraft Operations by Time of Day

Aircraft operations were broken down by time of day for the following time periods: day (7 a.m. to 7 p.m.), evening (7 p.m. to 10 p.m.), and night (10 p.m. to 7 a.m.). These time periods correspond to the time periods specified in CNEL. The Gillespie Field Airport Traffic Control Tower operates from 7 a.m. to 9 p.m. and traffic records of the control tower document aircraft operations during these hours of operation. Hourly traffic counts for May 2000 were obtained from the control tower and tabulated (and involved 18,525 aircraft operations for the month). This data indicated that approximately 94 percent of the operations occur between 7 a.m. and 7 p.m., and 6 percent occurs between 7 p.m. and 9 p.m. Data obtained from a random survey of operations recorded by County security guards during periods when the control tower was closed, suggested a breakdown of operations as follows: day (7 a.m. to 7 p.m.) – 92 percent, evening (7 p.m. to 10 p.m.) – 7 percent, and night (10 p.m. to 7 a.m.) 1 percent.

Further information was obtained from helicopter operators and business jet operators. The major helicopter operators at the airport (ASTREA and Mercy Air) were contacted. Based upon information provided by these operators helicopter operations are 70 percent day, 20 percent evening, and 10 percent night. Del Mar Jets provided information based on their flight dispatch records that indicated 79 percent of their operations occurred between 7 a.m. and 7 p.m., 9.5 percent occurred between 7 p.m. and 10 p.m., and 11.5 percent of their operations occurred between 10 p.m. and 7 a.m. Time of day input data for helicopter and business jet operations was adjusted accordingly per this information.

Peak Hour Aircraft Operations

Peak hour aircraft operations were forecast for the average day of the peak month (ADPM). The peak month was identified from three years historical traffic and is approximately 9.8 percent of annual aircraft operations. The average day number of operations is obtained by dividing peak month activity by 31 days. A peak hour factor of 12 percent of ADPM operations was applied to project peak hour operations. Table 4-11 presents the forecast of peak hour airport operations.

Table 4-8
ANNUAL AIRCRAFT OPERATIONS BY TYPE
GILLESPIE FIELD 1990 - 2025

Year	Operations by Type				Local Operations	Instrument Operations
	Commercial	General Aviation	Military	Total		
Actual						
1990	22	188,022	489	188,533	93,314	6,818
1995	186	183,939	166	184,291	96,976	6,784
2000	25	187,652	74	187,751	99,569	7,347
Baseline Forecast						
2007	130	209,000	180	209,310	110,900	7,700
2012	130	223,400	180	223,710	118,600	8,300
2025	130	256,300	180	256,610	136,000	9,500
High Growth Forecast						
2007	300	220,000	450	220,750	117,000	8,200
2012	300	243,300	450	244,050	129,300	9,000
2025	300	293,500	450	294,250	156,000	10,900
Low Growth Forecast						
2007	25	201,900	50	201,975	107,000	7,500
2012	25	210,200	50	210,275	111,400	7,800
2025	25	231,300	50	231,375	122,600	8,600

Source: P&D Aviation.

Table 4-9
FORECAST OF
GENERAL AVIATION OPERATIONS
BY TYPE OF AIRCRAFT
GILLESPIE FIELD 2000 - 2025

Aircraft Type	Estimated 2000	2007	2012	2025
Baseline Forecast				
Single Engine	166,074	181,671	193,182	217,228
Multi Engine	9,940	11,107	12,026	14,619
Jet	2,667	4,800	6,222	11,823
Helicopter	6,788	9,200	9,700	10,235
Other	2,182	2,222	2,269	2,396
Total	187,652	209,000	223,400	256,300
High Growth Forecast				
Single Engine	166,074	188,150	204,372	240,013
Multi Engine	9,940	11,692	13,097	16,359
Jet	2,667	8,395	12,410	22,995
Helicopter	6,788	9,425	10,950	11,297
Other	2,182	2,339	2,472	2,837
Total	187,652	220,000	243,300	293,500
Low Growth Forecast				
Single Engine	166,074	179,031	186,166	203,851
Multi Engine	9,940	10,730	11,315	12,892
Jet	2,667	2,783	2,928	3,418
Helicopter	6,788	7,210	7,656	8,903
Other	2,182	2,146	2,135	2,236
Total	187,652	201,900	210,200	231,300

Source: P&D Aviation

Table 4-10
COMPARISON OF BASELINE FORECAST
OF AIRCRAFT OPERATIONS
WITH FAA 2001 TAF AND 1999 CASP
GILLESPIE FIELD, 2000 - 2020

Year	Forecast			% Difference from Baseline	
	Baseline	2001 TAF	1999 CASP	2001 TAF	1999 CASP
Total Based Aircraft					
2000	187,751	192,110	211,102	2.3%	12.4%
2005	203,700	207,457	231,078	1.8%	13.4%
2010	217,900	226,256	246,967	3.8%	13.3%
2015	232,800	245,057	261,495	5.3%	12.3%
2020	246,800	NA	281,016	NA	13.9%
Percent Annual Change					
2000 - 2015	1.4%	1.6%	1.4%		
2000 - 2020	1.4%	NA	1.4%		

Source: P&D Aviation; FAA 2001 TAF, 1999 CASP.

Table 4-11
FORECAST OF PEAK HOUR AIRCRAFT OPERATIONS
DURING THE AVERAGE DAY PEAK MONTH (ADPM)
GILLESPIE FIELD, 2000 - 2025

	Actual	Forecast		
	2000	2007	2012	2025
Baseline Forecast				
Annual Operations	187,751	209,310	223,710	256,610
Peak Month Percentage [1]	10.0%	9.8%	9.8%	9.8%
Peak Month Operations	18,775	20,512	21,924	25,148
Days in Peak Month	31	31	31	31
ADPM Operations	606	662	707	811
Peak Hour Factor	12%	12%	12%	12%
Peak Hour Operations	73	79	85	97
High Growth Forecast				
Annual Operations	187,751	220,750	244,050	294,250
Peak Month Percentage [1]	10.0%	9.8%	9.8%	9.8%
Peak Month Operations	18,775	21,634	23,917	28,837
Days in Peak Month	31	31	31	31
ADPM Operations	606	698	772	930
Peak Hour Factor	12%	12%	12%	12%
Peak Hour Operations	73	84	93	112
Low Growth Forecast				
Annual Operations	187,751	201,975	210,275	231,375
Peak Month Percentage [1]	10.0%	9.8%	9.8%	9.8%
Peak Month Operations	18,775	19,794	20,607	22,675
Days in Peak Month	31	31	31	31
ADPM Operations	606	639	665	731
Peak Hour Factor	12%	12%	12%	12%
Peak Hour Operations	73	77	80	88

[1] 2000 is actual, forecast years are average of 1999, 2000, and 2001.

Source: P&D Aviation.

Chapter 5
Facility Requirements

INTRODUCTION

Chapter 4 produced a forecast of traffic volumes expected to be generated at the airport during the 20-year forecast period. The next step in the planning process is to determine the type and magnitude of airport facilities that will be needed during the 20-year period to satisfactorily accommodate future traffic volumes.

The process of determining facility requirements involves the application of acceptable airport planning standards to the various forecast components to identify the needed facilities that will provide sufficient capacity to handle the expected traffic. By comparing the sizes and capacities of the future facility needs with existing facility sizes and capacities, facility deficiencies can be determined and quantified.

The deficiencies are then resolved by increasing facility capacities over a three-phase development program. This chapter of the report will deal with the calculation of theoretical airport facility requirements as discussed above. The facilities developed through this planning process must be considered theoretical at this time because they have not been related to existing facilities. In Chapter 6, Concept Development, the recommended improvements derived from the facility requirements will be delineated in a series of concept plans. During this process, adjustments to the facility requirements may be necessary and the resulting facilities become the basis of the recommended development program.

The uncertainty of long-range forecasting was noted in Chapter 4, and a range of forecasts was provided. In the interest of preparing a plan capable of accommodating a wide range of options, the analysis of facility requirements will use the "High Growth" forecasts as these will present the greatest requirement for aviation facilities. In this regard, the airport layout plan will provide sufficient protection and flexibility in terms of aeronautical uses on the airport. This will also permit potential surplus land to be designated for revenue enhancing uses without compromising the airport's ability to fulfill its air transportation role. It is important to note that it will be actual demand that dictates the eventual development of facilities and not forecast demand. Thus, the use of the "High Growth" forecast does not commit the County to construct the facilities associated with projected demand.

Airport facility requirements are grouped into the two main operating elements - the airside facilities and the landside facilities. Before addressing the facility requirements, a brief discussion of airport classification is presented.

AIRPORT CLASSIFICATION

Gillespie Field functions in several roles as defined by FAA and explained in Chapter 3. First, it is a general aviation airport, which means it does not receive scheduled commercial air service. Gillespie Field is contained in the National Plan of Integrated Airport Systems (NPIAS) and is classified as a reliever airport. The airport is also contained in the California Aviation System Plan (CASP) and is classified as a Regional-Business/Corporate Airport. As explained in Chapter 3, this classification of the state applies to airports that are located in an area with a large population base that serves a number of cities or counties. Regional airports accommodate most business (multi-engine and jet) aircraft. The designation of the airport as "Business/Corporate" is a subcategory of the Regional functional classification and indicates the prevalence of business aviation activity at the airport.

The FAA in its current AC 150/5300-13, Airport Design, has developed an airport reference code (ARC) which is a coding system that relates airport design criteria and planning standards to two components: the operational and physical characteristics of aircraft operating at or expected to operate at the airport. It is an alphanumeric code with the numeric component consisting of a Roman numeral. The letter element of the code is the aircraft approach category and thus relates to operational characteristics. The aircraft approach category is a grouping of aircraft that is based on 1.3 times the stalling speed as follows:

Category	Speed
A	Speed less than 91 knots
B	Speed 91 knots or more but less than 121 knots
C	Speed 121 knots or more but less than 141 knots
D	Speed 141 knots or more but less than 166 knots
E	Speed 166 knots or more

The second component of the ARC is the airplane design group and relates to the wingspan of aircraft and therefore is a physical characteristic. The grouping of aircraft by wingspan (Aircraft Design Group) is as follows:

Airplane Design Group	Wingspan
I	Up to but not including 49 feet
II	49 feet up to but not including 79 feet
III	79 feet up to but not including 118 feet
IV	118 feet up to but not including 171 feet
V	171 feet up to but not including 214 feet
VI	214 feet up to but not including 262 feet

The aircraft approach speed element of the ARC will generally deal with runways and runway related facilities whereas the wingspan (and relevant Airplane Design Group) relates to separations required between airfield elements, i.e., runway-taxiway separations, taxilane and apron clearances, etc.

For this airport layout plan update the airport is designated as code B-II based on the following rationale. Application of planning and design standards for this aircraft group ensures that all general aviation aircraft that currently use the Airport will be provided adequate facilities. Planning standards contained in FAA AC 150/5300-13, Airport Design, will be applied in this study based on standards for an Airport Reference Code of B-II. Airport design standards for smaller or larger aircraft may be applied on a case by case basis in certain respects depending on the situation. For example, standards for an ARC of B-I should be applied to the short parallel runway. Furthermore, subsequent planning analyses may apply criteria for more demanding aircraft in the interest of promoting a flexible long-term plan. The rationale for such applications will be documented where appropriate in this narrative report. Table 5-1 presents the relevant airport planning standards for an ARC of B-II to be used in this study.

Table 5-1
AIRPORT PLANNING STANDARDS
FOR AIRPORT REFERENCE CODE B-II

AIRPORT DESIGN AIRPLANE AND AIRPORT DATA

Aircraft Approach Category B		
Airplane Design Group II		
Airplane wingspan		78.99 feet
Primary runway end approach visibility minimums are not lower than 1 mile		
Other runway end approach visibility minimums are visual exclusively		
Airplane undercarriage width (1.15 x main gear track)		17.25 feet
Airport elevation		387 feet

SEPARATION STANDARDS

Runway centerline to parallel runway centerline		700 feet
wider runway separation may be required for capacity (See AC 150/5060-5)		
Runway centerline to parallel taxiway/taxilane centerline	239.5	240 feet
Runway centerline to edge of aircraft parking	250.0	250 feet
Taxiway centerline to parallel taxiway/taxilane centerline	104.8	105 feet
Taxiway centerline to fixed or movable object	65.3	65.5 feet
Taxilane centerline to parallel taxilane centerline	96.9	97 feet
Taxilane centerline to fixed or movable object	57.4	57.5 feet

RUNWAY PROTECTION ZONES

Runway protection zone Runways 9L, 27R, 9R, 27L, 17 and 35:		
Length		1,000 feet
Width 200 feet from runway end		500 feet
Width 1,200 feet from runway end		700 feet

OBSTACLE FREE ZONES

Runway obstacle free zone (OFZ) width	400.0	400 feet
Runway obstacle free zone length beyond each runway end		200 feet
Inner-approach obstacle free zone width	400.0	400 feet
Inner-approach obstacle free zone length beyond approach light system		200 feet
Inner-approach obstacle free zone slope from 200 feet beyond threshold		50:1
Inner-transitional surface obstacle free zone slope		0:1

Table 5-1
AIRPORT PLANNING STANDARDS
FOR AIRPORT REFERENCE CODE B-II
(continued)

RUNWAY DESIGN STANDARDS

Runway width	75 feet
Runway shoulder width	10 feet
Runway blast pad width	95 feet
Runway blast pad length	150 feet
Runway safety area width	150 feet
Runway safety area length beyond each runway end or stopway end, whichever is greater	300 feet
Runway object free area width	500 feet
Runway object free area length beyond each runway end or stopway end, whichever is greater	300 feet
Clearway width	500 feet
Stopway width	75 feet

TAXIWAY DESIGN STANDARDS

Taxiway width	32.3	35 feet
Taxiway edge safety margin		7.5 feet
Taxiway shoulder width		10 feet
Taxiway safety area width	79.0	79 feet
Taxiway object free area width	130.6	131 feet
Taxilane object free area width	114.8	115 feet
Taxiway wingtip clearance	25.8	26 feet
Taxilane wingtip clearance	17.9	18 feet

Source: FAA Advisory Circular 150/5300-13, Airport Design.

AIRFIELD CAPACITY REQUIREMENTS

Annual and Hourly Capacity

Hourly runway capacities and annual service volume (ASV) estimates are needed to design and evaluate airfield development and improvement projects. The approach for estimating airport capacity in this study used general capacity estimates contained in FAA AC 150/5060-5, Airport Capacity and Delay. Figure 2-1 of the advisory circular contains various runway configurations and associated hourly and annual capacities that are suitable for long-range planning. Specifically, runway sketch 10 of the figure reflects a runway layout similar to Gillespie Field, namely a pair of closely spaced parallel runways with an intersecting crosswind runway. For a general aviation airport aircraft mix the corresponding annual capacity (Annual Service Volume) is identified as 355,000 operations. This also corresponds with data reflected in the latest FAA Terminal Area Forecast. The ASV also corresponds with data contained in the 1986 Master Plan for the Airport where the annual capacity was identified as 325,000 operations. Therefore, for the purpose of this ALP update an annual capacity of 355,000 operations will be assumed. An hourly VFR capacity estimate of 197 operations is also identified.

While the advisory circular identifies an hourly VFR capacity of 197 operations it is not reasonable to expect this level of traffic to be sustainable over an extended period of time, and certainly not through the course of a year. Therefore, an average hourly capacity value will be derived using peaking factors contained in the advisory circular. A daily demand ratio of 290 and hourly demand ratio of 9 is assumed. Based on these, an average hourly capacity of 136 operations is derived from the annual capacity (ASV) divided by the daily and hourly demand ratios.

Average hourly capacity = 355,000/(290*9) = ***136 Operations.***

It should be noted that the ASV represents the capacity of the present airport. It is also important to note the capacity of an airport is not constant and may vary over time depending upon airfield improvements, airfield or airspace geometry, ATC procedures, weather and mix of aircraft operating at the airport. The capacity of an airport can change with or without airfield improvements.

Demand Versus Capacity

By comparing ASV and hourly capacities with the forecast annual and peak hour demand, the relationship between demand and capacity can be determined. Table 5-2 presents the comparisons of demand versus capacity and as seen the present airfield will accommodate demand through the planning period.

Throughout the twenty year planning period, capacity is adequate but the relationship of demand and capacity reaches a threshold when capacity improvements are usually considered. Generally, capacity improvements should be recommended when demand is forecast to utilize 60 percent of capacity. This allows sufficient lead time to develop the improvement before the airport becomes saturated. Airport activity levels warranting capacity improvements are contained in FAA Order 5090.3B. As seen in Table

5-2, the forecast demand utilizes 60 percent of annual and hourly capacity, and has also done so in the past.

From this comparison of demand and capacity it is concluded that airfield capacity is sufficient to accommodate forecast operations (and it is noted that in this case the High Growth forecast has been assumed). Considering that runways are well served by exit taxiways (that enhance capacity) and the fact that major capacity enhancements such as a new runway are not viable, opportunities for capacity enhancements appear limited. However, the planning in the ALP Update should consider capacity enhancements in the ultimate layout of the airfield where practical.

Table 5-2
DEMAND VERSUS CAPACITY

	2007	2012	2025
ANNUAL:			
Demand	220,750	244,050	294,250
Capacity	355,000	355,000	355,000
% Capacity Utilized	62	69	83
WEIGHTED HOURLY:			
Demand	84	93	112
Capacity	136	136	136
% Capacity Utilized	62	68	83

AIRSIDE FACILITY REQUIREMENTS

As discussed earlier, the airside operating element as used in this report includes the runway and taxiway system, the runway approach areas and the associated appurtenances such as airfield lighting, visual aids and navigation aids. With the exception of aircraft aprons which, due to their interface with terminal facilities, are analyzed as a landside element, airside refers to those airport areas where aircraft operations are conducted. The ability of the present airside facilities to accommodate existing and future traffic loads and the facilities required through the year 2025 are examined in the following subsections.

Runway System

The existing runway system was described in Chapter 3. This section will deal with runway requirements needed to satisfy the forecast demand in terms of runway length, pavement strength requirement, crosswind coverage and safety areas. Planning and design standards set forth in FAA AC 150/5300-13, Airport Design, for Airport Reference Code B-II form the basis of this analysis which is applicable to Runways 9L-27R and 17-35. Design standards for Airport Reference Code B-I will be applied to Runway 9R-27L. This will provide satisfactory facilities for the variety of aircraft expected to use the runways.

Crosswind Runway

The present runway configuration provides 99.92 percent coverage for a 10.5 knot (12 mph) crosswind, and 99.98 percent coverage for a 13 knot (15 mph) crosswind. FAA states in AC 150/5300-13 that the allowable crosswind is 13 knots for Airport Reference Codes A-II and B-II. The coverage meets the FAA recommendation of 95 percent crosswind coverage, thus additional runways for improved crosswind coverage are not required. The existing coverage provided by Runways 9-27 are 99.71 and 99.77 percent respectively, for 10.5 and 13 knot crosswinds. Runway 17-35 provides 93.90 and 97.20 percent coverage for 10.5 and 13 knot crosswinds, respectively.

Runway Length

This subsection deals with the runway length requirements for the existing runways at Gillespie Field. Runway length is a critical consideration in airport planning and design. Aircraft need specified runway lengths to operate safely under varying conditions of wind, temperature and takeoff weight. This is particularly critical for jet aircraft where inadequate runway length will reduce the allowable takeoff weight. The weight reduction must come through either less payload or less fuel, thereby restricting the usability or operational range.

FAA Advisory Circular 150/5325-4A contains criteria used in developing runway lengths required for various general aviation utility and transport airports. The recommended runway lengths are based on performance information from manufacturer's flight manuals in accordance with provisions in FAR (Federal Aviation Regulations) Part 23, Airworthiness Standards: Normal, Utility and Acrobatic Category Airplanes, and FAR 91, General Operating and Flight Rules.

Aircraft performance together with significant site characteristics are considered in analyzing runway length. The site characteristics that are evaluated include: airport elevation, temperature (mean maximum temperature of the hottest month), runway gradient and wind conditions. The FAA Airport Design (Version 4.1) software package contains a program to calculate typical runway requirements for various classes of aircraft. This model was applied by P&D and the results are presented in Table 5-3. The airport site characteristics used in the runway length analysis were:

- Elevation - 387 feet MSL
- Temperature – 88.9°F
- Maximum Difference in Runway Centerline Elevation – 29.7 feet
- Surface Winds - Calm

The critical aircraft for Gillespie Field are small airplanes (less than 12,500 pounds) and occasionally business jets which are represented in Table 5-3 as "Large airplanes of 60,000 pounds or less". A large airplane is defined as an aircraft of more than 12,500 pounds maximum certificated takeoff weight. Most business jets would be categorized as large airplanes. As seen in the table, the recommended runway lengths for these aircraft range from 3,800 to 4,400 feet, (to accommodate all small aircraft), to approximately 5,400 feet for large airplanes.[1]

[1] 75 percent of large airplanes at 60 percent useful load.

The present length of Runway 9L-27R essentially satisfies the requirements for 75 percent of all business jets with useful loads of 60 percent as shown in Table 5-3. Considering existing constraints, extension of the main runway does not appear feasible. However, the planning process should consider extension of the runway to enhance operations to the extent practical. It is also seen in Table 5-3 that the short parallel runway (9R-27L) accommodates almost 75 percent of small airplanes. Extension of the runway will provide a greater percentage of the fleet of small aircraft (less than 12,500 pounds) and should also be considered as a potential future improvement on the Airport Layout Plan.

Table 5-3
FAA RECOMMENDED RUNWAY LENGTHS
FOR GILLESPIE FIELD

AIRPORT AND RUNWAY DATA

Airport elevation	387 feet
Mean daily maximum temperature of the hottest month	88.9° F
Maximum difference in runway centerline elevation	29.7 feet
Length of haul for airplanes of more than 60,000 pounds	500 miles

RUNWAY LENGTHS RECOMMENDED FOR AIRPORT DESIGN

Small airplanes with approach speeds of less than 30 knots	310 feet
Small airplanes with approach speeds of less than 50 knots	830 feet
Small airplanes with less than 10 passenger seats	
75 percent of these small airplanes	2,620 feet
95 percent of these small airplanes	3,160 feet
100 percent of these small airplanes	3,780 feet
Small airplanes with 10 or more passenger seats	4,320 feet
Large airplanes of 60,000 pounds or less	
75 percent of these large airplanes at 60 percent useful load	5,410 feet
75 percent of these large airplanes at 90 percent useful load	7,000 feet
100 percent of these large airplanes at 60 percent useful load	5,780 feet
100 percent of these large airplanes at 90 percent useful load	8,660 feet

Sources: FAA Advisory Circular 150/5325-4A, Runway Length Requirements for Airport Design.
P&D application of FAA Airport Design (Version 4.1).

Runway Width

Runway width is a dimensional standard that is based upon the physical and performance characteristics of aircraft using the airport (or runway). The characteristics of importance are wingspan and approach speeds. In this case, FAA Airplane Design Group II (wingspans up to but not 79 feet) and Approach Category B are used and will provide adequate width and separation for current and anticipated aircraft operations. FAA AC 150/5300-13 specifies a runway width of 75 feet for an Airport Reference Code of

B-II. The present widths of Runways 9L-27R and 17-35 exceed the standard as both runways are 100 feet wide. A runway width of 100 feet is desirable for business jets which frequently use the airport. Runway 9R-27L is 60 feet wide, which accommodates Approach Category B aircraft with a FAA Airplane Design Group I (wingspans up to but not including 49 feet).

Runway Grades

The maximum longitudinal grade is 2.0 percent for the critical aircraft at Gillespie Field (Approach Category B). Runways 9L-27R and 9R-27L conform to standards as the maximum gradient is 0.87 percent (found at the east end of the runway) and 0.57 percent (found at the east end of the runway) respectively. The Gillespie Field OC Chart dated September 1999 shows a maximum gradient of 2.98 percent on Runway 17-35 between 600 and 687 feet from Runway 35 end which exceeds the design standard. The runway should have adequate transverse slopes to prevent the accumulation of water on the surface. A maximum transverse grade of 1.0 to 1.5 percent is recommended for the Airport by FAA. During reconstruction of Runways 9L-27R and 9R-27L these recommended grades should be maintained.

Pavement Strength

Pavement strengths are based on a pavement survey conducted by the County Department of Public Works in October 1994. The pavement strength rating for Runway 9L-27R is 56,000 pounds for single wheel landing gears, 94,000 pounds for dual wheel landing gears, and 190,000 pounds for dual tandem landing gears. For Runway 9R-27L the pavement strength rating is 30,000 pounds for single wheel landing gears, 53,000 pounds for dual wheel landing, and 87,000 for dual tandem landing gears. The pavement strength rating for Runway 17-35 is 58,000 pounds for single wheel landing gears, 106,000 pounds for dual wheel landing gears, and 195,000 pounds for dual tandem landing gears.

The above stated pavement strengths reflect runway sections with the lowest pavement strength ratings for each respective runway. The pavements of Runways 9L-27R and 9R-27L are presently underway with pavement rehabilitation programs. The County has obtained Federal Aviation Administration (FAA) Airport Improvement Program (AIP) grants to construct pavement overlays on both runways. Runway 17-35 was partially reconstructed in the mid-1970s. Rehabilitation of this runway should be planned in the next five years, at such time when all runways will have undergone significant rehabilitation.

Runway Blast Pads

A runway blast pad provides blast erosion protection beyond runway ends. Runways 9L, 27R, 17 and 35 require a blast pad that is 95 feet wide and 150 feet long. A blast pad 80 feet wide and 100 feet long is required for Runways 9R and 27L.

Runway Safety Areas

A runway safety area is defined as a rectangular area centered about the runway that is cleared, drained, graded and usually turfed. Under normal conditions, this area should be capable of accommodating occasional aircraft that may veer off the runway, as well as fire fighting equipment. For Gillespie Field, the existing and planned requirement for the runway is an area 150 feet wide centered on the runway centerline and extending 300 feet beyond each runway end, for Runways 9L-27R and 17-35. Runway 9R-27L the runway safety area is 120 feet wide centered on the runway centerline and extending 240 feet beyond each runway end.

A service road traverses the runway safety area of Runway 27R. This service road is controlled by the airport air traffic control tower. To the south of Runway 35 a fence penetrates the runway safety area along with a parking lot, which are not on airport property.

Runway Object Free Areas

The runway object free area (ROFA) is a two dimensional ground area surrounding the runway and its clearing standard precludes parked aircraft and objects, except those fixed by function. The criteria replaces the former design standard of the aircraft parking limit line and is designed with the intention of providing adequate wing-tip clearance. The design standards for an ARC of B-II call for a ROFA extending 250 feet on either side of the runway centerline and extending 300 feet beyond the end of the runway. The standards for an ARC of B-I call for a ROFA extending 200 feet on either side of the runway centerline and extending 240 feet beyond the end of the runway. Object free areas also exist for taxiways and are 131 feet wide (65.5 feet on either side of centerline) for Airplane Design Group II.

Runway 27R has a 10 foot grade elevation change, from approximately 385 feet mean sea level (MSL), to 395 feet MSL, within the ROFA[2]. A fence penetrates the Runway 9L ROFA. A fence and building penetrate the runway object free area off of Runway 17, which are not on airport property. South of Runway 35 a fence protrudes into the ROFA along with a parking lot, which are also not on airport property.

Approach Surfaces and Runway Protection Zones

The approach surface and the runway protection zone (formerly called clear zone) are important elements in the design of runways which help to ensure the safe operations of aircraft. A brief description of these two areas follows:

- ***The Approach Surface*** is an imaginary inclined plane beginning at the end of the primary surface and extending outward to distances up to 10 miles depending on runway use (i.e., instrument or visual approaches). The width and slope of the approach surface are also dependent on runway use. The approach surface governs the height of objects on or near the airport. Objects should not penetrate or extend above the approach surface. If they do, they are classified as obstructions and must be either marked or removed.

- ***The Runway Protection Zone (Clear Zone)*** is an area at ground level that provides for the unobstructed passage of landing aircraft through the above airspace and is used to enhance the protection of people and property on the ground. The runway protection zone begins at the end of

[2] Based on data contained in the Gillespie Field OC Chart, September 1999.

the primary surface and has a size which varies with the designated use of the runway.

Federal Aviation Regulations Part 77 indicates that the approach surface should be kept free of obstructions to permit the unrestricted flight of aircraft in the vicinity of the airport. As the type of instrument approach to a runway becomes more precise, the approach surface increases in size and the required approach slope becomes more restrictive.

The runway protection zone is the most critical safety area under the approach path and should be kept free of all obstructions. No structure should be permitted nor the congregation of people allowed within the runway protection zone. Control of the runway protection zone by the airport owner is essential. It is desirable, therefore, that the airport owner acquire adequate property interests, preferably in fee title, in the runway protection zone to ensure compliance with the above.

As indicated above, the approach and runway protection zone dimensions are dependent on the type of approach being made to a runway. Presented in Table 5-4 are runway protection zone dimensions for various type runways.

Clear Zones are shown on the current ALP (dated May 23, 1983) located 200 feet from the displaced thresholds on Runways 27R, 17 and 35. As stated above Runway Protection Zones begin at the ends of the primary surface and should not be configured to a displaced threshold unless declared distances are applied.

Taxiways

Runway 9L-27R has a centerline-to-centerline separation from Taxiway C of 225 feet. The FAA AC 150/5300-13, Airport Design states the separation should be 240 feet. The runway centerline to taxiway centerline separation between Runway 9R-27L and Taxiway D is a 207 feet and should be 225 feet. The centerline-to-centerline separation for Runway 17-35 and parallel taxiways should be 240 feet. The separation between Runway 17-35 and Taxiway A is 150 feet and the separation between Taxiway B and Runway 17-35 is 200 feet.

The standard width for the taxiways for Airplane Design Group II planes is 35 feet. Most taxiways exceed the requirement and are 40 feet or 50 feet wide. However, it is noted that Taxiway D3 is 30 feet wide and does not meet the design standard. Widening of this taxiway should be considered.

Helicopters

In general helicopter operations should be separated from fixed wing aircraft when possible. Currently helicopter operators are located in various areas of the airport. The following helicopter operators are key users of the airport: Mercy Air, ASTREA, Safari Aviation, Krauss Helicopters, and Clark.

Table 5-4
RUNWAY PROTECTION ZONE DIMENSIONS

		Runway Protection Zone Dimensions			
Approach Visibility Minimums	**Facilities Expected To Serve**	**Length (Feet)**	**Inner Width (Feet)**	**Outer Width (Feet)**	**Area (Acres)**
Visual and Not lower than 1 mile	Small Aircraft Exclusively	1,000	250	450	8.035
	Aircraft Approach Categories A & B	1,000	500	700	13.770
	Aircraft Approach Categories C & D	1,700	500	1,010	29.465
Not lower than ¾ mile	All Aircraft	1,700	1,000	1,510	48.978
Lower than ¾ mile	All Aircraft	2,500	1,000	1,750	78.914

Source: FAA Advisory Circular 150/5300-13, Airport Design.

After surveying several of the helicopter operations at the airport the following issues were identified:

- The helipad at Sky Harbor, which Mercy Air uses, is not level. The size is inadequate for the helicopter using it and ultimately there should be two heli-pads for Mercy Air's use.
- A fuel source should be located closer to Mercy Air.
- There is no pattern established for helicopter training and no designated location to perform auto-rotations.
- Currently there is a 5,000-pound limit on helicopters allowed to use the facility due to dust issues.
- Helicopter operation cause high amounts of dust, which can cause damage.
- ASTREA is currently building a new facility on their leasehold.

While helicopter operations should be separated from fixed wing aircraft in a location to minimize dust and noise a consolidated helicopter area does not appear feasible for several reasons. However, considering that the forecast number of helicopters may increase to 48 (from current levels of 28), the planning of the ALP should seek to consolidate helicopter activities to as few areas as practical.

Airspace and Navigational Aids

The airspace in the vicinity of Gillespie Field is influenced by mountainous terrain that keeps en route altitudes relatively high. Additionally, much of the airspace in the vicinity of the airport is Class B airspace associated with Lindbergh Field. This airspace is divided into many sub-areas that have different sizes and altitude limits, and aircraft are certain to ATC and certification requirements to operate in Class B airspace. Presently the airport is served by a nonprecision GPS approach to Runway 17, and a circling approach for Runway 27R based on the existing localizer. The airport is controlled by an FAA control tower, and has various visual aids as previously described in Chapter 3.

The County was working with FAA to develop an enhanced instrument approach for Runway 27R based on a 17 degree offset LDA/DME. This was a result of prior study by the County and was the best procedure possible for the airport considering surrounding terrain and obstacles. The FAA also identified a potential procedure with a greater offset with possible visibility minimums of one mile. The potential development of an approach based on GPS with similar minimums should be preserved in the future through protection of FAR Part 77 surfaces.

Runway 27R is equipped with a Precision Approach Path Indicator system and Runways 9L, 17 and 35 are presently served by a Visual Approach Slope Indicator (VASI) systems. The FAA recommends that PAPI be installed as the visual glide path aid at airports under Airport Improvement Program funding grants. Therefore, the replacement of the existing VASI with PAPI at some point during the planning period may be considered as needed.

The FAA document Airway Planning Standard Number One-Terminal Air Navigation Facilities and Air Traffic Control Services (FAA Order 7031.2C) contains criteria for identifying candidate airports for navaids and visual aids. The criteria for navaids are based upon the number of annual instrument approaches (AIA) and for visual aids, criteria are keyed to the number of annual landings per runway.

Based upon criteria in FAA Order 7031.2C, Runway 27L qualifies for the installation of a PAPI system in the short term. A runway is a candidate for a visual glide path aid if the annual number of GA landings on a non-ILS runway are at least 14,000. For Runway 27L approximately 37,000 landings are estimated for the year 2007.

A runway is a candidate for runway end identifier lights (REIL) if there are at least 7,300 annual GA and military landings per year, is not currently equipped or programmed for an approach light system, and is lighted and approved for night operations. These lights provide rapid and positive identification of the approach end of a runway and consist of two synchronized flashing lights located on each side of the runway threshold. Based on qualifying criteria for the installation of REILs, Runway 27R is the only runway that meets the criteria, however, it is already equipped with REIL but the system is inoperative. A new REIL system, however, will be installed for the runway as part of the pavement rehabilitation project.

LANDSIDE FACILITY REQUIREMENTS

The airport landside system is comprised of all facilities supporting the movement of passengers and goods between the community's ground transportation system and the airport's airside system, and also any facilities used in the maintenance or protection of those facilities. For Gillespie Field, these include terminal/administration building, general aviation, aircraft storage and services, and airport support facilities. The landside elements, together with the previously discussed airside elements, form all of the airport development facilities required to accommodate the forecast level of traffic.

Since the airfield development program has been based upon an ultimate level of some 294,250 operations and 1,198 based aircraft, the planning of landside facilities should be based upon striking a balance of airside and landside capacity. The determination of general aviation and support area facilities has been accomplished for the three future planning periods of 2007, 2012 and 2025. The following subsections present the rationale for determining future landside facility requirements to serve the general aviation role of the airport.

Administration/Terminal Building

The amount of terminal space required is based upon the expected demand, i.e., the peak hourly volume of pilots and passengers who will use the facilities. A planning standard of 49 square feet per peak hour pilot/passengers is used to determine the required area. An estimated 2.5 pilot/passengers are assumed per peak hour operation. Table 5-5 shows the building requirements that were calculated using the above approach.

Table 5-5
GENERAL AVIATION TERMINAL AREA REQUIREMENTS

Item	2007	2012	2025
Peak Hour Operations	84	93	112
Total Peak Hour Occupants	210	233	280
Area/Occupant (SF)	49	49	49
Total Building Area (SF)	10,290	11,417	13,720

Source: P&D Aviation

The present administration/terminal building totals approximately 10,500 square feet and includes public rest rooms, and a public lobby/waiting area but is primarily used for County Airport offices. There is a Flight Service phone available outside of the building. A recent reconfiguration of office space within the building has caused the employee break room to be moved to the maintenance building. There are no facilities available for large meetings other than the public lobby/waiting area.

Additional general aviation terminal building space may also be provided at an FBO such as Royal Jet, Inc. and Golden State. There is a phone available at Royal Jet as well as a computer with weather information and flight planning capabilities. Golden State has tables available for flight planning and access to phones.

When comparing Table 5-5 with the existing facilities deficiencies become apparent. By the year 2025 3,220 additional square feet of general aviation terminal are required. Considering that the predominant use of the existing building is for County administrative uses suggests that there is even a greater need for general aviation terminal facilities.

Aircraft Parking Apron

Aircraft parking apron is required primarily for visiting transient aircraft. These are aircraft that land at Gillespie Field, but are based elsewhere. A busy itinerant day is derived from the average day of the peak month forecasts (ADPM) of aircraft activity and forms the basis of estimating transient parking apron requirements. Currently jet and turboprop aircraft park at Royal Jet, Inc. and all single engine transient aircraft park on the apron adjacent to the terminal.

Transient aircraft parking apron requirements are determined by applying the following assumptions to itinerant movements performed by transient aircraft on an ADPM.

- Transient operations are approximately 60 percent of itinerant fixed wing operations.
- The majority of transient aircraft will arrive and depart on the same day, thus it is assumed that the actual number of aircraft utilizing the parking apron is one-half (50 percent) of the transient movements being performed on the average day of the peak month.
- During the planning period, 50 percent of the transient aircraft will be on the ground at any given time.
- Thus, 25 percent of transient operations will be temporarily parked on the transient apron.
- Single engine aircraft require 2,700 square feet (300 square yards) of apron space; multi-engine aircraft require 5,625 square feet (625 square yards); and business jets require 14,400 square feet (1,600 square yards) of apron for parking and maneuvering.

Summarized in Table 5-6 are the transient apron requirements. The analysis concluded that roughly 24,000 square yards of apron will be required to accommodate transient demand in 2025.

Based Aircraft Storage

Aircraft based at the airport can be stored either by occupying a paved tie-down parking space or by storage within a hangar. The number of aircraft stored in hangars varies according to the economics of

Table 5-6
TRANSIENT AIRCRAFT TO BE ACCOMMODATED ON TRANSIENT AIRCRAFT APRON

Number of Aircraft to be Accommodated		2007	2012	2025
Annual Transient Operations		62,250	68,850	82,950
Peak Month Transient Operations		6,101	6,747	8,129
ADPM Transient Operations		197	218	262
Number of Aircraft Parked		49	54	66
<u>**Size of Transient Aircraft Apron**</u>				
Single Engine:	Number of Aircraft [a]	43	47	56
	Area/Aircraft (SY)	300	300	300
	Apron Area (SY)	12,900	14,100	16,800
Multi- Engine/	Number of Aircraft [a]	5	5	7
Helicopter:	Area/Aircraft (SY)	625	625	625
	Apron Area (SY)	1,875	1,875	2,500
Turboprop/	Number of Aircraft [a]	1	2	3
Business Jet:	Area/Aircraft (SY)	1,600	1,600	1,600
	Apron Area (SY)	1,600	3,200	4,800
Total Aircraft		49	54	66
Total Aircraft Area (SY)		16,375	19,175	24,100

[a] Based upon estimated mix of transient aircraft

Source: P&D Aviation

providing hangars and the severity of weather conditions prevailing at the airport location. The number of based aircraft at Gillespie Field may increase from the present level of approximately 774 to almost 1,200 aircraft in the year 2025. Adequate storage facilities should be provided to accommodate forecast based aircraft. In determining the demand for the various types of storage, the following assumptions tempered through previous experience and present trends at the airport were made:

- Approximately 80 percent of the present based aircraft at Gillespie are stored in hangars. This is a relatively high percentage compared to other airports in Southern California.

- All turboprops and business jets will be stored in conventional hangars.

- It is assumed that 75 percent of multi-engine and single engine aircraft will be stored in T-hangars. Multi-Engine aircraft will require a larger size T-hangar.

- Approximately 25 percent of based helicopters will be stored in conventional hangars with each helicopter requiring 1,620 square feet of floor space.

There are two types of hangars, conventional and T-hangars, both of which are located at Gillespie Field. T-hangars are "T" shaped hangars designed for the storage of individual aircraft while conventional hangars are large structures that will accommodate several aircraft of different sizes in an open bay. In this case, T-hangars could also include individual, rectangular, executive-size hangars. For the purpose of this analysis, T-hangar requirements are determined as number of spaces, or units, and conventional hangar requirements are calculated using 4,500 square feet per business jet or turboprop aircraft.

Table 5-7 summarizes the T-hangar space and conventional hangar floor area requirements determined in this analysis.

Table 5-7
BASED AIRCRAFT STORAGE HANGAR REQUIREMENTS – GILLESPIE FIELD

	2007	2012	2025
Single Engine Piston			
Number of Based Aircraft	785	863	1,025
Number of Aircraft in T-Hangar*	589	647	769
Multi-Engine Piston			
Number of Based Aircraft	48	53	68
Number of Aircraft in T-Hangar*	36	40	51
Business Jets/Turboprop			
Number of Based Aircraft	23	30	45
Number of Aircraft in Conventional Hangar	23	30	45
Area/Aircraft (SF)	4,500	4,500	4,500
Conventional Hangar Floor Area (SF)	103,500	135,000	202,500
Helicopters			
Number of Based Aircraft	32	36	48
Number of Aircraft in Conventional Hangar	8	9	12
Area/Aircraft (SF)	1,620	1,620	1,620
Conventional Hangar Floor Area (SF)	12,960	14,580	19,440
Total Based Aircraft	898	993	1,198
Total Aircraft Hangared	656	726	877
Required Rectangular and T-Hangars (Spaces)	625	687	820
Required Conventional Hangar Area (SF)	116,460	149,580	221,940

* Represents required T-hangar space.
Source: P&D analysis.

When the existing hangar areas are compared to the required facilities presented in Table 5-7, deficiencies become apparent. The tabulation below summarizes the deficiencies in hangar space if existing facilities are not expanded. The deficiencies, given for each planning period, are as follows:

		Deficiency		
Item	**Existing**	**2002-2007**	**2008-2012**	**2013-2025**
T-Hangar (Spaces)	436	189	251	384
Conventional Hangar (SF)	76,365	40,095	73,215	145,575

The above deficiencies represent the difference between required facilities (Table 5-7) and existing facilities, and reflect requirements for additional conventional hangars and T-hangars. While T-hangars are expected to be the primary means of housing based aircraft, the airport layout plan should also provide space for construction of conventional hangars storage or aircraft servicing.

Three approaches are available to the County in providing hangars. The first would involve leasing land to aircraft owners and allowing them to construct their own hangars. To assure uniformity in construction as well as visually pleasing results, the airport owner (the County) could control the type of hangar built by a clause in the land lease. An alternative to the above would be for the airport owner to construct the hangars and then rent or lease them to aircraft owners. If this approach is followed, firm commitments for their use should be made before construction of the hangars are undertaken. A third approach is to have a complex of hangars built by a private party on property leased by the airport.

The alternative to aircraft storage hangars is to provide space on the parking apron with tie-down facilities to secure the aircraft during severe weather or periods of high winds. For planning purposes, an allowance of 300 square yards for single engine, 625 square yards for multi-engine and helicopters.

As stated earlier approximately 75 percent of helicopters based at the airport will be on apron area and 25 percent of single and multi engine aircraft are assumed to require tie-down space. Table 5-8 represents the apron area required at Gillespie for helicopters.

Currently there are 244 tie-downs totaling approximately 68,000 square yards at the airport. This creates a deficiency of 13 tie-downs (22,425 square yards) by year 2012 and 65 tie-downs (41,925 square yards) by year 2025.

Aircraft Maintenance Facilities

Maintenance facilities play an important role at any active airport as they permit the based and transient aircraft to receive the full line of services necessary for safe flight. For projecting future maintenance facility requirements a factor of 90 square feet of aircraft maintenance area per based aircraft can be used. This factor was estimated based upon current conditions at the airport. By applying this factor, a long-term estimate of approximately 107,820 square feet for maintenance space is identified. There is approximately 70,000 square feet currently and therefore an additional 37,800 square feet of maintenance hangars should be planned. The timing will be contingent on demand and investment from the private sector. It should be noted that adequate apron should be planned for a maintenance hangar(s) with

Table 5-8
BASED AIRCRAFT TIE-DOWN AREA
REQUIREMENTS – GILLESPIE FIELD

	2007	2012	2025
Single Engine Piston			
Number of Based Aircraft	785	863	1,025
Number of Aircraft Tied-Down	196	216	256
Area/Aircraft (SY)	300	300	300
Apron Area (SY)	58,800	64,800	76,800
Multi-Engine Piston			
Number of Based Aircraft	48	53	68
Number of Aircraft Tied-Down	12	14	17
Area/Aircraft (SY)	625	625	625
Apron Area (SY)	7,500	8,750	10,625
Helicopters			
Number of Based Aircraft	32	36	48
Number of Aircraft Tied-Down	24	27	36
Area/Aircraft (SY)	625	625	625
Apron Area (SY)	15,000	16,875	22,500
Total Based Aircraft	898	993	1,198
Total Aircraft Tied-Down	232	257	309
Total Apron Area (SY)	81,300	90,425	109,925

Source: P&D analysis.

allowances for clearances between aircraft and buildings, aircraft towing/taxiing and parking positions for run-ups and maintenance checks

Automobile Parking

Parking areas must be provided at the airport for those using its facilities. The parking areas are designed to accommodate peak activity periods. A generally accepted value for computing the amount of general aviation parking space needed is 1.3 spaces per peak hour general aviation pilot/passenger. This factor takes into account airport employees, rental car spaces, and visitors as well as pilots/passengers. The area required per automobile is 350 square feet, which includes circulation routes and other necessary clearances within the parking area. Existing parking is provided at the administration building and the FBOs around the airfield. The existing auto parking facilities were documented in Chapter 3 and total 624 spaces.

All FBOs report that they have more than adequate parking available. The administration building has some potential problems since the parking lot is shared with Safari Aviation. During the day any large meetings will cause a shortage of parking in the area. This currently either leads to parking in a security fenced area of Safari Aviation, in which people parking there have direct access to the airfield, or parking at the El Cajon Speedway. The projected auto parking requirements are summarized in Table 5-9. As seen, the existing number of parking spaces meets the long-term requirement; therefore additional parking is not needed. However, considering the potential parking congestion at the administration building, additional parking should be provided for the building.

Table 5-9
AUTOMOBILE PARKING REQUIREMENTS

Item	2007	2012	2025
Peak Hour Operations	84	93	112
Total Occupants	210	233	280
Spaces/Occupant	1.3	1.3	1.3
Total Parking Spaces (Each)	273	303	364
Area/Parking Space (SF)	350	350	350
Total Parking Area (SF)	95,550	106,050	127,400

Source: P&D Aviation

Aircraft Rescue and Fire Fighting (ARFF) Facilities

FAA Advisory Circular 150/5210-6C establishes recommended scales of fire fighting protection for general aviation airports. Presented in the AC are two indexes used in determining the level of protection based on the types of aircraft and the number of operations. The two indexes are as follows:

- Index 1 Airports having at least 1,825 annual departures of aircraft more than 30 feet but no more than 45 feet long.
- Index 2 Airports having at least 1,825 annual departures of aircraft more than 45 feet but no more than 60 feet long.

Based on the forecast of aircraft operations the airport is anticipated to meet requirements for at least Index 1 by the year 2025. Table 5-10 summarizes the recommended scales of protection.

It should be noted that fire protection is provided by the El Cajon Fire Department and this arrangement should be continued until an ARFF facility is provided. Support from the City should also continue after an ARFF facility is provided.

Airport Maintenance

The County operates a 2,800 square foot airport maintenance building which is located east of the administration building. Currently, the County employee break room is located in the maintenance building and occupies approximately ten percent of the building. The ALP should identify an area suitable to accommodate an airport maintenance area.

Table 5-10
FIRE FIGHTING PROTECTION REQUIREMENTS FOR GENERAL AVIATION AIRCRAFT

	Primary Agents					Supplemental Agent	
	AFFF		OR	Protein Foam			
Index	Water for Foam Production (Gallons)	Solution Application Rate (Gallons)		Water for Foam Production (Gallons)	Solution Application Rate (Gallons)	Dry Chemical Powders (Pounds)	Number of Vehicles
1[a]	190	150		290	300	300	1
2	310	230		490	400	400	1

[a] Rounded off to the nearest 10 gallons. For practical application, vehicle water requirements should be adjusted to coincide with conventional water tanks of 200, 300 and 500 gallon capacities.

Source: FAA Advisory Circular 150/5210-6C, Aircraft Fire and Rescue Facilities and Extinguishing Agents.

LAND AREA REQUIREMENTS

The land use on an airport will vary depending on the role and volume of traffic. Nonetheless, the land uses can be broadly categorized into a few categories described herein.

The ***aircraft operating area (AOA)*** is defined as that area on-airport that lies within the building restriction lines (BRL) and runway protection zones (formerly clear zones). It includes the runways, taxiways, associated safety areas and lateral clearances, and runway approaches. The FAA defines the BRL as a line which identifies suitable building area locations and encompasses the runway protection zones, the runway object free area, the runway visibility zone, Navaid critical areas, areas required for terminal instrument procedures (TERPS), and areas required for clear line of sight from the control tower.

As stated in Chapter 3, the existing building restriction line is set at 250 feet from the runway centerline on the west side of Runway 17-35 and 300 feet from the east side. Runway 9L-27R has a BRL 375 feet to the north of the runway centerline and Runway 9R-27L the BRL is set 300 feet south of the centerline. As seen above and defined by FAA, runway protection zones (RPZ) are also encompassed within the BRL. The current ALP depicts clear zones which are located 200 feet off the displaced threshold, and as previously stated the RPZ should be located 200 feet off the runway end. This is assumed as the general boundary of the AOA. It should also be noted that the BRL will be reviewed and may be revised as part of the updating of the ALP (addressed in Chapter 7).

Areas of the airport serving landside aviation facilities can be categorized as ***aeronautical use areas***. This would include general aviation uses such as storage hangars, tie-downs and transient aprons, general aviation terminal and administration building, potential FBO sites, and auto parking.

The use of airport property for non-aviation purposes can enhance the revenue generating potential, and often can ensure the economic subsistence of the airport. Such land uses can be indicated on airport layout plans as ***airport compatible use areas***. It is important that it be determined that accommodation of all anticipated requirements for aviation facilities be provided before consideration of non-aviation uses of airport property. Airport compatible uses would include business and office parks, industrial and light manufacturing, commercial and research and development uses. The extent of airport area to be allocated for airport compatible uses depends on the extent of aviation facilities needed to accommodate forecast demand, and the demand for the non-aviation land uses. At Gillespie, airport compatible use areas can be subdivided as industrial park and other non-aviation use areas.

The current airport is 757 acres. The breakdown of airport property is shown on Table 5-11. Areas classified as "Other" include non-aviation uses such as the El Cajon Speedway, indoor soccer field, motor cross track and tree farm. The acreage shown is that which is currently within airport property and it should be noted that Runway Protection Zones are not entirely within the airport property line.

Table 5-11
LAND AREAS AT GILLESPIE FIELD

Category	Acreage
Aircraft Operating Area (AOA)	196
Aeronautical Use Areas	144
Industrial Park	325
Other	92
Total	757

Source: P&D Aviation

As seen, more than half of the airport property is currently used for non-aeronautical purposes. The future planning of the airport must determine the area required for aeronautical use to accommodate forecast demand. Any residual property may be considered for other uses.

Chapter 6
Concept Development

INTRODUCTION

This chapter, Concept Development, is intended to describe the basis of the development concept and the different development options that were evaluated. Once a preferred development concept is identified, the remaining task in the ALP Update will be to define the concept through a series of airport layout drawings.

The design of the airport concepts as described herein is based upon the facility requirements discussed in Chapter 5. Additionally, the concepts are intended to allow the airport to develop in response to certain demands that may materialize, i.e., commuter air service, business jet activity and increased helicopter operations.

This chapter includes a discussion on the future development concept and the rationale upon which it is based. This included the development and consideration of several concepts. The concept defines in general terms the different areas on-airport and the type of development recommended for each area. It will therefore form the basis for the ALP. The facility requirements analysis concluded that in the interest of prudent planning the ALP should accommodate, if needed, airport improvements, such as a runway extension and commuter passenger terminal facilities. Thus, the focus of the development concept is to organize the basic land uses and major facilities on-airport, which will promote the ultimate orderly development of the airport.

BASIS OF CONCEPT DEVELOPMENT

The recommended development concept formulated herein is based on four primary criteria. These are facility requirements derived from forecasts of aviation demand, facility improvements to enhance safety, providing a flexible plan that accommodates new aviation uses (such as scheduled commuter service), and the County's desire to utilize available property for aviation and, where not needed for aviation uses, for other revenue enhancing uses. Since the evolution of the concept acknowledged these factors, it is believed that the future recommended development will result in a plan that will satisfy future aviation demand, accommodate demand safely, efficiently, and in conformance with FAA standards, and permit the airport to react to potential changes in demand. The focus of the recommended development concept was on two major airport components – airside (runway) facilities and based and transient aircraft facilities.

Airside Elements

For airside elements, the development of the recommended concept primarily considered runway length and runway protection zone issues. The recommended airfield development concept is based on design standards for Airport Reference Code B-II (for Runways 9L-27R and 17-35), and B-I for Runway 9R-27L.

Runway Length

Runway 9L-27R

The primary runway (Runway 9L-27R) at Gillespie Field is 5,341 feet long and 100 feet wide and the landing threshold of Runway 27R is displaced 1,306 feet. The latest FAA Form 5010-1, Airport Master Record, indicates the controlling object with respect to the displaced threshold is a road that is 530 feet from the runway end, with a height 40 feet above the runway end. This description corresponds with a section of Magnolia Avenue that is located to the north of the extended runway centerline. However, it is noted that data contained on the latest Obstruction Chart for the airport published by the National Oceanic and Atmospheric Administration suggests that trees in the airport environs, and not the road, are the critical objects in terms of the location of the displaced threshold.

Appendix 2 of FAA Advisory Circular 150/5300-13, Airport Design, contains guidance on locating runway thresholds to meet approach obstacle clearance requirements using ***threshold siting surfaces***. If an object penetrates a threshold siting surface, one or more of the following actions is required: 1) the object is removed or lowered to preclude the penetration; 2) the threshold is displaced to preclude the object penetration; 3) visibility minimums are raised; or, 4) night operations are prohibited.

The shape, dimensions and slope for a threshold siting surface are dependent upon the type of aircraft operations, landing visibility minimums and types of instrumentation available. For the purpose of this analysis a threshold siting surface for the following type runway is assumed, "For Approach End of Runways Expected to Support Instrument Night Circling." This would be applicable to the existing situation. It is also important to note that a new instrument approach procedure (LDA/DME) was evaluated by FAA Runway 27R, and the possible landing minimums were not expected to be less than one statute mile.

The applicable threshold siting surface is described as follows. The centerline of the surface extends 10,000 feet along the extended runway centerline. The surface extends laterally 200 feet on each side of centerline at the threshold and increases in width to 1,700 feet on each side of the runway centerline at the end of the surface. The beginning elevation of the surface is the same as the runway threshold, and the surface extends outward and upward at a slope of 20 to 1.

Figure 6-1 graphically presents the threshold siting surface used in the analysis and it is shown superimposed on the Obstruction Chart (OC) for the airport. All objects within the threshold siting surface were evaluated. It was concluded that a 440-foot displacement of the runway is possible (compared to the existing 1,306 feet). A 440-foot displaced threshold still involves penetrations of the threshold siting surface but it has been assumed that these may be addressed by lighting or obstruction removal. Figure 6-1 presents the threshold siting surface aligned with a 440-foot displaced threshold. Table 6-1 summarizes the analysis of objects within the threshold siting surface and for each object presents, object elevation, distance from the proposed displaced threshold, and clearance (or penetration) of the threshold siting surface.

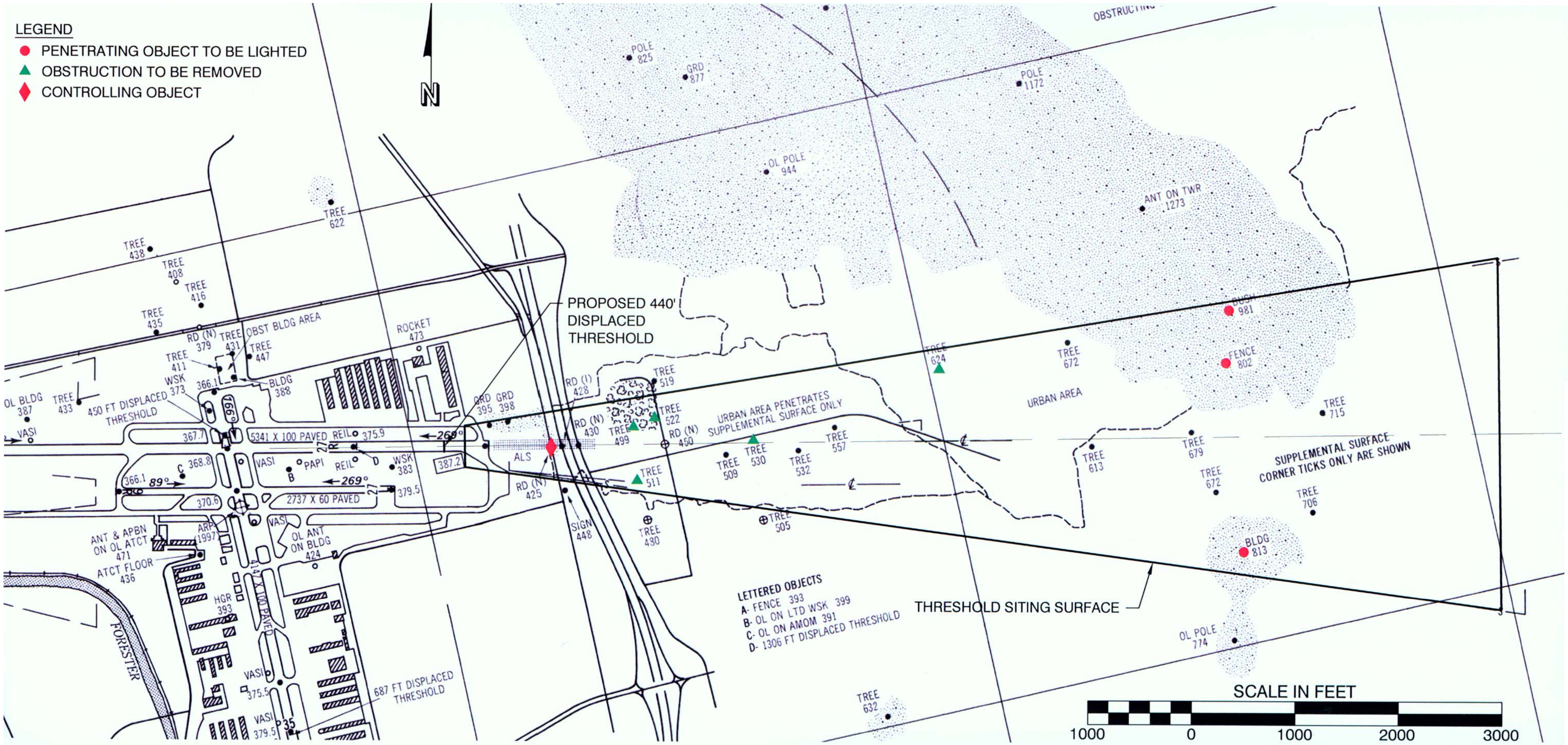


Figure 6-1
Threshold Siting Surface

Table 6-1
ASSESSMENT OF A 440-FOOT DISPLACED THRESHOLD – RUNWAY 27R

Object	Elevation	Dist. From Disp Thold	Clearance/ (Penetration)
Tree	715	8,653	91
Tree	706	8,551	95
Bldg	813	7,863	(46)
Bush	981	7,745	(220)
Fence	802	7,710	(43)
Tree	672	7,598	81
Tree	679	7,361	62
Tree	613	6,378	79
Tree	672	6,154	9
Tree	624	4,883	(6)
Tree	557	3,848	9
Tree	532	3,482	16
Tree	530	3,042	(5)
Tree	509	2,774	3
Road	450	2,173	32
Tree	522	2,075	(45)
Tree	511	1,896	(43)
Tree	499	1,864	(32)
Road	430	1,329	10
Road	428	1,166	4
Road	425	1,045	1
Ground	398	630	7
Ground	395	452	1

Sources: OC 5402 – Edition 8, Surveyed March 1997. P&D analysis.

Distant terrain located to the north and south of the extended runway centerline penetrates the threshold siting surface. These are a bush (981 feet) and fence (802 feet) located north of the runway centerline and a building (813 feet) located south of centerline. It is assumed that the installation of obstruction lights in the vicinity of these penetrations are adequate treatment such that these objects can remain.

Trees (624 feet, 530 feet, 522 feet, 511 feet, and 499 feet) also penetrate the threshold siting surface and represent objects that must be treated. It is recommended that these be removed through an obstruction removal program. It is noted that the County undertook an obstruction removal program in December 2001 in which it appears that some of the penetrations (Trees 522 and 499, and possibly Tree 511) were removed.

In order to locate the displaced threshold 440 feet from the existing runway end, it will be necessary to treat these penetrating trees. This will involve an obstruction survey and obstruction removal program, both of which may be included in future AIP funded projects. Obstruction surveys should be coordinated with the FAA Western-Pacific Region Airports Division to insure that they meet FAA specifications for obstruction surveys.

With the treatment of penetrating objects as described above, the controlling object with respect to the location of the displaced threshold is Magnolia Avenue (elevation 425).

Based on the assessment it is recommended that the displaced threshold of Runway 27R be located 440 feet from the end of Runway 27R (compared to the existing 1,306 feet). This will require the following as previously discussed above:

- Lighting distant terrain objects that penetrate the threshold siting surface with obstruction lights.
- Conducting an obstruction survey of trees and wooded areas within the threshold siting surface. The survey should be conducted in accordance with FAA specifications for obstruction surveys and may be included as part of existing or future AIP funded projects.
- Removing obstructions identified in this analysis that penetrate the threshold siting surface and any other objects identified in the obstruction survey that penetrate the threshold siting surface.

For the purpose of the Airport Layout Plan the future displaced threshold for Runway 27R will be depicted as a 440-foot displacement. This will also be used for noise modeling of the future (2025) scenario.

It is important that the obstruction environment for the approach area of Runway 27R be documented through topographic survey, and an obstruction removal program be undertaken in order to confirm the appropriate location of the displaced threshold of Runway 27R. For the purposes of this analysis, it will be assumed that the removal of the five penetrating trees shown on the OC will permit the location of the displaced threshold at a point 200 feet from the end of Runway 27R. However, it cannot be overemphasized that this assumption must be confirmed through an obstruction survey.

Runway 9R-27L

The analysis of facility requirements indicated that a runway length of 3,160 feet will accommodate 95 percent of all small airplanes with less than ten passengers at the Airport. Therefore, it is assumed that a 423-foot extension of the west end of Runway 9R-27L is constructed to provide this capability on the short parallel runway. The proposed improvement includes a cross taxiway, which connects Taxiways C and D, located at the proposed end of Runway 9R.

Runway Protection Zones

Runway Protection Zones (RPZ) are trapezoidal in shape and centered about the extended runway centerline. Other than with a special application of declared distances (which is not the case at Gillespie Field), the RPZ begins 200 feet beyond the end of the area usable for takeoff and landing (the runway). It is noted that the previous version of the ALP for the airport depicted RPZ in some cases located with respect to the displaced thresholds. This is an incorrect application of RPZ criteria. The location of RPZ for the recommended concept and ALP will be based on current guidelines, namely, placement of RPZ beginning 200 feet beyond the end of runways.

Other Airfield Improvements

Run-up Pad

A run-up pad is proposed on the north side of Runway 27R, capable of accommodating simultaneous run-ups by two Airplane Design Group II aircraft. It is noted that according to property records obtained from the County, 0.14 acres of land north of Runway 27R is not owned by the County and would need to be acquired in order to construct the run-up pad.

Taxiway C

It is proposed to extend Taxiway C to the west to provide direct access to the end of Runway 9L. This will require an existing drainage ditch to be converted into an underground storm drain.

Blast Pads

Runway blast pads provide blast erosion protection beyond runway ends and should extend across the full width of runway plus shoulders. For Runways 9L-27R and 17-35 blast pads that are 120 feet wide and 150 feet long are proposed for each runway end. For Runway 9R-27L blast pads that are 80 feet wide and 60 feet long are proposed.

Service Road

A 20-foot wide service road is proposed to serve access requirements of County vehicles on the airfield. Where possible the road should be outside of the Runway Object Free Area (ROFA). It will be necessary to locate the service road within the ROFA northwest of the end of Runway 9L and west of Runway 17-35, south of Runway 9R-27L to the south end of the ROFA (240 feet off the runway end). Acquisition of 1.98 acres off the end of Runway 35 and the previously mentioned 0.14 acres will be required in order to construct the road. In some areas the road traverses existing and/or future apron areas.

Landside Elements

Landside elements addressed in the evaluation of future development concepts are based on the long-term (year 2025) facility requirements presented in Chapter 5, with each concept designed to provide adequate facilities to satisfy requirements. Specifically, the alternative development concepts were based on the following general requirements:

- 384 additional T-hangars or individual box type hangars (820 total)
- 145,575 square feet of additional conventional, bay-type, hangars (221,940 SF total)
- 65 tie-downs (309 total for based and transient aircraft ramps)

- Additional aircraft maintenance hangar area
- Provision of a dedicated helicopter area to accommodate the forecast increase in based helicopters
- 13,720 square feet of additional general aviation terminal area
- Provision of an Aircraft Rescue and Fire Fighting (ARFF) facility
- Consideration of a new control tower location

Major landside elements are discussed below.

Hangars and Tie-downs

The facility requirements analysis identified the need for 384 additional hangars, 65 tie-downs, and 145,575 square feet of conventional hangars to meet the high growth forecast in the year 2025. These facilities require access to the airfield and a significant land area. Some new hangar and tie-down facilities may be added within existing lease holds, but for the most part the long-term requirements need to be located on currently undeveloped airport areas or on existing non-aviation areas that will become available in the near future.

Helicopter Area

The FAA states in Advisory Circular 150/5070-6A, Airport Master Plans, that designation of helicopter operating areas and related facility requirements be included in the planning of future facilities. The FAA further states in FAA Advisory Circular 150/5390-2B, Heliport Design, that helicopters are able to operate on most airports without unduly interfering with airplane traffic. An area dedicated for future helicopter operators is proposed in order to accommodate the projected increase in based helicopters. The forecast of based aircraft estimates that the number of based helicopters at Gillespie Field will increase from a present number of 28 to 48 in the year 2025 The concept of a helicopter area is intended to accommodate small helicopters that weigh less than 6,000 pounds. It is not intended to serve institutional operators with larger helicopters such as ASTREA, nor is it suggested to relocate existing users to one helicopter area. Rather, a helicopter area is proposed to consolidate as much as possible future (small) based helicopters.

In terms of identifying the extent of space needed for a helicopter area the following general guidelines were applied - seven tie-downs for based helicopters, three tie-downs for transient helicopters, 20,000 square feet of conventional hangar space (for based helicopters), and proximity to helipads. When added to current facilities for existing helicopter operators the long-term facility requirements for helicopters are met.

In locating a helicopter operating area on the airport several factors were considered including:

- The Final Approach and Takeoff Area (FATO) should be separated from the centerline of Runways 9R-27L and 17-35 by at least 300 feet.
- Provide an unobstructed line-of-sight from the control tower of the helicopter area and a view that accommodates fixed wing and helicopter operations with minimal body movement and visual interruptions.

- Locating the area, if possible, in an area near existing helicopter activities, therefore maximizing the concentration of future helicopter activities on the airport.
- Locating helicopter parking to minimize rotor wash from upsetting parked airplanes.

General Aviation Terminal

The existing terminal building is mainly used for airport administration offices and therefore a deficiency remains in terms of general aviation terminal facilities. A facility capable of meeting the long-term GA terminal requirements should be planned and should consider the potential for commuter airline service should it materialize. In this regard the siting of a GA terminal should provide adequate room for commuter aircraft parking as well as auto parking. While this should not be interpreted as a projected need, the GA terminal should be planned with flexibility in mind to accommodate potential commuter operations. Airport administration may be housed within the terminal building or separately.

Aircraft Rescue and Fire Fighting (ARFF) facility

As identified in the Chapter 5, an Index 1 ARFF facility will be required as a minimum by the year 2025, and possibly an Index 2 facility. The ARFF facility should be located such that direct and safe access to the airside is provided, with unimpeded access routes to the runways, taxiways and aircraft parking areas. The site should not interfere with line-of-sight from a control tower, and should consider response times to the most probable aircraft accident areas. The site should accommodate an ARFF building within BRL parameters and should not interfere with communication or navaid equipment. The site should offer reasonable access from the airport access road, as well as utilities.

Airport Traffic Control Tower

The airport is a controlled facility in that there is a FAA Airport Traffic Control Tower responsible for the control of air traffic on and around the airport, and therefore the analysis of facility requirements did not indicate the need for additional ATC facilities. During a meeting of the Planning Advisory Committee for this project it was indicated by the Gillespie Field FAA Air Traffic Manager, that a larger control tower cab could be required to serve the forecast increase of aircraft operations. Therefore, the evaluation of potential development concepts should consider potential sites for a new (replacement) control tower. It should be noted that the timing of such development is dependent on FAA programming, and the evaluation of the need for a new ATCT and siting of a replacement control tower is the responsibility of FAA. Potential sites for a new ATCT will be identified, however, it is important to remember that the final location of a potential control tower will be determined by FAA based on a special study to be performed by FAA and will consider requirements stated in FAA Order 6480.4.

DEVELOPMENT CONCEPTS

Three potential concepts to accommodate forecast aviation demand were first developed by P&D based on the facility requirements and the rationale described above. These were submitted to the County Department of Public Works for review and comment. Based on feedback provided by the County a fourth concept was identified and advanced as the preferred concept plan for the ALP Update. This was then presented to the Planning Advisory Committee (on September 25, 2002) and the Gillespie Field Development Council (on November 19, 2002). Based on comments received from these groups, refinements were made to the preferred concept and a fifth and final concept evolved. This concept will form the basis of the Airport Layout Plan Update. The development concepts are described herein.

Each concept includes some common elements in the form of land acquisition and the use of the 70-acre parcel presently leased to the El Cajon Speedway. Land acquisition involves the purchase of land in fee and acquisition of avigation easements.

As previously mentioned, County records indicate that 0.14 acres of land in the northeast corner of the airport are required in order to construct a run-up pad for Runway 27L. Approximately 2.15 acres on the east side of the Runway 17 object free area and runway protection zone are depicted on concepts to be acquired in fee. On the south end of the runway, 4.67 acres on the west side of the runway object free area are recommended for acquisition in fee in order to allow for the runway safety area and object free area to be extended.

On the east side of the runway, 4.90 acres are identified for acquisition in fee. This parcel should be redeveloped for aviation use. The location of existing aircraft tie-downs within the runway object free area and runway protection zone and a hangar within the Building Restriction Line violates FAA standards for these criteria. Therefore, the acquisition of this parcel will allow for these deviations from FAA standards to be resolved. This will require that the portion of Johnson Avenue north of Bradley Avenue be closed.

The acquisition of additional avigation easements is also proposed in each concept for areas within proposed runway protection zones in which such control does not exist. This involves acquisition of easements for 5.7 acres within the Runway 27R runway protection zone; 5.8 acres within Runway 17 runway protection zone; 1.5 acres within the Runway 9L runway protection zone; and, 11.1 acres within the Runway 35 runway protection zone.

It is also assumed in each concept that the existing lease for the 70-acre parcel that presently accommodates the El Cajon Speedway will expire in 2005, which will permit this airport property to be used for aviation purposes.

Concept 1

The conceptual design parameters for this alternative were to utilize existing leasehold and other vacant parcels for based aircraft facilities before developing the 70-acre leasehold on the southeast corner of the airport, expanding the existing administration building for general aviation terminal uses, and providing a helicopter operating area that is remote from the airfield Figure 6-2 graphically presents this concept.

On the northeast corner of the airport this concept proposes constructing 15 tie-downs, 16 T-hangars (or individual hangar spaces) east of Classic Hangars and 4 T-hangars on the Classic leasehold. A conventional hangar is proposed south of the San Diego Aerospace Museum and 18 T-hangars west of the museum. A new Royal Jet, Inc. hangar (which has since been built) is depicted on their leasehold.

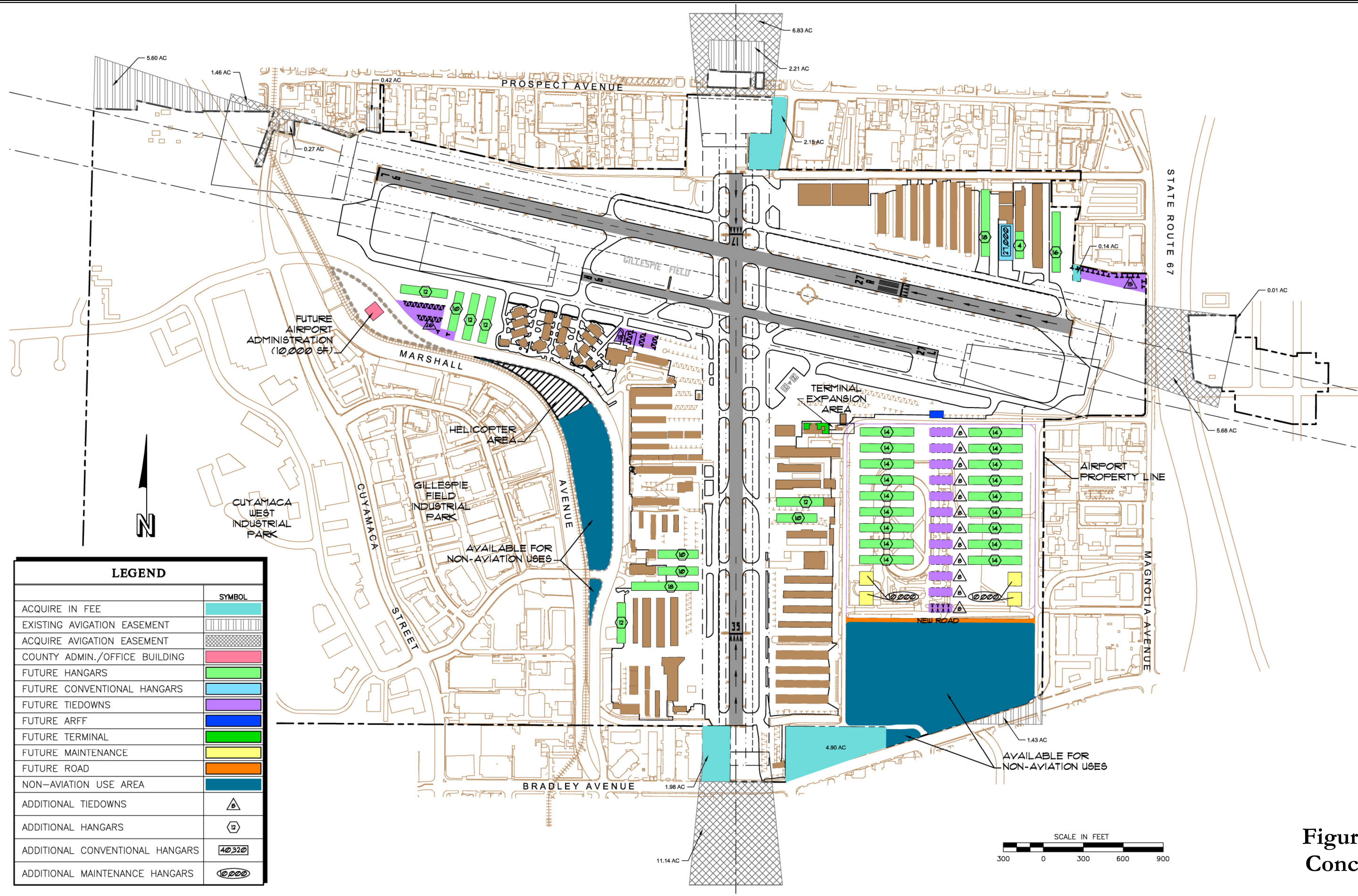


Figure 6-2
Concept 1

On the southwest corner of the airport hangars and tie-downs are proposed on presently undeveloped area west of the LaJolla Investments Inc/Allen Airways leasehold. This proposed development includes 46 T-hangars and 26 tie-downs. Fifteen tie-downs are proposed in this concept east of the LaJolla Investments leasehold. This concept also accommodates a helicopter area south of the LaJolla Investment leasehold along Marshall Avenue. A 10,000 SF Airport Administration building is proposed in Concept 1 west of Marshall Avenue.

This concept proposed adding hangar space on existing leaseholds along the east and west sides of Runway 17-35. Two hangar buildings providing 22 hangars spaces are located on existing tie-down area south of Safari Aviation (East). On the west side of the runway, four hangar buildings providing 50 aircraft spaces are situated on the El Cajon Flying Service leasehold, primarily on existing apron areas on the leasehold.

In order to meet the projected requirements for general aviation terminal facilities, this concept proposes converting and expanding the existing administration building for this use.

In order to meet the long-term requirement to accommodate approximately 1,200 based aircraft, there is a need to utilize a significant portion of the 70-acre leasehold on the southeast side of the airport for aircraft storage facilities. This concept includes 252 hangar spaces, 96 tie-downs and 40,000 SF of aircraft maintenance hangars on this parcel. This leaves approximately 22 acres available for other uses.

Concept 2

The basis of this alternative development concept is to utilize the 70-acre leasehold on the southeast corner of the airport as the primary area for aircraft storage facilities; provide a new general aviation terminal area, and provide a helicopter operating area with direct access to the airfield. Concept 2 is graphically presented in Figure 6-3.

On the northeast corner of the airport this concept proposes constructing 25 tie-downs, 14 T-hangars (or individual hangar spaces) east of Classic Hangars. Tie-downs (21 spaces) are proposed south of the San Diego Aerospace Museum and 18 T-hangars west of the museum. A new hangar is depicted on the Royal Jet leasehold. Nine hangar spaces are also located in this concept along the east eade of the runway protection zone for Runway 17.

On the southwest corner of the airport six hangar buildings providing 58 aircraft spaces are proposed on presently undeveloped area west of the LaJolla Investments Inc/Allen Airways leasehold.

This concept locates a helicopter area on apron adjacent to the existing administration building. A hangar providing 12 aircraft storage spaces is proposed in Concept 2 in the area presently occupied by the administration building.

The primary basis of this concept is to utilize the existing 70-acre leasehold for based aircraft and general aviation terminal area. A general aviation terminal building is located along Wing Avenue with ample apron for transient aircraft and area for additional terminal expansion. The remainder of the 70-acre leasehold is utilized to provide a conventional hangar (32,000 SF), 17 hangar buildings with 293 aircraft

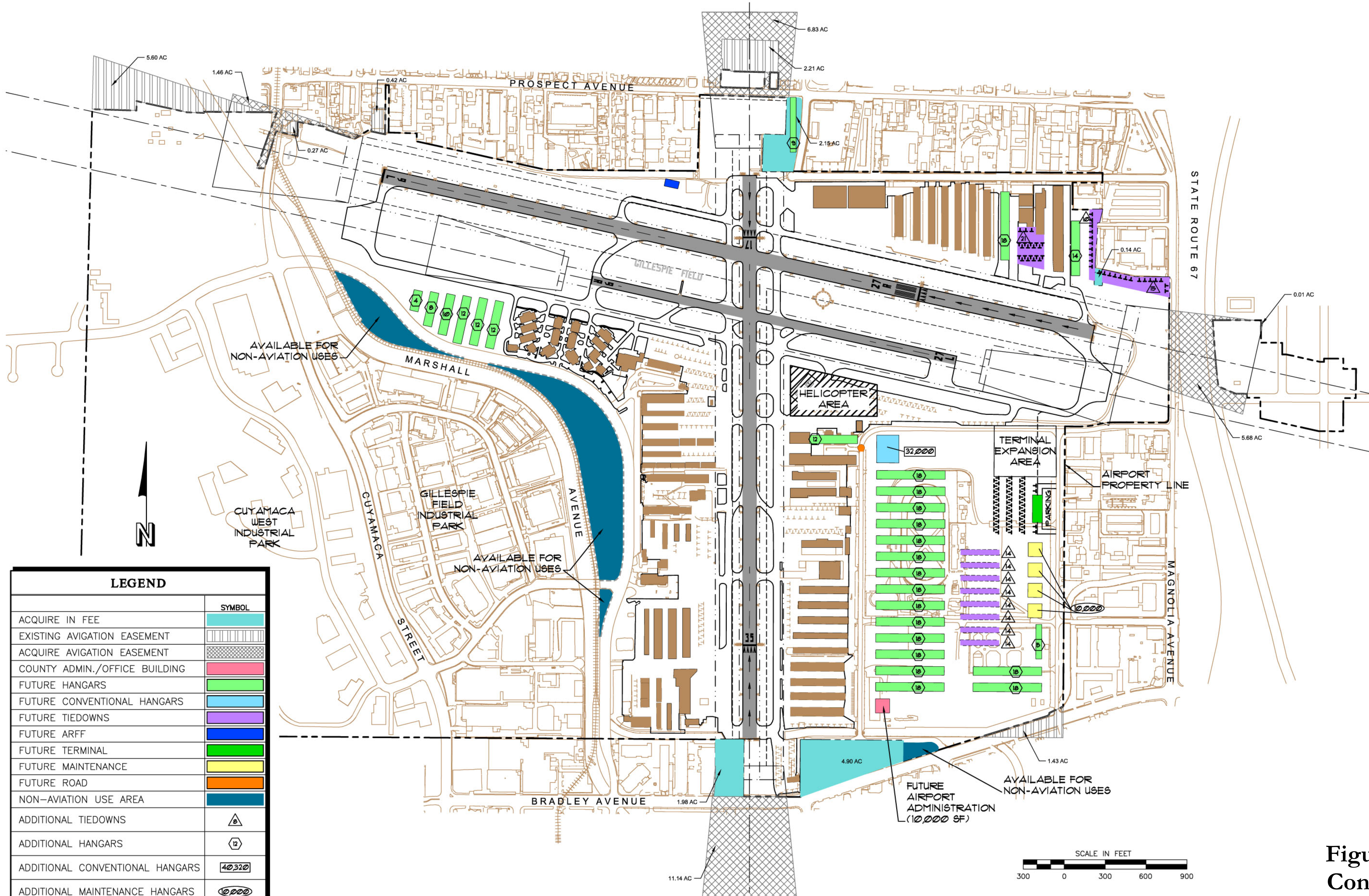


Figure 6-3
Concept 2

storage spaces, 40,000 SF of aircraft maintenance hangar space, and 112 based aircraft tie-downs. A new airport administration building is located at the southwest corner of the parcel.

Approximately 12 acres are available for non-aviation uses west of Marshall Avenue.

Concept 3

The basis of this concept is to utilize the 70-acre leasehold on the southeast as the primary area for aircraft storage facilities; expand the existing administration building to provide a new general aviation terminal area, and provide a helicopter operating area with direct access to the airfield. Figure 6-4 presents Concept 3.

Development proposed on the northeast quadrant of the airport in this concept is the same as in Concept 2 (except a hangar building along the east edge of the runway protection zone of Runway 17 in Concept 2 is not included in this concept).

On the southwest corner of the airport four hangar buildings providing 30 aircraft spaces are proposed on presently undeveloped area west of the LaJolla Investments Inc/Allen Airways leasehold. A 32,000 SF conventional hangar is also proposed in this concept in this area. As in Concept 1 a 10,000 SF Airport Administration building is proposed west of Marshall Avenue.

Also similar to Concept 1, this concept proposes converting and expanding the existing administration building in order to meet the projected requirements for general aviation terminal facilities.

The existing 70-acre leasehold is primarily used for based aircraft storage facilities in this concept. It accommodates 19 hangar buildings with 356 aircraft storage spaces, 40,000 SF of aircraft maintenance hangar space, and 112 based aircraft tie-downs. A helicopter area is located at the northeast corner of the parcel along Taxiway D.

Approximately 12 acres at the south part of the parcel are not dedicated for aviation facilities in this concept and are assumed for non-aviation uses. Also 9 acres are available for non-aviation uses west of Marshall Avenue.

Concept 4

The previously described three development concepts were developed by P&D Aviation and submit to the County Department of Public Works for review. Based on County input on the concepts a fourth concept was prepared that blended certain features of each and resulted in a concept that was believed to provide a balanced approach for future development of the airport. The basis of this concept was to meet aeronautical demand (1,200 based aircraft), provide a helicopter area, accommodate non-aviation uses where possible, and utilize open areas on-airport for aircraft storage facilities to the extent possible and not restricted by utility easements. Figure 6-5 graphically presents Concept 4.

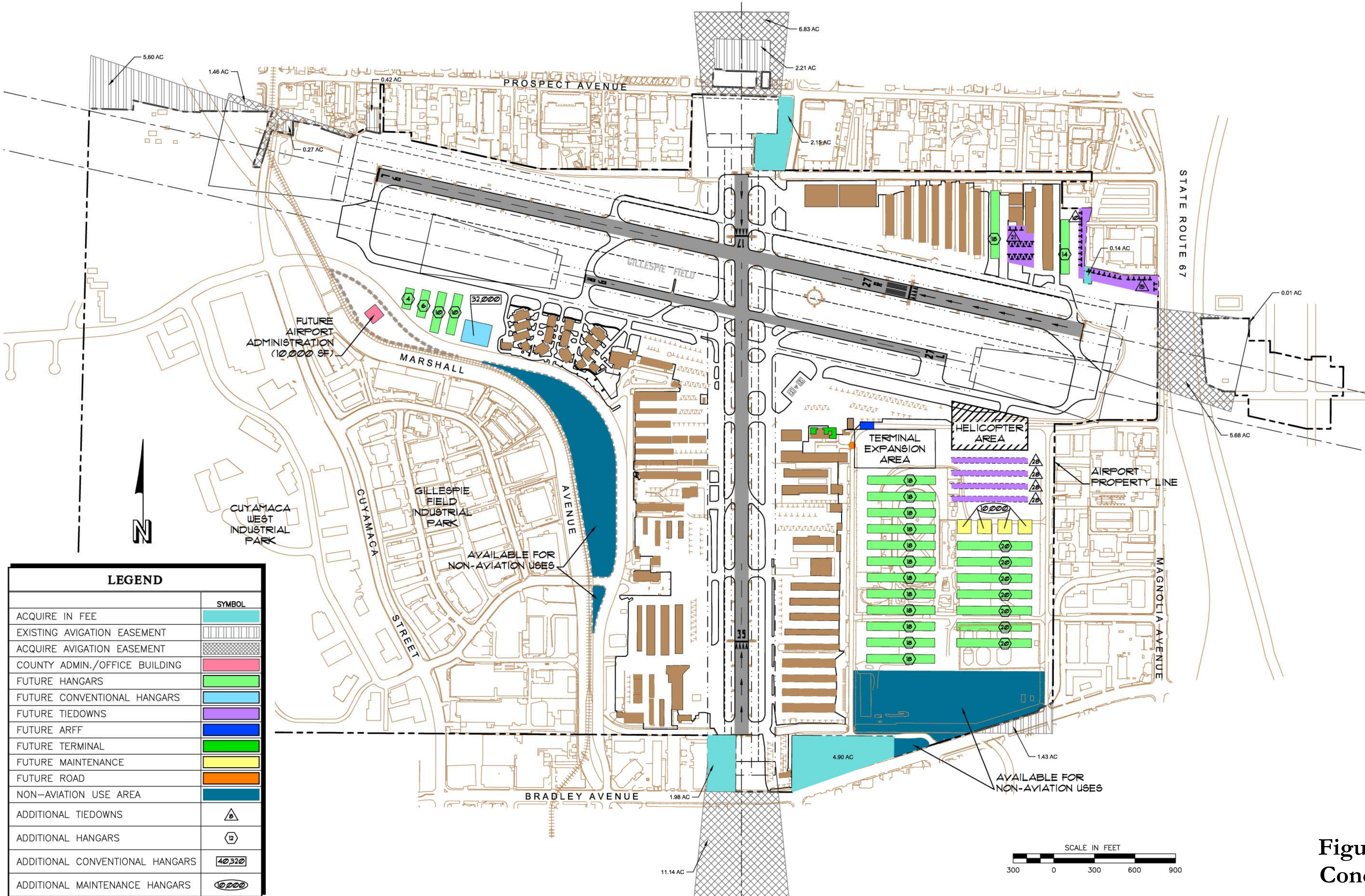


Figure 6-4
Concept 3

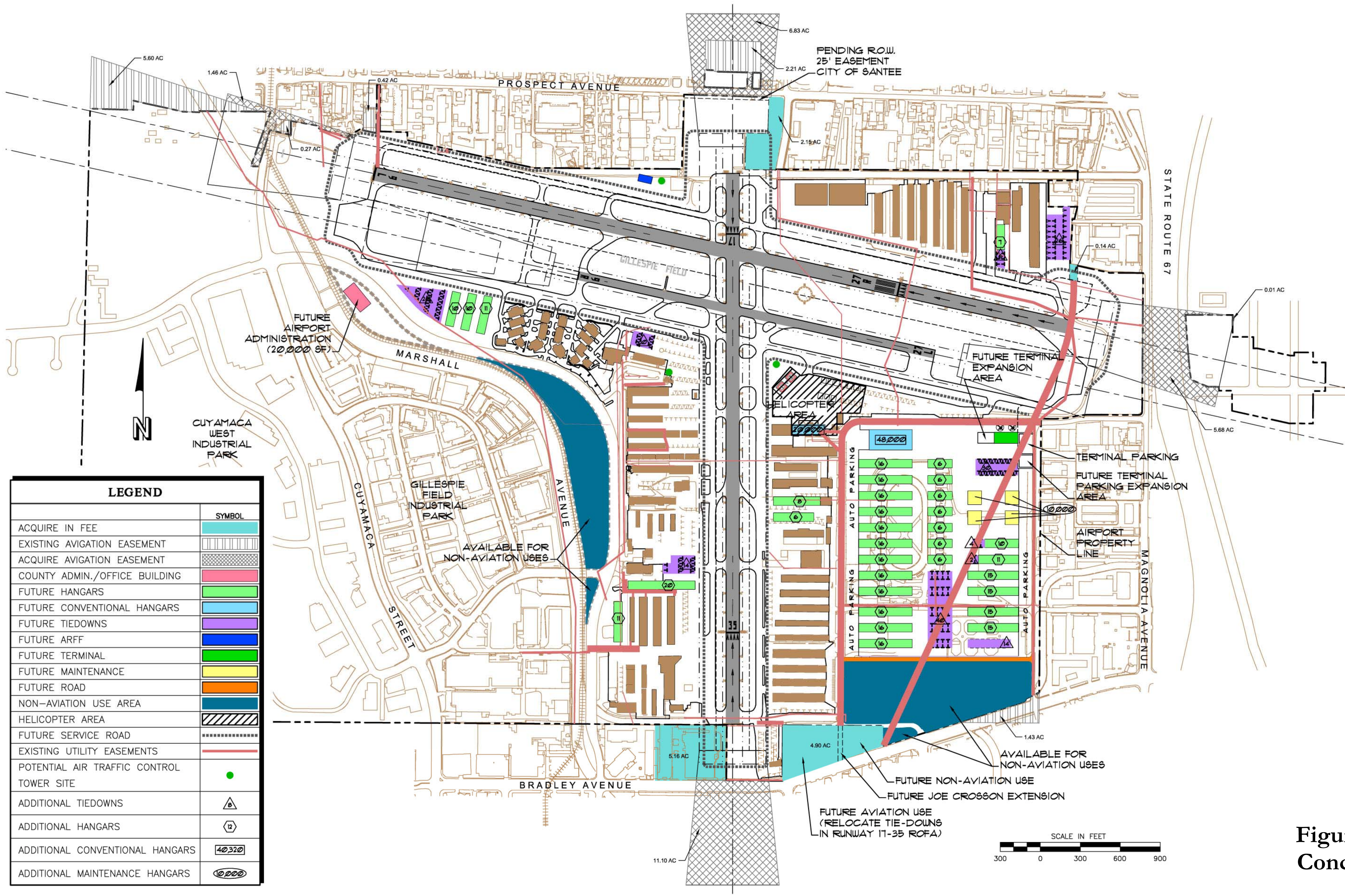


Figure 6-5
Concept 4

The facility requirements analysis identified the need for 384 additional hangars, 65 tie-downs, and 145,575 square feet of conventional hangars to meet the high growth forecast in the year 2025. As in previous concepts, the expansion at Royal Jet is illustrated on this concept. It should be noted that the additional hangar space (43,200 square feet) is not counted towards the year 2025 requirement total (145,575 square feet), and as a result, Concept 4 provides 111,200 square feet of conventional hangar space. Additional conventional hangars could be provided if the entire parcel is used for aviation uses.

The concept shows seven T-hangars on the northeast side of the airport near the San Diego Aerospace Museum along with six tie-downs.

Three hangar buildings providing 31 aircraft spaces and 26 tie-downs, on the west side of the airport west of La Jolla Investments Inc./Allen Airways have been located on approximately five acres. Development of buildings on the site is constrained by utility easements. Ten aircraft tie-downs are included in this concept east of La Jolla Investments leasehold.

Two hangar buildings providing 31 aircraft spaces and 14 new tie-downs are proposed in this concept on the El Cajon Flying Service leasehold. Fourteen T-hangars are planned for the Southern California Aircraft Repair leasehold and depicted in this concept. Ten aircraft hangar spaces are also depicted on former tie-down area south of Aircraft Storage Spaces hangars. This building has already been constructed.

A total of 315 T-hangars have been located on the 70-acre El Cajon Speedway parcel. Also located on the 70-acre parcel, as well are 40,000 square feet of aircraft maintenance space, 48,000 square feet of conventional hangar, and a 14,000 square foot terminal building. Tie-downs have been incorporated as space permits and include 30 tie-downs near the proposed terminal building for transient parking, and 54 tie-downs near the south end of the parcel. The location of buildings on the parcel must consider existing utility easements upon which the construction of structures has not been assumed. A large (48,000 SF) conventional hangar has been located at the northwest corner of the parcel. This is expected to serve as an FBO location for business aircraft. The site has good airfield access with ground access via Joe Crosson Drive. T-hangars are aligned along the east side of Joe Crosson Drive with auto parking provided along the road as currently is the case on the west side of the road for existing hangars. Similarly, T-hangars are also aligned along Wing Avenue on the east side of the parcel. Smaller rows of T-hangars (six per row) may also be developed on the interior portion of the site. Maintenance hangars have been located considering ground access, airfield access and apron area, and the location of easements.

Helicopter Area

An area dedicated for future helicopter operators is included in the plan near the existing County owned helipads. The area encompasses approximately six acres. Within the six acres there are seven tie-downs for based helicopters, three tie-downs for transient helicopters, 20,000 square feet of conventional hangar space, and two helipads. Together with facilities for existing helicopter operators the projected facility requirements are met. The conventional hangar is proposed to be located at the site of the existing terminal, and the timing of this development would be dependent upon the new GA terminal construction. The helicopter area would be completely paved to minimize dust and debris, and somewhat shielded by helicopter storage hangars.

General Aviation (GA) Terminal

The existing terminal building is mainly used for airport administration offices. Concept 4 relocates these functions to a two story building (20,000 square feet total) located near the trolley station along Marshall Avenue. To provide for possible commuter airline service and meet year 2025 requirements a new 14,000 square foot terminal is shown on the east side of the 70-acre parcel and will be accessible from Wing Avenue. The terminal is expandable to the west should demand dictate. On the south side of the terminal there are 30 tie-downs for transient parking. The north side is reserved for commuter service. Auto parking is provided along Wing Avenue. If additional parking is required the building and transient aircraft parking may be translated to the west to provide greater area for auto parking. In this case, a two story terminal would allow for building expansion.

Air Traffic Control Tower Sites

Three potential locations for the Air Traffic Control Tower (ATCT) are shown on this concept. One potential location is adjacent to the existing tower. The second potential location is near the County owned helipads; however, the helipads would need to be relocated. This location presents access and airspace (FAR Part 77) concerns. The third potential location is northwest of the intersection of Runways 9L-27R and 17-35. While access to this site is better than the previously described site, FAR Part 77 obstruction standards are also an issue at this location. It is noted that the final location of a potential control tower will be determined by FAA based on a special study to be performed by FAA and will consider requirements stated in FAA Order 6480.4.

Aircraft Rescue and Fire Fighting (ARFF) Facilities

A potential site has been identified on the concept and is located north of Runway 9L-27R and west of Runway 17-35. This site would be accessible from Prospect Avenue, north of the end of Runway 17.

Non-aviation Uses

The south portion (roughly 14 acres) of the 70-acre parcel would not be dedicated for aviation use and is available for other uses in this concept. Approximately 9 acres of land west of Marshall Avenue is also available for non-aviation uses in this concept.

Concept 5 (Preferred Concept)

The previous concept (Concept 4) was presented to the Planning Advisory Committee and Gillespie Field Development Council at meetings of these groups, and based on input from these meetings, the concept was revised and resulted in a fifth concept. This revised concept is presented as the preferred development concept for the airport, and will serve as the basis of the Airport Layout Plan. Concept 5, the preferred concept, is graphically presented in Figure 6-6.

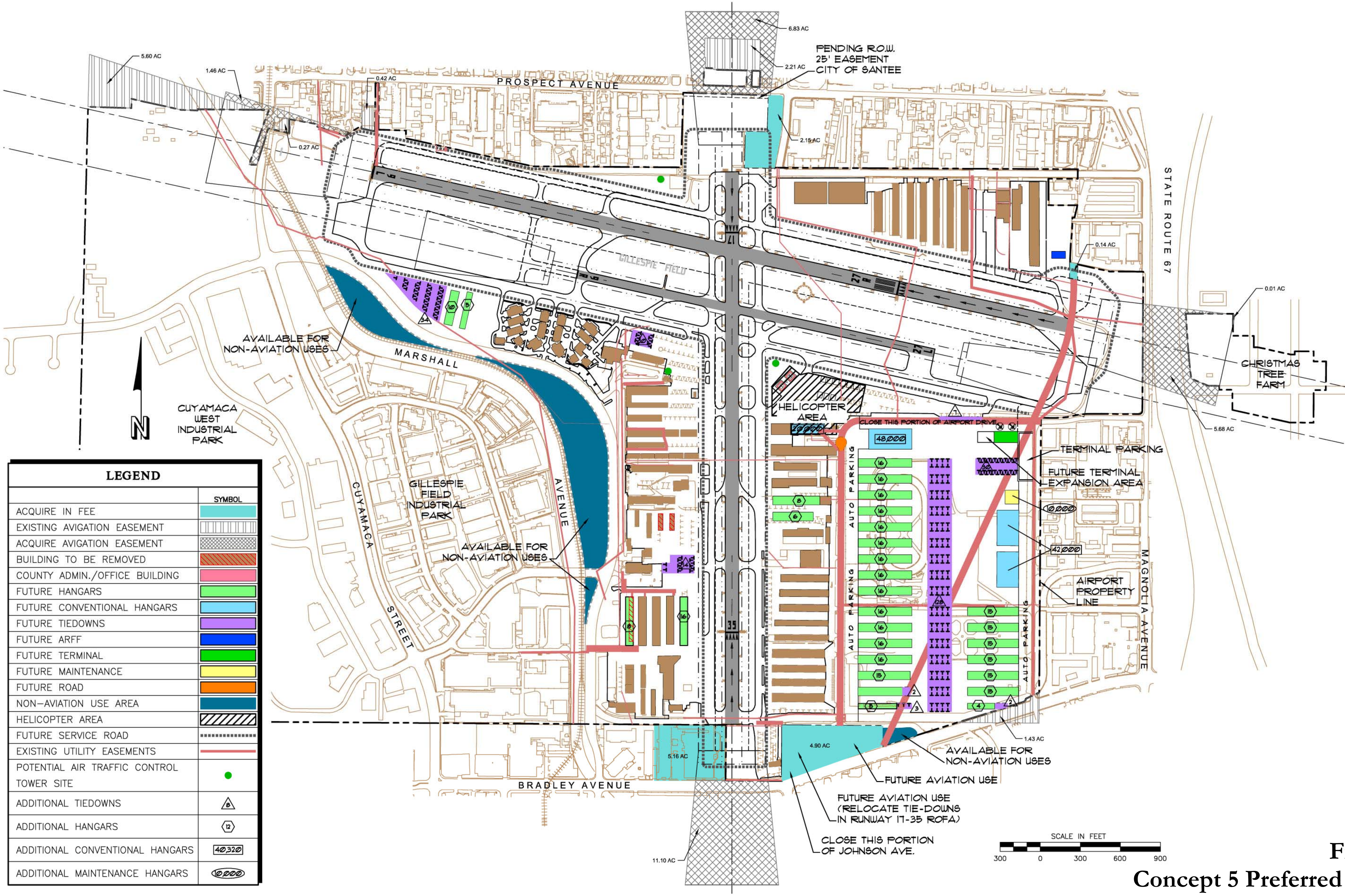


Figure 6-6
Concept 5 Preferred Concept

The main features of the concept are described below. A major basis of the concept is the use of the 70-acre parcel for aviation purposes.

Northeast Quadrant of Airport

The future development of facilities for based aircraft on the northeast side of the airport is limited to the planned hangar development by Royal Jet as shown on previous concepts. Tie-downs shown on the northeast corner of the airport in other concepts are not proposed in this concept as it was noted in comments that the topography of the site is not conducive to apron or hangar uses. While the site is capable of supporting such uses, albeit with additional earthwork costs, the site is designated in this concept to accommodate an ARFF facility. This use is not sensitive to the topographic conditions as is the case with tie-down or hangar uses at the site. This is a good location for an ARFF facility as it provides direct and immediate access to the main runway.

Previous concepts proposed various configurations of hangars and tie-downs in the vicinity of the San Diego Aerospace Museum. Development of additional hangars and tie-downs were not included in this concept and were not deemed compatible with the museum leasehold.

West Side of Airport

Based aircraft hangar and tie-down facilities are proposed in this concept on the west side of the La Jolla Investments Inc./Allen Airways leasehold. The configuration of facilities in this area was refined to reflect the lease line and extent of facilities planned by La Jolla Investments. Two hangars providing 15 aircraft spaces and 34 tie-downs are proposed in this location. Ten tie-down spaces are also proposed on the east side of the La Jolla Investments Inc./Allen Airways leasehold.[1]

West Side of Marshall Avenue

A major comment of the Gillespie Field Development Council and users of the airport was to preserve the 70 acres on the southeast side of the airport for aviation purposes. Other concepts identified various areas in the south part of the parcel as not needed for future aviation facilities and available for non-aviation development. With the 70-acre parcel dedicated for aviation purposes in this concept the long-term aviation demand can be met, and areas west of Marshall Avenue can be utilized for non-aviation uses. A total of approximately 13 acres has been identified as available for non-aviation uses. The northwestern parcel was identified in the previous concept (Concept 4) as a site for airport administrative offices. These functions have been assumed to be housed in the general aviation terminal buildings (on a second floor).

West Side of Runway 35

The configuration of hangars and tie-downs on the El Cajon Flying Service leasehold has been revised per input obtained from the operator. Two buildings providing eight aircraft spaces on the north part of

[1] This area was recently identified for transient apron in a Airport Improvement Program grant awarded by FAA. Ultimate development as proposed in the concept would still be possible.

the lease, and the western-most hangar on the south part of the lease (providing 12 aircraft spaces) are assumed to be removed by the year 2005 as required in the lease agreement. Two hangar buildings providing 24 aircraft spaces can be located on the south part of the leasehold as shown on Figure 6-6. An additional 14 tie-down spaces can also be accommodated within the leasehold area.

East Side of Runway 35

One hangar building that accommodates ten aircraft is included in this concept south of the Aircraft Storage Spaces hangars. Two hangar buildings that will accommodate 14 aircraft spaces are located south of Safari Aviation (East) hangars. These structures will replace existing aircraft tie-downs.

Helicopter Area

As with Concept 4, an area dedicated for future helicopter operators is included in the plan near the existing County owned helipads. The area encompasses approximately six acres that provides seven tie-downs for based helicopters, three tie-downs for transient helicopters, 20,000 square feet of conventional hangar space, and two helipads. Together with facilities for existing helicopter operators the projected facility requirements are met. As in Concept 4, the conventional hangar is located at the site of the existing terminal, and the timing of this development would be dependent upon the new GA terminal construction.

As previously discussed, the helicopter area is intended to accommodate small helicopters (less than 6,000 pounds) and is not intended to serve institutional operators with larger helicopters such as ASTREA or California Department of Forestry. It is also not suggested to relocate existing users to one helicopter area. Rather, the helicopter area is proposed to consolidate future (small) based helicopters in one area to the extent possible.

The existing County airport maintenance buildings are located adjacent to the helicopter area. This function and the associated existing facilities are proposed to remain in the present location.

An area on the south side of the airport is proposed for the temporary parking of heavy transient helicopters. The 4.67 acre parcel recommended to be acquired to provide runway safety area and runway object free area at the south end of Runway 35 will also provide room for parking two large helicopters. The need for parking is infrequent. This location has been identified due to its proximity to Runway 35, as well as other heavy helicopter operators (ASTREA).

Southeast 70-Acre Parcel

A total of 371 T-hangars have been located on the 70-acre El Cajon Speedway parcel. Aircraft maintenance space (47,500 square feet), conventional hangar (48,000 square feet), and a 14,000 square foot terminal building are also proposed on the parcel. Tie-downs have been incorporated on interior portions of the parcel and a total of 148 spaces for based aircraft and 30 for transient aircraft area provided.

The location of buildings on the parcel must consider existing utility easements upon which the construction of structures has not been assumed. A large (48,000 SF) conventional hangar has been located at the northwest corner of the parcel. This is expected to serve as an FBO location for business aircraft. The site has good airfield access with ground access via Joe Crosson Drive. It is proposed to terminate Joe Crosson Drive via a cul-de-sac near the entrance to the existing airport administration building. The east-west portion of Airport Drive between Joe Crosson Drive and Wind Avenue will be closed.

T-hangars are aligned along the east side of Joe Crosson Drive with auto parking provided along the road as currently is the case on the west side of the road for existing hangars. Similarly, T-hangars are also aligned along Wing Avenue on the east side of the parcel. It is possible to commence development of T-hangars in the northwest part of the parcel prior to development of the large conventional hangars, but the siting of T-hangars should recognize the potential development of a large conventional hangars on the parcel as shown in Figure 6-6.

Maintenance hangars have been located considering ground access, airfield access and apron area, and the location of easements. A large (37,500 square foot) maintenance hangar is depicted in this concept that provides an additional capability to store business jets and other business aircraft should demand materialize.

A new terminal building is proposed on the northeast corner of the parcel. This facility will provide general aviation terminal facilities. The building footprint depicted on Figure 6-6 provides 14,000 square feet on one level. It is assumed that a second floor will provide adequate space for airport administrative functions. The building may be expanded to the west to provide additional facilities for commuter operations should such demand materialize. As shown on Figure 6-6, aircraft parking for two turboprop commuter aircraft (such as Beech 1900) is possible. Transient aircraft apron (30 tie-downs) is located south of the proposed terminal building.

Seven existing tie-downs at the east end of the existing transient ramp are retained in this concept for transient parking. Seven future tie-downs to the south of these are also proposed to serve transient parking requirements.

Auto parking for the terminal is proposed along Wing Avenue. Approximately 35,000 square feet of parking area capable of accommodating 100 auto parking spaces is included.

Air Traffic Control Tower Sites

As with Concept 4, three potential locations for the Air Traffic Control Tower (ATCT) are shown on this concept. The final location of a potential control tower will be determined by FAA based on a special study to be performed by FAA and will consider requirements stated in FAA Order 6480.4.

Conclusions

It is recommended that Concept 5 as described herein be used as the basis for the Airport Layout Plan. It is important to note that the development concept is schematic in nature and depicts the location of various functions on the airport. It demonstrates that facilities can be provided to accommodate long-term based aircraft demand and located in accordance with pertinent FAA clearance and dimensional standards. The intent of the ALP as well is to identify areas reserved for existing and future aviation development. Therefore, the configuration of future buildings and hangars shown in the concept is conceptual. The ultimate configuration of hangars may vary from that which is suggested herein. The fact that ultimate building footprints and orientation may vary is not critical, but it is important that the ultimate configuration of future buildings accommodate comparable numbers of aircraft storage and other facilities; does not preclude development of other parts of the airport or impact airfield access.

Chapter 7
Airport Plans

INTRODUCTION

This chapter, Airport Plans, is intended to detail the total 20-year development program, as recommended by this Airport Layout Plan Update for Gillespie Field. The design of the airport system as described herein is based upon the facility requirements discussed in Chapter 5 and the recommended development concept. This airport development program is intended to integrate existing facilities and improvements needed over the next twenty years within the framework of an implementation schedule.

This chapter is comprised of a text discussion and accompanying graphics, some of which are reductions of the large-scale plans prepared during the course of this Study, that graphically depict the recommended development plan for Gillespie Field. The overall development plan for the airport is depicted on the Airport Layout Plan (ALP). The ALP is a graphic presentation of existing and ultimate airport facilities and is a key document that serves as a reference of aviation requirements, as well as land use and financial planning. In order to receive federal funding assistance, proposed projects must be consistent with the ALP, and thus the ALP must be revised and periodically updated. The ALP also indicates the recommended phasing of airport development projects.

It should be noted that many development recommendations contained in this report and indicated on airport plans are based upon projected traffic levels and attainment of these levels. It cannot be over-emphasized that where development is recommended based upon demand or traffic levels (such as hangars), it is ***actual***, not forecast, demand that dictates the timing of construction. However, for planning purposes, a schedule must be provided and this schedule is based upon the forecasts of traffic presented in Chapter 4.

It is also important to point out that the schedule of improvements proposed in this plan is contingent upon the availability of Federal, State, and local funds, and investment from the private sector. While improvements are scheduled for specific years in this report, it must be remembered that it is the programming of the Airport Improvement Program by the FAA that will determine the timing of many projects. Development projects at Gillespie Field must be reconciled with development priorities of other airports in the region. The implementation of projects will then depend on the availability of funds and FAA programming, as well as attainment of activity levels.

In addition to the ALP, three other drawings are included in the set of plans prepared as part of this Narrative Report. These are the Airport Airspace Plan, Runway Protection Zone Plan, and Property Map "Exhibit A". Further detail on these plans is the subject of individual subsections in this chapter.

In terms of the Comprehensive Land Use Plan (CLUP), it is recognized that the San Diego County Regional Airport Authority (SDCRAA) is the agency responsible for the preparation of CLUPs. Information generated from this ALP Update and Narrative Report can be used to update the CLUP, and is therefore also contained herein.

ROLE OF THE AIRPORT

Before presenting the recommended development and airport plans, it is appropriate to briefly discuss the role of the airport. To begin, the airport is presently designated by FAA in the National Plan of

Integrated Airport System (NPIAS) as a general aviation airport which is defined as an airport that serves a community that does not receive scheduled commercial air service. The future role of Gillespie Field is envisioned to continue in its present role as a general aviation airport, however, provisions have been incorporated in the ALP to accommodate commuter airline service should demand materialize. Expansion of the airport significantly beyond its present role is not practical from the standpoints of site constraints and the need to meet more stringent airport design standards, airspace (proximity to terrain), and the airport location (in a heavily developed area of commercial/industrial and residential uses). The airport is very capable of continuing in its current role and accommodating commuter or cargo service by turboprop aircraft.

The FAA in its current AC 150/5300-13, Airport Design, has developed an ***Airport Reference Code (ARC)*** which is a coding system that relates airport design and planning standards to two components: the operational and physical characteristics of aircraft operating at an airport. The coding system was more fully explained in Chapter 5, and as previously stated, planning standards specified for an Airport Reference Code of B-II will be used in developing the ALP for Gillespie Field. This type of facility will accommodate larger general aviation aircraft with wingspans up to 79 feet and approach speeds up to 121 knots. However, there are cases where planning standards for a lesser ARC are applied due to operations of smaller aircraft. ARC B-II criteria will be applied to Runways 9L-27R and 17-35, and criteria for ARC B-I will be applied to Runway 9R-27L.

While the role of the airport is expected to continue as a general aviation airport, the airport plans include provisions for the airport to transition to an enhanced role to accommodate scheduled commuter service and/or increased business aircraft demands. This does not involve commitments to build expanded facilities for such uses.

AIRPORT LAYOUT PLAN

The Airport Layout Plan, Figure 7-1, delineates the overall development plan for Gillespie Field as recommended in this ALP Update and Narrative Report and also indicates the phasing of the airport improvement strategy. The development phases used herein are as follows: the short-range or Phase 1 (1-5 years); the intermediate-range or Phase 2 (6-10 years); and, the long-range or Phase 3 planning period (11-20 years).

As a graphic overview of the recommended airport development, the ALP is supported by the other plans discussed in this section. The Airport Layout Plan conforms to guidelines set forth by the FAA for this preparation of this plan. The ALP is the principal plan depicting the recommended improvements and changes to the airport layout configuration and support areas. The recommended development program shown on the ALP is summarized below on a phase-by-phase basis.

Phase 1 Development (2005- 2009)

Phase 1, or short-range, development at Gillespie Field encompasses the first five-year period (2005-2009) of the overall plan. The improvements discussed below are considered to be of the highest priority in the total development plan, but are coordinated with the remainder of the plan and are

NOTES:

1. Ground contour elevations are in feet above Mean Sea Level (MSL).
2. California Coordinate System, Zone 6 NAD 83.
3. Air Traffic Contol Tower site to be determined by FAA study.
4. Final displaced threshold to be determined through obstruction surveys and obstruction removal programs. Terrain penetrating threshold siting surface approximately 1.5 miles to the east to be lighted.
5. The airport is part of the Rancho El Cajon and has not been sectioned. The nearest section corner is approximately 3 miles south of the airport.
6. County to request release from aeronautical use.
7. Slurry seal airfield pavements every 8 to 9 years.
8. Ultimate replacement of VASI with PAPI assumed in Phase 3.
9. Enhance runway–taxiway intersections in Phase 2.
10. Instrument approach procedure based on GPS is assumed in Phase 3.
11. Pave Runway 17–35 infield areas (Phase 1).
12. Buildings within ATCT Line of Sight and Building Restriction Line may be restricted based on height.
13. The Building Restriction Line does not encompass TERPS surfaces. TERPS issues should be addressed through FAA Form 7460 process.

ABBREVIATIONS:

ARP	Airport Reference Point
ATCT	Airport Traffic Control Tower
AWOS	Automated Weather Observation System
BRL	Building Restriction Line
(E)	Existing
(F)	Future
MIRL	Medium Intensity Runway Edge Lights
OFZ	Obstacle Free Zone
PAPI	Precision Approach Path Indicator
REIL	Runway End Identifier Lights
ROFA	Runway Object Free Area
RPZ	Runway Protection Zone
RSA	Runway Safety Area
RVZ	Runway Visibility Zone
R/W	Runway
T/W	Taxiway
TDZE	Touch Down Zone Elevation
VASI	Visual Approch Slope Indicator
ULT.	Ultimate

FAA APPROVAL

MAY 13 2005

Approved conditionally

Subject to comments contained in our letter dated: May 13, 2005

FEDERAL AVIATION ADMINISTRATION

Western-Pacific Region

By [signature]

Supervisor, Standards Section

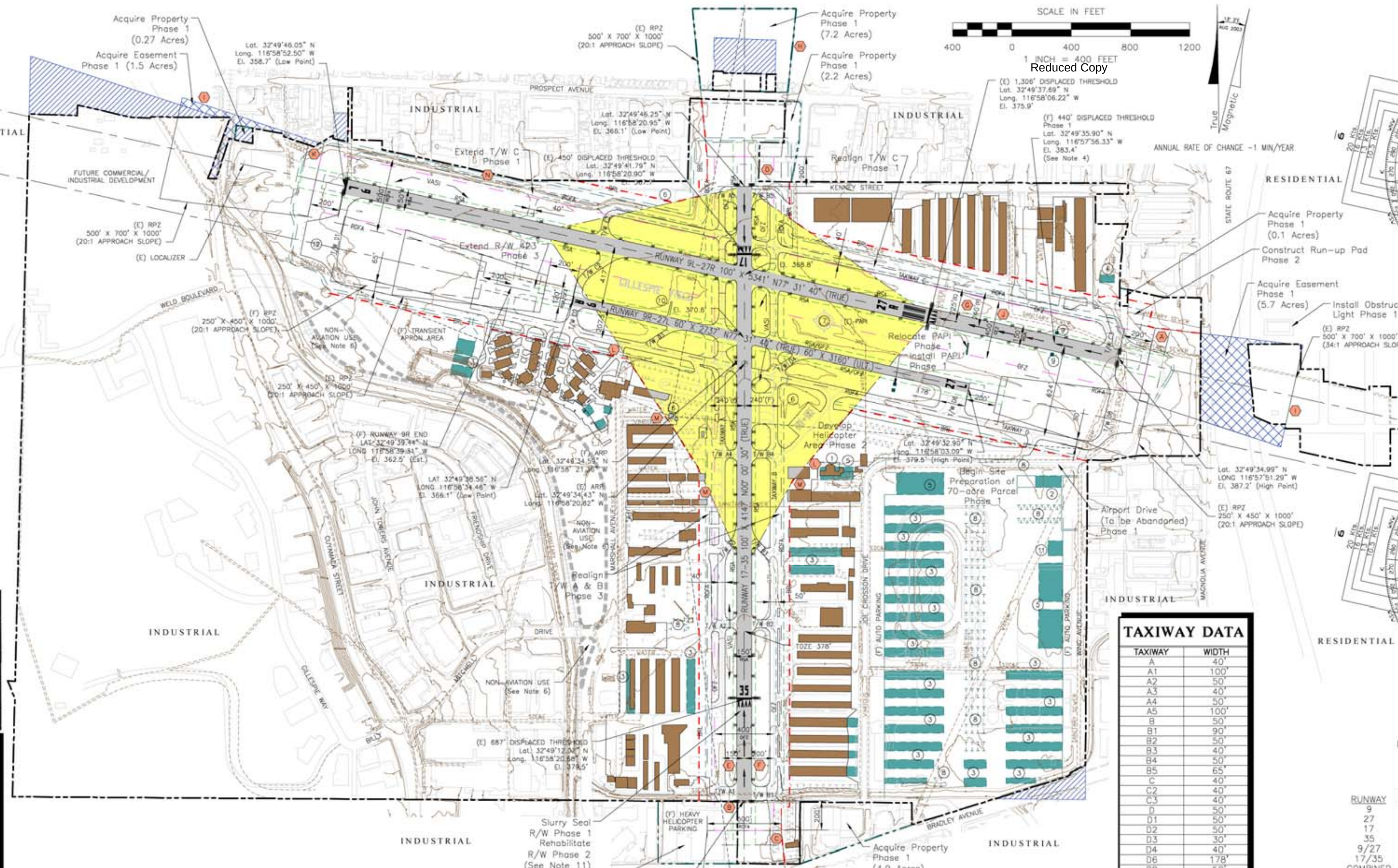
AIRPORTS ENGINEER: [signature] DATE 4/6/05

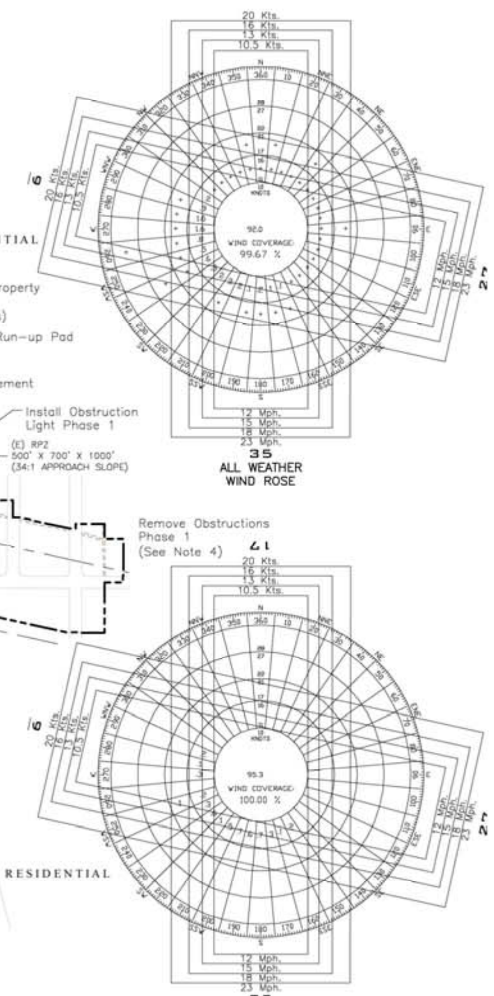
AIRPORT MANAGER: [signature] DATE 4/6/05

DIRECTOR OF AIRPORTS: [signature] PETER DRINKWATER DATE 04/06/05

DEPUTY DIRECTOR–PUB. WORKS [signature] LAWRENCE WATT DATE 4/6/05

Conditionally approved: Subject to Environmental Review and completion of the Gillespie Field Master Plan.





RUNWAY	10.5 KNOT CROSS WIND COVERAGE: ALL WEATHER	10.5 KNOT CROSS WIND COVERAGE: LOW VISIBILITY	13 KNOT CROSS WIND COVERAGE: ALL WEATHER	13 KNOT CROSS WIND COVERAGE: LOW VISIBILITY
9	43.29%	76.86%	43.54%	77.51%
27	94.61%	90.52%	95.15%	91.44%
17	73.12%	90.03%	74.40%	90.58%
35	60.09%	79.22%	61.48%	79.38%
9/27	98.52%	96.80%	99.31%	98.38%
17/35	93.83%	98.67%	96.50%	99.39%
COMBINED	99.67%	99.64%	99.97%	100.00%

Based on 27,171 observations between 1992 through 2001 taken at Gillespie Field.

TAXIWAY DATA

TAXIWAY	WIDTH
A	40'
A1	100'
A2	50'
A3	40'
A4	50'
A5	100'
B	50'
B1	90'
B2	50'
B3	40'
B4	50'
B5	65'
C	40'
C2	40'
C3	40'
D	50'
D1	50'
D2	50'
D3	30'
D4	40'
D6	178'
D8	50'

BUILDING/FACILITY KEY

#	DESCRIPTION
1	Existing Terminal/Administration Building
2	Future Terminal/Administration Building (Phase 2)
3	Future Hangars (All Phases)
4	Future Aircraft Rescue and Fire Fighting Building (Phase 3)
5	Future Conventional Hangar (All Phases)
6	Potential Air Traffic Control Tower Site (See Note 3) (Phase 3)
7	Segmented Circle
8	Future Tie-downs (All Phases)
9	Future Runway End Identification Lights (Phase 1)
10	Automated Weather Observation System
11	Future Aircraft Maintenance
12	Existing Compass Calibration Pad

RUNWAY END DATA

RUNWAY		EXISTING	ULTIMATE	EXIST. ELEV.	ULT. ELEV.
9L	LATITUDE	32°49'46.05" N	SAME	358.7'	SAME
	LONGITUDE	116°58'52.50" W	SAME		
27R	LATITUDE	32°49'34.99" N	SAME	387.2'	SAME
	LONGITUDE	116°57'51.29" W	SAME		
9R	LATITUDE	32°49'38.56" N	32°49'39.44" N	366.1'	362.5'
	LONGITUDE	116°58'34.46" W	116°58'39.31" W		
27L	LATITUDE	32°49'32.90" N	SAME	379.5'	SAME
	LONGITUDE	116°58'03.09" W	SAME		
17	LATITUDE	32°49'46.25" N	SAME	366.1'	SAME
	LONGITUDE	116°58'20.95" W	SAME		
35	LATITUDE	32°49'05.22" N	SAME	384.8'	SAME
	LONGITUDE	116°58'20.62" W	SAME		

LEGEND

	EXISTING	ULTIMATE
AIRFIELD PAVEMENT		
AIRPORT BOUNDARY		
AIRPORT REFERENCE POINT (ARP)		
AVIGATION EASEMENT		
BUILDING RESTRICTION LINE (BRL)		SAME
BUILDINGS (AERONAUTICAL USE AREAS)		
BUILDINGS TO BE REMOVED	NONE	
FENCE		
GROUND CONTOURS	995'	SAME
ATCT LINE OF SIGHT		SAME
OBSTACLE FREE ZONE (OFZ)		
ROAD/VEHICLE PARKING		
RUNWAY LIGHTS		SAME
RUNWAY OBJECT FREE AREA (ROFA)		
RUNWAY SAFETY AREA (RSA)		
RUNWAY VISIBILITY ZONE (RVZ)		SAME

AIRPORT DATA

		EXISTING	ULTIMATE
AIRPORT ELEVATION		387'	SAME
AIRPORT REFERENCE POINT (ARP) COORDINATES (NAD 83)	LATITUDE	32°49'34.43" N	32°49'34.59" N
	LONGITUDE	116°58'20.82" W	116°58'21.36" W
MEAN MAX. TEMP. OF HOTTEST MONTH		88.9° JULY	SAME
AIRPORT AND TERMINAL NAVAIDS		LOCALIZER	SAME
AIRPORT REFERENCE CODE		B–II	SAME
AIRPORT WIND COVERAGE % (13 KNOTS)		99.98%	SAME
MISCELLANEOUS FACILITIES		ATCT, AWOS	SAME, REIL(27R) ARFF
DESIGN AIRCRAFT		FALCON 50	SAME
GPS AT AIRPORT		YES	SAME

RUNWAY DATA

	RUNWAY 9L–27R EXISTING	RUNWAY 9L–27R ULTIMATE	RUNWAY 9R–27L EXISTING	RUNWAY 9R–27L ULTIMATE	RUNWAY 17–35 EXISTING	RUNWAY 17–35 ULTIMATE
AIRPORT REFERENCE CODE	B–II	SAME	B–I (SMALL)	.54	B–II	SAME
EFFECTIVE GRADIENT (IN %)	.53	SAME	.49	.54	.45	SAME
PAVEMENT STRENGTH (000 LBS)	56(S),94(D),190(DT)	SAME	30(S),53(D),87(DT)	SAME	58(S),106(D),195(DT)	SAME
RUNWAY/TAXIWAY PAVEMENT MATERIAL	ASPHALTIC–CONC.	SAME	ASPHALTIC–CONC.	SAME	ASPHALTIC–CONC.	SAME
RUNWAY LIGHTING	MIRL	SAME	NONE	SAME	MIRL	SAME
RUNWAY MARKING	VISUAL	SAME	VISUAL	SAME	VISUAL	SAME
NAVIGATIONAL AIDS	LOC(27R)	SAME	NONE	SAME	NONE	SAME
WIND COVERAGE % (13 KNOTS)	99.77%	SAME	99.77%	SAME	97.20%	SAME
VISUAL AIDS	VASI(9L), PAPI(27R)	SAME, REIL (27R)	NONE	PAPI (27L)	VASI	SAME
APPROACH CATEGORY (FAR PART 77)	VISUAL/NON–PRECISION	SAME	VISUAL/VISUAL	SAME	NON–PRECISION/VISUAL	SAME
APPROACH SURFACES	20:1/34:1	SAME	20:1/20:1	SAME	20:1/20:1	34:1/20:1
MAXIMUM ELEVATION ABOVE MSL	387.2'	SAME	379.5'	SAME	384.8'	SAME
RUNWAY LENGTH	5,341'	SAME	2,737'	3,162'	4,147'	SAME
RUNWAY WIDTH	100'	SAME	60'	SAME	100'	SAME
RUNWAY SAFETY AREA LENGTH/WIDTH	300/150	SAME/SAME	240/120	SAME/SAME	31/150(17) 4/150(35)	SAME/SAME
APPROACH VISIBILITY MINIMUMS	VISUAL/ 1 1/2 MILE	VISUAL/ 1 MILE	VISUAL/VISUAL	SAME	1 1/2 MILE/VISUAL	SAME/SAME

DEVIATIONS FROM FAA DESIGN STANDARDS

X	DESIGN STANDARD	REQUIRED	EXISTING	ACTION
A	RUNWAY OBJECT FREE AREA GRADING	MATCH RSA	+10' OF RSA	TERRAIN PENETRATION TO BE REMOVED
	RUNWAY SAFETY AREA (RSA)	300'	0'	PERIMETER ROAD TO BE RELOCATED AS PART OF AIP PROJECTS 3-06-0212-07 & -08
	OBSTACLE FREE ZONE (OFZ)	FREE OF OBJECTS	TERRAIN	TERRAIN PENETRATION TO BE REMOVED
B	RUNWAY SAFETY AREA (RSA)	300'	4'	ACQUIRE LAND TO ACCOMMODATE RSA
	OBSTACLE FREE ZONE (OFZ)	200'	4'	ACQUIRE LAND TO ACCOMMODATE OFZ
C	RUNWAY PROTECTION ZONE	CLEAR	TIE–DOWNS	TO BE ADDRESSED WHEN LEASE EXPIRES
	RUNWAY OBJECT FREE AREA	300'	47'	
D	OBSTACLE FREE ZONE (OFZ)	200'	29'	ACQUIRE LAND TO ACCOMMODATE OFZ
	RUNWAY OBJECT FREE AREA	300'	29'	ACQUIRE LAND TO ACCOMMODATE ROFA
E	RUNWAY – TAXIWAY SEPARATION	240'	150'	REALIGN TAXIWAY A
F	RUNWAY – TAXIWAY SEPARATION	240'	200'	REALIGN TAXIWAY B
G	RUNWAY – TAXIWAY SEPARATION	240'	225'	REALIGN TAXIWAY C
H	RUNWAY PROTECTION ZONE	NO STRUCTURES	STRUCTURES EXIST	TO BE ACQUIRED
I	RUNWAY PROTECTION ZONE	NO STRUCTURES	STRUCTURES EXIST	TO REMAIN, ACQUIRE AVIGATION EASEMENTS
J	OBSTACLE FREE ZONE (OFZ)	400' WIDE	PENETRATED BY TAXIING AIRCRAFT WITH WINGSPANS > THAN 50' ON T/W C	REALIGN TAXIWAY C
K	RUNWAY OBJECT FREE AREA	300'	210'	TO REMAIN
L	RUNWAY VISIBILITY ZONE	CLEAR	OBSTRUCTED	TO BE ADDRESSED WHEN LEASES EXPIRES
M	BUILDING RESTRICTION LINE	NO BUILDINGS	EXISTING BUILDINGS	TO BE ADDRESSED WHEN LEASES EXPIRES
N	TAXIWAY OBJECT FREE AREA (TOFA)	65.5' TO OBJECT	PROPOSED T/W C PROVIDES 56' TOFA	OBTAIN MODIFICATION TO STANDARD

This is a reduced version of a large size drawing.

Figure 7-1
Airport Layout Plan

supported by findings reached during previous portions of the Study. The primary focus of Phase 1 improvements is enhancement of Runway 27R landing capabilities and development of a new aviation use area on the 70-acre parcel on the southeast corner of the airport. The Phase 1 recommendations are outlined below.

Airfield Improvements

Pavement Management Plan (PMP) Slurry Seal Airfield Pavements (on-going). Application for FAA AIP funds for slurry seal projects should be submitted on a regular basis every 5 to 7 years such that construction commences every 8 to 9 years. Since Runways 9R-27L and 9L-27R recently underwent pavement rehabilitation, the first slurry seal of these two runways should occur approximately 2012. A slurry seal of Runway 17-35 is recommended in 2006 and is discussed below.

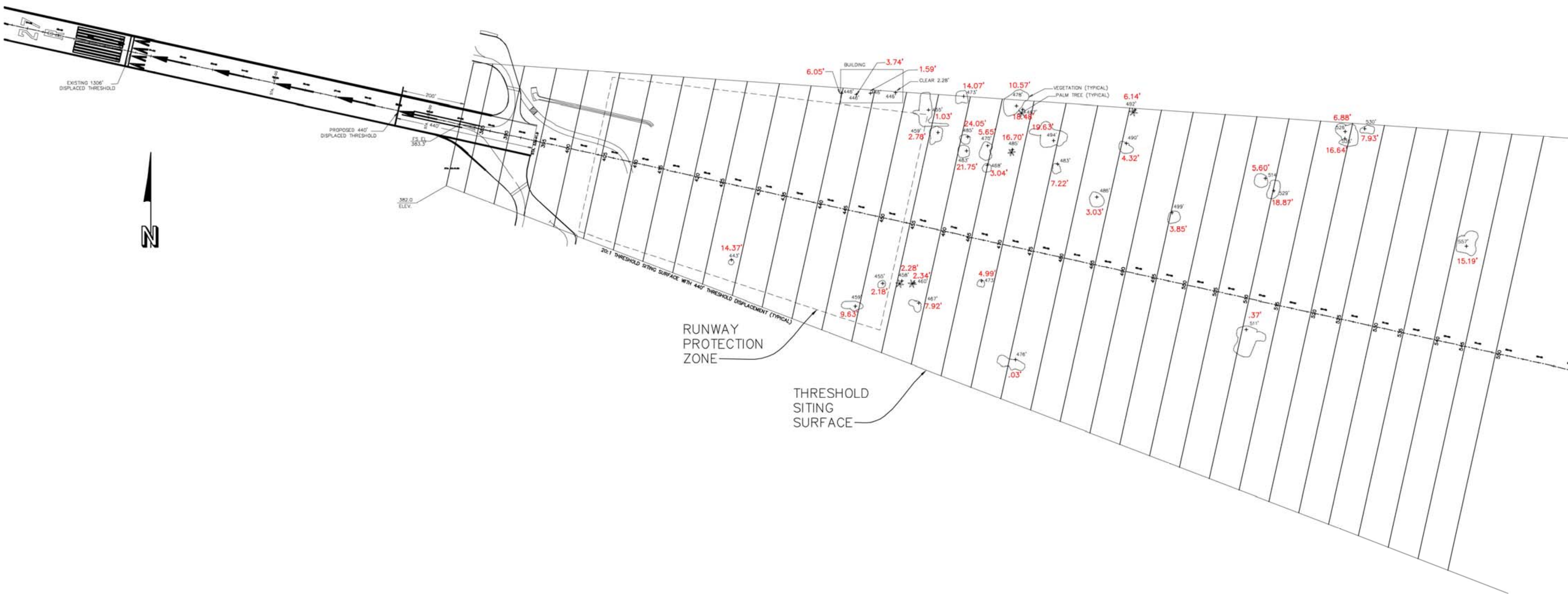
Relocate Runway 27R Displaced Threshold and Remove Obstructions (2005). Analysis previously described in Chapter 6, indicated that it is possible to move the displaced threshold for Runway 27R a significant distance to the east and enhance the capability of the runway for landings. The conclusions are contingent upon the completion of an obstruction survey and obstruction removal program. An obstruction survey has since been completed as part of the Runway 9L-27R rehabilitation project.[1] The survey identified more trees that require removal than as shown on the OC chart. The obstruction survey also identified a two story structure (8253 Graves Avenue) approximately 900 feet from the end of Runway 27R as a critical object with respect to the threshold siting surface. The building penetrates the threshold siting surface of Runway 27R by 6.05 feet. This can be treated in two ways.

First, the threshold can be located in a position such that the building does not penetrate the threshold siting surface. This would result in a displaced threshold location of approximately 580 feet. A second option is to light the building with red obstruction lights. At least one obstruction light located on the southwest corner of the building will be required. Lighting of the building is recommended.

Approximately 30 trees will require trimming (topping) or removal. These are shown on Figure 7-2 which shows the inner portion of the threshold siting surface, trees and building. The runway protection zone for Runway 27R is also shown. The extent of the RPZ corresponds to a point where the elevation of a FAR Part 77 approach surface is 50 feet above the elevation of the runway end. Trees located beyond the RPZ may be acceptable to FAA and may not require trimming or removal. The County should coordinate the obstruction removal program (i.e. Figure 7-2) with the FAA to determine the extent of obstruction removal required by FAA.

Obstruction removal is eligible for federal grants under the FAA Airport Improvement Program (AIP) and is also eligible under state grant programs. An increase of the Runway 27R landing length by 866 feet is a significant benefit and should justify FAA and/or Caltrans grants (through CAAP) for obstruction removal. The County should pursue these grants for obstruction removal. As an option, less obstruction removal may be pursued. This will still provide additional landing length and will require locating the displaced threshold west of the proposed 440-foot displaced threshold shown in Figure 7-2.

[1] Christensen Engineering & Surveying, December 15, 2003.



Sources: Christensen Engineering & Surveying.
P&D analysis.

Figure 7-2
Obstruction Survey and Removal

Improve Runway Safety Areas to Meet Standards (2005 and 2006). A service road traverses the runway safety area of Runway 27R. This modification to standards will be corrected as the road will be realigned as part of the Runway 9L-27R rehabilitation project. A 10-foot grade elevation change off the end of Runway 27R violates obstacle free zone (OFZ) criteria and should be removed as part of this or subsequent AIP project. To the south of Runway 35 a fence and parking lot are within the runway safety area. This area is not located on airport property and has been recommended to be acquired. Once the property is acquired, the fence can be removed and the safety area prepared in accordance with FAA standards.

Realign and extend Taxiway C (2005). This project involves realignment of Taxiway C to meet runway-taxiway separation standards for ARC B-II (240 feet), and extension of Taxiway C to the end of Runway 9L. This taxiway will serve business jets and other aircraft based on the north side of the airport. This will reduce runway crossings and/or taxi-back operations on the primary runway. A 40-foot wide taxiway is proposed which is the same width as the existing Taxiway C. The proposed alignment raises an issue with respect to taxiway object free area standards. A clearance of 65.5 feet is required from a taxiway centerline to an object for ARC B-II and approximately 56 feet of clearance is possible between the proposed taxiway centerline and the existing perimeter fence and property line. Since acquisition of properties in this area is not practicable it is recommended that a modification to standard be obtained for this situation.

Slurry Seal Runway 17-35 and Associated Taxiways (2006). This includes the application of slurry seal and new pavement markings to Runway 17-35 and associated taxiways. This should include markings for red and green safety lines to prevent encroachment by users and confirmation of the location of displaced thresholds. An eventual pavement overlay for the runway is expected, but the slurry seal project is intended to maintain the runway until such time that a pavement rehabilitation program can be designed and constructed.

Airfield Lighting Improvements (2007). This project involves installation of a Precision Approach Path Indicator (PAPI) system on Runway 27L. Based on criteria contained in FAA Order 7031.2C, Runway 27L is a candidate for PAPI since there are at least 14,000 annual GA and military landings on the runway. Runway 27L qualifies for installation of a PAPI system since the number of GA landings on the runway significantly exceeds the qualifying threshold of 14,000 landings (37,000 landings on the runway are estimated for the year 2007).

Dust Control Improvements (2008). This project is consistent with storm water permit requirements and involves covering infield dirt medians to prevent blowing dust and FOD when aircraft and helicopters takeoff and land. The improvements are located in the infield areas of Runway 17-35 (between Taxiways A and B and the runway) and involve paving the infields. The priority is to pave the south end first from the south end of the runway to Taxiways A2/B2, then pave the north end infield areas north of Taxiway C to the north end of the runway. The infield areas north of Taxiways A2/B2 to Taxiway D may be paved last if the improvements are phased.

Heavy Helicopter Parking Area (2009). An area for the parking/staging of heavy, fire fighting helicopters operated by the U.S. Forest Service and California Department of Forestry has been designated south of ASTREA on the land to be acquired to meet runway safety area requirements for

Runway 35. This will be used for helicopter parking only during those periods of fire fighting operations, and should include space for employee vehicle parking and controlled access for security. This location has been identified to take advantage of the parcel and provide as much separation from other aircraft operations as possible, and is preferred over other locations considered such as along Marshall Avenue.

Modification of Airport Design Standards

FAA Advisory Circular 150/5300-13 defines "modification to standards" as a change to FAA design standards other than dimensional standards for runway safety areas. A request for modification should show that the modification will provide an acceptable level of safety, economy, durability, and workmanship. There are several existing deviations from FAA design standards including: runway safety area, runway-taxiway separation, obstacle free zone, runway visibility zone, and runway object free area.

Runway Safety Areas (RSA). The current deviation from FAA standards with respect to this criterion involves the extended runway safety area beyond the south end of Runway 35. The existing safety area extends a distance of only 4 feet before it is encroached by a fence. The 687-foot displaced threshold of Runway 35 somewhat reduces the impact of this deviation. In order to meet the standard it is recommended to acquire property located immediately to the south of the runway and clearing and grading the area to provide standard RSA.

Runway-Centerline-to-Taxiway-Centerline Separation. The current runway-taxiway separations are as follows:

- Taxiway A – 150 feet (240 feet required)
- Taxiway B – 200 feet (240 feet required)
- Taxiway C – 225 feet (240 feet required)
- Taxiway D – 207.5 feet (165 feet required)

Taxiways A, B and C will be realigned to comply with runway-taxiway separation standards for ARC B-II. Taxiway C, serving the main runway, can occur in the short-term and should be pursued as soon as possible. The timing of relocating Taxiways A and B will be dependent on the expiration of several leases of tenants located on both sides of Runway 17-35. Realignment of Taxiways A and B is shown as a long-term (Phase 3) project on the ALP.

Runway Obstacle Free Zone. Obstacle Free Zone (OFZ) criteria is an issue for two runways at Gillespie Field – Runways 9L-27R and 17-35. For Runway 9L-27R the issue relates to the north side of the runway where the wing-tip of an ADG II aircraft on Taxiway C penetrates the OFZ. The proposed realignment of Taxiway C will correct this deficiency. A 10-foot grade elevation change within the OFZ beyond the end of Runway 27R violates OFZ criteria and should be removed. The OFZ for Runway 9L-27R is 400 feet wide.

The Obstacle Free Zone for Runway 17-35 is also 400 feet wide as shown on the ALP. Aircraft taxiing on Taxiways A and B will penetrate the OFZ. The proposed realignment of Taxiways A and B will address the current sub-standard situation. The requirement for the OFZ 200 feet beyond the end of the runway is also not met on the north and south ends (due to a fence). The corrective action depicted on the ALP is to acquire land in order to provide standard OFZ.

Runway Object Free Area (ROFA). Object Free Area criteria is an issue for Runways 9L, 27R, 17 and 35. A fence is located within the Runway 9L ROFA along the northwest property line and begins to angle in towards the extended runway centerline. Only 200 feet of ROFA is provided beyond the runway end versus the requirement for 300 feet. A modification to standards should be considered for this minor deviation. Some terrain is located within the ROFA of Runway 27R. This terrain also violates OFZ criteria and should be removed. A fence and buildings are within the ROFA beyond the end of Runway 17 (off airport property), and a fence, parking lot and building are within the ROFA beyond the end of Runway 35 (also off airport property). The acquisition of property to meet RSA standards (described above) will provide airport control of the violating areas on the south end and will permit standard ROFA be provided. Acquisition of property on the north end will also permit standard ROFA be provided. Thirteen aircraft tie-downs are located within the ROFA of Runway 17-35 on the south end. These should be relocated outside the ROFA.

Runway Visibility Zone (RVZ). The RVZ is depicted on the ALP as a yellow-shaded, "kite-like" shaped polygon. The shape of the RVZ is a composite of individual RVZ developed for the following runway pairings: Runway 9L-27R and 17-35, and Runway 9R-27L and Runway 35. Portions of three hangars, the control tower, electric vault and fuel island are located within the RVZ and obstruct visibility in the RVZ. These structures should be removed and are depicted on the ALP to be addressed when the applicable lease expires.

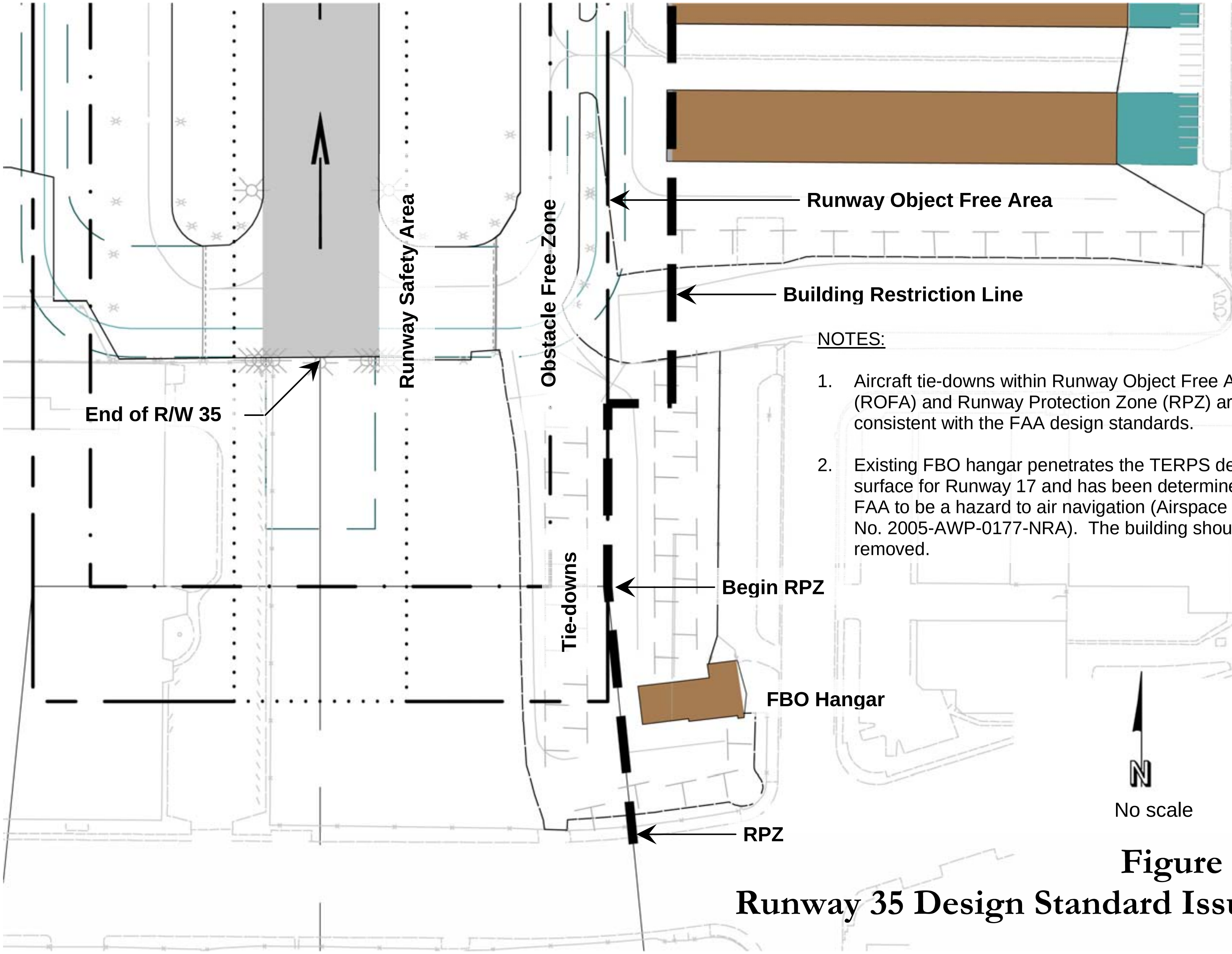
Runway Protection Zone (RPZ). There are structures located with the RPZ of Runways 9L, 27R, 17 and 35. There are approximately twelve commercial/industrial buildings within the Runway 9L RPZ. A portion of a storage facility/tree farm concession stand is located within the Runway 27R RPZ (this is on airport property). The Runway 17 RPZ encompasses several residential structures north of Prospect Avenue. The County has obtained easements for part of the area and acquisition (in fee) of those areas not already controlled by easement is recommended. The Runway 35 RPZ encompasses six industrial buildings south of Bradley Avenue. It is recommended to acquire (in fee) the area south of Bradley Avenue.

Existing FBO. An existing FBO is located at the south end of the airport near the end of Runway 35. The existing tie-down and building raise several issues with respect to airport design standards, some of which are mentioned above. The specific issues are:

- Seventeen tie-downs on the west side of the leasehold are located within runway ROFA and/or RPZ. (See Figure 7-3). Thirteen are within the ROFA, and ten are within the RPZ.

- The building is outside the OFZ, ROFA, and RPZ, but the building lies within an IFR Departure Area defined by TERPS.

The FAA completed an airspace study from an airspace utilization standpoint of the FBO building. The FAA review determined that the building is not acceptable from an airspace utilization standpoint and is a hazard to air navigation. This was because the existing structure penetrates the departure surface for



NOTES:

1. Aircraft tie-downs within Runway Object Free Area (ROFA) and Runway Protection Zone (RPZ) are not consistent with the FAA design standards.

2. Existing FBO hangar penetrates the TERPS departure surface for Runway 17 and has been determined by FAA to be a hazard to air navigation (Airspace Case No. 2005-AWP-0177-NRA). The building should be removed.

Figure 7-3
Runway 35 Design Standard Issues

Runway 17. The building should be removed after the current lease expires in 2007.

Building Restriction Line (BRL)

The FAA defines the building restriction line as a line which identifies suitable building area locations on airports. The BRL should encompass the runway protection zones, runway object free areas, runway visibility zone, Navaid critical areas, areas required for terminal instrument procedures, and airport traffic control tower clear line of sight. Through the years a BRL has typically been depicted on airport layout plans, with a BRL indicated on previous ALPs for Gillespie Field. However, over the years the criteria for defining the BRL has changed and the development of hangars at Gillespie Field has encroached the original BRL.

The ALP Update establishes the BRL by protecting those airport design and operational surfaces specified by the current FAA definition. The BRL has been established as follows and is depicted in Figure 7-1.

Along the sides of the runway and taxiways the BRL is defined by the taxiway object free area (TOFA) which is a 65.5-foot offset of the taxiway centerline (and a 305.5-foot setback from the runway centerline). Near the runway ends the BRL is defined by the TOFA of the relevant entrance taxiway to the runway object free area (ROFA) and runway protection zone (RPZ). Near the runway intersection the BRL is defined by the Runway Visibility Zone (RVZ) which is the yellow shaded area shown in Figure 7-1. The BRL is delineated as an outline of the most critical portions of the TOFA, ROFA, RVZ and RPZ. The TERPS surfaces of concern are the Departure Areas specified in FAA Order 8260.3B. The BRL depicted on the ALP does not encompass TERPS surfaces, but it is noted that TERPS issues should be addressed on a case-by-case basis through the FAA Form 7460 process. Furthermore, lines of sight from the control tower are shown on the ALP. Buildings located or proposed for the area between the control tower clear line of sight and the Building Restriction Line may be subject to height restrictions.

These BRL meet the current FAA criteria. There are several existing buildings that do not comply with the above defined BRL. These existing deviations should remain as modifications with the intention of removing the buildings in the future if it becomes possible and practical. To avoid further compromise of the BRL there should not be new construction of buildings within the BRL.

Landside Improvements

The major landside theme of this ALP Update is the dedication of the 70-acre Brucker lease on the southeast corner of the airport for future aviation facilities. The parcel is currently used for various non-aviation activities including the El Cajon Speedway, motor cross track and golf driving range. The lease expired on August 15, 2005, and it is assumed that at least two years will be required after this date before aviation facilities are available for occupancy (assumed in 2007). Therefore, construction of some new hangars and tie-downs are planned prior to this for other areas on-airport including existing leaseholds.

It should be noted that the layout of hangars does not imply a design or mandatory configuration, but rather is a concept that depicts the potential build-out of a parcel and the feasibility of providing a number of aircraft accommodations. The ultimate layout of facilities may differ from the concept, however, in developing the site it is important that the County maintain consistent development standards to prevent haphazard development of the property, while maintaining minimum safety and security standards. The capacity of future hangar configurations should accommodate the requirements contained in Chapter 5 for the forecast of based aircraft. The ability to develop existing leaseholds and other vacant areas (other than the 70-acre parcel) for hangars is limited, which creates the need to begin preparation of the 70-acre parcel as soon as possible.

It should also be noted that while the recommended plan calls for the ultimate build-out of the 70-acre parcel in aviation uses, that the demand for aviation uses of the parcel will occur over time. Temporary non-aviation use of portions of the 70 acres may be considered to enhance airport revenues as long as they do not preclude or impede the development of the property into aviation uses when needed. For example, a non-aviation use such as automobile parking/storage may be an appropriate temporary non-aviation use as temporary parking lot pavement could be converted to aircraft parking apron without creating major impediments. Other examples may also be possible.

Vehicle parking for commercial services, car rentals and community support special events and weekend activities may be accommodated by shuttles from nearby shopping centers and industrial parking lots. This will require coordination with neighboring jurisdictions and shopping centers.

Reconstruct Existing Transient Apron (2005). This improvement involves reconstructing the existing transient ramp with temporary asphalting to maintain the pavement until Airport Drive is closed and development of the 70-acre parcel commences.

Based Aircraft Storage Facilities on Existing Leaseholds and Vacant Area (2005/2006). A total of 189 hangar spaces are required in Phase 1 and the initial development must occur on areas other than the 70-acre southeast parcel, and involves redevelopment of some existing leaseholds. The actual timing will be contingent on present lease terms, and funding by third parties, however, the following areas provide opportunities for additional based aircraft storage facilities.

Assumed redevelopment activities on the El Cajon Flying Service leasehold include demolition of two small hangar buildings on the north side of the leasehold and the westernmost hangar building on the south side of the leasehold. The latter can be replaced with a new hangar building, and a 16-unit hangar building can be accommodated on the south part of the leasehold along Taxiway A. The area occupied by the two buildings to be demolished on the north side may be reused as tie-down, with twelve additional tie-downs possible on the leasehold.

Fourteen new hangar spaces in two buildings are proposed on the east side of Runway 17-35 near Southern California Aircraft Repair. Wash rack facilities should be included as part of the development of these potential hangar development projects. Extension of Gillespie Field Partners hangars on the east end of buildings is possible and reflected on the Airport Layout Plan.

Additional based aircraft storage facilities can be accommodated on present vacant land to the west of the Allen Airway Museum leasehold. Approximately 3 acres are available and could support hangar buildings and tie-down spaces. This area is planned to be developed as transient ramp as suggested by FAA. However, in the future it could be converted to based aircraft tie-down if there is low use of the ramp by transient aircraft. It would also be possible to construct sun shades on the apron without conflicting with FAA grant assurances.

Construct Transient Aircraft Ramp (2006). The County has accepted a grant from FAA to construct a transient ramp. The project is located west of the Allen Airways leasehold. The intent is to provide enhanced access to the trolley, downtown San Diego and San Diego area. This ramp may be also used for based aircraft storage if transient demand does not materialize.

Close Airport Drive between Joe Crosson Drive and Wing Avenue (2006). In order to begin development of the 70-acre parcel for aviation use, it is necessary to close Airport Drive between Joe Crosson Drive and Wing Avenue to prevent the mixing of aircraft and vehicular traffic. It is expected that a cul-de-sac is constructed near the entrance to the parking lot for the present airport administration building. Proper signage should be designed as part of the project to clarify way finding and minimize potential vehicle turnarounds on Joe Crosson Drive.

Site Preparation (2006). It is assumed that once the lease expires on the 70-acre parcel that the County will commence a site preparation program so that the parcel can be developed into aviation use as soon as possible. This project involves the preparation of the northern half of the site including demolition of the speedway and motor cross track (including above ground light standards), removal and disposition of demolished facilities, clearing and grubbing, identifying underground utilities and rough grading. Drainage improvements and utility requirements may be designed to accommodate Phase 1 based aircraft storage facilities for the site, with the infrastructure extended as the parcel builds out. Utility issues may involve lowering a water line at the northeast corner of the parcel.

Construct Conventional Hangar (2007). A 48,000 square foot conventional, bay-type hangar located east of the existing airport administration building will provide additional storage space for business jets. This project will require abandonment of existing transient parking spaces in order to provide sufficient ramp frontage for the hangar and closure of the County wash rack. The hangar will be provided good airfield access via Taxiway D. Ground access to the hangar will be via Joe Crosson Drive.

Construct Based Aircraft Storage Facilities (2007-2009). Approximately 155 hangars are required to be developed in Phase 1 on the 70-acre parcel. This is the last parcel available to accommodate facility requirements for aviation uses. Hangar development in this phase is proposed to occur along Joe Crosson Drive in ten hangar buildings that provide 160 aircraft spaces. Approximately 72 tie-down spaces are also provided in the central "spine" of the parcel. The initial construction of hangars is assumed to occur over a three year period and is contingent upon demand and funding. Access will be via Joe Crosson Drive, with auto parking also provided along the street but outside future security fencing.

Utilities

The site preparation project for the 70-acre parcel will involve the identification of existing utilities and construction of utilities required to support future aviation development on the parcel. Two other projects should be considered.

Upgrade Existing Emergency Generator and Building. This involves constructing a new building with emergency generators and regulators near the Airport Maintenance building. This may be separated from the area near the Airport Traffic Control Tower for security.

Upgrade Existing Electrical Vault. Considering the proposed application of RPZ 200 feet beyond the runway ends and lighting upgrades and additions, the adequacy of the existing electrical vault should be evaluated and upgraded as needed. This should include generator and regulator upgrades, spare regulator rack for the primary runway and taxiway, and access controls for security enhancements.

Land Acquisition

Property acquisition in fee simple is recommended to meet RSA, ROFA, RPZ and OFZ criteria beyond each end of Runway 17-35 and for future aviation development. Acquisition of additional avigation easements is recommended to obtain control of all areas within the Runway Protection Zones of Runways 9L-27R. Acquisition of property in fee and easement is proposed to begin in 2005 and extend over several years and is depicted on the ALP (Figure 7-1).

Three parcels located beyond the north end of Runway 17-35 and encompassing approximately 2.2 acres should be acquired. Approximately 10 acres south of Bradley Avenue within the Runway 35 RPZ and approximately 7.2 acres north of Prospect Avenue with the Runway 17 RPZ should also be acquired. Property acquisition in fee also involves one parcel located beyond the south end of Runway 17-35 totaling approximately 5.2 acres. The acquisition of property on the south end will also provide an area suitable for parking of heavy helicopters, which is an issue during fire season. Approximately 4.9 acres located east of Johnson Avenue and north of Bradley Avenue are recommended for acquisition for future aviation use. A 0.1 acre parcel located in the northeast corner of the airport should be acquired and will permit the development of a run-up pad.

The ALP depicts areas for which avigation easements should be acquired. The acquisition of additional avigation easements involves area within currently specified FAA RPZ that are not covered by an existing easement. The following areas should be covered by new easements:

- Runway 9L – 1.5 acres
- Runway 27R – 5.7 acres

These easements will provide coverage for runway protection zones shown on the Airport Layout Plan. It should be noted that future circulation and access improvements by local and state jurisdictions in the immediate vicinity of the airport should include measures acceptable to the County to maintain FAA design standards and the integrity of airspace and airport operations. This would include potential improvements to Bradley Avenue, Magnolia Avenue, Prospect Avenue and potential freeway improvements.

Release of Property from Aeronautical Use

Areas west of Marshall Avenue between the trolley tracks are not required to meet aviation demand and are constrained due to lack of airfield access. Approximately 13 acres has been identified as available for non-aeronautical compatible uses. Hangar development depicted in Figure 7-1 represents the ultimate, long-term requirements and it can be seen that essentially all available space suitable for aircraft storage and aviation uses will be utilized. It is concluded that the lands indicated for release are not needed for aeronautical purposes and complete disposal of these areas should be considered. Prior to disposal, these areas may be considered by the County for other possible airport or County functions. The latter could include airport uses such as airport electric vault, potential control tower site, or County airport maintenance yard.

The County may opt to sell or lease the released property. To obtain FAA consent to release airport properties for non-aeronautical use, certain procedures and documentation are required. The first step, which is being accomplished as part of this study, is to update the ALP and indicate areas to be released, as shown in Figure 7-1. If FAA concurs that all airport needs are satisfied, then they will approve the ALP.

Once this is accomplished and the sponsor is ready to convert the lands to non-aeronautical use, then the County must make a written request to FAA for release of the property and any compliance requirements from previous airport agreements. This must include the following where applicable:

- Statement of what agreement with the United States are involved (such as Grant Deed).
- What is requested for release and why.
- Justification of release.
- Statement of property involved and present use and condition of property.
- What is the intended use of the property.
- Comparison of the relative advantages to the airport from the release, as opposed to retention for rental income.
- How the property was obtained or acquired by the sponsor.
- What is the condition and present use of the area involved.
- What proceeds are expected from disposed use and what will be done with any revenues derived.
- What is the appraised fair market value of the property or facilities.
- Identification of intangible benefits, if any, accruing to the airport.
- Statement of airport's source and application of funds for prior three years.
- Statement of future sources and application of funds needed for continued operation and maintenance of the airport.
- Statement of the financial capability and intent to develop the airport as stated in the National Plan of Integrated Airport Systems.

Copies of the updated ALP should be attached to the letter request.

The County's request will be reviewed and evaluated by FAA based upon the following considerations:

- Past and present compliance record of the County under all previous agreements with the FAA.
- Reasonableness and practicality of the request in terms of future aeronautical needs and priorities.
- Net benefits to be derived by civil aviation and compatibility of the proposal with civil aviation needs.
- Consistency with internal guidelines and policy.

After review and approval by FAA, they will notify the Sponsor (County) of approval and the release usually with some conditions. For example, these may state that the property may be released provided that the proposed development will not cause hazards to aircraft operations (smoke, bird hazards, etc.) or be incompatible with airport operations (structures and antennas). Also, in this case where the release would involve sale or other disposition of airport property, the FAA's consent may require the County to commit to provide reimbursement of Federal funds expended, or to apply net proceeds of the disposition for the maintenance, operation, or improvement of the Airport. If so, a binding commitment obligating the County will be required.

Other Action Items

Cost Estimate and Financial Plan. The ALP Update for Gillespie Field did not include the preparation of construction cost estimates and financial plan for recommended improvements. The County should prepare cost estimates for recommended improvements, as well as identifying likely funding sources, including the private sector, so that the fiscal requirements for the County may be identified and prioritized.

Update Comprehensive Land Use Plan. Updating of the Gillespie Field Comprehensive Land Use Plan (CLUP) is the responsibility of the San Diego County Regional Airport Authority (SDCRAA). However, information prepared as part of this ALP Update and Narrative report are directly applicable to the CLUP and should be considered by SDCRAA with respect to the CLUP. Items that are most relevant to the CLUP are runway configuration, FAR Part 77 imaginary surfaces, State of California safety zones, and noise contours. Issues related to the CLUP are more fully described later in this chapter, but in terms of an action item, the County should submit the future noise contours, FAR Part 77 surfaces and safety zones contained herein to the SDCRAA for the purpose of updating the CLUP.

Prepare Master Plan and Environmental Analysis. A master plan for Gillespie Field should be prepared that includes the ALP Narrative Report, cost estimates, financial plan (described above), further airport planning and appropriate environmental document in accordance with CEQA.

Phase 2 Development (2010- 2014)

Medium range development, covering the period 2010 to 2014 is depicted on the ALP as Phase 2. Phase 1 development focused on immediate airfield improvements and development of the 70-acre parcel for aviation uses. Phase 2 development addresses additional airfield improvements and continuation of development on the 70-acre parcel. The following improvements are recommended during this period.

Airfield Improvements

Runway 17-35 Rehabilitation. Similar to current pavement rehabilitation projects for Runways 9R-27L and 9L-27R, a pavement rehabilitation project is proposed in this phase. It involves construction of a two-inch asphalt overlay of the runway. The actual timing will be dependent on the pavement condition and effectiveness of the slurry seal constructed in Phase 1.

Construct run-up pad Runway 27R. A run-up pad/holding apron is recommended for Runway 27R. This will provide a standing space for airplanes awaiting final ATC clearance and will enhance the maneuverability for holding airplanes. There is a major water main in the area of this planned improvement that will need to be relocated. This will require coordination between the County and service provider. Construction of noise barriers should be considered during the design process to assess their need and appropriate design.

Runway/Taxiway Intersections. A centerline 75-foot radius curve is required for a runway-taxiway intersection for ARC B-II standards. This is not available on all taxiways that intersect a runway. The following intersections do not meet FAA taxiway design standards: Taxiway C2 (the west fillet on the north side of the runway), Taxiway A (at the north and south sides of Runway 9L-27R), Taxiway B (east fillet on the south side of the runway and west fillet on the north side of the runway), and Taxiway C3 (the entrance fillet for the runway). Construction of improvements to widen these runway-taxiway intersections is recommended. These enhancements may be included within the scope of other airfield projects and should consider a specific critical aircraft (greater than ARC B-II) to the extent applicable.

Landside Improvements

Construct General Aviation Terminal/Airport Administration Building (Phase 2). A new GA terminal and airport administration building is proposed in the development program which will provide a site for a new helicopter hangar. The terminal building will serve general aviation functions and will include office space for County Airports personnel. The building should be expandable to provide additional facilities for commuter operations should demand materialize, and the location of the building as shown on the ALP depicts possible expansion. The project also includes new tie-downs for 37 transient aircraft as follows: approximately 30 tie-downs can be located on the south side of the terminal building, and seven new tie-downs added on the present apron.

Construct Helicopter Area (Phase 2). This project involves transforming the existing terminal building area into a helicopter area designed to serve relatively light helicopters. This includes demolition of the existing airport administration/terminal building and construction of a 20,000 SF hangar. The existing terminal area ramp will be converted to helicopter parking uses. The helicopter area is not intended for heavy helicopters, or aircraft for law enforcement, medical/air ambulance or federal/state fire fighting operations. These activities will remain on present leaseholds. Temporary parking for heavy fire-fighting helicopters is proposed on land to be acquired at the south end of Runway 35. The land is being acquired for runway safety area requirements but will also provide space for heavy helicopter parking.

Construct Based Aircraft Storage Facilities (Phase 2). This project involves extension of the hangar and tie-down development on the 70-acre site that was initiated in Phase 1. Approximately 62 hangars are required to be developed in Phase 2 on the 70-acre parcel. This is proposed to occur along Joe Crosson Drive in two hangar buildings that provides 32 aircraft spaces, with an additional 30 spaces provided in two buildings located on the east side of the parcel along Wing Avenue. Automobile parking for the hangar facilities is proposed along Joe Crosson Drive and Wing Avenue. Approximately 16 tie-down spaces are also provided by extending the central ramp of the parcel approximately 225 feet to the south.

Construct Conventional Hangars (Phase 2). A 42,000 square foot conventional, bay-type hangar suitable for business jets is proposed this phase on the east side of the 70-acre parcel along Wing Avenue. Area south of this proposed conventional hangar should be preserved to accommodate a second, similar hangar building. A 10,000 square foot hangar, suitable for aircraft maintenance and/or storage is also proposed along Wing Avenue. This smaller hangar is proposed for the area to the north of the above-described hangar developed in this phase.

Phase 3 Development (2015- 2025)

Development recommended under Phase 3, or long-term portion of the planning period, covers the period 2015 to 2025. As such, the improvements discussed below are considered to be of the lowest priority and implementation is recommended only if activity materializes or conditions warrant. Recommendations for Phase 3 development consist of the following projects.

Airfield Improvements

Relocate Taxiways A and B. By this time period long-term leases will be close to expiring and the County should begin programming and planning the ultimate relocation of Taxiways A and B. A runway centerline to taxiway centerline separation of 240 feet is depicted on the Airport Layout Plan in accordance with ARC B-II airport design standards. The ability to relocate Taxiways A and B will depend on the expiration of leases.

Construct 423-foot extension on west end of Runway 9R-27L. Extending the runway 423 feet will provide an ultimate runway length of 3,160 feet. This will accommodate 95 percent of all small airplanes with less than 10 passenger seats and enhance the utilization of the runway.

Slurry Seal Runways and Associated Taxiway Pavements. A slurry seal of all airfield pavements is assumed to be required in the long-term. This includes the application of slurry seal and new pavement markings to all runways and associated taxiways in conjunction with the preparation by the County of an FAA approved Pavement Management Plan per FAA Advisory Circular 150/5380-7, Pavement Management System.

Replace VASI with PAPI. Runways 9L, 17 and 35 are equipped with FAA VASI systems. Replacement of the VASI with PAPI systems is assumed to occur in Phase 3. The timing will be contingent on the operation and reliability of the existing systems and FAA priorities as these are currently being maintained by FAA.

Enhanced Instrument Approach Procedure. It is assumed that development of a published non-precision instrument approach procedure with straight-in minimums for Runway 27R will be possible in the future and supported by GPS technology. The FAA indicated that a non-precision instrument approach procedure, if feasible, should not impact the location of the displaced threshold of Runway 27R provided that the minimum visibility is limited to one mile and distant terrain penetrations are marked and lighted.

Landside Improvements

Construct Based Aircraft Storage Facilities. This project involves the build-out of hangar and tie-down development on the 70-acre site. Approximately 128 hangar spaces are developed in Phase 3 on the southern part of the 70-acre parcel. One 16-unit building, one 15-unit building, one 13-unit building, and one 8-unit building are proposed to occur along Joe Crosson Drive to the southern boundary of the parcel. Four 15-unit hangar buildings and one 4-unit building are proposed on the east side of the parcel along Wing Avenue. Automobile parking for the hangar facilities is proposed along Joe Crosson Drive and Wing Avenue. Two rows of 6-unit hangar buildings may be "in-filled" at the south part of the central ramp area of the parcel. The timing of this last development will be contingent on the demand for hangar space and could be required sooner if demand warrants.

Construct Conventional Hangar. A second 42,000 square foot conventional, bay-type hangar is proposed to the south of a similar hangar constructed in Phase 2. This is located on the east side of the 70-acre parcel along Wing Avenue and will serve business aircraft.

Construct Aircraft Rescue and Fire Fighting (ARFF) Building. Based on the forecast of aircraft operations the airport will meet requirements for an Index 1 ARFF facility by the year 2025. This will involve construction of a building to house required fire equipment (one vehicle) and associated support space. The location of the proposed ARFF is the northwest corner of the airport to the east of Classic Hangars. This site was suggested by users to be not suitable for based aircraft storage facilities, but is capable of supporting ARFF functions. It is strategically located with respect to immediate access to the main runway, with landside access also possible to the site. The development of the facility should consider applicable security requirements. An Aircraft Rescue and Fire Fighting vehicle should also be acquired.

Relocate Airport Traffic Control Tower (ATCT) Building. The existing control tower is located in the Runway Visibility Zone and does not comply with RVZ criteria. It is also assumed to require upgrading during the planning period due to increased airport activity and aging ATCT facilities. This may involve construction of replacement facilities. The timing will be dependent upon FAA programs. The Airport Layout Plan depicts three potential ATCT sites, but it is noted that the ultimate location will be based on an FAA siting study and criteria contained in FAA Order 6480.4, Airport Traffic Control Tower Siting Criteria. The three potential sites identified on the ALP are: a site adjacent to the existing FAA Airport Traffic Control Tower, a location north of Taxiway C and west of Runway 17-35, and a location near the intersection of Taxiways B and D in the vicinity of the County helipads (H1 and H2). Each will present unique issues in terms of construction, access, security, visibility, and FAR Part 77. Construction of a control tower north of Taxiway C and west of Runway 17-35 would eliminate ATCT line-of-sight issues on the south side of the airport. Since the timing of the relocation of the control tower is dependent on FAA programs and not likely in the near-term, this suggests the need for private sector funding of new control tower development.

Phasing

The timing of recommended improvements depicted on the ALP and previously described are summarized in tabular form in Table 7-1 and graphically presented in Figure 7-4. Specific years are indicated for improvements recommended in the first development phase, whereas improvements for Phases 2 and 3 are shown by phase.

AIRPORT AIRSPACE PLAN

The Airport Airspace Plan, presented as Figure 7-5, depicts the imaginary surfaces on and around Gillespie Field through which no object should penetrate without being properly marked. The dimensions and criteria employed in determining these surfaces, as discussed below, are those outlined in the Federal Aviation Regulations, Part 77 Objects Affecting Navigable Airspace. The imaginary surfaces are based upon the ultimate runway configuration depicted on the Airport Layout Plan and therefore assumes a 423-foot extension of the west end of Runway 9R-27L. Criteria for runways categorized in Part 77 has been applied as follows:

- Runway 27R – "Other than utility" runway with non-precision instrument approach with visibility greater than ¾ statute mile.
- Runway 9L - "Other than utility" runway with visual approach.
- Runway 17 – Utility runway having non-precision instrument approach.
- Runways 35, 9R and 27L – Utility runways having only visual approaches.

Consistent with the ALP, it is assumed that a non-precision instrument approach procedure to Runway 27R based on GPS technology is possible at some point in the future, and therefore the Airport Airspace Plan protects for this contingency. Runway end and associated imaginary surface elevations are based on the latest Obstruction Chart (OC) published by the National Geodetic Survey.[2] The FAR Part 77 imaginary surfaces shown in Figure 7-5 are different than those shown on the latest OC. The basis of the surfaces shown in Figure 7-5 is explained below.

The ***horizontal surface*** is a horizontal plane 150 feet above the established airport elevation, which in the case of Gillespie Field is 537 feet above mean sea level. The perimeter of the horizontal surface is delineated by arcs of radius 10,000 feet from the center of the primary surface of each end of Runway 9L-27R, and arcs of 5,000 feet for the other runways. A 10,000 foot arc is used since the runway is not a utility runway and a non-precision instrument approach is assumed for Runway 27R in the future. Adjacent arcs are connected by lines that are tangent to these arcs. In this case, the 5,000 foot arcs are encompassed by the tangents connecting the two 10,000 foot arcs and therefore the 5,000 foot arcs are disregarded.

[2] OC 5402 – Edition 8. Surveyed March 1997. The National Geodetic Survey, U.S. Department of Commerce.

Table 7-1
SUMMARY OF RECOMMENDED IMPROVEMENTS

Project	Timing
Phase 1 (2005-2009)	
Relocate R/W 27R Displaced Threshold and Remove and/or Light Obstructions	2005
Improve Runway Safety Areas to Meet FAA Standards	2005/2006
Prepare Master Plan and Environmental Analysis	2005
Prepare Cost Estimate and Financial Plan	2005
Provide SDCRAA Information for CLUP Update	2005
Acquire Property (fee simple)	2005 – 2008
Acquire Avigation Easements	2005
Release Property from Aeronautical Use (west of Marshall Avenue)	2005
Relocate and extend Taxiway C to the West	2005
Reconstruct Existing Transient Ramp	2005
Construct Based Aircraft Storage on Existing Leaseholds	2005 – 2006
Construct Transient Aircraft Ramp south of T/W D at west end of R/W 9L-27R	2006
Slurry Seal Runway 17-35 and Associated Taxiways	2006
Close Airport Drive between Joe Crosson and Wing Avenue	2006
Site Preparation of 70-acre Parcel	2006
Construct Emergency Generator Building	2006
Airfield Lighting Improvements – PAPI R/W 27L	2007
Upgrade Existing Electrical Vault	2007
Construct 48,000 SF Hangar	2007
Construct Based Aircraft Storage Facilities on 70-acre Parcel	2007 – 2009
Construct Airfield Dust Control Improvements (infield areas along R/W 17-35)	2008
Construct Heavy Helicopter Parking Area	2009
Phase 2 (2010 – 2014)	
Runway 17-35 Rehabilitation	Phase 2
Construct Run-up Pad R/W 27R	Phase 2
Enhance Runway/Taxiway Intersections (fillets)	Phase 2
Construct General Aviation Terminal/Airport Administration Building	Phase 2
Construct Helicopter Area	Phase 2
Construct Additional Based Aircraft Storage Facilities	Phase 2
Construct Conventional Hangars (42,000 SF and 10,000 SF)	Phase 2
Phase 3 (2015 – 2025)	
Relocate Taxiways A and B to comply with ARC B-II criteria	Phase 3
Construct 423-foot Extension on West End of R/W 9R-27L	Phase 3
Slurry Seal Runways and Associated Taxiways & Prepare Pavement Management Plan	Phase 3
Construct Additional Based Aircraft Storage Facilities	Phase 3
Construct Conventional Hangar (42,000 SF)	Phase 3
Construct Aircraft Rescue and Fire Fighting (ARFF) Building	Phase 3
Acquire ARFF Vehicle	Phase 3
Relocate/Upgrade Airport Traffic Control Tower (ATCT) Building	Phase 3
Replace Existing VASI with PAPI	Phase 3
Develop Enhanced Instrument Approach Procedure Based on Available Technologies	Phase 3

Source: P&D Aviation

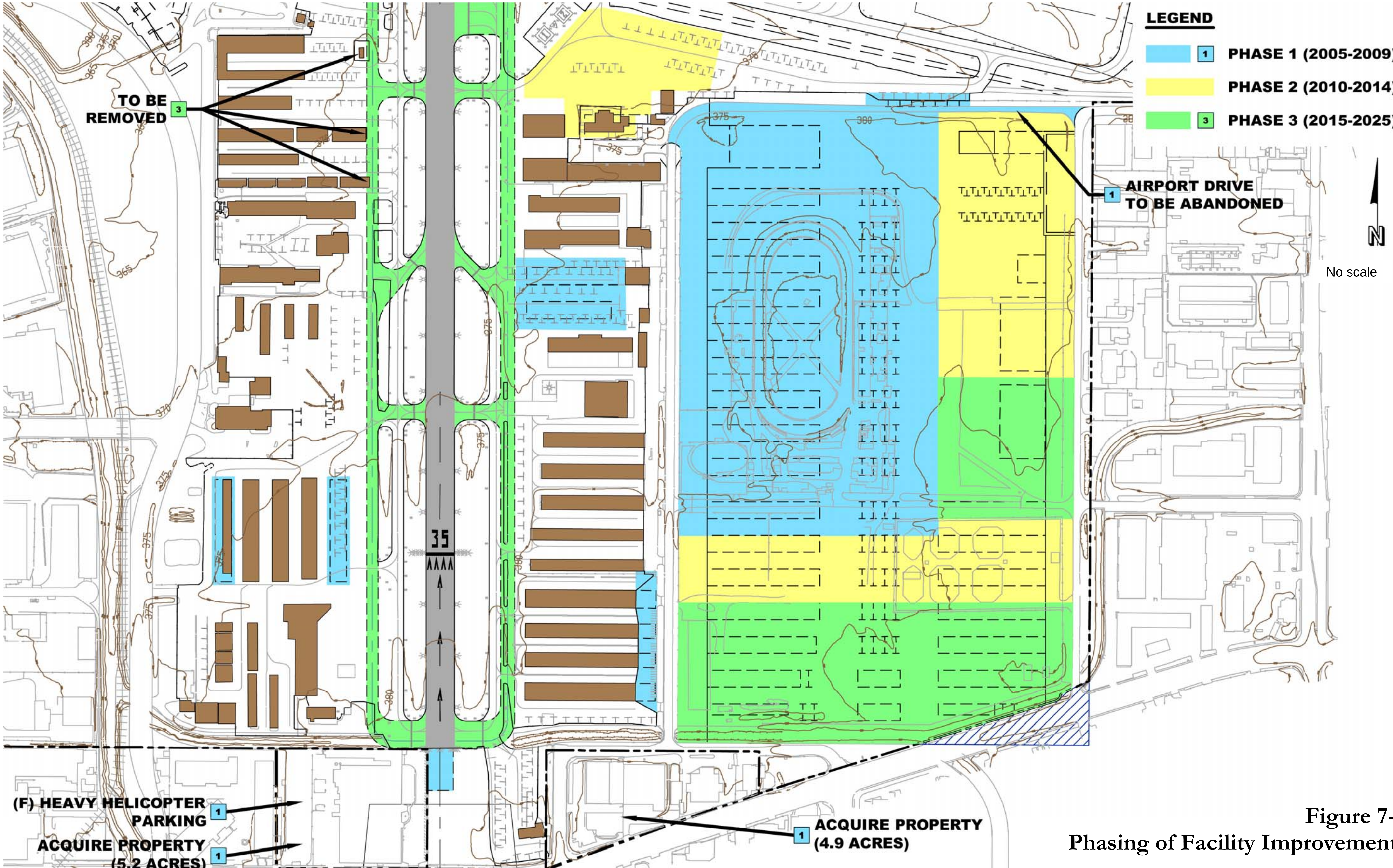
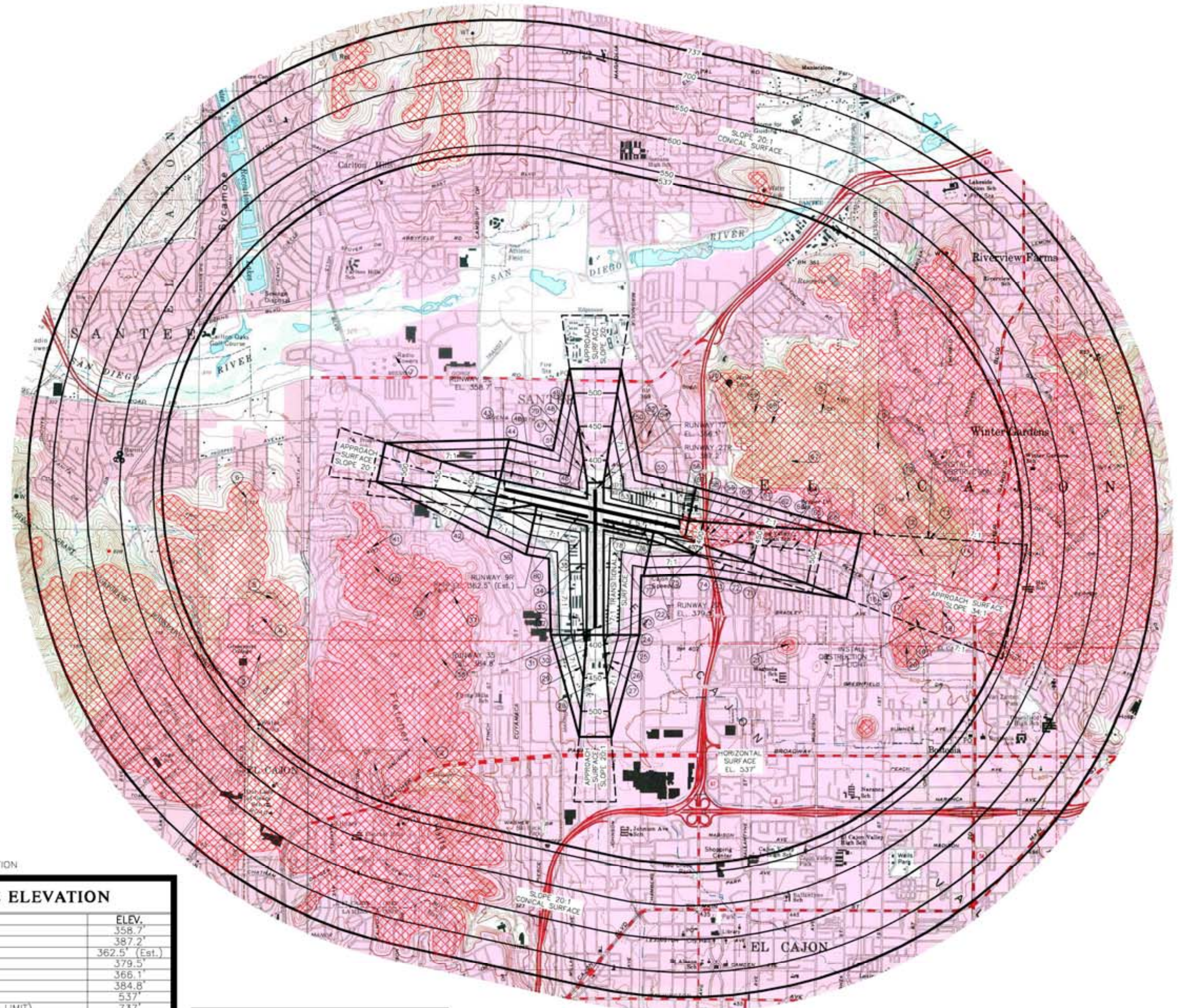


Figure 7-4
Phasing of Facility Improvements



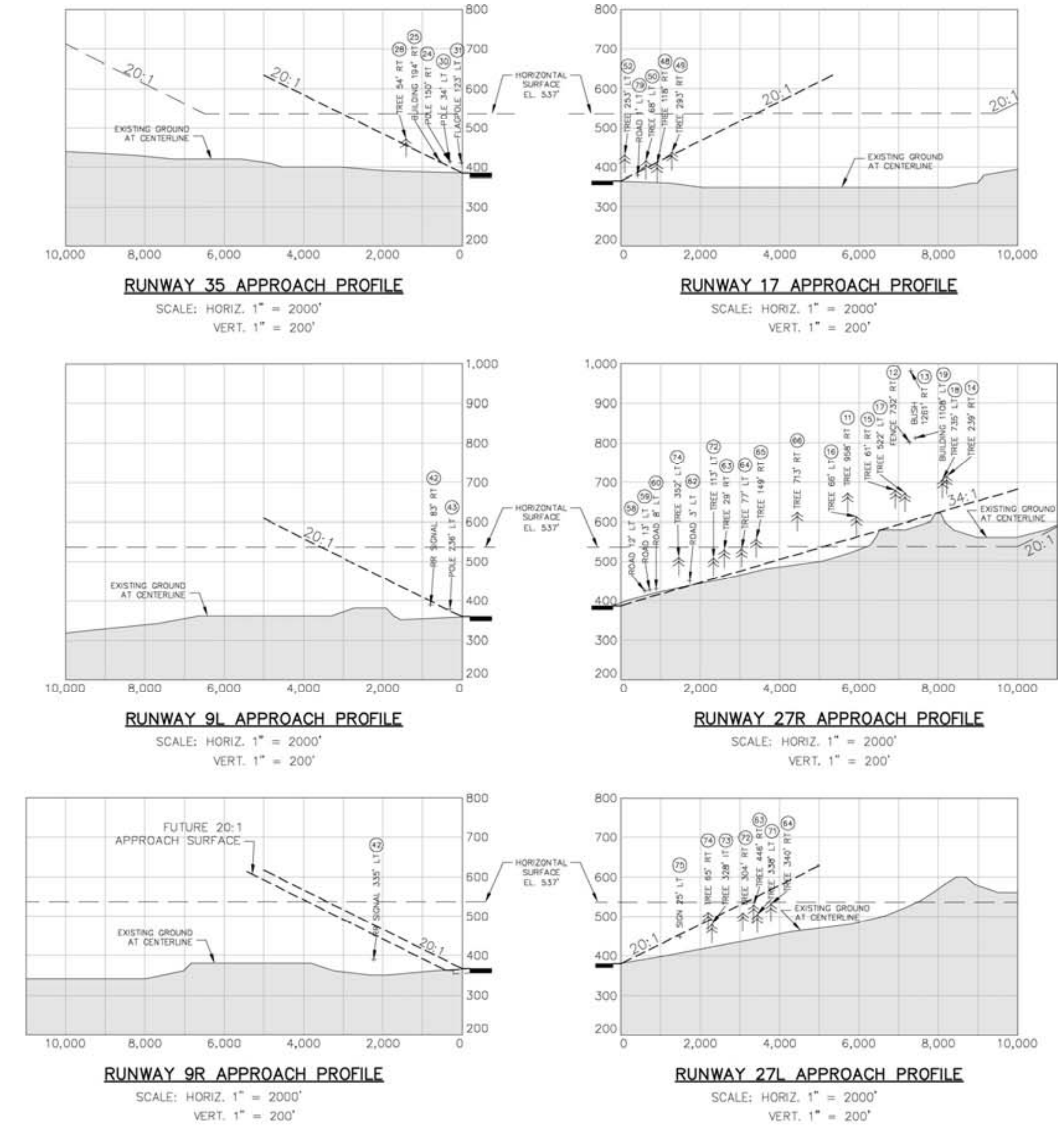
LEGEND:
GROUND PENETRATION

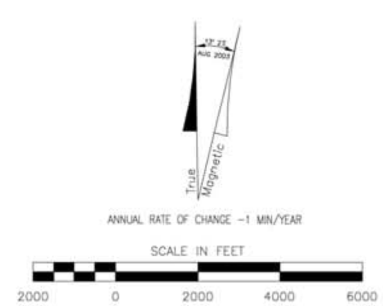
SURFACE ELEVATION	
SURFACE	ELEV.
END OF RUNWAY 9L	358.7'
END OF RUNWAY 27R	387.2'
END OF RUNWAY 9R	362.5' (Est.)
END OF RUNWAY 27L	379.5'
END OF RUNWAY 17	366.1'
END OF RUNWAY 35	384.8'
HORIZONTAL SURFACE	537'
CONICAL SURFACE (UPPER LIMIT)	737'
APPROACH SURFACE (9L)–UPPER LIMIT	608.7'
APPROACH SURFACE (27R)–UPPER LIMIT	681.3'
APPROACH SURFACE (9R)–UPPER LIMIT	612.5'
APPROACH SURFACE (27L)–UPPER LIMIT	629.5'
APPROACH SURFACE (17)–UPPER LIMIT	616.1'
APPROACH SURFACE (35)–UPPER LIMIT	634.8

USGS MAPS USED FOR BASE
7.5 MIN. QUAD
EL CAJON (1996)
LA MESA (1994)

OBSTRUCTION IDENTIFICATION TABLE

OBS. No.	DESCRIPTION	ELEV.	PENETR.	SURFACE	PROPOSED ACTION
1	TREE	898'	361'	HORIZONTAL	TO REMAIN
2	TREE	870'	333'	HORIZONTAL	TO REMAIN
3	TREE	795'	258'	HORIZONTAL	TO REMAIN
4	TREE	788'	251'	HORIZONTAL	TO REMAIN
5	GROUND	745'	208'	HORIZONTAL	TO REMAIN
6	BUSH	722'	185'	HORIZONTAL	TO REMAIN
7	TOWER	533'	-4'	HORIZONTAL	TO REMAIN
8	BUSH	1052'	515'	HORIZONTAL	TO REMAIN
9	POLE	1172'	635'	HORIZONTAL	TO REMAIN
10	ANTENNA	1273'	736'	HORIZONTAL	TO REMAIN
11	TREE	672'	123'	APPROACH	TO REMAIN
12	FENCE	802'	207'	APPROACH	TO REMAIN
13	BUSH	981'	385'	APPROACH	TO BE LIGHTED
14	TREE	715'	92'	APPROACH	TO REMAIN
15	TREE	679'	94'	APPROACH	TO REMAIN
16	TREE	613'	57'	APPROACH	TO REMAIN
17	TREE	672'	80'	APPROACH	TO REMAIN
18	TREE	706'	86'	APPROACH	TO REMAIN
19	BUILDING	813'	213'	APPROACH	TO BE LIGHTED
20	POLE	774'	237'	HORIZONTAL	TO REMAIN
21	TREE	632'	95'	HORIZONTAL	TO REMAIN
22	FENCE	393'	8'	PRIMARY	TO BE REMOVED
23	BUILDING	421'	22'	TRANSITIONAL	TO BE REMOVED
24	POLE	416'	16'	APPROACH	TO BE LIGHTED
25	BUILDING	415'	2'	APPROACH	TO REMAIN
26	TREE	470'	23'	TRANSITIONAL	TRIM/REMOVE
27	TREE	465'	30'	TRANSITIONAL	TRIM/REMOVE
28	TREE	472'	16'	APPROACH	TRIM/REMOVE
29	TREE	473'	32'	TRANSITIONAL	TRIM/REMOVE
30	POLE	414'	14'	APPROACH	TO REMAIN
31	FLAGPOLE	411'	25'	APPROACH	TO BE REMOVED
32	POLE	428'	38'	TRANSITIONAL	TO REMAIN
33	WINDSOCK	411'	1'	TRANSITIONAL	TO REMAIN
34	HANGAR	393'	0'	TRANSITIONAL	TO REMAIN
35	ANTENNA	471	63'	TRANSITIONAL	TO REMAIN
36	WINDSOCK	366'	9'	PRIMARY	TO REMAIN
37	TREE	655'	118'	HORIZONTAL	TO REMAIN
38	TREE	783'	246'	HORIZONTAL	TO REMAIN
39	ANTENNA	821'	287'	HORIZONTAL	TO REMAIN
40	TREE	721'	184'	HORIZONTAL	TO REMAIN
41	TREE	654'	117'	HORIZONTAL	TO REMAIN
42	RR SIGNAL	390'	1'	APPROACH	TO REMAIN
43	POLE	378'	14'	APPROACH	TO REMAIN
44	TREE	428'	54'	TRANSITIONAL	TRIM/REMOVE
45	BUILDING	387'	16'	TRANSITIONAL	TO REMAIN
46	WINDSOCK	373'	8'	PRIMARY	TO REMAIN
47	TREE	435'	31'	TRANSITIONAL	TRIM/REMOVE
48	TREE	408'	-3'	APPROACH	TO REMAIN
49	TREE	438'	8'	APPROACH	TRIM/REMOVE
50	TREE	416'	18'	APPROACH	TRIM/REMOVE
51	TREE	411'	45'	PRIMARY	TO BE REMOVED
52	TREE	431'	60'	APPROACH	TO BE REMOVED
53	BUILDING	388'	22'	PRIMARY	ACQUIRE & REMOVE
54	TREE	622'	85'	HORIZONTAL	TO REMAIN
55	ROCKET	473'	-12'	TRANSITIONAL	TO REMAIN
56	GROUND	395'	8'	PRIMARY	TO BE REMOVED
57	GROUND	398'	11'	PRIMARY	TO BE REMOVED
58	ROAD	425'	26'	APPROACH	TO REMAIN
59	ROAD	428'	25'	APPROACH	TO REMAIN
60	ROAD	430'	23'	APPROACH	TO REMAIN
61	TREE	519'	67'	TRANSITIONAL	TRIM/REMOVE
62	ROAD	450'	18'	APPROACH	TO REMAIN
63	TREE	530'	72'	APPROACH	TO REMAIN
64	TREE	532'	61'	APPROACH	TO REMAIN
65	TREE	557'	75'	APPROACH	TO REMAIN
66	TREE	624'	112'	APPROACH	TO REMAIN
67	POLE	944'	407'	HORIZONTAL	TO REMAIN
68	GROUND	877'	340'	HORIZONTAL	TO REMAIN
69	POLE	825'	288'	HORIZONTAL	TO REMAIN
70	FENCE	690'	153'	HORIZONTAL	TO REMAIN
71	TREE	505'	26'	TRANSITIONAL	TO REMAIN
72	TREE	509'	59'	APPROACH	TO REMAIN
73	TREE	480'	-1'	TRANSITIONAL	TO REMAIN
74	TREE	511'	87'	APPROACH	TO REMAIN
75	SIGN	448'	29'	TRANSITIONAL	TO REMAIN
76	WINDSOCK	383'	6'	PRIMARY	TO REMAIN
77	ANTENNA	424'	1'	TRANSITIONAL	TO REMAIN
78	WINDSOCK	399'	30'	PRIMARY	TO REMAIN
79	ROAD	379'	-8'	APPROACH	TO REMAIN
80	ANEMOMETER	391'	26'	TRANSITIONAL	TO REMAIN





Reduced Copy

NOTES:

1. All elevations are in feet above Mean Sea Level (MSL).
2. Obstacle data based on OC 5402 – Edition 8. Survey March 1997. National Geodetic Survey.
3. Ground profile represents terrain on the extended centerline.
4. Obstacles shown in profiles are within the approach surface. See Sheet 4 for close-in obstructions.
5. Negative elevations in the Obstruction Identification Table represent distance clear to specified surface.

This is a reduced version of a large size drawing.

Figure 7-5
Airport Airspace Plan

The ***conical surface*** extends outward and upward from the edge of the horizontal surface at a slope of 20:1 for a horizontal distance of 4,000 feet. Thus, the elevation of the conical surface at its outermost edge is 737 feet above mean sea level.

The ***primary surface*** is defined as being longitudinally centered on the runway for a width dependent on the type of runway and extending 200 feet beyond each end of the landing threshold. The applicable width for the primary surface at Gillespie Field is 500 feet for Runways 9L-27R and 17-35, and 250 feet for Runway 9R-27L, as specified in Part 77.

The slope and configuration of the runway ***approach surfaces*** vary as a function of runway type, length, and availability of instrument approaches. At Gillespie Field all approach surfaces extend 5,000 feet at a slope of 20:1, except for Runway 27R which extends 10,000 feet at a slope of 34:1. For Runway 27R the inner width is the same as the primary surface width (500 feet) and it expands uniformly to a width of 3,500 feet at a point 10,200 feet from the runway end. The approach surface intersects the horizontal surface at 537 feet MSL. This is approximately 5,100 feet from the runway end.

For Runway 9L the inner width of the approach surface is 500 feet and it expands to a width of 1,500 feet at a point 5,200 feet from the runway end. The approach surface intersects the horizontal surface approximately 3,570 feet from the runway end. For Runway 17 the inner width of the approach surface is 500 feet and it expands to a width of 2,000 feet at a point 5,200 feet from the runway end. The approach surface intersects the horizontal surface approximately 3,420 feet from the runway end. For Runway 35 the inner width of the approach surface is 500 feet and it expands to a width of 1,250 feet at a point 5,200 feet from the runway end. The approach surface intersects the horizontal surface approximately 3,048 feet from the runway end. For Runways 9R and 27L the inner width of the approach surface is 250 feet and it expands to a width of 1,250 feet at a point 5,200 feet from the runway end. The approach surface intersects the horizontal surface approximately 3,494 feet from the end of Runway 9R and 3,154 feet from the end of Runway 27L. The approach surfaces of Runway 9R-27L are largely disregarded as they are less critical than transitional surfaces associated with Runway 9L-27R. Profile views of the approach surfaces are also shown on Figure 7-5.

The ***transitional surfaces*** extend outward and upward at right angles to the runway centerline (and runway centerline extended) at a slope of 7:1 from the edges of the primary and approach surfaces.

There are numerous obstructions in the vicinity of Gillespie Field as defined on the latest OC. Many are trees that are recommended to be either trimmed or removed. As previously described in Figure 7-2 there are approximately 30 trees recommended for removal or trimming in order to move the displaced threshold of Runway 27R. An obstruction light on Rattlesnake Peak is also recommended and is associated with the relocation of the displaced threshold. Obstruction removal is also recommended in the approaches to Runways 17, 35 and 9L and involve trees in the approach surface or close in the transitional surfaces. A pole in the approach surface of Runway 35 is also recommended to be lighted. Other obstructions depicted on Figure 7-5 are expected to remain.

A major consideration in the regulation of off-airport land use is the height of tall structures in relation to the approach and departure surfaces for the runways, particularly the innermost portions of the surfaces, or those that are nearest the runways and contained within the Runway Protection Zones. The absence of appropriate controls can lead to the establishment of tall structures such as antennae, smoke stacks, etc. which are penetrations to the avigational surfaces described in FAR Part 77.

In order to control the future construction of obstacles which may hamper the safe operation of aircraft operating at Gillespie Field, it is recommended that this Airport Airspace Plan be incorporated in the zoning ordinances for the area surrounding the Airport.

RUNWAY PROTECTION ZONE PLAN

The proposed Runway Protection Zones (RPZ) are depicted in plan view on Figure 7-6. The existing runway protection zones were depicted on prior Gillespie Field ALPs as "clear zones" and in some cases were located with respect to displaced thresholds. This is not consistent with FAA standards that state that the RPZ begins 200 feet beyond the end of the area that is usable for takeoff or landing. The proposed RPZ for Runways 9L, 27R, 17 and 35 encompass 13.77 acres and extend off airport to various degrees.

Runway 9L. Approximately 1.5 acres along the north edge of the RPZ should be acquired through easement. Approximately twelve commercial/industrial structures are located in this area.

Runway 27R. Approximately 5.7 acres that primarily overlie State Route 67 and Magnolia Avenue should be acquired through easement.

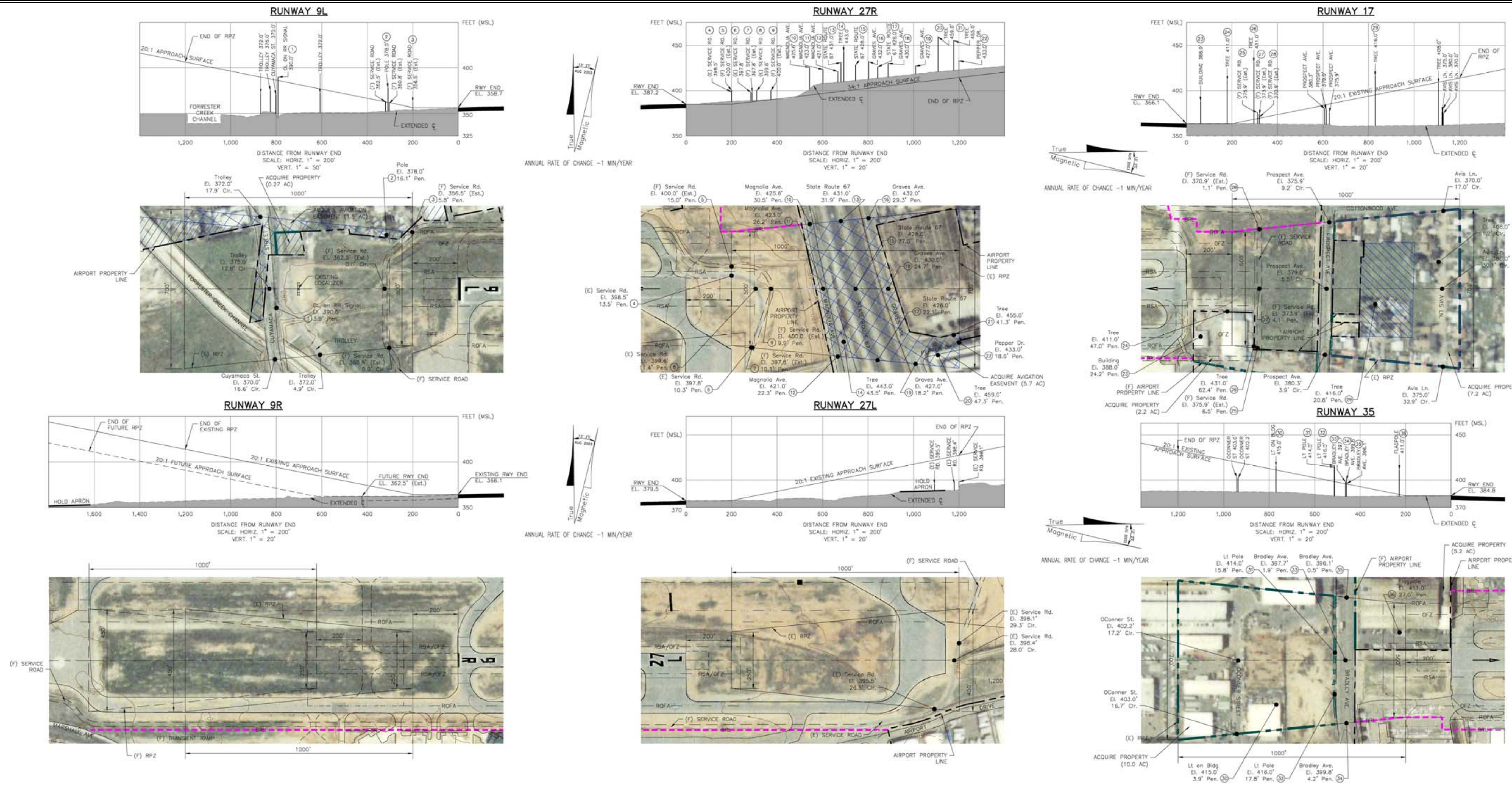
Runway 17. Several residences are located within the RPZ, which is inconsistent with FAA recommended land uses within RPZ. Approximately 7.2 acres located north of Prospect Avenue are within the RPZ (including 2.2 acres covered by existing easements). The Airport Layout Plan identifies this area to be acquired. This will reduce incompatible uses within the RPZ and the acquisition would be eligible for FAA funding.

Runway 35. Six industrial buildings are located within the Runway 35 RPZ south of Bradley Avenue. Approximately 10 acres of the RPZ lies off-airport and should be acquired.

Runways 9R and 27L. The RPZ each encompass 8.035 acres and are contained on airport property.

PROPERTY MAP – "EXHIBIT A"

This drawing, presented as Figure 7-7, shows various tracts of land within the airport boundary and indicates when each tract was acquired and the acreage of each tract. Easement interests outside the property line are also shown on an airport property map. An easement is presently held on approximately 5.6 acres on the northwest corner of the airport for RPZ protection. Easements totaling approximately 2.2 acres are held in the Runway 17 approach area. Some other easements exist on various portions near the airport boundary. Additional easements are recommended as previously described and as shown on the Airport Layout Plan. These areas are also depicted on Figure 7-7. Figure 7-7 also depicts areas to be acquired in fee, and areas west of Marshall Avenue to be released from aeronautical use.



OBSTRUCTION IDENTIFICATION TABLE

OBS. No.	DESCRIPTION	ELEV.	PENETR.	PROPOSED ACTION	OBS. No.	DESCRIPTION	ELEV.	PENETR.	PROPOSED ACTION
1	OL ON RR SIGNAL	390.0'	3.9'	TO REMAIN	19	GRAVES AVE.	427.0'	18.2'	TO REMAIN
2	POLE	378.0'	16.1'	TO REMAIN	20	TREE	459.0'	47.3'	TO BE REMOVED
3	(F) SERVICE RD.	356.5'*	5.8'	TOWER CONTROLLED	21	TREE	455'	41.3'	TO BE REMOVED
4	(E) SERVICE RD.	398.5'	13.5'	TO BE RELOCATED	22	PEPPER AVE.	433.0'	18.6'	TO REMAIN
5	(F) SERVICE RD.	400.0'*	15.0'	TOWER CONTROLLED	23	BUILDING	388.0'	24.2'	ACQUIRE & REMOVE
6	(E) SERVICE RD.	397.8'	10.3'	TO BE RELOCATED	24	TREE	411.0'	47.0'	TO BE REMOVED
7	(F) SERVICE RD.	397.8'*	10.1'	TOWER CONTROLLED	25	(F) SERVICE RD.	375.9'*	6.5'	TOWER CONTROLLED
8	(E) SERVICE RD.	398.5'	13.5'	TO BE RELOCATED	26	TREE	431.0'	62.4'	TO BE REMOVED
9	(F) SERVICE RD.	400.0'*	9.9'	TOWER CONTROLLED	27	(F) SERVICE RD.	373.9'*	4.1'	TOWER CONTROLLED
10	MAGNOLIA AVE.	425.6'	30.5'	TO REMAIN	28	(F) SERVICE RD.	370.9'*	1.1'	TOWER CONTROLLED
11	MAGNOLIA AVE.	423.0'	26.2'	TO REMAIN	29	TREE	416.0'	20.8'	TO BE REMOVED
12	MAGNOLIA AVE.	421.0'	22.3'	TO REMAIN	30	LT ON BLDG	415.0'	3.9'	TO REMAIN
13	STATE ROUTE 67	431.0'	31.9'	TO REMAIN	31	LT POLE	414.0'	15.8'	TO REMAIN
14	TREE	443.0'	43.5'	TO BE REMOVED	32	LT POLE	416.0'	17.8'	TO BE LIGHTED
15	STATE ROUTE 67	428.0'	27.0'	TO REMAIN	33	BRADLEY AVE.	397.7'	1.9'	TO REMAIN
16	GRAVES AVE.	432.0'	29.3'	TO REMAIN	34	BRADLEY AVE.	399.8'	4.2'	TO REMAIN
17	STATE ROUTE 67	426.0'	22.1'	TO REMAIN	35	BRADLEY AVE.	3961'	0.5'	TO REMAIN
18	GRAVES AVE.	430.0'	24.7'	TO REMAIN	36	FLAGPOLE	411.0'	4.4'	TO BE REMOVED

* Elevations are estimated.

ABBREVIATIONS:

- AVE. Avenue
- BLDG Building
- ℄ Centerline
- CLR. Clear
- DR. Drive
- (E) Existing
- EL Elevation
- EST. Estimate
- (F) Future
- LT. Light
- OL Obstruction Light
- PEN. Penetration
- RD. Road
- RR Railroad
- ST. Street

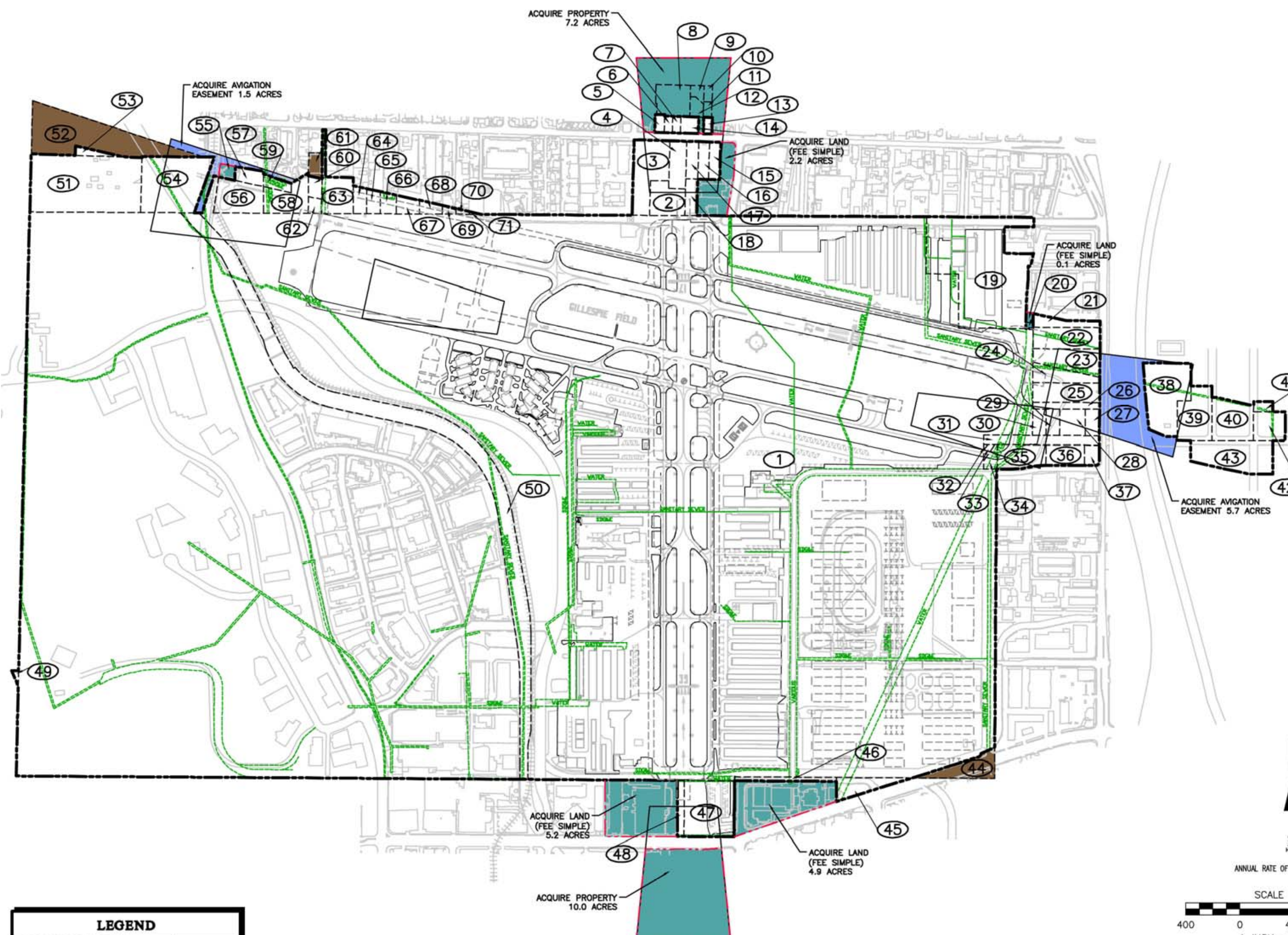
NOTES:

1. Elevations in feet above Mean Sea Level (MSL).
2. Obstacle data based on OC 5402 – Edition 8. Survey March 1997. National Geodetic Survey.
3. Profile views reflect extended runway center lines.

This is a reduced version of a large size drawing.

Figure 7-6
Runway Protection Zone Plan

TRACT	TYPE OF INTEREST	BOOK	PAGE	DOC. #	ACREAGE	DATE	COMMENTS
1	FEE	4888 5675	301 487		671.94	6-11-53 6-10-55	RE-RECORDED
2	FEE			73-185853	1.35	7-5-73	
3	FEE			73-308046	2.59	11-2-73	
4	FEE			74-240707	1.02	9-5-79	
5	FEE			77-443741	0.21	10-27-77	
6	FEE			77-490260	0.17	11-29-77	
7	FEE			78-098829	0.17	3-14-78	
8	EASEMENT			81-199573	1.34		APPROACH SURFACE EASEMENT
9	EASEMENT			77-400602	0.23	9-29-77	APPROACH SURFACE EASEMENT
10	EASEMENT			77-530431	0.17	12-23-77	APPROACH SURFACE EASEMENT
11	EASEMENT			77-400603	0.16	9-29-77	APPROACH SURFACE EASEMENT
12	EASEMENT			77-516847	0.31	12-14-77	APPROACH SURFACE EASEMENT
13	FEE			77-471183	0.17	11-15-77	
14	FEE			77-468240	0.36	11-14-77	
15	FEE			74-266633	0.53	10-3-74	
16	FEE			76-028800	0.51	1-30-76	
17	FEE			76-030653	.057	2-2-76	
18	EASEMENT FEE			73-001981 78-134859	0.55	1973 4-6-78	AVIGATION EASEMENT
19	FEE			74-117088	11.29	5-7-79	
20	FEE			74-117767	0.05	5-7-79	
21	FEE			74-117088	0.72	5-7-74	
22	FEE			65-068819	1.82	4-19-65	
23	FEE			65-074717	1.74	4-28-65	
24	FEE	6456	5510		1.10	2-14-57	
25	FEE	6180	5410		1.65	7-15-56	
26	FEE	6171	473		0.57	7-10-56	
27	FEE	6702	268		0.47	8-12-57	
28	FEE	6173	339		0.85	7-11-56	
29	FEE	7798	212		0.45	7-29-56	
30	FEE	6204	4		0.45	8-1-56	
31	FEE			61-138626	1.37	8-11-61	VAC
32	FEE			61-70103	0.01	4-24-61	
33	FEE			61-31336	0.10	2-21-61	
34	FEE			61-70103	0.31	4-24-61	
35	FEE			61-88020	1.40	8-22-61	
36	FEE			71-138263	0.97	6-28-71	
37	FEE			71-182001	0.37	8-16-71	
38	FEE	6306	205		3.44	10-19-56	
39	FEE	6157	9		2.14	6-26-56	
40	FEE	6994	190		2.07	3-14-58	
41	FEE	6157	5		0.24	6-27-56	
42	FEE	6469	202		1.16	2-25-57	
43	FEE	7798	215		2.95	7-29-59	
44	EASEMENT			76-432583	1.43		AVIGATION EASEMENT
45	FEE			82-303492	1.14	10-1-82	
46	FEE				0.52	7-18-61	
47	FEE			73-186911	3.56	7-6-73	FLOYD SMITH DRIVE (DEDICATED)
48	FEE			76-173525	0.48	6-7-76	
49	FEE			68-22394	0.07	12-31-68	
50	FEE			F/P79-451653	13.29	10-26-79	
51	FEE	6403	225		7.86	1-3-57	
52	EASEMENT			F/P176211 F/P104103 F/P176212	5.60	11-4-60 6-24-66 11-4-66	AVIGATION EASEMENT AVIGATION EASEMENT AVIGATION EASEMENT
53	FEE	6343	507		0.30	11-15-56	
54	FEE	6433	52		4.43	1-25-57	
55	EASEMENT			F/P66-76296	0.27	5-6-66	AVIGATION EASEMENT TO BE ACQUIRED IN FEE
56	FEE	6346	221		1.87	11-16-56	
57	EASEMENT			63-212968 F/P64-114959 F/P74-296024	0.53	2-20-64 7-14-66 11-7-74	 AVIGATION EASEMENT AVIGATION EASEMENT
58	FEE	6249	294		1.57	9-7-56	
59	FEE			63-156147	0.38	8-30-63	
60	FEE			64-032086	0.35	2-20-64	
61	EASEMENT			F/P73-272684	0.42		AVIGATION EASEMENT
62	FEE	6475	513		0.26	2-28-57	
63	FEE			63-163493	1.62	9-13-63	
64	FEE			64-032086	0.45	2-20-64	
65	FEE			63-163491	0.40	9-13-63	
66	FEE			63-156280	0.41	8-30-63	
67	FEE			63-156147	0.46	8-30-63	
68	FEE			63-196042	0.32	10-31-63	
69	FEE			64-032086	0.12	2-20-64	
70	FEE			64-032085	0.07	2-20-64	
71	FEE			64-096933	0.02	5-20-64	



LEGEND

EXISTING PROPERTY LINE	
FUTURE PROPERTY LINE	
PARCEL LINES	
TRACT NUMBER	(1)
UTILITY EASEMENT	
EXISTING AVIGATION EASEMENT	
FUTURE AVIGATION EASEMENT	
FUTURE ACQUISITION IN FEE	

The preparation of this plan was financed in part through a planning grant from the Federal Aviation Administration as provided under Section 505 of the Airport and Airway Improvement Act of 1982, as amended. The contents do not necessarily reflect the official views or policy of the FAA. Acceptance of this plan by the FAA does not in any way constitute a commitment on the part of the United States to participate in any development depicted therein nor does it indicate that the proposed development is environmentally acceptable in accordance with appropriate public laws.

ANNUAL RATE OF CHANGE -1 MIN/YEAR

SCALE IN FEET

400 0 400 800 1200

1 INCH = 400 FEET

This is a reduced version of a large size drawing.

NOTES:

1. Airport property line based on an AutoCAD file provided by the County of Real Property.
2. Parcel boundary lines were established from: Gillespie Field Property Acquisitions, Property Record Drawing, dated 6-27-83, which was obtained from the County Department of Real Property.
3. Acreages of parcels are calculated in AutoCAD.

Figure 7-7
Property Map Exhibit A

The primary purpose of the property map is to identify all land which is designated airport property and to provide an inventory of all parcels that make up the airport.

COMPREHENSIVE LAND USE PLAN (CLUP) ISSUES

As part of the ALP Update CNEL noise contours have been prepared based on the forecast of air traffic contained in Chapter 4. These are significantly different than those contained in the current Comprehensive Land Use Plan (CLUP)[3]. The proposed ALP includes two items related to runway configuration that are not reflected by the current CLUP. These are the relocation of the displaced threshold of Runway 27R, and a 423-foot extension of the west end of Runway 9R-27L. Furthermore, the State of California, Department of Transportation, Division of Aeronautics, in January 2002 published the *California Airport Land Use Planning Handbook (Handbook)* that contains updated guidance for developing airport compatibility plans. These result in significant differences from the current CLUP in terms of noise and safety zones. These differences are described herein. It is recommended that the County submit this information to the Airport Land Use Commission (ALUC) in order to update the Gillespie Field CLUP.

Noise

Figures 7-8 and 7-9 present the existing (year 2000) and future (year 2025) CNEL noise contours for Gillespie Field superimposed on current USGS topographic quad sheets. The Ldn 65 contour for the existing CLUP is also shown for comparison. It is recommended that the County adopt the future (year 2025) CNEL noise contours for use in an updated CLUP for Gillespie Field.

It should be noted that the construction of 27 homes approximately 2,000 feet from the end of Runway 9L was approved by the City of Santee. This occurred despite objections of the County of San Diego, Gillespie Field Development Council and Caltrans Division of Aeronautics based on the fact that the proposed construction is incompatible in terms of noise and safety zones. The homes are currently under construction.

There are several key points with respect to the noise analysis conducted as part of the ALP Update that differ from the noise analysis of the current CLUP. These are summarized as follows:

- The noise contours contained in the CLUP are 15 years old and since the preparation of the noise contours the FAA Integrated Noise Model (INM), the computer program used to generate noise exposure maps, has undergone significant changes.

- The noise contours in the CLUP are Annual Day Night Average Sound Level Contours (Ldn), not Community Noise Equivalent Level (CNEL). The significance of this is that the Ldn metric does not weight evening aircraft operations (those that occur between 7 p.m. and 10 p.m.). CNEL contains an approximate 5 dB weighting for operations occurring during this period.

[3] San Diego Association of Governments. July 1989.

Figure 7-8
Existing (2000) CNEL Noise Contours

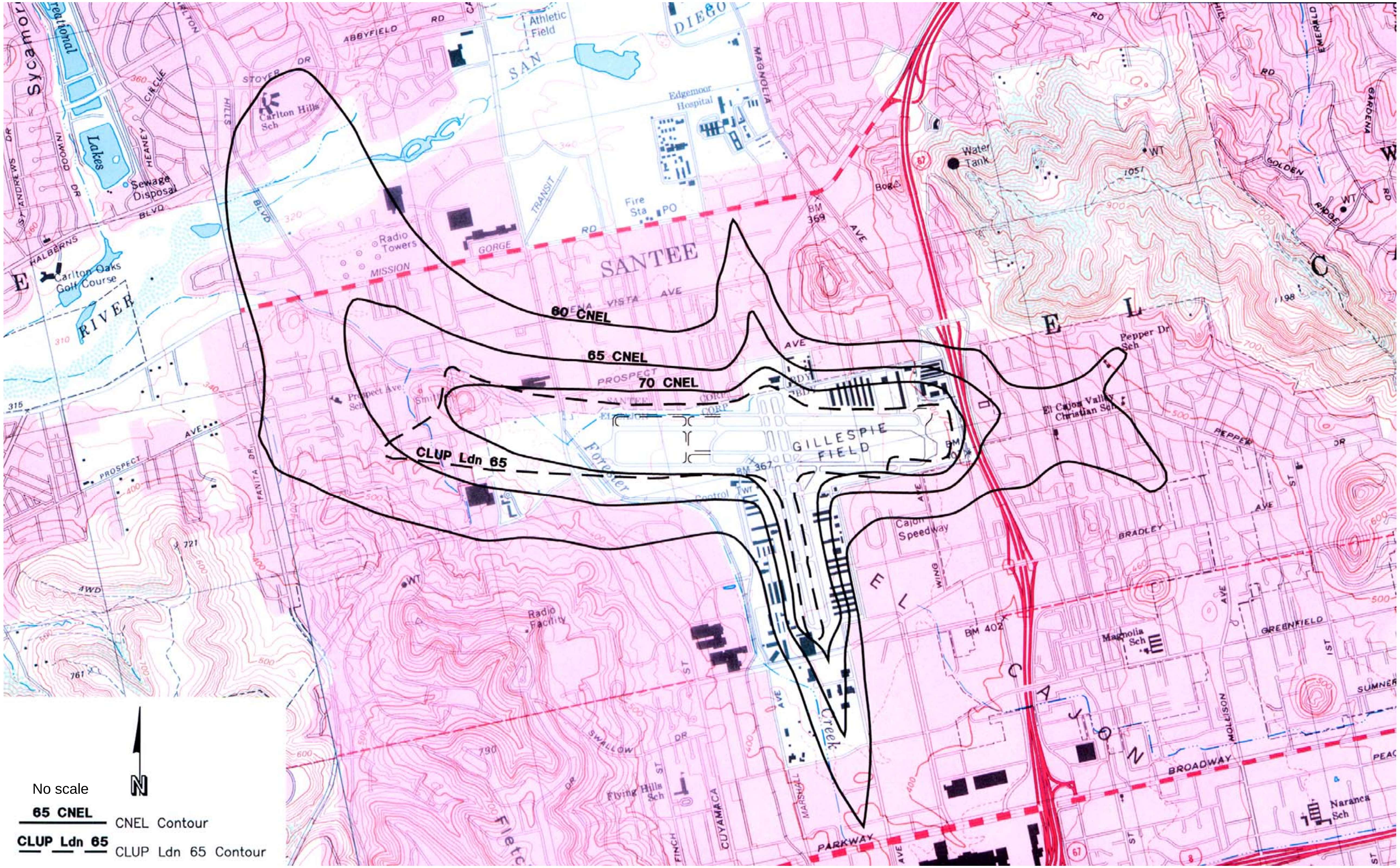


Figure 7-9
Future (2025) CNEL Noise Contours

- One change of the INM involved the relationship between terrain and noise exposure. The version of the INM used to prepare the CLUP noise contours did not include algorithms to account for differences in noise exposure due to terrain, and therefore underestimated noise exposure in areas of higher terrain. The current INM produces noise contours that reflect terrain effect, and therefore the updated noise contours will more accurately present noise exposure in areas of higher terrain in the vicinity of Gillespie Field.

- The noise contours in the CLUP were based on 1 daily business jet operation in the year 2010. The forecast prepared as part of the ALP Update contains a significantly different fleet mix with respect to business jets. The noise contours in the CLUP were based on the existing airfield configuration. The future noise contours for this ALP Update reflect the proposed location of the displaced threshold of Runway 27R, and a 423-foot extension of Runway 9R-27L.

Appendix C contains a technical report that documents the preparation of noise contours for the ALP Update.

Safety Zones

The existing CLUP depicts clear zones, trapezoidal areas similar to runway protection zones, as the safety zones for Gillespie Field. As described above, the California Division of Aeronautics published new guidelines in its *California Airport Land Use Planning Handbook (Handbook).* The *Handbook* provides guidelines regarding the establishment of land use compatibility policies related to (1) aircraft noise and (2) off-airport aircraft accident potential and safety. This report section addresses guidelines related to safety compatibility.

The previous edition of the *Handbook*, published in 1993, emphasized the concepts and processes in airport land use compatibility planning. The views expressed in that edition were characterized as only "suggestions and recommendations." However legislation passed in 1994 established a requirement that airport land use commissions "shall be guided by information" in the *Handbook* (or any future updates) when formulating, adopting, or amending an airport land use compatibility plan. Consequently the 2002 *Handbook* is much more definitive in the guidance it provides. Nevertheless, the 2002 *Handbook* does not constitute State policy, standards, or regulations. Development of airport land use policy is the responsibility of each individual airport land use commission.

Safety compatibility policies consist of two components: zones indicating locations around an airport with differing levels of aircraft accident risk and criteria indicating the compatibility or incompatibility of various types of land uses within these zones. The purpose of developing such policies is to limit the consequences which aircraft accidents can have on people and property near airports.

Safety Compatibility Zone Guidelines

The primary basis for the delineation of safety zones around airports, as developed in the *Handbook*, is the historical spatial distribution of aircraft accidents for various categories of runways. The spatial distribution, with respect to the runway, of past accidents is a good indicator of where such accidents are likely to occur in the future. Safety compatibility zones take into account the types of aircraft usage, flight procedures, and other operational characteristics particular to each runway end. In the preparation of the 2002 *Handbook*, 873 general aviation aircraft accidents were analyzed, covering the period from 1983 to 1992. This data shows that the patterns of general aviation accident locations near runways differ substantially depending on characteristics of the runway and aircraft involved. Notable in this regard are the differences based on runway length.

To portray these differences, the *Handbook* divided the database into three groups according to length of runway:

- Runway lengths less than 4,000 feet.
- Runway lengths of 4,000 to 5,999 feet.
- Runway lengths of 6,000 feet or more.

From this analysis, six safety zones are identified in the *Handbook* for each of the three runway sizes:

- Zone 1: Runway Protection Zone
- Zone 2: Inner Approach/Departure Zone
- Zone 3: Inner Turning Zone
- Zone 4: Outer Approach/Departure Zone
- Zone 5: Sideline Zone
- Zone 6: Traffic Pattern Zone

The intent of the set of safety zones is that risk levels be relatively uniform across each zone, but distinct from the other zones. The *Handbook* description of these zones is contained in Appendix D (*Handbook* Table 9B).

Safety compatibility zone examples contained in the *Handbook* for runway categories applicable to Gillespie Field are shown in Appendix D (Figure 9K of the *Handbook*). *Handbook* Example 1 (runway length less than 4,000 feet) would apply to Runway 9R/27L, which is currently 2,737 feet long and proposed on the Airport Layout Plan to be extended to 3,160 feet. *Handbook* Example 2 (runway length 4,000 to 5,999 feet) would apply to Runway 9L/27R, which is 5,341 feet in length and Runway 17/35, which is 4,147 feet long.

It is noted that Example 1 assumes approach visibility minimums of greater than or equal to one mile or visual approaches only. Example 2 assumes approach visibility minimums of greater than ¾ mile and less than one mile. The only instrument approaches to the airport are a straight-in GPS approach to Runway 17, with visibility minimums of 1¼ miles and greater, and GPS and Localizer circling approaches with visibility minimums of 1¼ miles and greater. It is noted that a recently proposed LDA approach at the airport would provide visibility minimums of one mile. Although these instrument approach minimums do not match the *Handbook* assumptions, the *Handbook* examples appear to be representative, and no modifications are specifically suggested in the *Handbook* to account for differences in approach minimums. Therefore, Examples 1 and 2 are applied to Gillespie Field, with adjustments as described below.

Adjustments to Safety Zones for Gillespie Field

The *Handbook* provides that adjustments to the zones depicted in Figure 9K of the *Handbook* may be appropriate when applying them to an individual airport due to the operating characteristics of that airport. The *Handbook* describes several operational variables which could affect the shape of one or more safety zones:

- Instrument approach procedures
- Other special flight procedures or limitations
- Runway use by special purpose aircraft
- Small aircraft using long runways
- Runways used predominantly in one direction
- Displaced landing thresholds

The discussion of these is reproduced in Appendix D (Table 9A of the *Handbook*). Topography and other characteristics of the airport environs may also warrant adjustment to safety zones according to the *Handbook*.

The Airport Land Use Commission of San Diego County has the responsibility for developing land use policies related to Gillespie Field, including the modification of safety zones to address the 2002 *Handbook* guidelines. Based on existing operating conditions at the airport, the following are considered appropriate adjustments to the safety compatibility zone examples given in the *Handbook* when applying them to Gillespie Field:

- Runway Protection Zones. All Runway Protection Zones should be adjusted to reflect the Runway Protection Zones as shown on the Airport Layout Plan, which conform to current FAA criteria.

- Traffic Pattern Zones. The Traffic Pattern Zones should be adjusted to be consistent with the actual traffic patterns flown at the airport, as identified during the noise contour analysis and as verified by the air traffic control tower. The traffic pattern for Runway 9L/27R is located only on the north side of the airport and extends beyond the standard Traffic Pattern Zone for Example 2. The traffic pattern for Runway 9R/27L is located only on the south side and extends to the west (to between Fanita Drive and the 125 Freeway) and south beyond the standard Traffic Pattern Zone for Example 1. This traffic pattern is a published noise abatement touch-and-go pattern for Runway 27L.

  The traffic pattern for Runway 9L/27R is located only on the north side. Due to the proposed relocation of the Runway 27R threshold approximately 860 feet to the east, the future traffic pattern for that runway is assumed to extend to the east side of Rattlesnake Mountain.

  The traffic patterns for Runway 17/35 are located on both sides of the runway and extend to the west and east beyond the standard Traffic Pattern Zone for Example 2.

- Inner Turning Zones. The Inner Turning Zones should be adjusted to reflect actual areas in which turns are made at each runway end. Departures on Runway 27L turn well beyond the Example 1 Inner Turning Zone and arrivals on Runway 9R enter their final approach leg well before the Example 1 Inner Turning Zone. The Example 1 Inner Turning Zone for the Runway 9R end can be eliminated because turns at the Runway 9R end are encompassed within the Runway 9L Inner Turning Zone, which is larger and extends farther beyond the runway ends.

  Due to the presence of high terrain northeast of the airport, departures on Runways 9L and 9R continue straight out or make a right turn. Aircraft approaching Runway 27R from the traffic pattern (on the north side of the runway) will usually be between Rattlesnake Mountain and the 67 Freeway on their base leg before turning to the final approach. Aircraft approaching Runway 27L from the traffic pattern (on the south side of the runway) will normally be slightly east of the 67 Freeway. Therefore, the Inner Turning Zone as shown for Example 2 would be appropriate for Runway 27R. The Inner Turning Zone as shown for Example 1 would be appropriate for Runway 27L but would include only the segment on the south side of the runway since turns for that runway are normally not made to the north side.

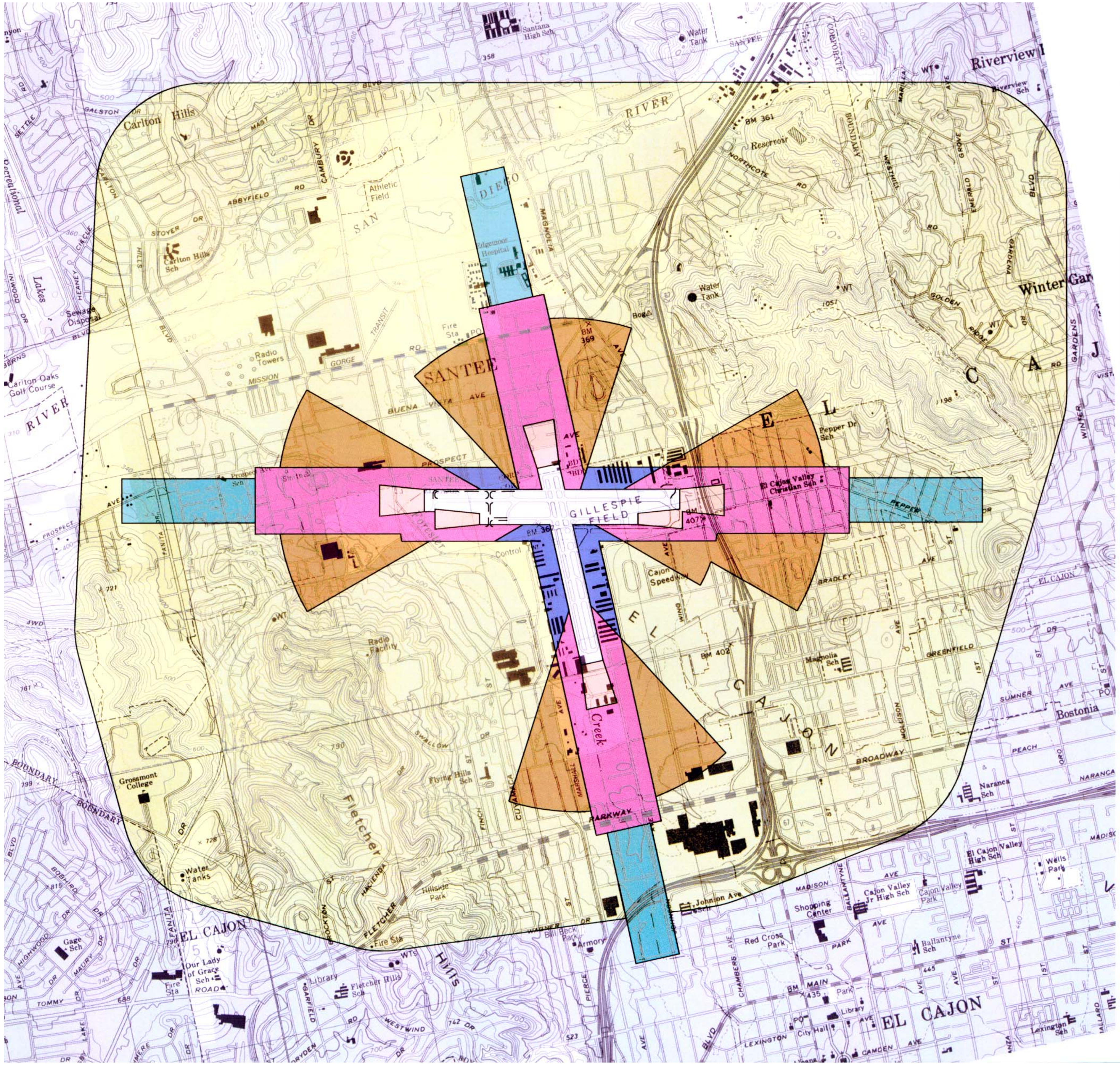
  The Inner Turning Zone as shown for Example 2 would be appropriate for Runways 17 and 35 because the traffic pattern turns for each of those runways would generally contained within that zone.

Combined Safety Zones for Gillespie Field

Figure 7-10 depicts the adjusted, combined safety compatibility zones for all runways at Gillespie Field. The above-described adjustments to the safety zones are recommended when applying the 2002 *Handbook* guidelines. It is recommended that the County adopt these safety zones and submit them to the ALUC when re-evaluating the CLUP. Figure 7-10 illustrates the application of the 2002 *Handbook* guidelines for safety compatibility zones to Gillespie Field based on the long-term plan for the airport as depicted on the ALP and described in this report. The dimensions of all zones, except the Traffic Pattern Zone, are as shown in Appendix D, Figure 9K of the *Handbook*. Where zones for runways overlap, the more restrictive zone in terms of land use criteria takes precedence.

As described above, the Traffic Pattern Zone was adjusted to encompass the actual airport traffic patterns. Tangent lines have been drawn to connect the outer edges of all traffic patterns to form the Traffic Pattern Zone. The Traffic Pattern Zone extends approximately 1.7 miles to the north of Runway 17, 1.5 miles east of Runway 27R, 1.3 miles south of Runway 35, and 1.5 miles west of Runway 9L.

Land use guidelines applicable to the safety zones and contained in the *Handbook* should be followed when considering development proposals in the vicinity of the airport.



LEGEND

Symbol	Zone	Maximum Residential Density[1] (Dwelling Units per Gross Acre)		Maximum Non-Residential Density (Average Number of people per Gross Acre)	
		Rural/ Suburban	Urban	Rural/ Suburban	Urban
(light pink)	1. Runway Protection Zone	0	0	0[3]	0[3]
(magenta)	2. Inner Approach/ Departure Zone	1 d.u. per 10-20 ac.	0	25-40	40-60
(orange)	3. Inner Turning Zone	1 d.u. per 2-5 ac.	Infill[2]	60-80	80-100
(light blue)	4. Outer Approach/ Departure Zone	1 d.u. per 2-5 ac.	Infill[2]	60-80	80-100
(blue)	5. Sideline Zone	1 d.u. per 1-2 ac.	Infill[2]	80-100	100-150
(yellow)	6. Traffic Pattern Zone	No Limit	No Limit	150	No Limit[4]

[1] Clustering to preserve open land encouraged in all zones.

[2] Allow infill at up to average of surrounding residential area only if non-residential uses are not feasible.

[3] Exceptions can be permitted for agricultural activities, roads, and automobile parking provided that FAA criteria are satisfied.

[4] Large stadiums and similar uses should be prohibited.

Source: California Airport Land Use Planning Handbook, State of California Department of Transportation Division of Aeronautics, January 2002.

N

No scale

Figure 7-10
Gillespie Field Safety Zones

ENVIRONMENTAL ANALYSIS

During the initial phase of the project (FAA grant application and award) the County was advised by the FAA that an environmental analysis was not required for an ALP Update. It is also the County's understanding that a CEQA document is warranted for an ALP Update. The ALP Update and Narrative Report is a planning document that will lead to a master plan including the preparation of an appropriate environmental document in accordance with CEQA. The master plan and environmental analysis will be pursued as a second phase of the planning process.

Appendix A
Glossary and Abbreviations

GLOSSARY AND ABBREVIATIONS

A

A-WEIGHTED SOUND LEVEL - The sound pressure level which has been filtered or weighted to reduce the influence of low and high frequency (dBA).

AC - Advisory Circular published by the Federal Aviation Administration.

ACCOM. - Accommodations

ADPM - Average Day of the Peak Month

AFB - Air Force Base

AIA - Annual Instrument Approaches

AICUZ - Air Installation Compatible Use Zones define areas of compatible land use around military airfields.

AIR CARRIER - A commercial scheduled service airline carrying interregional traffic.

AIRCRAFT MIX - The relative percentage of operations conducted at an airport by each of four classes of aircraft differentiated by gross takeoff weight and number of engines.

AIRCRAFT TYPES - An arbitrary classification system which identifies and groups aircraft having similar operational characteristics for the purpose of computing runway capacity.

AIR NAVIGATIONAL FACILITY (NAVAID) - Any facility used for guiding or controlling flight in the air or during the landing or takeoff of aircraft.

AIR ROUTE SURVEILLANCE RADAR (ARSR) - Long-range radar which increases the capability of air traffic control for handling heavy enroute traffic. An ARSR site is usually located at some distance from the ARTCC it serves. Its range is approximately 200 nautical miles. Also called ATC Center Radar.

AIR TAXI - Aircraft operated by a company or individual that performs air transportation on a non-scheduled basis over unspecified routes usually with light aircraft.

AIRPORT AVAILABLE FOR PUBLIC USE - An airport available for use by the public with or without a prior request.

ALP - Airport Layout Plan

ALSF-1 - Approach Light System with Sequence Flasher Lights.

AGL - Above Ground Level

ALS - Approach Light System

AMBIENT NOISE - All encompassing noise associated with a given environment, being usually a composite of sounds from many sources near and far.

ANCLUC - Airport Noise and Compatible Land Use Control plan; an FAA sponsored land use compatibility planning program preceding Part 150 Airport Noise Compatibility Program.

APPROACH CONTROL SERVICE - Air traffic control service provided by a terminal area traffic control facility for arriving and departing IFR aircraft and, on occasion, VFR aircraft.

APPROACH FIX - The point from or over which final approach (IFR) to an airport is executed.

APPROACH SLOPE - Imaginary areas extending out and away from the approach ends of runways which are to be kept clear of obstructions.

APPROACH SURFACE - An element of the airport imaginary surfaces, longitudinally centered on the extended runway centerline, extending upward and outward from the end of the primary surface at a designated slope.

AREA NAVIGATION(RNAV) - A method of navigation that permits aircraft operations on any desired course within the coverage or stationed-reference navigation systems or within the limits of self-contained system capability.

ARTS-III - Automated Radar Terminal Service - Phase III. A terminal facility in the air traffic control system using air ground communications and radar intelligence to detect and display pertinent data such as flight identification, altitude and position of aircraft operating in the terminal area.

ASDE - Airport Surface Detection Equipment

ASV - Annual Service Volume - a reasonable estimate of the airfield's annual capacity.

ATCT - Airport Traffic Control Tower

ATC - Air Traffic Control

AVIGATION AND HAZARD EASEMENT - An easement which provides right of flight at any altitude above the approach surface, prevents any obstruction above the approach surface, provides a right to cause noise vibrations, prohibits the creation of electrical interferences, and grants right-of-way entry to remove trees or structures above the approach surface.

B

BASED AIRCRAFT - An aircraft permanently stationed at the airport, usually by some form of agreement between the aircraft owner and airport management.

BIT - Bituminous Asphalt Pavement

BUSINESS JET - Any of a type of turbine powered aircraft carrying six or more passengers and weighing less than approximately 90,000 pounds gross takeoff weight.

C

CY - Calendar Year

CARGO - Originating and/or terminating.

CAT I - Category I Instrument Landing System. (Minimums: decision height of 200 feet; Runway visual range 1,800 feet).

CAT II - Category II Instrument Landing System. (Minimums: decision height of 100 feet; Runway visual range 1,200 feet).

CAT III - Category III Instrument Landing System. (Minimums: no decision height; Runway visual range of from 0 to 700 feet depending on type of CAT III facility).

CALIBRATION - The procedure used to adjust an urban area traffic model so that it matches base year of present day conditions.

CAPACITY - The maximum number of vehicles which have a reasonable expectation of passing over a given section of a lane or a roadway during a given period under a specified speed or level of service.

CAPACITY MANUAL - Special Report 87 published by the Highway Research Board (now Transportation Research Board). Current issue is 1985.

CAPACITY RESTRAINT - See Trip Assignment.

CENTER'S AREA - The specified airspace within which an air route traffic control center provides air traffic control and advisory service.

CFR - Crash, Fire and Rescue. This is now called Airport Rescue and Fire Fighting (ARFF).

CIRCLING APPROACH - A maneuver initiated by the pilot to align the aircraft with a runway for landing when a straight-in instrument approach is not possible. This maneuver requires ATC clearance and that the pilot establish visual reference to the airport.

CL - Centerline

CLEAR ZONE - Inner portion of runway approach zone.

CNEL - Community Noise Equivalent Level - a noise metric used in California to describe the overall noise environment of a given area from a variety of sources.

COLLECTOR - A roadway with no control of access providing movement between residential areas and the arterial system.

COMM. - Communications

COMMERCIAL SERVICE AIRPORT - A public airport which received scheduled passenger service and enplanes annually 2,500 or more passengers.

COMMUTER AIRLINE - Aircraft operated by an airline that performs scheduled air transportation service over specified routes using aircraft with 60 seats or less.

CONC. - Portland Cement Concrete Pavement

CONICAL SURFACE - An imaginary surface extending upward and outward from the periphery of the horizontal surface at a slope of 20 to 1 for a horizontal distance of 4,000 feet.

CONNECTION - A passenger who boards an aircraft directly after deplaning from another flight. On-line single carrier connections involve flights of the same carrier, while interline or off-line connections involve flights of two different carriers. This term can also be applied to freight shipments.

CONTROLLED AREA - Airspace within which some or all aircraft may be subject to air traffic control.

CONTROL TOWER - A central operations facility in the terminal air traffic control system consisting of a tower cab structure (including an associated IFR room if radar equipped) using air/ground communications and/or radar, visual signaling and other devices to provide safe and expeditious movement of terminal air traffic.

CONTROL ZONES - These are areas of controlled airspace which extend upward from the surface and terminate at the base of the continental control area. Control zones that do not underlie the continental control area have no upper limit. A control zone may include one or more airports and is normally a circular area with a radius of 5 statute miles of any extensions necessary to include instrument departure and arrival paths.

CONTROLLED AIRSPACE - An airspace of defined dimensions within which air traffic control service is provided to IFR flights and to VFR flights in accordance with the airspace classification, Class A, Class B, etc.

CORRIDOR - A swath of area surrounding a proposed facility that encompasses all the possible locations for that facility that would still serve the originally intended purpose for that facility.

CRITICAL LANE VOLUME ANALYSIS - A short-cut technique for relating the level of service at intersections to traffic volumes in the "critical lane."

CROSSWIND RUNWAY - A runway aligned at an angle to the prevailing wind which allows use of an airport when crosswind conditions on the primary runway would otherwise restrict use.

CURFEW - A restriction placed upon all or certain classes of aircraft by time of day, for purposes of reducing or controlling airport noise.

CYCLE - The time period required for one complete sequence of signal indications .

D

DECISION HEIGHT (DH) - With respect to the operation of aircraft, this means the height at which a decision must be made, using an ILS or PAR instrument approach, to either continue the approach or to execute a missed approach.

DEMAND - The actual number of persons, aircraft or vehicles currently using a facility if that facility is operating at or below capacity or the number of persons, aircraft or vehicles who want to use the facility when the facility is operating above capacity.

DEPLANEMENT - Any passenger getting off an arriving aircraft at an airport. Can be both a terminating and connecting passenger. Also applies to freight shipments.

DESIGN HOUR VOLUME (DHV) - The number of vehicles expected to use a road section, intersection, etc. in the design hour, which is usually the 30th highest hour of the year for commuter roads, the 150th highest hour for recreational roads, twice the average for shopping center facilities, etc.

DESIGN SPEED - The maximum safe speed for which the various physical features of the roadway were designed.

DISTANCE MEASURING EQUIPMENT (DME) - An electronic installation established with either a VOR or ILS to provide distance information from the facility to pilots by reception of electronic signals. It measures, in nautical miles, the distance of an aircraft from a NAVAID.

DIRECTIONAL SPLIT - The proportional distribution between access and egress flows of traffic into and out of a development or between opposite flows of traffic on two-way streets or highways.

DPW - Department of Public Works

E

ENPLANEMENT - Any passenger boarding a departing aircraft at an airport. Can be both a local origin and a connecting passenger. Applies also to freight shipments.

ENROUTE - The route of flight from point of departure to point of destination, including intermediate stops (excludes local operations).

ENROUTE AIRSPACE - Controlled airspace above and/or adjacent to terminal airspace.

EQUIVALENT SOUND LEVEL (LEQ) - The steady A-weighted sound level over a specified period that has the same acoustic energy as the fluctuating noise during that period.

EXPRESSWAY - A divided highway for through traffic with full or partial control of access generally using grade separated interchanges and some well spaced at-grade intersections.

F

F&E - Facilities and Equipment Programming - FAA

FAA - Federal Aviation Administration of the United States Department of Transportation

FAR - Federal Aviation Regulation

FAR Part 36 - A regulation establishing noise certification standards for aircraft.

FAR Part 77 - A regulation establishing standards for determining obstructions to navigable airspace.

FAR Part 150 - A regulation establishing criteria for noise assessment and procedures and criteria for FAA approval of noise compatibility programs.

FBO - Fixed Base Operator

FEDERAL AIRWAYS - See Low Altitude Airways.

FINAL APPROACH IFR - The flight plan of landing aircraft in the direction of landing along the extended runway centerline from the base leg to the runway.

FLEET MIX - The proportion of aircraft types or models expected to operate at an airport.

FLIGHT SERVICE STATION (FSS) - A facility operated by the FAA to provide flight assistance service.

FREEWAY - A divided highway for through traffic with full control of access at grade separated interchanges.

FY - Fiscal Year

G

GA - General Aviation - Refers to all civil aircraft and operations which are not classified as air carrier.

GENERATION - See trip generation.

GLIDE SLOPE (GS) - The vertical guidance component of an Instrument Landing System (ILS).

GND CON. - Ground Control

GPS - Global Positioning System.

GRAVITY MODEL - Newton's Law of Gravitation used to simulate traffic movements by distributing trips among zonal pairs in direct proportion to the number of trips originating in those zones and in inverse proportion to a measure of the spatial separation between the zones, such as travel time.

H

HGRS. - Hangars

HIGH ALTITUDE AIRWAYS - See Jet Routes.

HIRL - High Intensity Runway Lighting

HOLDING - A predetermined maneuver which keeps an aircraft within a specified airspace while awaiting further clearance.

HORIZONTAL SURFACE - An imaginary surface constituting a horizontal plane 150 feet above the airport elevation.

I

IFR - Instrument Flight Rules that govern flight procedures under IFR conditions (limited visibility or other operational constraints).

IMAGINARY SURFACE - An area established in relation to the airport and to each runway consistent with FAR Part 77 in which any object extending above these imaginary surfaces is, by definition, an obstruction.

INDUCED TRIPS - See Trip.

INSTRUMENT APPROACH - A series of predetermined maneuvers for the orderly transfer of an aircraft under instrument flight conditions from the beginning of the intial approach to a landing or to a point from which a landing may be made visually.

INSTRUMENT LANDING SYSTEM (ILS) - A precision landing aid consisting of localizer (azimuth guidance), glide slope (vertical guidance), outer marker (final approach fix) and approach light system.

INSTRUMENT OPERATION - A landing or takeoff conducted while operating on an instrument flight plan.

INSTRUMENT RUNWAY - A runway equipped with electronic and visual navigation aids for which a precision or non-precision approach procedure having straight-in landing minimums has been established.

INTEGRATED NOISE MODEL (INM) - A computer-based airport noise exposure modelling program.

ISOPLETH - A line on a map connecting points at which a given variable (ground travel time) has a specified constant value.

ITINERANT OPERATIONS - All aircraft arrivals and departures other than local operations.

INTERNATIONAL OPERATIONS - Aircraft operations performed by air carriers engaged in scheduled international service.

J

JET ROUTES - A route designed to serve aircraft operating from 18,000 feet MSL up to and including flight level 450.

L

LAT - Latitude

LDA - Localizer Type Directional Aid

LDN - Day-Night Average Sound Level. The 24-hour average sound level, in decibels, from midnight to midnight, obtained after the addition of ten decibels to sound levels for periods between 10 p.m. and 7 a.m.

LDNG. AIDS - Landing Aids

LENGTH OF HAUL - The non-stop airline route distance from a particular airport.

LEVEL OF SERVICE - An arbitrary but standardized index of the relative service provided by a transportation facility.

LIRL - Low Intensity Runway Lighting

LOAD FACTOR - Ratio of the number of passenger miles to the available seat miles flown by an airline representing the proportion of aircraft seating capacity that is actually sold and utilized. Load factors are also referred to in air cargo and can be determined by weight or volume.

LOC - Localizer (part of a ILS)

LOCAL OPERATION - Operations performed by aircraft which: (a) operate in the local traffic pattern or within the sight of the tower; (b) are known to be departing for, or arriving from, flight in local practice areas located within a 20-mile radius of the control tower, or (c) execute simulated instrument approaches or low passes at the airport.

LOM - Compass locator at an outer marker (part of an ILS). Also call COMLO.

LONG - Longitude

LOW ALTITUDE AIRWAYS - Air routes below 18,000 feet MSL. They are referred to as Federal Airways.

LRR - Long-Range Radar

M

MALS - Medium Intensity Approach Light System

MALSF - Medium Intensity Approach Light System with sequence flashing lights.

MALSR - MALS with Runway Alignment Indicator Lights (RAIL)

MARKER BEACON - An electronic navigation facility which transmits a fan or boneshaped radiation pattern. When received by compatible airborne equipment they indicate to the pilot that he is passing over the facility. Two to three beacons are used to advise pilots of their position during an ILS approach.

MASTER PLAN - Long-range plan of airport development requirements.

MGW - Maximum Gross Weight

MILITARY OPERATION - An operation by military aircraft.

MINIMUM DESCENT ALTITUDE (MDA) - The lowest altitude, expressed in feet above mean sea level, to which descent is authorized on final approach or during circling-to-land maneuvering in execution of a standard instrument approach procedure where no electronic glide slope is provided.

MIRL - Medium Intensity Runway Lighting

MISSED APPROACH - A prescribed procedure to be followed by aircraft that cannot complete an attempted landing at an airport.

MITL - Medium Intensity Taxiway Lighting

MLS - Microwave Landing System

MM - Middle Marker (part of an ILS)

MOA - Military Operations Area

MODAL SPLIT - The distribution of trips among competing travel modes, such as walk, auto, bus, etc.

MODE - A particular form or method of travel such as walk, auto, carpool, bus, rapid transit, etc.

MOVEMENT - Synonymous with the term operation, i.e., a takeoff or a landing.

MSL - Mean Sea Level

N

NA - Not applicable

NAS - NATIONAL AIRSPACE SYSTEM - The common system or air navigation and air traffic encompassing communications facilities, air navigation facilities, airways, controlled airspace, special use airspace and flight procedures authorized by Federal Aviation Regulations for domestic and international aviation.

NAVAID - See Air Navigation Facility.

NB - Northbound

NDB - NON-DIRECTIONAL BEACON - An electronic ground station transmitting in all directions in the L/MF frequency spectrum; provides azimuth guidance to aircraft equipped with direction finder receivers. These facilities are often established with ILS outer markers to provide transition guidance to the ILS system.

NEPA - National Environmental Policy Act

NM - Nautical Mile

NOISE ABATEMENT - A procedure for the operation of aircraft at an airport which minimizes the impact of noise on the environs of the airport.

NOISE CONTOUR - A noise impact boundary line connecting points on a map where the level of sound is the same.

NOISE EXPOSURE MAP - A scaled, geographic depiction of an airport, its noise contours and surrounding area.

NOISE LEVEL REDUCTION (NLR) - The amount of noise level reduction achieved through incorporation of noise attenuation (between outdoor and indoor levels) in the design and construction of a structure.

NON-PRECISION APPROACH - A standard instrument approach procedure in which no electronic glide slope is provided.

NPI - Non-Precision Instrument Runway

NPIAS - National Plan of Integrated Airport Systems.

O

OAG - Official Airline Guide

OBSTRUCTION - Any structure, growth, or other object, including a mobile object, that exceeds a limiting height established by federal regulations or by a hazard zoning regulation.

OM - Outer Marker (part of an ILS)

OPERATING SPEED - The maximum average speed for a given set of roadway and traffic conditions.

OPERATION - An aircraft arrival at or departure from an airport.

ORIGINATION - A passenger boarding an aircraft at an airport who has started his trip from a local, off-airport point. Also applicable to freight shipments.

OUTER FIX - A point in the destination terminal area from which aircraft are cleared to the approach fix or final approach course.

P

PAPI - Precision Approach Path Indicator

PAR - Precision Approach Radar

PAX - Passenger

PEAK HOUR FACTOR - The ratio of the average flow rate during the peak hour to the highest short-term (say 15 minutes) rate within the peak hour.

PEAK HOUR PERCENTAGE - The percentage of total daily trips or traffic occurring in the highest or "peak" hour. Frequently confused with Peak Hour Factor.

PERSON TRIP - A trip made by a person by any travel mode or combination of travel modes. A carpool of four persons entails one vehicle trip and four person trips.

PHASE - A part of the cycle allocated to any traffic movement or any combination of traffic movements.

PI - Precision Instrument Runway marking.

POSITIVE CONTROL - The separation of all air traffic within designated airspace by air traffic control.

PRECISION APPROACH - A standard instrument approach procedure in which an electronic glideslope/glidepath is provided; eg., ILS/MLS and PAR.

PRIMARY COMMERCIAL SERVICE AIRPORT - A commercial service airport which enplanes .01 percent or more of the total annual U.S. enplanements.

PRIMARY RUNWAY - The runway on which the majority of operations take place. On large, busy airports, there may be two or more parallel primary runways.

PRIMARY SURFACE - An area longitudinally centered on a runway with a width ranging from 250 to 1000 feet and extending 200 feet beyond the end of a paved runway.

PRODUCTION - A trip end associated with a dwelling unit or other trip "producer."

PROHIBITED AREA - Airspace of defined dimensions identified by an area on the surface of the earth within flight is prohibited.

PU - Publicly owned airport.

PVC - Poor visibility and ceiling.

PVT - Privately owned airport.

Q

QUEUE - A line of pedestrians or vehicles waiting to be served.

R

RADAR SEPARATION - Radar spacing of aircraft in accordance with established minima.

RAIL - Runway Alignment Indicator Lights

RCAG - Remote Center Air/Ground Communications

REIL - Runway End Identification Lights

RELIEVER AIRPORT - An airport which, when certain criteria are met, relieves the aeronautical demand on a high density air carrier airport.

RESTRICTED AREAS - Airspace of defined dimensions identified by an area on the surface of the earth within which the flight of aircraft, while not wholly prohibited, is subject to restrictions.

RNAV - See Area Navigation.

ROTATING BEACON - A visual NAVAID displaying flashes of white and/or colored light used to indicate location of an airport.

RVR - Runway Visual Range

RVV - Runway Visibility Value

R/W - Runway

R/W SAFETY AREA (RSA) - An area symmetrical about the runway centerline and extending beyond the ends of the runway which shall be free of obstacles as specified.

S

SALS - Short Approach Light System

SANDAG – San Diego Association of Governments

SCREEN LINE - A line dividing a study area into two parts and used for a detailed comparison of measured and simulated traffic or travel during a model calibration process.

SDF - Simplified Directional Facility landing aid providing final approach course.

SEE - Three letter identifier for Gillespie Field.

SEGMENTED CIRCLE - An airport aid identifying the traffic pattern direction.

SEPARATION MINIMA - The minimum longitudinal, lateral, or vertical distances by which aircraft are spaced through the application of air traffic control procedures.

SMSA - Standard Metropolitan Statistical Area.

SOCIOECONOMIC - Data pertaining to the population and economic characteristics of a region.

SSALF - Simplified Short Approach Light System with Sequence Flashing lights.

SSALS - Simplified Short Approach Light System.

SSALR - Simplified Short Approach Light System with Runway Alignment Indicator Lights (RAIL)

STANDARD LAND USE CODING MANUAL (SLUCM) - A standard system for identifying and coding land use activities published by the U.S. Department of Housing and Urban Development and the Federal Highway Administration.

STRAIGHT-IN APPROACH - A descent in an approved procedure in which the final approach course alignment and descent gradient permits authorization of straight-in landing minimums.

STOL - Short Takeoff and Landing

STOVL - Short Takeoff Vertical Landing

SYSTEM PLAN - A representative of the aviation facilities required to meet the immediate and future air transportation needs and to achieve the overall goals.

T

TACAN - Tactical Air Navigation

TDZ - Touchdown Zone

TERMINAL AIRSPACE - The controlled airspace normally associated with aircraft departure and arrival patterns to/from airports within a terminal system and between adjacent terminal systems in which tower enroute air traffic control service is provided.

TERMINAL CONTROL AREA (TCA) - This consists of controlled airspace extending upward from the surface or higher to specified altitudes within which all aircraft are subject to positive air traffic control procedures.

TERPS - Terminal Instrument Procedures

T-HANGAR - A T-shaped aircraft hangar which provides shelter for a single airplane.

THRESHOLD - The beginning of that portion of the runway usable for landing.

TOUCH-AND-GO OPERATION - An operation in which the aircraft lands and begins takeoff roll without stopping.

TRAFFIC ANALYSIS OR ZONE - A subdivision of a study area used to aggregate dispersed data items, such as population, employment, etc., in preparation for estimating the trips attracted or produced by these data items and for loading such attractions and productions onto a simulation network.

TRAFFIC CONTROL DEVICE - Any sign, signal, marking or device placed or erected for the purpose of regulating, wording or guiding vehicular traffic and/or pedestrians.

TRAFFIC PATTERN - The traffic flow that is prescribed for aircraft landing at, taxiing on, and taking off from an airport. The usual components of a traffic pattern are upwind leg, crosswind leg, downwind leg and final approach.

TRANSIENT OPERATIONS - See Itinerant Operations.

TRANSITION SURFACE - An element of the imaginary surfaces extending outward at right angles to the runway centerline and from the sides of the primary and approach surfaces to where they intersect the horizontal and conical surfaces.

TRANSITIONAL AIRSPACE - That portion of controlled airspace wherein aircraft change from one phase of flight or flight condition to another.

TRAVEL SHED - The total contributing area that generates trips which ultimately concentrate at a selected study point. Also called a travel sector.

TRIP - The one-way unit of travel between an origin and a destination.

TRIP ASSIGNMENT - That portion of the transportation planning process where distributed trips are allocated among the actual routes they can be expected to use.

TRIP DISTRIBUTION - That portion of the transportation planning process that estimates the spatial distribution of trips estimated during the trip generation phase.

TRIP END - The beginning or end of a trip.

TRIP GENERATION - That portion of the transportation planning process concerned with developing an estimate of the total number of trips attracted or produced by each traffic analysis zone in a study area.

TRIP PURPOSE - The primary reason for making a trip, i.e., work, shop.

TW & T/W - Taxiway

TWR - Control Tower

TVOR - Terminal Very High Frequency Omnirange Station

U

UHF - Ultra High Frequency

UNICOM - Radio communications station which provides pilots with pertinent airport information (winds, weather, etc.) at specific airports.

UTILITY RUNWAY - A runway intended to be used by propeller driven aircraft of 12,500 pounds maximum gross weight or less.

V

VASI - Visual Approach Slope Indicator providing visual glide path.

VASI-2 - Two Box Visual Approach Slope Indicator

VASI-4 - Four Box Visual Approach Slope Indicator

VECTOR - A heading issued to an aircraft to provide navigational guidance by radar.

VEHICLE MILES OF TRAVEL (VMT) - A measure of total travel within a study area, usually estimated as the total number of trips multiplied by the average length of a typical trip.

VFR - Visual Flight Rules that govern flight procedures in good weather.

VFR AIRCRAFT - An aircraft conducting flight in accordance with Visual Flight Rules.
VHF - Very High Frequency

VISUAL APPROACH RUNWAY - A runway intended for visual approaches only.

VOR - Very High Frequency Omnirange Station. A ground-based radio (electronic) navigation aid transmitting radials in all directions in the VHF frequency spectrum; provides azimuth guidance to pilots by reception of electronic signals.

VORTAC - Co-located VOR and TACAN.

V/STOL - Vertical/Short Takeoff and Landing

VTOL - Vertical Takeoff and Landing (includes, but is not limited to, helicopters).

W

WARNING AREA - Airspace which may contain hazards to non-participating aircraft in international airspace.

WB - Westbound

WIND CONE (WIND SOCK) - Conical wind directional indicator.

WIND TEE - A visual device used to advise pilots about wind direction at an airport.

Y

YEARLY DAY-NIGHT AVERAGE SOUND LEVEL (Ldn) - The 24-hour average sound level, in decibels, for the period from midnight to midnight, obtained after the addition of ten decibels to sound levels for the periods between 10 p.m. and 7 a.m. the following day, averaged over a span of one year.

Appendix B
Economic Impact Study

**A MARKET FEASIBILITY ANALYSIS
AND ECONOMIC IMPACT STUDY
FOR SAN DIEGO COUNTY LAND
LOCATED AT GILLESPIE FIELD AIRPORT
EL CAJON, CALIFORNIA**

Prepared For

**P&D Aviation Consultants
999 Town and Country Rd., 4th Floor
Orange, CA 92868**

Prepared By
CIC Research, Inc.
8361 Vickers Street
San Diego, CA 92111-2112
Phone: (858) 637-4000
Fax: (858) 637-4040

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INTRODUCTION

CIC Research, Inc. was retained by P&D Aviation Consultants to conduct a land use market analysis and economic impact study of San Diego County land at Gillespie Field Airport in El Cajon, California. This analysis was conducted in support of the Gillespie Field Airport Layout Plan Update and Narrative Report. The Airport Layout Plan (ALP) may be generally described as a "scaled drawing of existing and proposed land and facilities necessary for the operation and development of the airport."[1] The planning horizon for the Gillespie Field ALP is the year 2025 and as such drives the land use and economic impact analysis within this report, including aviation and non-aviation uses.

LOCATION OF GILLESPIE FIELD AIRPORT

The Gillespie Field Airport (the Airport) is located on San Diego County-owned land approximately 13 miles northeast of downtown San Diego between the cities of Santee (on the north) and El Cajon (on the south). The Airport boundaries are very generally described by Kenney Street on the north, Magnolia Ave. on the east, Bradley Ave. on the south, and Cuyamaca Street on the west.

Figure 1
Gillespie Field Airport Regional Location

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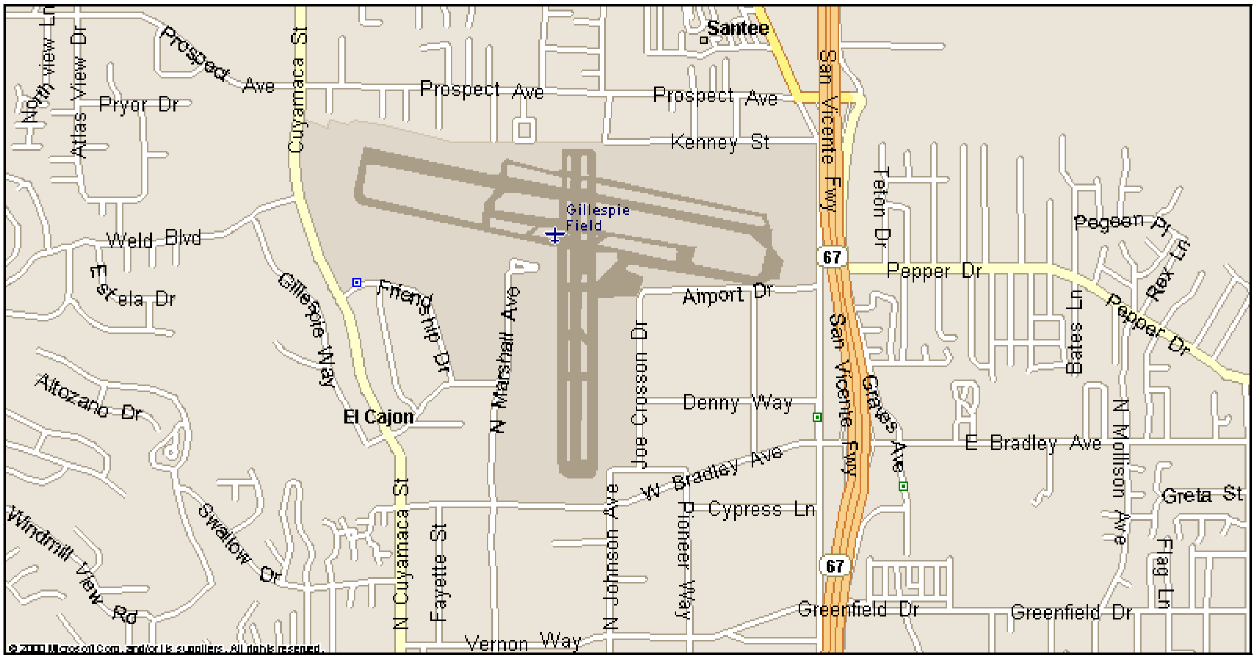
[1] FAA AC 150/5300-13, Airport Design.

Figure 2 below, provides a more detailed map of the Gillespie Field Airport location. However, the figure does not clearly define the extent of the County-owned land associated with the airport, which extends west of the industrial development along Gillespie Way as well as including some additional land along W. Bradley Ave. and Pepper Dr. (east of SR-67).

Figure 2
Location of Gillespie Field



GILLESPIE FIELD - HISTORY

Gillespie Field is the oldest and largest of San Diego County's eight airports. The County-owned airport includes runways, a control tower, a terminal, various hangers and fixed-base operators, as well as many non airport-related businesses. A general history and overview of the airport is published on the County of San Diego web site.[2]

1942 Commissioned as a Marine Corps parachutists facility and named for Marine Lieutenant Archibald H. Gillespie. Camp Gillespie served in that capacity until Marine parachute units were phased out in 1944.

1946 December, the County of San Diego leased Gillespie Field and converted it to a public airport.

1952 County granted ownership of the facility by federal government.

1961 Cajon Speedway opened.

1971 San Diego County Sheriff stationed ASTREA, the law enforcement aviation section at the airport.

[2] County of San Diego – Land Use & Environment Group, Dept. of Public Works.

1993 San Diego Aerospace museum located its restoration operations and a special exhibit at the field.

EXISTING GILLESPIE FIELD LAND USE INVENTORY

The scope of work for the Airport Layout Plan Narrative Report Update included an inventory of businesses located at Gillespie Field. This inventory included aviation and non-aviation businesses and provided the foundation for the land-use market analysis and 2025 economic impact estimates. The inventory of the Gillespie Field businesses is presented in Appendix B of this report.

The first Planning Advisory Committee (PAC) for the ALP Narrative Report Update was held at Gillespie Field on November 19, 2001. The meeting introduced the study team and the objectives of the ALP Narrative Report Update to the committee, which included Master Lessees and aviation users at Gillespie Field as well as other interested parties. During the meeting, CIC Research explained the business inventory data collection survey.

CIC Research met with the County's Airport Real Property Manager to collect a list of Master Lease abstracts with information that included: Master Lessee contact information, type of lease (aviation or non-aviation), County parcel number, and gross acreage. Sublease tenant information was available for the aviation leases, but was not always current.

CIC designed a survey form that requested information from each Master Lessee regarding the names of businesses operating on the leasehold parcel, a description of each business activity, the amount of space occupied by each business (in square feet or acres), and the number of employees at that location. A cover letter was also designed by CIC Research explaining the need for the business information to support the updating of the Gillespie Field Airport Layout Plan. The letter was printed on County letterhead and was signed by the County Airport Director. The cover letter, survey form, and a business reply envelope were mailed to 90 Master Leesees on November 30, 2001.

In the week following the initial mail out, approximately 25 responses were received by return mail or fax. Follow up telephone calls began on Wednesday December 5, 2001 to remind all Master Lessees, who had not responded, to return the survey form. Nearly all returned survey forms required additional phone calls to clarify information regarding the description of business activities, employment, and contact information. Approximately, 70 of the Master Lessees responded with sufficient information. Survey data for the remaining 20 Master Lessees were collected through on-site field inspections conducted by CIC staff.

Gillespie Field Land Use Activity Survey

Four of the 90 master leases had expired or had been replaced with new aviation or non-aviation leases that were included with the initial mailing. Of the 86 remaining leaseholds, one was created by CIC Research to represent the 1.1-acre Gillespie Field Airport Administration Building facility. This facility was placed in the inventory as an aviation leasehold and represents a valid air transportation services category with employment impacts associated with the airport operation.

A total of 18 aviation master lessees were recorded as leaseholders at Gillespie Field. These aviation leaseholds comprised a total of 91.73 gross acres. The remaining 68 non-aviation leaseholds comprised a total of 216.24 gross acres. The majority (63) of the non-aviation leaseholds are categorized as industrial leases and total 116.92 acres. The remaining five non-aviation leaseholds comprise 99.32 acres of which the Cajon Plaza Speedway site equals 66.58 acres.

- 86 total master leases
  - 18 aviation master leases
  - 68 non-aviation master lessees
- Aviation master leases = 91.73 gross acres
- Non-aviation master leases = 216.24 gross acres
  - 63 industrial master leases = 116.92 acres
  - 5 recreation/other master leases = 99.32 acres

Figure 3

Aviation and Non-Aviation Master Leases
Gillespie Field

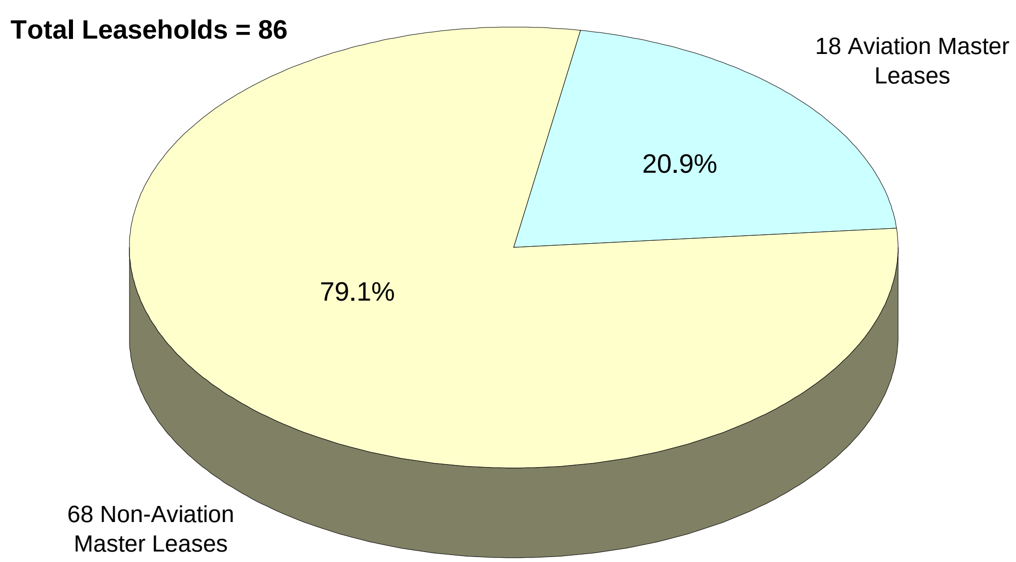
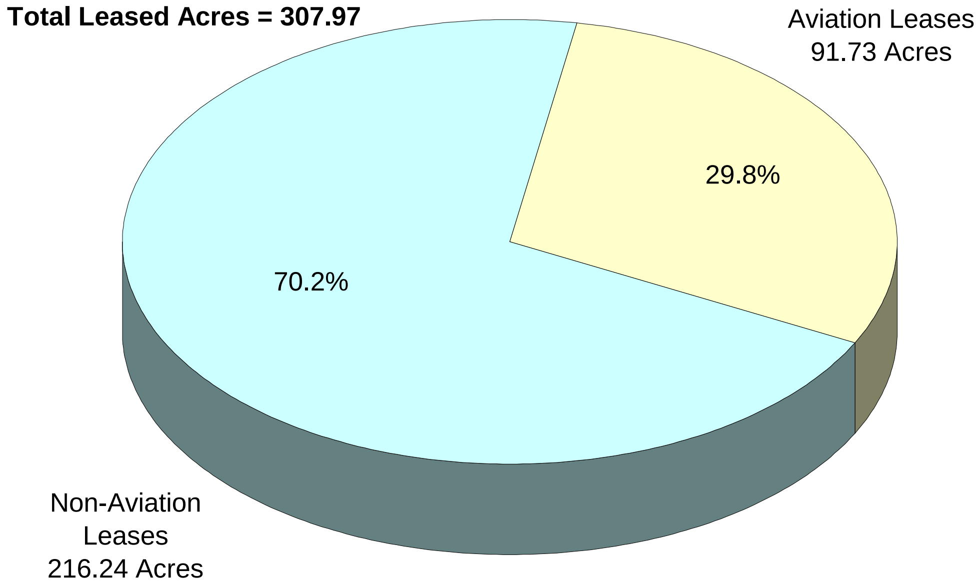


Figure 4
Aviation and Non-Aviation Master Lease Acres
Gillespie Field



Source: CIC Research, Inc., December 2001.

Gillespie Field Business Inventory

The field inventory identified 267 businesses and government enterprises on the County-owned land at Gillespie Field. These business activities span all major sectors of industry as listed in the following Table 1. As might be expected, the Transportation, Communications, and Utilities sector (TCU) represented the largest proportion of activities with nearly 36% of the total.[3] Manufacturing was the second largest industry division with nearly 23% of the business activity. Services accounted for 44 of the 267 businesses (17%).[4] The remaining industry divisions are listed in Table 1.

Table 2 lists a more detailed breakdown of the business activities by two-digit major industrial grouping. For example, the Manufacturing Division listed in Table 1 are comprised of twenty, two-digit standard industrial classification (SIC) sectors (i.e., SIC's 20 through 39 as listed within Table 2).

[3] Please note that the TCU sector is almost entirely represented by air transportation services at Gillespie Field.
[4] Services include businesses providing personal and business services, repair work, amusement services, health, legal and engineering; as well as educational institutions and membership organizations.

Table 1
Gillespie Airport Business Activities By Major Industry Division

SIC-Major Industry Division	Frequency	Percent	Cumulative Percent
A. Agriculture, forestry, and fishing	1	0.4%	0.4%
C. Construction	17	6.4%	6.7%
D. Manufacturing	60	22.5%	29.2%
E. Transportation, Communications, and Utilities	95	35.6%	64.8%
F. Wholesale Trade	18	6.7%	71.5%
G. Retail Trade	13	4.9%	76.4%
H. Finance, insurance, and real estate	18	6.7%	83.1%
I. Services	44	16.5%	99.6%
J. Public Administration	1	0.4%	100.0%
Total	267	100.0%	

Source: CIC Research, Inc., Gillespie Field Business & Land Use Survey, December 2001.

On Airport Employment

The 267 businesses operating at Gillespie Field (master lessees and tenants) reported 3,164 total on-airport employees. The majority (51%) of this employment is in manufacturing businesses, which recorded a total of 1,611 jobs (see Table 3). The second largest employment sector was services with 638 jobs (20%). Transportation sector employment (generally air transportation services) reported 399 on airport jobs (13%). Nearly 88% of the total on-airport employment (2,778 jobs) are generated on non-aviation leaseholds. The remaining 12% of the employment (386 jobs) were recorded on aviation leaseholds. Please note that only direct on-airport employment has been reported here for the business inventory (see Figure 5). The chapter on regional economic impacts incorporates the input-output model estimates for indirect and induced regional employment, income, and gross regional output associated with the land uses on the Airport.

Table 2

Gillespie Airport Businesses By Two-Digit SIC Code
(Two-Digit Major Industrial Groups)

SIC Category & Title	Frequency	Percent	Cumulative Percent
45 Transportation By Air	80	30.0%	30.0%
65 Real Estate Investment & Development	18	6.7%	36.7%
42 Trucking & Warehousing	14	5.2%	41.9%
17 Special Trade Contractors	13	4.9%	46.8%
34 Fabricated Metal Products	12	4.5%	51.3%
39 Misc. Manufacturing Industries	11	4.1%	55.4%
50 Wholesale Trade - Durable Goods	10	3.7%	59.2%
73 Business Services	9	3.4%	62.5%
51 Wholesale Trade - Nondurable Goods	8	3.0%	65.5%
82 Educational Services	8	3.0%	68.5%
87 Engineering & Management Services	8	3.0%	71.5%
25 Furniture & Fixtures	7	2.6%	74.2%
59 Miscellaneous Retail	6	2.2%	76.4%
79 Amusement & Recreation Services	6	2.2%	78.7%
35 Industrial Machinery & Equipment	5	1.9%	80.5%
76 Miscellaneous Repair Services	5	1.9%	82.4%
23 Apparel & Other Textile Products	4	1.5%	83.9%
27 Printing & Publishing	4	1.5%	85.4%
37 Transportation Equipment	4	1.5%	86.9%
58 Eating & Drinking Places	4	1.5%	88.4%
15 General Buildling Contractors	3	1.1%	89.5%
32 Stone, Clay, & Glass Products	3	1.1%	90.6%
36 Electronic & Other Electric Equipment	3	1.1%	91.8%
80 Health Services	3	1.1%	92.9%
24 Lumber & Wood Products	2	0.7%	93.6%
33 Primary Metal Industries	2	0.7%	94.4%
75 Auto Repair, Services, & Parking	2	0.7%	95.1%
8 Forestry	1	0.4%	95.5%
16 Heavy Construction, Except Building	1	0.4%	95.9%
26 Paper & Allied Products	1	0.4%	96.3%
30 Rubber & Misc. Plastics Products	1	0.4%	96.6%
38 Instruments & Related Products	1	0.4%	97.0%
41 Local & Interurban Passenger Transit	1	0.4%	97.4%
52 Building Materials, Hardware, Garden Supply, & Mobile Home Parts	1	0.4%	97.8%
54 Food Stores	1	0.4%	98.1%
57 Furniture & Homefurnishings Stores	1	0.4%	98.5%
70 Hotels & Other Lodging Places	1	0.4%	98.9%
81 Legal Services	1	0.4%	99.3%
84 Museums, Botanical, Zoological Gardens	1	0.4%	99.6%
90 Public Administration	1	0.4%	100.0%
Total	267	100.0%	

Table 3

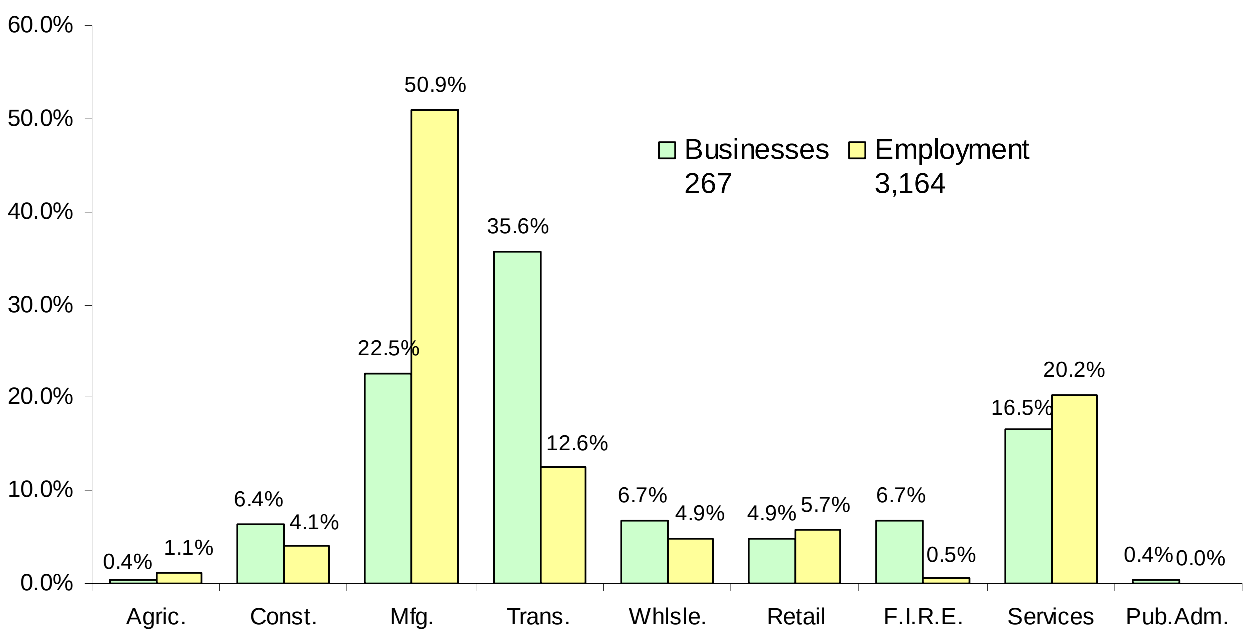
Gillespie Airport Businesses and Employment
By Leasehold Type and Major Industry Division

SIC-Major Industry Division	Aviation Leaseholds		Non-Aviation Leaseholds		All Gillespie Field Leaseholds	
	Businesses	Employees	Businesses	Employees	Businesses	Employees
A. Agric., Forestry, & Fishing	0	0	1	35	1	35
C. Construction	0	0	17	129	17	129
D. Manufacturing	4	46	56	1,565	60	1,611
E. Trans., Comm., & Utilties	81	276	14	123	95	399
F. Wholesale Trade	1	2	17	154	18	156
G. Retail Trade	2	12	11	167	13	179
H. Fin., Ins., & Real Estate	7	0	11	17	18	17
I. Services	8	50	36	588	44	638
J. Public Administration	0	0	1	0	1	0
Total	103	386	164	2,778	267	3,164

Source: CIC Research, Inc., Gillespie Field Business Inventory and Survey, December 2001.

Figure 5

Gillespie Airport Businesses and Employment
By Major Industry Division



ECONOMIC AND DEMOGRAPHIC TRENDS

The Gillespie Field Airport is located on County-owned land on the northern border of the City of El Cajon and the southern border of the City of Santee. El Cajon is a well-established mature city, while Santee is a relatively young and rapidly developing suburban area. The City of El Cajon was incorporated in 1912. The city's boundaries encompass about 14.1 square miles and it is home to about 96,700 residents. The city of El Cajon derives its name from the Spanish term for "box," so named because the city is surrounded by mountains. The City developed as an industrial "blue collar" working class community and residential suburb.

The City of Santee was incorporated in 1980 and is currently home to about 53,600 residents. Santee is located north of the City of El Cajon between State Route 125 and State Route 67 and the city's boundaries encompass about 16.5 square miles. Development of Santee benefits from increased regional access created by SR 125 and the ultimate completion of SR 52 to SR 67 (scheduled by 2008).

AIRPORT AREA NEW PROJECT DEVELOPMENTS

There are several planned mixed-use developments in East County. One of the larger projects is the Santee Town Center which consists of 706 acres of master planned mixed-use development, with over 626,000 square feet of commercial space constructed and another 110,000 square feet approved for commercial use.

Major retail commercial development in Santee is important to the Gillespie Field ALP. Two focal points are the Santee Plaza/Promenade Tower center anchored by Costco, Wal-Mart and Home Depot and the 50-acre Santee Trolley Square. The 50-acre Trolley Square development is also the location for the Santee Transit Center linking Santee to Downtown San Diego via the San Diego Trolley. The Lowe's Home Improvement Warehouse project on Mission Gorge Road, east of the Santee Post Office, will provide a total of 234,000 square feet of commercial development, including a 163,000 square-foot Lowe's Home Improvement Center and 72,000 square feet of retail shops and pads.

Although, office professional development has not been significant in the East County, development is underway on a 104-acre corporate office park serving high technology and biomedical firms. The planned Corporate and Technology Office Campus next to the Santee Town Center would provide approximately 1.5 million square feet of high technology and research and development space within a corporate office campus environment.

Industrial development for much of the Airport area is in the form of light industrial uses, which are characterized by manufacturing and assembly, electronics, research and development and light warehousing use. The majority of industrial parks are located on Airport land, east and west of Cuyamaca Street and in Santee along Prospect and Woodside Avenues.

A little farther south of the Airport area in downtown El Cajon, the Community Development Corporation has developed its own master plan for downtown redevelopment. The downtown El Cajon redevelopment area is anchored by the East County Performing Arts Center. The master plan includes development of a five-story, 400-room hotel, a Children's Museum, restaurants, commercial office buildings, 264 market-rate residential units, 85,000 square feet of commercial/retail space, and public plazas.

POPULATION AND HOUSEHOLDS – 2020 AND 2030 FORECAST

There were a total of 2.8 million residents in San Diego County as reported by the 2000 U.S. Census. The San Diego region is expected to add almost 1.1 million residents between January 1, 2000 and January 1, 2030. This would represent a 38% population increase with an annual average growth rate of 1.1%. The San Diego Association of Government (SANDAG) forecasts that the East Suburban MSA, which includes the cities of El Cajon, La Mesa, Lakeside, Santee, and some additional areas, will experience a 33% increase in population between 2000 to 2030 (462,663 to 614,077, respectively).[5]

In the San Diego region the median age of the population will rise as the baby boom generation passes through middle age, resulting in a surge in the number of people over age 45. The median age of residents in the East Suburban MSA will increase from 35.0 years to 41.0 years in 2030. Countywide the median age of the population will also increase, but will remain about two years younger than the population of the East Suburban MSA.

Table 4
San Diego County/ East County
Economic and Demographic Trends

East Surburban MSA	**January 2000**	**2010**	**2020**	**2030**	**% Change 2000-2030**
Total Population	462,663	510,366	579,072	614,077	32.7%
Total Employment	145,328	163,791	193,311	207,721	42.9%
Median Age	35.0	37.5	39.4	41.0	17.1%
Total Housing Units	170,370	181,568	202,722	212,750	24.9%
Total Households (Occupied Units)	165,681	175,593	195,193	204,586	23.5%
Persons Per Household	2.75	2.86	2.92	2.95	7.3%
Median Household Income	$47,209	$55,025	$64,394	$72,014	52.5%
San Diego County	**January 2000**	**2010**	**2020**	**2030**	**% Change 2000-2030**
Total Population	2,813,833	3,235,675	3,598,871	3,889,604	38.2%
Total Employment	1,384,673	1,590,206	1,777,652	1,883,395	36.0%
Median Age	33.2	35.6	37.4	39.2	18.1%
Total Housing Units	1,040,149	1,161,259	1,276,943	1,379,644	32.6%
Total Households (Occupied Units)	994,677	1,103,584	1,208,317	1,301,356	30.8%
Persons Per Household	2.73	2.84	2.89	2.90	6.2%
Median Household Income	$47,268	$54,669	$64,079	$71,535	51.3%

Source: 2000 U.S. Census and SANDAG, "Preliminary 2030 Forecast," October 2002.

[5] SANDAG Preliminary 2030 Cities/County Forecast, October 2002.

The total number of households in the East Suburban market area will increase nearly 25%, from 165,700 in 2000 to 204,600 in 2030. In contrast, the number of households Countywide are forecast to increase 31% during the 30-year period. The average household size in the East Suburban market area is very similar to the Countywide average of about 2.75 people. The average household size is expected to increase to about 2.95 people in the East Suburban MSA and will increase to about 2.9 people Countywide.

Income

As of the 2000 U.S. Census, the median household income of $47,200 for the East Suburban MSA was very similar to the San Diego County median income of $47,300. Over the next 30 years it is expected that the East Suburban median household income will increase to $72,000 (52.5%) and the median for San Diego County will increase to $71,500 (51.2%).

Employment

The East Suburban MSA is expected to experience faster growth in employment than San Diego County overall. In the 2000 U.S. Census a total of 145,300 people were reported employed in the East Suburban market area. This represented about 10.5% of the 1,384,700 total employees in the County. Employment within the East Suburban MSA is expected to increase nearly 43% during the next 30 years to a total of 207,700 in 2030. Total employment within the County is expected to increase 36% by 2030.

In 2000, about 23% of the East County workforce was employed in manufacturing, repair, or skilled crafts. About 21% were in professional specialty occupations, 17% were in services, 15% were in clerical occupations, 15% in sales, and about 7% were executives or managerial positions. Among the largest East Suburban area employers were the Viejas, Sycuan and Barona casinos with a combined employment of more than 6,500 employees. However, the Grossmont Union High School District was the largest single employer with more than 3,100 employees. Local government employed about 860 people.

Table 5
East County Major Employers

Employer Name	Number of Employees
Grossmont Union High School District	3,148
Barona Casino	2,931
Grossmont-Cuyamaca Community College District	2,633
Cajon Valley Union School District	2,600
Grossmont Hospital/Sharp Health	2,300
Viejas Casino & Turf Club	2,252
La Mesa/Spring Valley School District	1,600
Sycuan Casino & Golf Courses	1,380
Local Government	863
Chemtronics Inc.	850
Senior Aerospace Flexonics	670
Total Employees	**21,227**

Source: SANDAG / Sourcepoint, No. 2, May 2002.
San Diego East Chamber of Commerce.
San Diego Business Journal, May 19, 2003.

While population growth of the East Suburban MSA is expected to lag behind the County over the next 30 years (33% v. 38%, respectively) it is significant that employment within the MSA is expected to substantially outpace the County's employment growth (43% v. 36%, respectively). In addition, employment in key manufacturing and professional services sectors will experience the greatest growth within the East Suburban market area.

LAND USE MARKET CONDITIONS

OFFICE SPACE MARKET CONDITONS

There was approximately 1,223,500 square feet of speculative office space in the East County market area in 2002, representing about 2% of the total space in San Diego County.[6] The East County area experienced modest growth in office space in the first half of the 1990s, but the trend did not continue in the second half of the 1990s when only 2% growth in office space was experienced, the slowest growth among all areas of San Diego. This trend is likely to continue in the East Suburban market until the planned Corporate and Technology Office Campus in Santee begins to come on-line.

The North City MSA (University City/Sorrento Mesa/Del Mar Heights) contains about one-third of the County's speculative office space and has added more than 30 percent of its inventory in the last ten years. The Central Suburban MSA (including Mission Valley) and the Central MSA (including downtown San Diego) provide 24% and 18%, respectively of the region's speculative office space. The South Bay market area has experienced the fastest growth rate in the last ten years, adding more than 300% to its speculative office space inventory. However, even with this growth the South Bay percentage of total inventory rose from approximately 1% to 2%.

Table 6
San Diego County Speculative Office Space
Year End 2002

Office Market Area	Number of Projects	Total Square Feet	Percent of Total	Vacant Square Feet	Percent Vacant	2002 Net Absorption	Under Construction
Central	90	9,937,336	17.9%	934,624	9.4%	(63,745)	-
Central Suburban	256	13,160,716	23.7%	872,726	6.6%	386,823	269,491
North City	257	19,083,072	34.4%	3,107,619	16.3%	193,212	589,150
North County West	100	3,765,552	6.8%	653,399	17.4%	335,122	144,642
Hwy. 78 Corridor	45	1,365,849	2.5%	77,537	5.7%	112,080	23,690
I-15 Corridor	110	5,703,595	10.3%	1,241,333	21.8%	455,652	-
East County	60	1,223,484	2.2%	17,107	1.4%	35,589	-
South Bay	39	1,220,802	2.2%	89,520	7.3%	143,992	-
San Diego County	957	55,460,406	100.0%	6,993,865	12.6%	1,598,725	1,026,973

Note: The number of projects, total s.f. and vacancy rates are based on speculative projects greater than 20,000 s.f. Projects may contain individual buildings less than 10,000 s.f. Net absorption and under construction figures include speculative buildings as well as build-to-suits.
Source: Burnham 2003 Outlook, Office Market Summary, Year End 2002.

The San Diego office market performed much better than expected in 2002, with almost 1.6 million square feet of net absorption. San Diego office vacancy of 12.6%, although up slightly over 2001's 12.3% was favorable when compared to other major U.S. cities. However, vacancy rates for San Diego County are highest in Class A office buildings (16.6%, Q1-2003). The fact that construction is slowing as leasing activities stabilize should prevent vacancy from rising

[6] Burnham Outlook 2003, Office Market Summary 2002.

much further in 2003 and is expected to recover with renewed employment and economic growth in 2004.

The East County office market recorded a very low vacancy rate of 1.4% and negligible absorption for 2002 of about 36,000 s.f. of speculative space. This market condition in the East County will change as the planned 1.5 million square-foot Corporate and Technology Office Campus in Santee is developed. This project is adjacent to the Santee Transit Center and the Santee Trolley Square retail facilities. Market demand for the 104-acre master planned office project will benefit from close connection to public transportation and shopping. The nearly completed 77,000 square-foot first phase of the development will house the Hartford Financial Services Group.

INDUSTRIAL/R&D MARKET CONDITIONS

Countywide there was more than 77 million s.f. of industrial/R&D space at the end of 2002. The vacancy rate at the end of 2002 stood at 7.4% for industrial space and 10.0% for R&D space. All MSA's except for the Central San Diego MSA and the South MSA reported more than 100% growth in industrial space during the past ten years. This industrial space included research and development parks, industrial parks, and individual industrial sites. The largest growth in total space by market occurred in the North City, which added 21.4 million square feet of space in the last decade. The highest growth rate (179%) was experienced in the North County West, encompassing the area from Del Mar to Carlsbad with the addition of 7.1 million s.f. of space.

Table 7
San Diego County Industrial/R&D Market Summary
Year End 2002

Industrial Market Area	Number of Projects	Total Square Feet	Percent of Total	Vacant Square Feet	Percent Vacant	2002 Net Absorption	Under Construction
Central	85	3,898,815	5.9%	97,184	2.5%	41,900	-
Central Suburban	137	8,193,746	12.4%	195,083	2.4%	72,723	-
North City	164	11,315,647	17.1%	579,374	5.1%	528,352	-
North County West	82	5,603,895	8.5%	752,603	550.0%	321,902	-
Hwy. 78 Corridor	193	10,871,823	16.4%	598,675	13.4%	745,992	692,210
I-15 Corridor	135	9,273,511	14.0%	1,137,442	12.3%	(221,593)	279,000
East County	132	5,583,228	8.4%	104,164	1.9%	194,028	17,580
South Bay	135	11,548,556	17.4%	1,435,864	12.4%	879,653	770,367
San Diego County	1,063	66,289,221	100.0%	4,900,389	7.4%	2,562,957	1,759,157
R&D Market Area	Number of Projects	Total Square Feet	Percent of Total	Vacant Square Feet	Percent Vacant	2002 Net Absorption	Under Construction
Central Suburban	69	4,021,852	6.1%	410,564	10.2%	193,309	-
North City	177	10,615,075	16.0%	994,135	9.4%	(107,680)	-
North County West	45	2,890,743	4.4%	334,514	1160.0%	259,581	-
Hwy. 78 Corridor	8	377,714	0.6%	-	0.0%	51,530	198,171
I-15 Corridor	48	2,847,452	4.3%	327,428	11.0%	23,897	95,910
San Diego County	347	20,752,836	100.0%	2,066,641	10.0%	420,637	294,081

Note: The number of projects, total s.f. and vacany figures are based on the speculative market of projects greater than 20,000 s.f.
Projects may contain individual buildings that are less than 10,000 s.f. Net absorption and under-construction figures include speculative buildings as well as build-to-suit buildings.
Source: Burnham 2003 Outlook, Industrial Market Summary, Year End 2002.

San Diego County had a total of 66 million s.f. of industrial space in 2002. Even with the addition of 1.6 million s.f. of newly completed industrial space, the year-end vacancy stood at 7.4%, its lowest level since 1997. Countywide current building activity as reported by Burnham Real Estate Services, is well below the 14.9 million s.f. of space that was added to the market during the record years of 1997-1999 – an average of 5 million s.f. per year. The first quarter of 2003 however, recorded negative absorption of about 245,000 s.f. which pushed the countywide industrial vacancy rate up to about 8.3%. Burnham expects the industrial space demand to strengthen in the second half of this year and recover fully by 2004. Longer term the SANDAG forecasts of gross regional output and employment will drive 2.5 million square feet of net absorption per year in the regional economy.

At the end of 2002, the East County MSA had about 5.6 million s.f. of industrial space, representing about 8% of the total in San Diego County. The East County market area absorbed nearly 195,000 s.f. of industrial space in 2002 and finished the year with a vacancy rate of less than 2%. However, the generally weak countywide market in the first quarter of 2003 was also felt in the East County. The East County experienced negative absorption in the first quarter (-37,000 s.f.) and vacancy currently stands at 2.5%.

RETAIL MARKET CONDITIONS

Total retail space in San Diego County was about 50.7 million s.f. at the end of 2002. The countywide average vacancy rate was 2.7% and compared very favorably to the nationwide retail vacancy rate of more than 13%. The East County market area had 7.3 million s.f. of retail space and a retail vacancy rate of 2.3% at the end of 2002. The East County absorbed 168,000 s.f. of retail space during 2002.

In addition to the Trolley Square Project that opened in the Fall of 2002, the planned Lowe's Home Improvement Warehouse project on Mission Gorge Road, east of the Santee Post Office, will provide a total of 234,000 s.f. of commercial development. The project will include a 163,000 square-foot Loew's Home Improvement Center and 72,000 s.f. of retail shops

Table 8
San Diego County Retail Market Summary
Year End 2002

Market	Number of Centers	Total Square Feet	Percent of Total	Vacant Square Feet	Percent Vacant	12-Month Net Absorption: New Construction	12-Month Net Absorption: Existing Centers	Under Construction
Central	13	562,548	1.1%	11,557	2.1%	-	4,965	115,923
Central Suburban	118	10,311,887	20.3%	217,829	2.1%	-	100,129	-
North City	39	3,920,761	7.7%	94,844	2.4%	-	(1,379)	-
North County West	44	4,862,993	9.6%	97,705	2.0%	166,120	40,646	303,335
Hwy. 78 Corridor	90	9,161,057	18.1%	415,970	4.5%	163,268	111,221	694,375
I-15 Corridor	80	7,667,300	15.1%	225,075	2.9%	72,500	201,033	214,000
East County	95	7,320,009	14.4%	171,925	2.3%	-	167,706	-
South Bay	73	6,875,256	13.6%	152,908	2.2%	-	85,699	410,000
San Diego County	552	50,681,811	100.0%	1,387,813	2.7%	401,888	710,020	1,621,710

Note: The number of projects, total s.f. and vacany figures are based on the speculative market of projects greater than 20,000 s.f.
Projects may contain individual buildings that are less than 10,000 s.f. Net absorption and under construction figures include speculative buildings as well as build to suit buildings.
Source: Burnham 2003 Outlook, Retail Market Summary, Year End 2002.

Regional Shopping Centers

Countywide there are 11 regional shopping centers with more than 12 million s.f. of gross leasable area (GLA). There are two regional shopping centers in the East County market area, Grossmont Center and Parkway Plaza. These two centers have a total GLA of approximately 2,013,000 s.f. and 265 stores. The East County has 17% of the Countywide GLA for regional shopping centers and about 16% of the population of the County.[7]

HOTEL / MOTEL MARKET CONDITIONS

As of April 2003, San Diego County had 466 hotels with 51,372 rooms. East County had 31 hotels/motels (7%) and 1,905 hotel rooms (4%). There are 17 hotels in El Cajon, nine hotels in La Mesa, three hotels in Santee, one hotel in Lakeside, and one hotel in Spring Valley. Within the County the largest supply of hotel rooms are located in the city of San Diego (31,727). Carlsbad is a distant second with 3,008 hotel rooms, while Coronado has 1,793 hotel rooms.

CIC Research completed a San Diego County Hotel/Motel Inventory in October 2001 including information on property name, address, number of rooms, room rates, size of largest meeting space, total meeting space, chain affiliation and market mix. The hotel inventory in the East County, excluding the Indian gaming resorts, is characterized by relatively small motel properties (20-50 rooms), low/medium pricing, very limited services, and limited or no meeting facilities.

El Cajon/Santee Hotels and Motels

Of the existing hotels/motels in the East County market area very few are limited-service and none are full-service hotels serving the business market. A limited service business hotel would have a minimum three-diamond rating in 2003 from the Automobile Association of America and may have one or more of the following: a business services center, email/dataports, meeting rooms, hospitality suites, a fitness center, and an extended-hour restaurant onsite or adjacent. Given these criteria, three hotels/motels with a combined total of 312 guests rooms in El Cajon and four hotels with 256 rooms in La Mesa, whose target customers are business and group travelers are the most competitive. Other identified hotel properties in the market area are low /medium quality hotels with no meeting facilities. Among the eighteen hotels/motels listed in Figure 5, four motels have meeting facilities and are providing limited service to the business community. These include the Best Western Continental Inn, Best Western Courtesy Inn, the Quality Inn, and the Super 8 Motel.

The Best Western Continental Inn is located at 650 N. Mollison Ave., close to Interstate-8 and Hwy. 67. The hotel has 97 guestrooms and was built in 1963. The hotel has about 720 square feet of meeting space that accommodates up to 60 people and amenities include a restaurant and a lounge, new rooms, suites with spas, and a swimming pool. The general manager for the property indicated a 50/50 split between business and leisure. Rack rates for the motel are $44-$129.

[7] SANDAG, "Info," No. 2, May 2002.

The 47-room Best Western Courtesy Inn located on 1355 E. Main Street is the newest hotel among the four and was built in 1987. It has a meeting room that accommodates up to 30 people, a restaurant and a lounge, a heated pool, and a jacuzzi. The hotel is located close to Interstate-8 and Hwy. 54. Rack rates for the hotel are $60-$106.

Figure 6
El Cajon/Santee Area Hotels and Motels

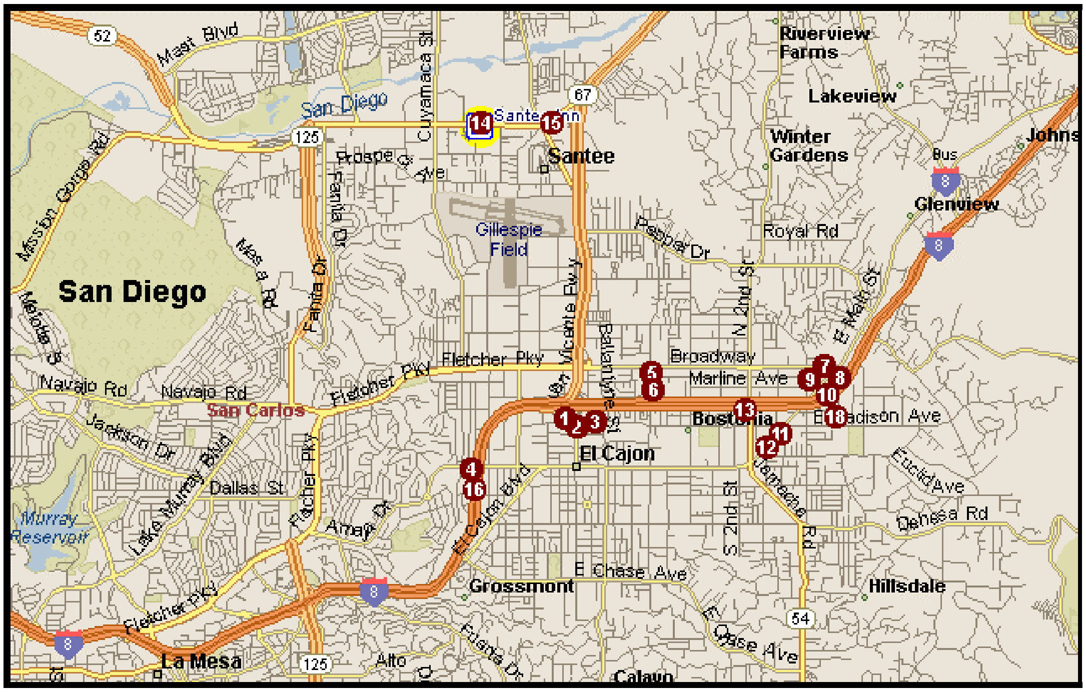


Table 9
El Cajon/Santee Area Hotels and Motels

Map #	Name of Hotel	Number of Rooms	Address	Spring 2003 Internet Rate	Meeting Rooms	Year Built
6.	Best Western Continental Inn	97	1274 Oakdale Ave.	$44-$129	Yes	1963
11.	Best Western Courtesy Inn	47	1355 E. Main St.	$60-$106	Yes	1987
15.	Best Western Santee Lodge	146	10726 Woodside Ave.	$72-$134	No	1987
8.	Budget Inn Motel	56	1538 E. Main St.	$39-$42	No	1981
10.	Ha' Penny Inn	75	1549 E.Main St.	$50-$56	No	1970
9.	Fabulous Seven Motel	100	1527 E. Main St.	$40-$45	No	1965
3.	Midtown Motel	19	461 N. Magnolia	$45	No	1981
1.	Motel 6 – El Cajon	183	550 Montose Ct.	$34-$40	No	1986
13.	Parkside Inn	32	1274 Oakdale Ave.	$40-$80	No	1968
5.	Plaza International	60	683 N. Mollison Ave.	$49-$56	No	1972
18.	Quality Inn	96	1250 El Cajon Blvd.	$69-$89	Yes	1987
14.	Santee Inn	57	10135 Mission Gorge	$50	No	1986
12.	St. Francis Motel	37	1368 E. Main St.	$50	No	1966
16.	Super 8 Motel/El Cajon	72	588 N. Mollison Ave.	$55-$65	Yes	1979
4.	Thriftlodge – El Cajon	38	1220 W. Main St.	$44-$99	No	1966
2.	Travelodge – El Cajon	47	471 N. Magnolia	$53-$98	No	1988
17.	Valley Motel	20	585 N. Mollison Ave.	$45	No	1965
7.	Villa Embasadora	85	1556 E. Main St.	$33-$38	No	1965
	Total:	**1,267**				

The Quality Inn, formerly an Econo Lodge, has recently undergone remodeling and added a small meeting room accommodating up to 48 people. The 15-year old hotel has 96 rooms with room rates ranging from $69-$89. The hotel is located near Interstate 8 and Grossmont Center, a major shopping mall in the area.

The Super 8 is a limited service hotel located at 588 N. Mollison Ave. It has a swimming pool, offers free local phone calls, and has a guest laundry. This Super 8 was built in 1979 as a Travelodge and was re-branded as a Super 8 in 1990. It has 72 guest rooms and meeting space for about 30 people. Rack rates for the motel are $55-$65.

Transient Occupancy Tax (TOT)

The City of El Cajon's transient occupancy tax (TOT) rate is 10% of the room cost. A little more than $9.4 million in lodging sales were generated within El Cajon during FY 2002, of which the city received about $940,000 in TOT revenue. Approximately $7.4 million in lodging sales were generated within the city of La Mesa during FY 2002 and the city received about $734,000 in TOT revenue. Almost $1.7 million in lodging sales were generated within the city of Santee during FY 2002 and the city received nearly $100,000 in TOT revenue. Combined these three cities generated about 1.4% of the total lodging sales within the County. Countywide lodging sales were nearly $1.3 billion with 73.5% of all lodging sales occurring within the city of San Diego.

Table 10
San Diego County/East County Cities
FY2002 TOT Collection

Selected Cities	Lodging Sales	Percent of County Lodging Sales	TOT Rate	TOT Revenues	Percent of County TOT Revenues
East County Cities	$18,438,773	1.4%	9.6%	$1,777,252	1.4%
El Cajon	$9,434,520	0.7%	10.0%	$943,452	0.7%
La Mesa	$7,338,620	0.6%	10.0%	$733,862	0.6%
Santee	$1,665,633	0.1%	6.0%	$99,938	0.1%
Rest of County	$1,257,343,277	98.6%	10.0%	$126,301,698	98.6%
COUNTY TOTAL	**$1,275,782,050**	**100.0%**	**10.0%**	**$128,078,950**	**100.0%**

Source: San Diego Convention & Visitors Bureau, Research Department, September 2002.

During the last 10 years lodging sales have increased by 107% in the East County market area. Countywide lodging sales have increased 121%.

Business travelers include Individual Business Travelers and Group/Convention Travelers desiring a property with meeting space for conventions, sales and orientation, training programs, social functions, etc. The majority of this demand occurs during the normal business week, Monday through Friday. The SMERF segment (social, military, educational, religious and fraternal groups) is generally regional in nature and meets on weekends and during holiday seasons, as it is more rate sensitive than the other group segments. These off-peak times enable more favorable rates. This segment is expected to grow moderately in accordance with general economic and demographic growth trends for the next several years.

The level of tourist activity (Leisure Travelers) in the area is closely related to fluctuations in the national economy and the strength of the dollar against foreign currencies. This segment is seasonal, generating a greater amount of lodging demand during the summer season and during student orientations, graduations, and home football games related to San Diego State University and Grossmont College, as well as other local educational institutions. A small percentage of this demand is a second bedroom demand from friends and relatives visiting area residents. Excluding the casino hotels, the leisure segment is expected to experience relatively modest growth.

Branding and chain affiliation have many benefits for a hotel seeking commercial and group market share. A centralized, national, or international reservation system increases occupancy levels, guests and meeting planners are reassured by a consistent quality expectation, and guests can benefit from rewards and frequent stay programs. The amenities offered by these chain hotels are basic hotel rooms, small meeting rooms, complimentary breakfast, and pool facilities. The franchisee benefits by getting full-service, international lodging affiliation offering a global reservation system, an on-line real time reservation system, marketing, advertising, purchasing, training and quality standards.

Hotels/motels with rates of less than $55 reported occupancy rates ranging from mid 50% to mid 60% during the period of 1998-2002. These occupancy rates fall significantly below the Countywide average rate, which ranged from low to mid 70%. Many of the smaller properties are individually operated with limited exposure. Many lack the global reservation benefits from chain affiliation, and therefore did not perform as well as larger chain affiliated properties.

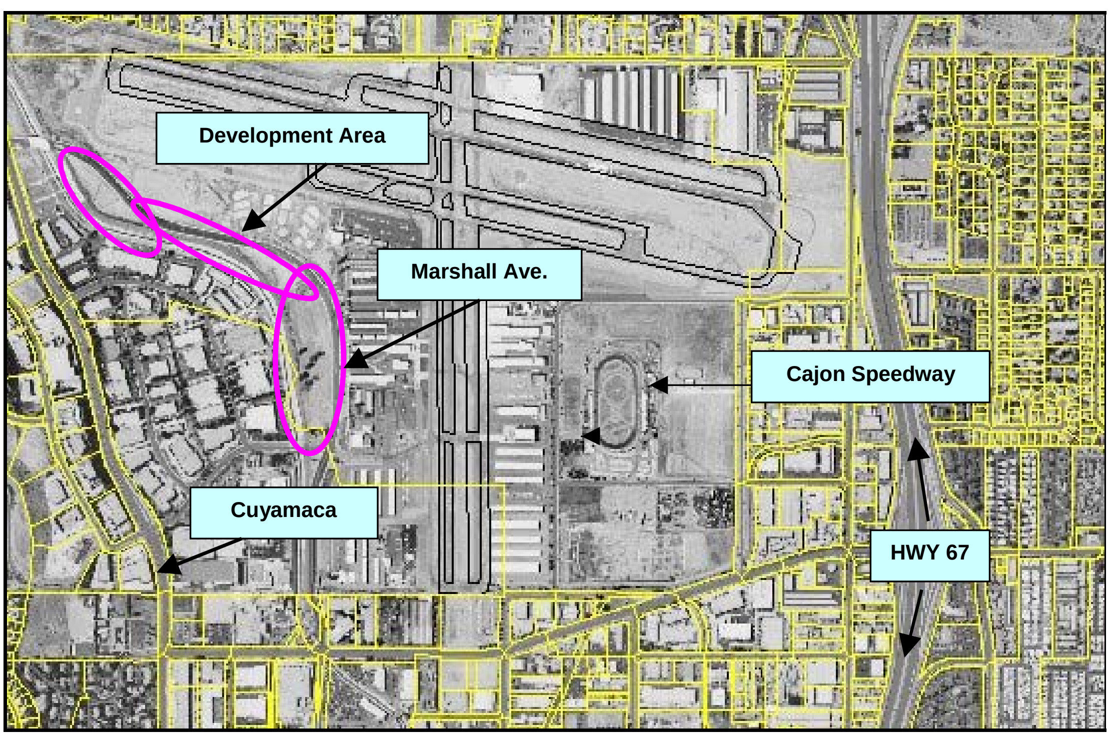
GILLESPIE FIELD FUTURE DEVELOPMENT AREA
NON-AVIATION USE

The Gillespie Field 2025 Airport Layout Plan proposed development concept (dated February 2002) incorporates significant land use changes to meet anticipated operational needs of the Airport. The largest change on the Airport land would occur in the area of the existing 66-acre Cajon Plaza Speedway. The 66 acres would be used for hangers, tie-downs, a terminal, and maintenance facilities. Other proposed ALP changes for Airport operations involve smaller areas that would relocate the helicopter operations, acquire aviation easements, provide for service road improvements, and allow in-filling of additional hangers and tie-downs.

FUTURE NON-AVIATION DEVELOPMENT AREA

The 2025 ALP designates one specific area of the Airport for additional development in non-aviation use. This future development area is “S” shaped and covers 12.6-acres located along Marshall Ave. on the west side of Gillespie Field. At its closest point the site is about 300 yards from the Gillespie Field Airport north-south runway. The land is long and irregular in shape, in three separate parcels, bounded by Billy Mitchell Dr. to the south, Marshall Ave. to the east, and the Trolley line to the west. Main access to the site on the north would be from Cuyamaca St. to Marshall and access from the south would be from West Bradley to Marshall Ave.

Figure 7
Gillespie Field Future Development Area



The concrete-lined Forrester Creek drainage channel runs along the backside (western boundary) of the parcel. Also running along the east side of the channel is the San Diego Trolley ROW. A trolley terminal is located at the intersection of Cuyamaca and Marshall at the north end of the parcel. A bus stop is located on Marshall Ave. directly in front of the parcel, providing convenient public transportation for area employees.

The area to the west of the project site is the Gillespie Field Industrial Park and is primarily comprised of manufacturing, warehousing, and distribution facilities. The main entrance to the Gillespie Field Airport is located across Marshall Ave. to the east of the parcel. Minimal convenience retail and food and beverage services are available on the Airport property. The closest major retail stores, restaurants, and business support services are located near the intersection of Mission Gorge Rd. and Cuyamaca St., only a few minutes north of the site. The Parkway Plaza regional shopping center is located a few minutes to the south of the site.

The site would have the advantage of good exposure from Marshall Ave. and it would remain detached from the older Gillespie Field Industrial Park tenants on the interior streets of John Towers Ave., Friendship Dr., and Billy Mitchell Dr.

GILLESPIE FIELD GROUND LEASE

Although the Federal Government granted ownership of the Gillespie Field land to San Diego County, there are restrictions placed on disposition and use of the land. As such the County cannot sell the land at Gillespie Field and non-aviation land uses must not interfere with the needs and operations of the Airport. In order to comply with these restrictions the County is allowed to enter into long term ground leases (generally, industrial leases are written for 55 years, aviation leases are 20 years).

Most of the ground leases are written on a base, five-year fixed monthly rent with annual inflation adjustments. The initial base rent is determined as a percentage of the current market value of the land. The base fixed rent is readjusted to market value at the end of each five-year period throughout the life of the lease term. At the end of the lease term the County has the right to require vacation of all buildings and improvements on the leased land and may require the leaseholder to remove all buildings and improvements and restore the land to its original state. As such the potential ground leesee must weigh the pros and cons of entering into a ground lease versus a more traditional fee-simple purchase of the land. It should also be noted that the ground leesee has possessory interest ownership of the land and is therefore responsible for the payment of property taxes and all other applicable fees and special taxes of property ownership.

MARKET FEASIBLE NON-AVIATION LAND USE

The market and growth conditions for the El Cajon, Santee, and the greater East Suburban MSA will support additional commercial and industrial development. Vacancy rates for industrial, office, and retail space are low when compared to historical trends for the market area and when compared to the greater San Diego region. Until recently, hotel development and office space development were almost completely ignored in the East Suburban market area, largely because of the perceived lack of demand and support services.

However, the character of the east county region is evolving and several large projects that are under construction and planned will help to change the perception of the market's capacity for higher-end development. Significant support for this development is generated by the anticipated completion of the regional transportation systems including Hwy. 125, Hwy. 52, and the San Diego Trolley.

At the outset of the ALP project study the proposed amount and location of new aviation and non-aviation land uses was not known. With the preparation of the of the Preliminary ALP Concept Plan for the Airport, the potential major land use changes are more clear. These changes would incorporate the 66-acre El Cajon Speedway (including the golf driving range and outdoor trailer/equipment storage operations) for aviation land uses as described previously. The second major change would designate a 12.6-acre area for non-aviation land uses on Marshall Avenue.

One of the community's objectives for the ALP study was to maximize the fiscal and economic benefits of the proposed Airport land uses. The new aviation uses under the preliminary plan are generally well prescribed and the non-aviation uses were intentionally not defined.

12.6-Acre Marshall Avenue Site

The 12.6-acre Marshall Avenue site offers some significant market advantages when compared with the older Gillespie Field Industrial Park. As a long parcel with generally shallow depth, the proposed site will benefit from much greater exposure along a major interior roadway (Marshall Avenue). The close proximity of the San Diego Trolley station and bus routes also support employee access and therefore the site's development potential.

However, the site's surrounding industrial neighbors have created a perceived and real industrial environment. The area does not have the land use controls or the corporate feel of the Gillespie Field Business Park (west of Cuyamaca St.). The proposed site has minimal nearby or adjacent commercial support (e.g., business services, eating and drinking, and shopping). The site also lacks direct exposure to major transportation routes, although it does have good exposure to an interior circulation roadway (Marshall Ave.).

Commercial office and retail establishments rely on key site factors such as exposure and access to create awareness and convenience for their client base and potential customers. High average daily trip volumes from drive-by traffic on major roadways can create significant exposure and awareness. Good access is important to optimize a high exposure location. The quality and condition of the surrounding environment are also key factors in potential market demand for a specific location, especially for commercial retail, office, and hotel development.

The Marshall Avenue site is not well suited to hotel development, office development, or retail development. In CIC's opinion the 12.6-acre Marshall Avenue site is best suited for multi-tenant industrial development and is likely to attract some tenants with combined manufacturing and sales activities or wholesale and retail activities. The site will support up to120,000 s.f. of multi-tenant industrial space in a five- to eight-building configuration along Marshall Avenue. Expected lease rates per square foot would range from $0.80 to $0.85 NNN, with a $15 to $20 per square foot tenant improvement allowance.

ECONOMIC AND FISCAL IMPACT ANALYSIS

The economic activities of the Gillespie Field Airport aviation and non-aviation businesses (including Airport users), interact with all sectors of the San Diego County regional economy. Therefore, businesses and households throughout the region benefit from sales and income directly and indirectly derived from all activities occurring on the Airport land. The inventory of businesses and the survey of business activities and employment conducted by CIC Research, Inc. were used to derive the total direct regional output of the Airport's aviation and non-aviation activities. However, the measurement of the direct output (regional sales) did not represent the total impact of these activities within the local economy. Estimating these total economic impacts required the use of a basic economic modeling tool called input/output analysis.

THE SAN DIEGO REGIONAL ECONOMIC IMPACT MODEL

In this study an input-output model of the San Diego economy was used. The term "input/output" refers to the interrelationships of businesses and households, where the inputs of one industry (i.e., the purchases of materials and labor necessary to produce a good or service) must be purchased from the outputs of other industries (i.e., the sales of other industries and labor that are supplying the inputs).[8]

With this regional input/output model it was possible to measure the total economic activity within the local economy and the direct output associated with the Airport land uses. These impacts are measured in terms of total regional sales, employment, and personal income (e.g., wage and salary income) generated directly and indirectly within the region. CIC Research applied IMPLAN PRO input/output software in measuring the San Diego regional economic activity of the Airport.

CIC Research used 26 aggregated economic sectors to define the San Diego regional economic model. Table 11 lists these 26 sectors of the San Diego County economic model and the respective sales, income (wages and salaries), and employment for each sector. The largest sector listed in the table and figure is a non-descriptive "Other Services." Included in Other Services as defined for the regional modeling are: health services, educational services, childcare, social services, legal services, engineering and architectural services, as well as religious and fraternal organizations.

Rounding out the remaining four of the top five sectors of the regional economy (in terms of employment) are 2) business services, 3) state and local government, 4) durable goods manufacturing, and 5) retail trade (excluding food stores, auto dealers/service and gas stations, and eating and drinking places). The total countywide economy generated about $257 billion in sales. Total household income within the County was $68 billion and total employment was equal to approximately 1,745,000 jobs. The average income per job in the County was $38,800.

[8] For a readable discussion see William H. Miernyk, The Elements of Input-Output Analysis, New York, Random House, 1965.

Table 11

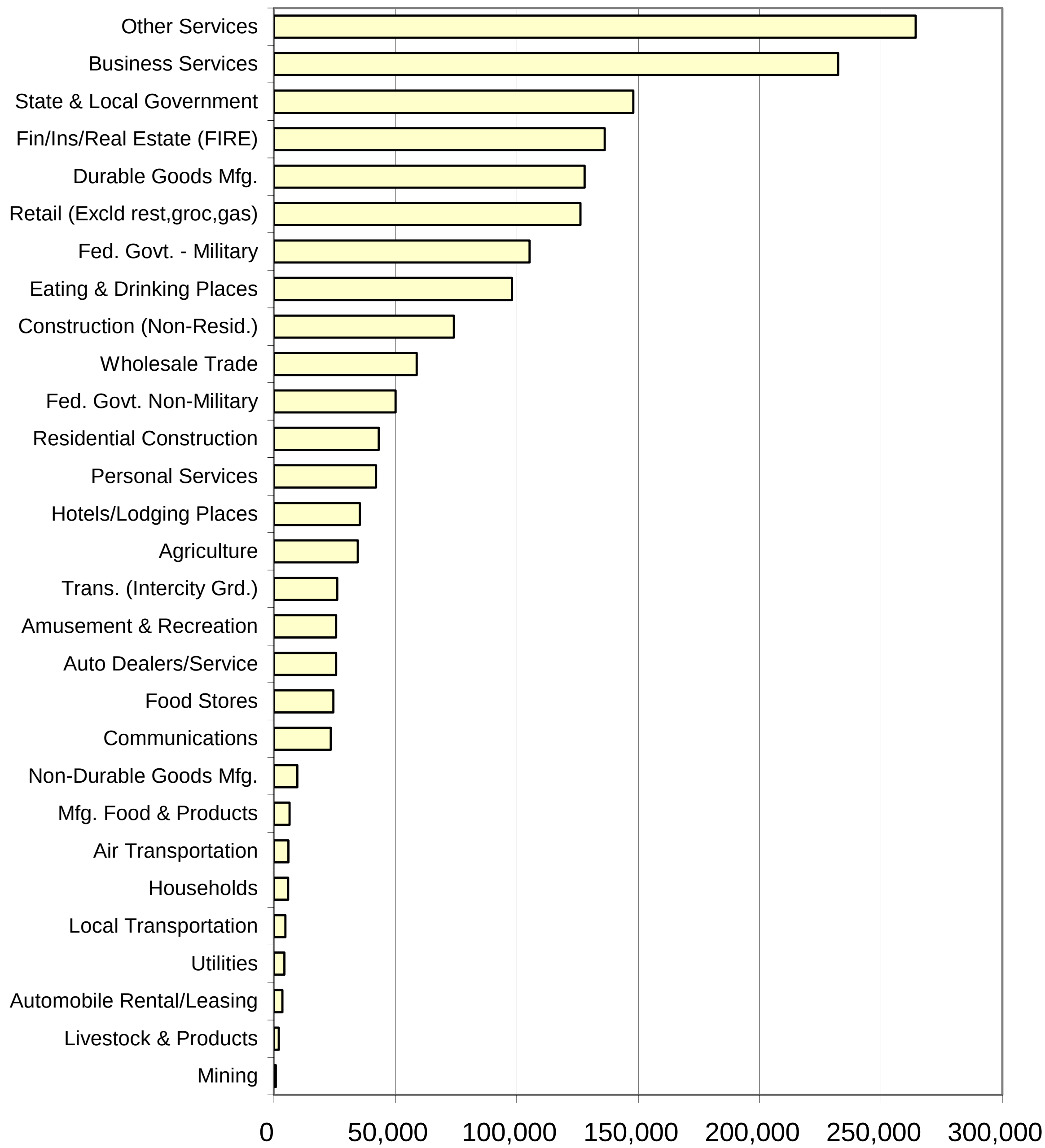
The San Diego County Economy
Regional Input-Output Model Sectors

Sector Description	Estimated 2001 County Totals Sales ($millions)	Income ($millions)	Jobs
1 Livestock & Livestock Products	$95	$26	2,057
2 Agriculture	$1,698	$686	34,617
3 Mining	$182	$59	761
4 Residential Construction	$6,043	$1,466	43,198
5 All Other Construction	$7,435	$3,387	74,151
6 Manufacturing Food & Kindred Products	$1,137	$173	6,437
7 Non-Durable Goods Manufacturing	$1,106	$281	9,602
8 Durable Goods Manufacturing	$24,177	$7,248	128,005
9 Other Transportation	$2,509	$1,115	26,045
10 Local Transportation	$218	$135	4,737
11 Air Transportation	$492	$210	6,029
12 Communications	$13,179	$3,377	23,407
13 Utilities	$2,438	$500	4,275
14 Wholesale Trade	$7,295	$3,013	58,776
15 Other Retail Trade	$5,501	$2,652	126,275
16 Food Stores	$1,295	$761	24,469
17 Automotive Dealers & Service Stations	$2,052	$934	25,574
18 Eating & Drinking	$3,838	$1,543	98,028
19 FIRE	$30,416	$5,214	136,267
20 Hotels and Lodging Places	$2,137	$876	35,406
21 Personal Services	$1,855	$830	42,009
22 Other Services	$17,848	$10,070	264,293
23 Business Services	$14,000	$7,339	232,330
24 Automobile Rental and Leasing	$395	$114	3,519
25 Amusement and Recreation Services	$862	$369	25,637
26 Households	$87,343	$368	5,884
Exogenous Transfer Payments			
27 Federal Government - Military	$10,218	$5,921	105,283
28 Federal Government - Non-Military	$3,197	$2,712	50,040
29 State & Local Government	$8,426	$6,711	148,019
Total	**$257,387**	**$68,090**	**1,745,130**

Source: IMPLAN 1999 structural matrices for San Diego County regional economy adjusted to 2001 control totals by CIC Research based on a combination of changes in sales data or employment and inflation factors by sector.

Figure 8

Ranking Of San Diego County Economic Model Sectors By Employment



Source: IMPLAN 1999 structural matrices for San Diego County regional economy adjusted to 2001 control totals by CIC Research based on a combination of changes in sales data or employment and inflation factors by sector.

TOTAL REGIONAL VALUE OF AIRPORT ACTIVITES

The following tables summarize the resulting total economic impacts (direct and indirect) associated with all Airport land uses. These impacts are measured for the current level of Airport activities as well as for the land use activities for the proposed 2025 Airport Layout Plan. Detailed economic impact tables appear in the appendix, listing the direct, indirect, and induced spending by sector for the regional economy.

The Airport's Countywide Economic Impacts

The Airport land uses including the 267 aviation and non-aviation businesses are currently generating direct sales of about $403 million and 3,164 jobs. Countywide the $403 million in direct Airport land use activities generated nearly $919 million in total sales (direct, indirect and induced: multiplier = 2.3). The $919 million total regional impact also generated $263 million in household income. The Airport aviation and non-aviation supported a total of about 6,250 jobs with an average total income per job of about $42,000 Countywide. The Airport's total regional impact represents about 0.4% percent of the regional economy.

Table 12
Gillespie Field Airport Total Economic Activity
(2001)

Impact Category	Impact Estimates
Direct Output	$403.0 M
Indirect & Induced Output	$515.5 M
Total Economic Activity	$918.5 M
Household Income	$262.9 M
Employment (total jobs)	6,258
Average Income Per Job	$42,000
Economic Multiplier (total / direct spending)	$2.28

Source: CIC Research, Inc.

The Gillespie Field 2025 Airport Layout Plan Preliminary Concept identifies additional aviation and non-aviation activities and would result in increased employment and regional sales generation from the Airport land uses. The conversion of the Cajon Plaza Raceway property will significantly increase aviation related uses on the Airport land. In addition, the build out of the Gillespie Airport Business Park (west of Cuyamaca St.) along with the proposed 12.6-acre Marshall Ave. site, and additional in-filling on the Airport will result in a 73% increase in aviation related employment and a 28% increase in non-aviation employment.

The proposed Airport land uses included in the 2025 ALP would generate direct sales of about $530 million (expressed in current dollar amount) and an estimated 4,190 direct jobs. Countywide the $530 million in direct Airport land use activities would generate more than $1.2 billion in total sales (direct, indirect and induced: multiplier = 2.27). The $1.2 billion total regional impact would also generate $346 million in household income. The Airport aviation and non-aviation activities would support a total of about 8,250 jobs Countywide.

Table 13
Gillespie Field Airport Total Economic Activity
2025 Airport Layout Plan
($Millions*)

Impact Category	Impact Estimates
Direct Output	$529.8 M
Indirect & Induced Output	$675.3 M
Total Economic Activity	$1,205.1 M
Household Income	$346.2 M
Employment (total jobs)	8,258
Average Income Per Job	$41,900
Economic Multiplier (total / direct spending)	$2.27

* Expressed in current 2001 dollar amounts.
Source: CIC Research, Inc.

GILLESPIE FIELD AIRPORT FISCAL IMPACTS

The following fiscal impact analysis builds from these Countywide estimates of total regional sales output to estimate the amount of government revenues and expenses attributable to the Airport land uses. The major categories of fiscal revenues are primarily measured in terms of sales tax, property tax, and transient occupancy tax revenues. The economic activities of the aviation and non-aviation land uses at Gillespie Field Airport are generating significant local, state, and Federal government revenues.

As a result of the $919 million in total regional output from Airport land uses, local, state, and Federal governments are receiving an estimated $61 million tax revenues and fees. Property taxes are the largest source of revenue for local governments representing about 85% of the total tax revenue received. Sales tax revenues are much more important for the state than for local governments as the state is receiving nearly 87% of the sales tax revenue, although a portion of this money is returned to the region through the allocation of regional transportation funds. However, state and Federal government income taxes and various excise taxes and fees, representing $44 million of the total $61 million in total fiscal revenues.

Table 14
Gillespie Field Airport Fiscal Impacts
($Millions - 2001)

Fiscal Revenue Sources	Local	State & Fed	Total
Property Taxes	$ 8.41	$ -	$ 8.41
Retail Sales Tax	$ 1.10	$ 7.14	$ 8.24
Transient Occupancy Tax	$ 0.43	$ -	$ 0.43
Business and Household Income Taxes	$ -	$ 44.09	$ 44.09
TOTAL	$ 9.94	$ 51.23	$ 61.17

Source: CIC Research, Inc.

Table 15
Gillespie Field Airport Fiscal Impacts
2025 Airport Layout Plan
($Millions*)

Fiscal Revenue Sources	Local	State & Fed	Total
Property Taxes	$ 10.98	$ -	$ 10.98
Retail Sales Tax	$ 1.44	$ 9.38	$ 10.82
Transient Occupancy Tax	$ 0.56	$ -	$ 0.56
Business and Household Income Taxes	$ -	$ 57.84	$ 57.84
TOTAL	$ 12.98	$ 67.22	$ 80.20

* Expressed in current 2001 dollar amounts.

Source: CIC Research, Inc.

Based on the 2025 ALP and an estimated $1.2 billion in total regional output from Airport land uses, local, state, and Federal governments would receive an estimated $80 million in tax revenues and fees (expressed in current 2001 dollars). This would represent an increase of about 31% more than the current (2001) level of activity. Property taxes would continue to be the largest source of revenue for local governments representing about $11 million of the total $13 million in local tax revenues. Sales tax revenues for the state would total about $9.4 million. State and Federal government revenues would total about $67 million of the total $80 million in fiscal revenues.

APPENDIX

DETAILED TABLES OF TOTAL REGIONAL ECONOMIC IMPACTS BY SECTOR

Table A-1

Gillespie Field Airport
2001 Land Use Inventory
Total Regional Economic Activity By Sector
($Millions)

#	Sector Description	Direct Sales	Total Direct, Indirect, And Induced Impact		
			Sales	Income	Jobs
1	Livestock & Livestock Products	$0.0	$0.2	$0.0	4
2	Agriculture	$1.6	$3.0	$1.2	60
3	Mining	$0.0	$0.6	$0.2	2
4	Residential Construction	$3.0	$5.6	$1.4	38
5	All Other Construction	$11.5	$17.4	$7.9	155
6	Manufacturing Food & Kindred Products	$0.0	$1.5	$0.2	7
7	Non-Durable Goods Manufacturing	$11.1	$15.5	$3.9	135
8	Durable Goods Manufacturing	$275.9	$362.6	$108.7	1,889
9	Other Transportation	$11.7	$25.5	$11.3	255
10	Local Transportation	$0.0	$0.7	$0.4	14
11	Air Transportation	$22.4	$24.0	$10.2	280
12	Communications	$0.0	$9.9	$2.5	18
13	Utilities	$0.0	$10.1	$2.1	19
14	Wholesale Trade	$18.4	$143.3	$14.8	289
15	Other Retail Trade	$3.0	$58.4	$7.0	305
16	Food Stores	$2.5	$17.3	$2.5	83
17	Automotive Dealers & Service Stations	$0.0	$21.0	$2.4	60
18	Eating & Drinking	$2.5	$12.0	$4.8	285
19	FIRE	$3.7	$59.0	$10.1	256
20	Hotels and Lodging Places	$0.7	$4.3	$1.7	68
21	Personal Services	$10.2	$15.0	$6.7	322
22	Other Prof. Services (I.e., eng., educ., health)	$16.3	$71.0	$40.0	966
23	Business Services	$6.9	$36.5	$19.2	553
24	Automobile Rental and Leasing	$0.0	$1.1	$0.3	9
25	Amusement and Recreation Services, N.E.C.	$1.6	$3.2	$1.4	100
26	Households	$0.0		$1.7	86
	Total	$403.0	$918.5	$262.9	6,258

Source: CIC Research, Inc.

Table A-2

Gillespie Field Airport
2025 ALP Proposed Land Use Inventory
Total Regional Economic Activity By Sector
($Millions of current dollars)

#	Sector Description	Direct Sales	Total Direct, Indirect, And Induced Impact		
			Sales	Income	Jobs
1	Livestock & Livestock Products	$0.0	$0.2	$0.1	5
2	Agriculture	$2.1	$3.9	$1.6	79
3	Mining	$0.0	$0.8	$0.3	3
4	Residential Construction	$3.8	$7.3	$1.8	49
5	All Other Construction	$14.7	$22.3	$10.2	200
6	Manufacturing Food & Kindred Products	$0.0	$2.0	$0.3	9
7	Non-Durable Goods Manufacturing	$14.3	$20.0	$5.1	175
8	Durable Goods Manufacturing	$356.1	$469.2	$140.7	2,444
9	Other Transportation	$15.0	$33.4	$14.8	334
10	Local Transportation	$0.1	$1.0	$0.6	20
11	Air Transportation	$38.6	$40.7	$17.4	476
12	Communications	$0.0	$13.0	$3.3	23
13	Utilities	$0.0	$13.1	$2.7	24
14	Wholesale Trade	$23.8	$186.5	$19.3	376
15	Other Retail Trade	$4.1	$77.0	$9.3	402
16	Food Stores	$3.2	$22.6	$3.3	108
17	Automotive Dealers & Service Stations	$0.0	$27.6	$3.1	79
18	Eating & Drinking	$3.1	$15.6	$6.3	371
19	FIRE	$4.8	$77.5	$13.3	337
20	Hotels and Lodging Places	$0.9	$5.6	$2.3	88
21	Personal Services	$13.1	$19.4	$8.7	416
22	Other Prof. Services (I.e., eng., educ., health)	$21.5	$93.5	$52.7	1,273
23	Business Services	$8.8	$47.5	$24.9	718
24	Automobile Rental and Leasing	$0.0	$1.5	$0.4	12
25	Amusement and Recreation Services, N.E.C.	$1.8	$3.9	$1.7	122
26	Households	$0.0		$2.2	113
	Total	$529.8	$1,205.1	$346.2	8,258

Source: CIC Research, Inc.

Appendix C
Noise Study

Gillespie Field
Noise Analysis

March, 2004

Prepared by:

Mestre Greve Associates
27812 El Lazo Road
Laguna Niguel, California 92677

P & D Aviation
999 Town & Country Road, 4th Floor
Orange, California 92868

Table of Contents

Noise Analysis

Introduction

This section presents background information on the characteristics of sound as a physical phenomenon and provides insight into its perception as noise by humans. Individuals residing at or near airports often misunderstand the sound levels recorded and documented by acoustical studies. Relating numerical representations of sound levels to the perceived levels of sound is difficult. This section provides a means to relate the sound made by aircraft at Gillespie Field (SEE) to the noise perceived by those in the surrounding communities. The metrics and methodologies used in this Study to measure and model the noise environment are described to give the reader a greater understanding of the assessment of noise impacts. This section is divided into the following sub-sections:

- Characteristics of Sound - Presents properties of sound that are important for technically describing noise in the airport setting.
- Factors Influencing Human Response to Sound -Presents factors audible to the human ear that produce subjective perception and elicit a response.
- Health Effects of Noise - Summarizes the potential disturbances and health effects of noise to humans.
- Sound Rating Scales - Presents various sound rating scales and how they apply to assessing noise from aircraft operations.
- Noise/Land Use Compatibility Guidelines - Summarizes current standards and regulations used to control the use of land in areas affected by aircraft noise.
- Airport Noise Assessment Methodology. Describes computer modeling and on site noise measurement surveys used to measure and describe noise within the vicinity of the airport.

Characteristics of Sound

Sound Level and Frequency. Sound is technically described in terms of sound pressure (amplitude) and frequency (similar to pitch).

Sound pressure measures the magnitude of a sound without consideration for other factors that may influence its perception. The range of sound pressures that occur in the environment is so large that it is convenient to express them on a logarithmic scale. This scale compresses the wide range of sound pressures to a more usable range of numbers. The standard unit of measurement of sound pressure is the Decibel (dB). One decibel is actually an exponent to the reference point of 20 micro Pascals or about .000000003 pounds per square inch.

On the logarithmic scale, a sound level of 70 dB has 10 times as much acoustic energy as a level of 60 dB while a sound level of 80 has 100 times as much acoustic energy as 60 dB. (This differs from the human perception to noise. which typically judges a sound 10 dB higher than another to be twice as loud, 20 dB higher four times as loud, and so forth.)

The frequency of a sound is expressed as Hertz (Hz) or cycles per second. The normal audible frequency range for young adults is 20 Hz to 20,000 Hz. The human ear is not equally sensitive to all frequencies; some frequencies are judged to be louder for a given signal than others. As a result, various methods of frequency weighting have been developed. The most common weighting is the A-weighted decibel scale (dBA) which accounts for various frequencies in a manner approximating the sensitivity of the human ear. (Other weighting scales include the dB(B) and dB(C) which are used for other types of measurements.) Most community noise analyses are based upon the A-weighted decibel scale. Typically, everyday sounds normally range from 30 dBA (very quiet) to 100 dBA (very loud) as presented in Figure 1 entitled, *TYPICAL COMMUNITY NOISE LEVELS (dBA)*.

Propagation of Noise. Outdoor sound levels decrease as a result of increasing distance from the source. This decrease is due to wave divergence, atmospheric absorption and ground attenuation. If sound is radiated from a source in a even and undisturbed manner, the sound travels in spherical waves. As the sound wave travels away from the source, the sound energy is dispersed over a greater area dispersing the sound power of the wave. Spherical spreading of sound waves reduces the noise level at a given receptor location at a rate of 6 dB per doubling of the distance.

dB(A)	OVER-ALL LEVEL Sound Pressure Level Reference: 0.0002 Microbars	COMMUNITY (Outdoor)	HOME OR INDUSTRY	LOUDNESS Human Judgement of Different SoundLevels
130		Military Jet Aircraft Take-Off With After-burner From Aircraft Carrier @ 50 Ft. (130)	Oxygen Torch (121)	120 dB(A) 32 Times as Loud
120 110	UNCOMFORTABLY LOUD	Concord Takeoff (113)*	Riveting Machine (110) Rock-N-Roll Band (108-114)	110 dB(A) 16 Times as Loud
100		Boeing 747-200 Takeoff (101)*		100 dB(A) 8 Times as Loud
90	VERY LOUD	Power Mower (96) DC-10-30 Takeoff (96)* Motorcycle @25 Ft. (90)	Newspaper Press (97)	90 dB(A) 4 Times as Loud
80		Car Wash @ 20 Ft. (89) Boeing 727 w/ Hushkit Takeoff (96)* Diesel Truck, 40 MPH @ 50 Ft. (84) Diesel Train, 45 MPH @ 100 Ft. (83)	Food Blender (88) Milling Machine (85) Garbage Disposal (80)	80 dB(A) 2 Times as Loud
70	MODERATELY LOUD	High Urban Ambient Sound (80) Passenger Car, 65 MPH @ 25 Ft. (77) Freeway @ 50 Ft. From Pavement) Edge, 10:00 AM (76 +or- 6) Boeing 757 Takeoff (76)*	Living Room Music (76) TV-Audio, Vacuum Cleaner	70 dB(A)
60		Propeller Airplane Takeoff (67)* Air Conditioning Unit @ 100 Ft. (60)	Cash Register @ 10 Ft. (65-70) Electric Typewriter @ 10 Ft. (64) Dishwasher (Rinse) @ 10 Ft. (60) Conversation (60)	60 dB(A) 1/2 as Loud
50	QUIET	Large Transformers @ 100 Ft. (50)		50 dB(A) 1/4 as Loud
40		Bird Calls (44) Lower Limit Urban Ambient Sound (40)		40 dB(A) 1/8 as Loud
20	JUST AUDIBLE	Desert at Night (dB[A] Scale Interrupted)		
10	THRESHOLD OF HEARING			

Numbers in Parentheses are the A-Scale Weighted Sound Levels for that Noise Event
****Aircraft takeoff noise measured 6,500 meters from beginning of takeoff roll***

SOURCE: Leo L. Beranek "Noise and Vibration Control," 1971
*Aircraft Levels From FAA Advisory Circular AC-36-3G

Figure 1 Examples of Typical A-Weighted Sound Levels

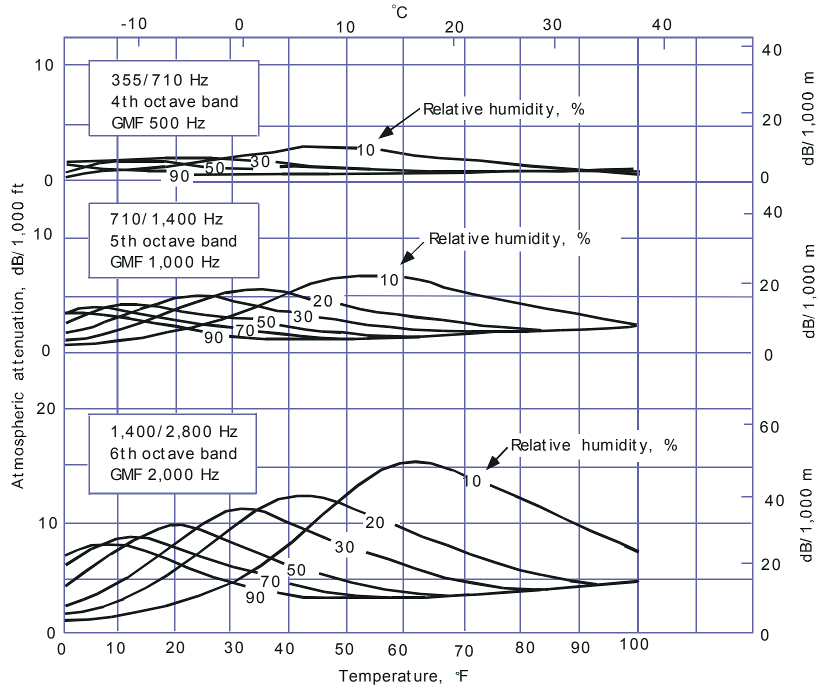
Temperature and humidity of the atmosphere also influence the sound levels received by the observer. The influence of the atmosphere and the resultant fluctuations increase with distance and become particularly important at distances greater than 1,000 feet. The degree of absorption depends on frequency of the sound as well as the humidity and air temperature. For example, when the air is hot and humid, and therefore more dense, atmospheric absorption is lowest. Higher frequencies are more readily absorbed than the lower frequencies, and over large distances, the lower frequency sounds become dominant. Examples of the affects of temperature and humidity on the absorption effects of the atmosphere are presented in the following Figure 2, *ATMOSPHERIC ATTENUATION BY OCTAVE BAND VERSUS RELATIVE HUMIDITY AND TEMPERATURE*.

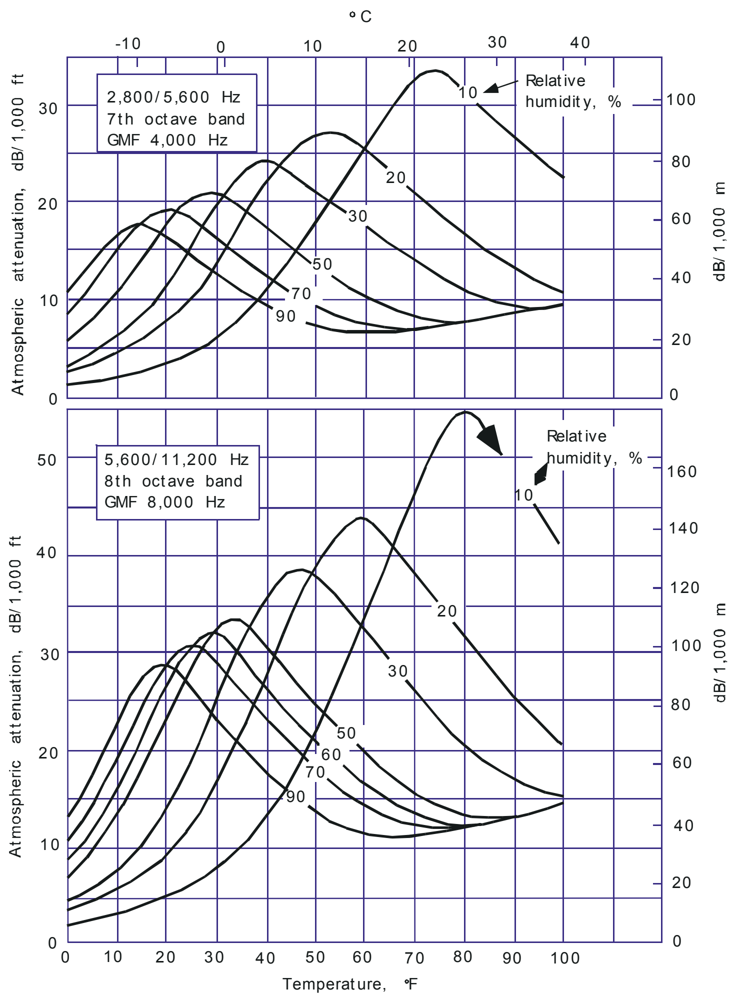
Duration of Sound. Duration of a noise event is an important factor in describing sound in a community setting. The longer the noise event, the more annoying it is. The "effective duration" of a sound starts when a sound rises above the background sound level and ends when it drops back below the background level.

Psycho-acoustic studies have determined the tradeoffs between the level of a noise event and its duration making it possible to equate the annoyance from a short, but loud, event with a long, but quieter, event.

This relationship between duration and noise level forms the basis of the equivalent energy principal of sound exposure. Reducing the acoustic energy of a sound by one-half results in a 3 dB reduction. Conversely, doubling the duration of the sound event increases the total energy of the event by 3 dB. This equivalent energy principal is based upon the premise that the potential for a noise to impact a person is dependent on the total acoustical energy content of the noise. Noise descriptors explained below (CNEL, LEQ and SENEL) are all based upon the equal energy principle.

Change in Noise Levels. The concept of change in sound levels is related to the reaction of the human ear to sound. The human ear detects relative differences between sound levels better than absolute values of levels. Under controlled laboratory conditions, a human listening to a steady unwavering pure tone sound can barely detect a change of approximately one decibel for sound levels in the mid-frequency region. However, when ordinary noises are heard, a young healthy ear can only detect changes of two to three decibels. A five-decibel change is noticeable while a 10-decibel change is judged by the majority of people as a doubling effect of the sound. Therefore it is typical in environmental noise studies to consider a 3 dB change as potentially discernible.





SOURCE: BERANEK, 1981

Figure 2 Atmospheric Attenuation by Octave Band Versus Relative Humidity and Temperature

Ground Effects. As sound travels away from the source, some of it is absorbed due to the interaction with the surrounding terrain. This is termed ground attenuation. The amount of ground attenuation depends on the structure and density of foliage as well as the height of both the source and receiver as well as the frequency of the sound being absorbed. If the source and the receiver of the sound are both located below the average height of the intervening terrain, the ground attenuation will be most effective. If either the source or the receiver rises above the height of the ground, the attenuation becomes less effective. Homes located on a ridge, for example, where there is less ground absorption would experience higher noise levels than what would normally be expected at those distances. Water surface is a reflective surface and therefore absorbs less sound than ground or foliage. Man made structures such as buildings and walls also contribute localized attenuation.

Factors Influencing Human Response to Sound

Many factors influence how a sound is perceived and whether or not it is considered annoying to the listener. This includes not only physical characteristics of the sound but also secondary influences such as sociological and external factors. Molino, in the Handbook of Noise Control describes human response to sound in terms of both acoustic and non-acoustic factors. These factors are summarized in Table 1, *FACTORS THAT AFFECT INDIVIDUAL ANNOYANCE TO NOISE*.

Table 1
FACTORS THAT AFFECT INDIVIDUAL ANNOYANCE TO NOISE

Primary Acoustic Factors
- Sound Level
- Frequency
- Duration

Secondary Acoustic Factors
- Spectral Complexity
- Fluctuations in Sound Level
- Fluctuations in Frequency
- Rise-Time of the Noise
- Localization of Noise Source

Non-Acoustic Factors
- Physiology
- Adaptation and Past Experience
- How the Listener's Activity Affects Annoyance
- Predictability of When a Noise will Occur
- Is the Noise Necessary
- Individual Differences and Personality

Source: C. Harris, 1979

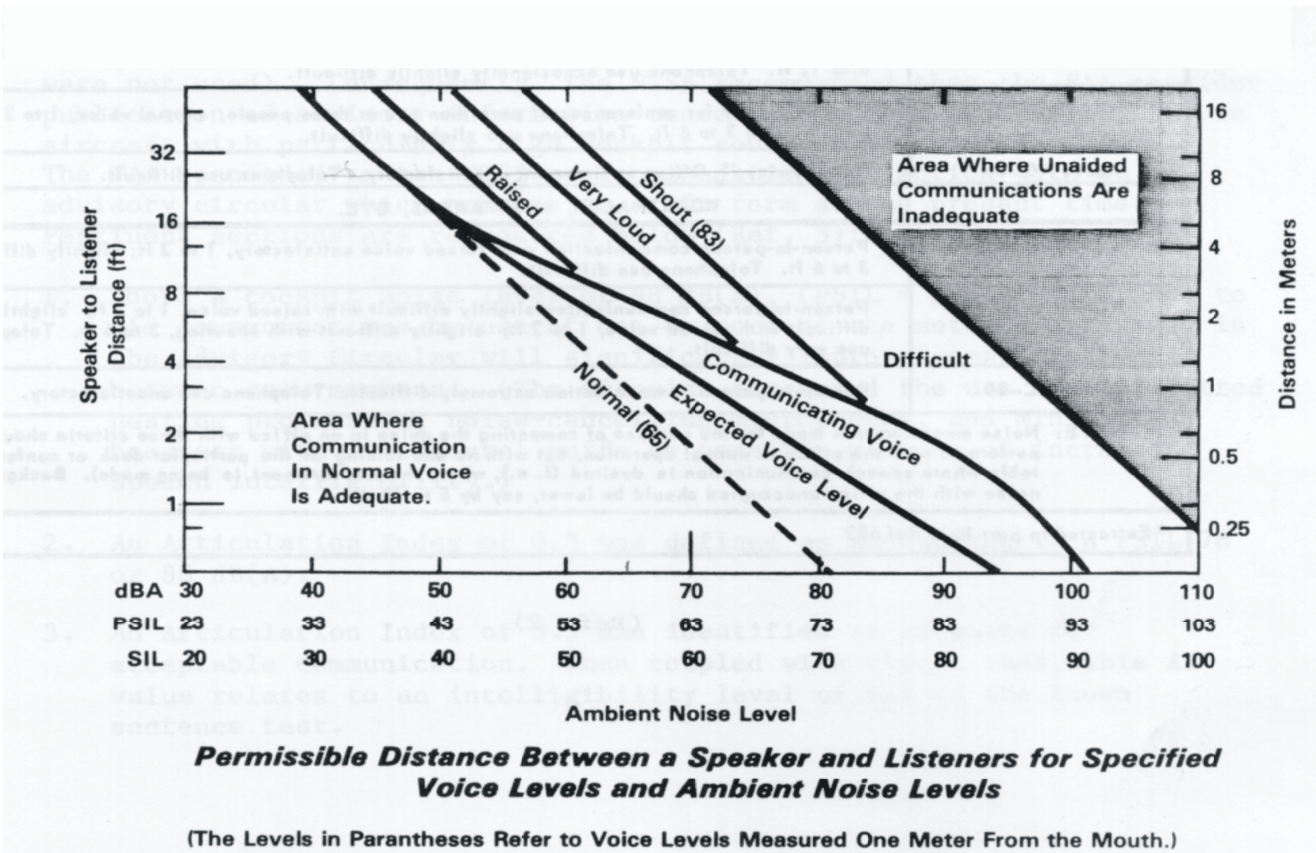
Sound rating scales have been developed to account for how humans respond to sound and how sounds are perceived in the community. As shown in Table 1, many non-acoustic parameters affect individual response to noise. Background sound, an additional acoustic factor not specifically listed, is important in describing sound in rural settings. Some research on the effects of personal and situational variables on noise annoyance identified a clear association of reported annoyance and fear of an accident. In particular, there is firm evidence that noise annoyance is associated with: (1) the fear of an aircraft crashing or of danger from nearby surface transportation; (2) the belief that aircraft noise could be prevented or reduced by designers, pilots, or authorities related to airlines; and (3) an expressed sensitivity to noise generally. Thus, it is important to recognize that such non-acoustic factors as well as acoustic factors contribute to human response to noise.

Health Effects of Noise

Noise, often described as unwanted sound, is known to have several adverse effects on people. From these effects, criteria have been established to help protect the public health, safety, and welfare, and to prevent the disruption of certain human activities. These criteria are based on effects of noise on people such as hearing loss (not a factor with typical community noise), communication interference, sleep interference, physiological responses and annoyance. Each of these potential noise impacts is briefly discussed below:

- *Hearing Loss* is generally not a concern in community noise problems, even close to a major airport or a freeway. The potential for noise induced hearing loss is more commonly associated with occupational noise exposures in heavy industry, very noisy work environments with long term exposure, or certain very loud recreational activities such as target shooting, motorcycle or car racing, etc. The Occupational Safety and Health Administration (OSHA) identifies a noise exposure limit of 90 dB(A) for 8 hours per day to protect from hearing loss (higher limits are allowed for shorter duration exposures). Noise levels in neighborhoods, even in very noisy neighborhoods, do not exceed this standard and are not sufficiently loud to cause hearing loss.
- *Communication Interference* is one of the primary concerns in environmental noise problems. Communication interference includes speech interference and interference with activities such as watching television. Normal conversational speech is in the range of 60 to 65 dB(A) and any noise in this range or louder may interfere with speech. There are specific methods for describing speech interference as a function of the distance between speaker and listener and voice level. Figure 3, *SPEECH INTERFERENCE WITH DIFFERENT BACKGROUND NOISE*, shows the relationship between the quality of speech communication and various noise levels.
- *Sleep Interference,* particularly during nighttime hours, is one of the major causes of annoyance due to community noise. Noise makes it difficult to fall asleep, creates momentary disturbances of natural sleep patterns by causing shifts from deep sleep to lighter stages of sleep, and may cause awakenings that a person may not be able to recall.

  Historically, sleep research studies have yielded widely varying results. The latest research conducted in the 1990's in England shows that the probability for sleep disturbance is less than that reported in earlier research. Newer, more sophisticated *field* techniques indicate that awakenings can be expected at a much lower rate than had been expected based on earlier *laboratory* studies. The significant difference in the recent English study is the use of actual in-home sleep disturbance patterns as opposed to laboratory data that had been the historic basis for predicting sleep

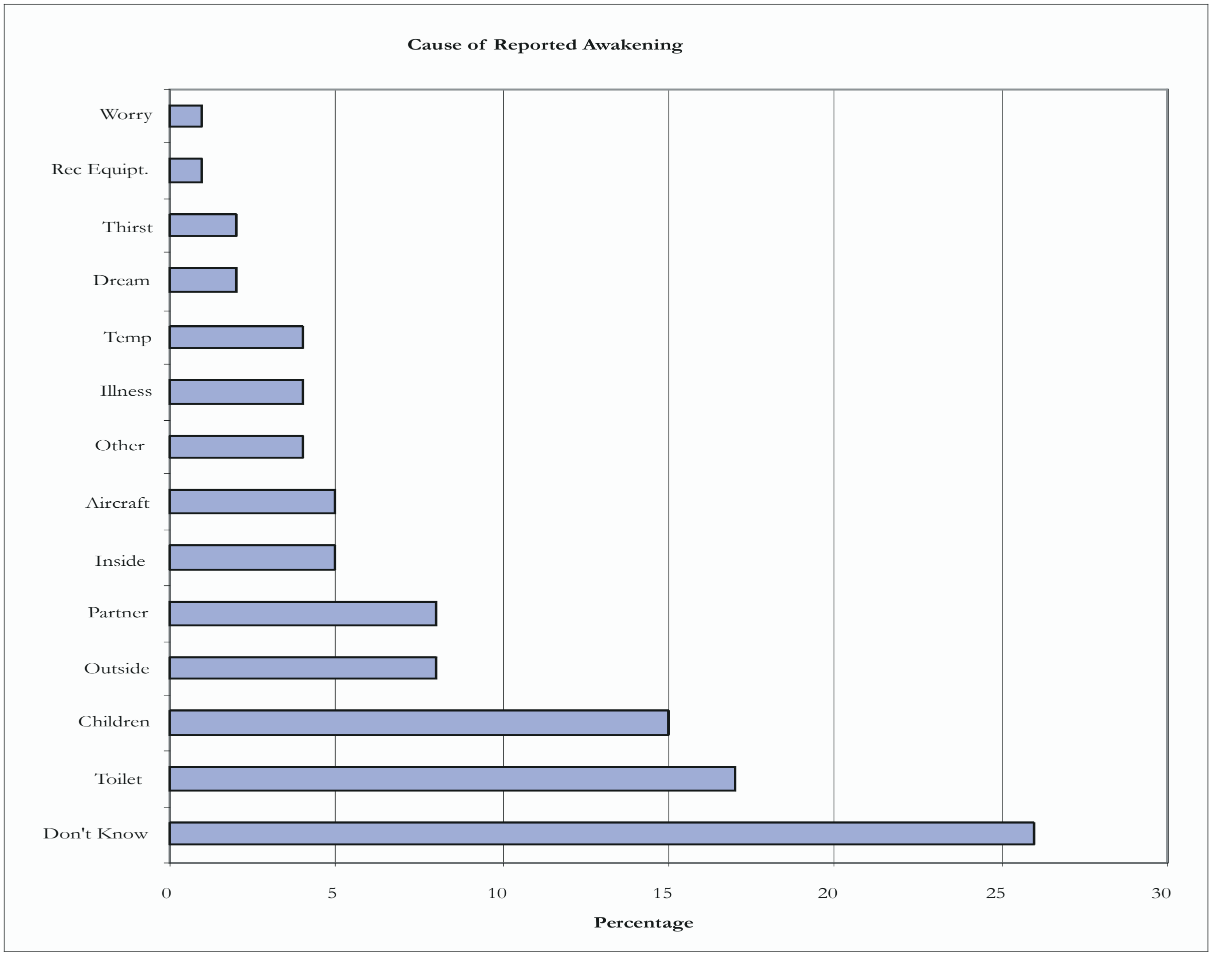


Source: Noise Effects Handbook, U.S. Environmental Protection Agency, July 1981

Figure 3 Speech Interference with Different Background Noise

disturbance. This research showed that once a person was asleep, it is much more unlikely that they will be awakened by a noise. Some of this research has been criticized because it was conducted in areas where subjects had become habituated to aircraft noise. On the other hand, some of the earlier laboratory sleep studies had been criticized because of the extremely small sample sizes of most laboratory studies and because the laboratory was not necessarily a representative sleep environment. This field study assessed the effects of nighttime aircraft noise on sleep in 400 people (211 women and 189 men; 20-70 years of age; one per household) habitually living at eight sites adjacent to four U.K. airports with different levels of night flying. The main finding was that only a minority of aircraft noise events affected sleep, and, for most subjects, that domestic and other non-aircraft factors had much greater effects. As shown in Figure 4, *CAUSES AND PREVALENCE OF ALL AWAKENINGS*, aircraft noise was a minor contributor among a host of other factors causing awakening.

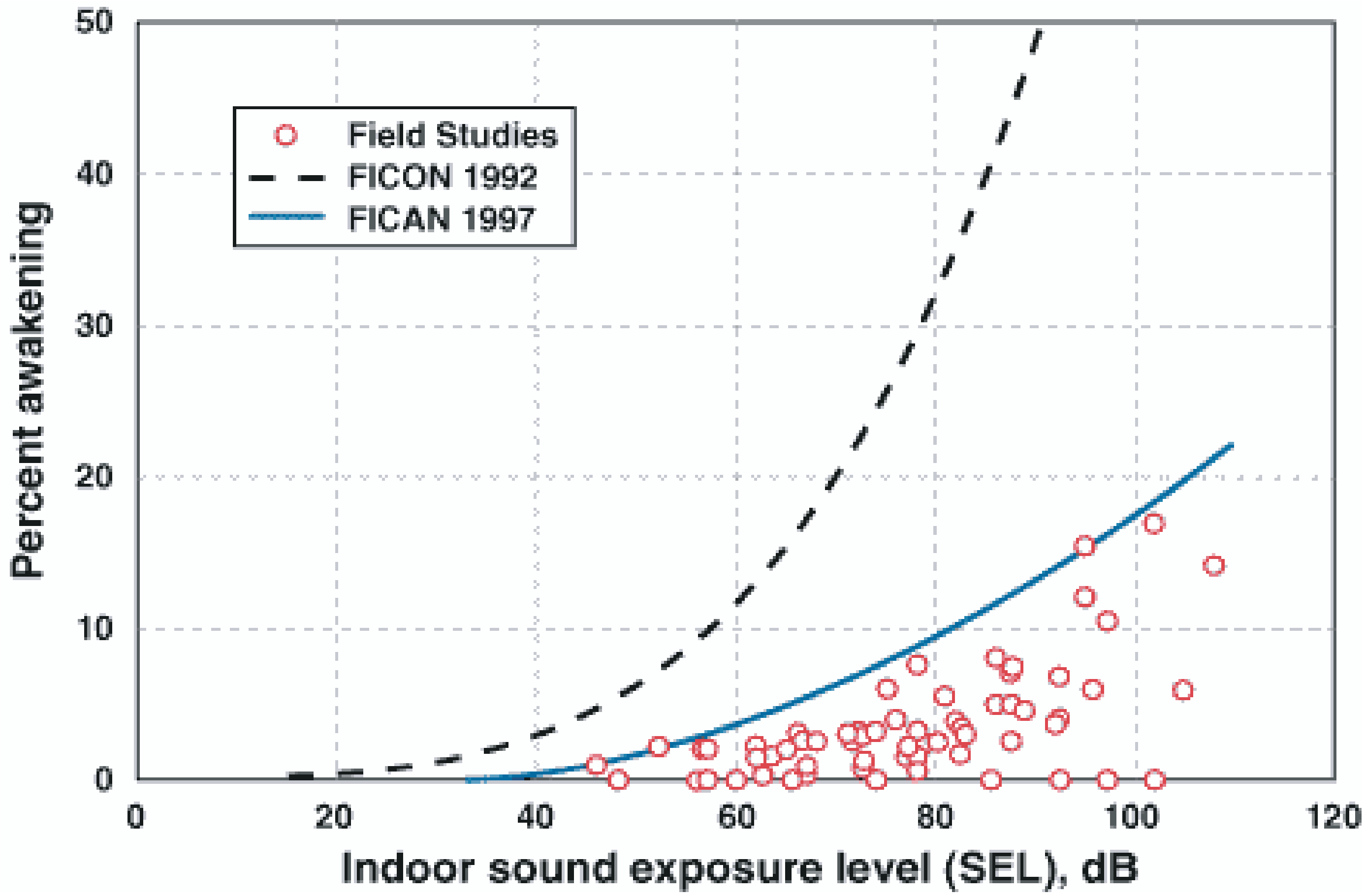
Likewise, in June of 1997, the Federal Interagency Committee on Aviation Noise (FICAN) updated its recommendation using an updated curve based on the more recent in-home sleep disturbance studies. The FICAN recommended a curve based on the upper limit of the data presented and therefore considers the curve to represent the "maximum percent of the exposed population expected to be behaviorally awakened," or the "maximum awakened." The FICAN recommendation is shown in Figure 5, *SLEEP DISTURBANCE RESEARCH*. This is a very conservative approach. A more common statistical curve for the data points is also reflected in the figure. The differences indicate, for example, a 10% awakening rate at a level of approximately 100 dB SENEL, while the "maximum awakened" curve prescribed by FICAN shows the 10% awakening rate being reached at 80 dB SENEL. (The full FICAN report can be found on the internet at www.fican.org.)



(Total awakenings = 6,457. Each subject could have reported more than one awakening each night.)

Source: JA, Pankhurst FL etal, "A Field Study of Sleep Disturbance: Effects of Aircraft Noise and Other Factors on 5,742 Nights of Actimetrically Monitored Sleep in a Large Subject Sample", March 1994

Figure 4 Causes and Prevalence of All Awakenings



Source: Federal Interagency Review of Selected Airport Noise Analysis Issues, FICON, August 1992

Figure 5 Sleep Disturbance Research

- *Physiological Responses* reflect measurable changes in pulse rate, blood pressure etc. Generally, physiological responses reflect a reaction to a loud short-term noise, such as a rifle shot or a very loud jet over flight. While such effects can be induced and observed, the extent to which these physiological responses cause harm is not known.

- *Annoyance* is perhaps the most common of all noise responses in airport environs; and, unfortunately, is the most difficult to describe. Annoyance is an individual characteristic and can vary widely from person to person. What one person considers tolerable may be unbearable to another of equal hearing capability. The level of annoyance also depends on the characteristics of the noise (i.e.; loudness, frequency, time, and duration), and how much activity interference (e.g. speech interference and sleep interference) results from the noise. However, the level of annoyance is also a function of the attitude of the receiver. Personal sensitivity to noise varies widely. It has been estimated that 2 to 10 percent of the population is highly susceptible to annoyance from noise not of their own making, while approximately 20 percent are unaffected by noise. Attitudes are affected by the relationship between the listener and the noise source. (Is it our dog barking or the neighbor's dog?) Whether we believe that someone is trying to abate the noise will also affect our level of annoyance.

Sound Rating Scales

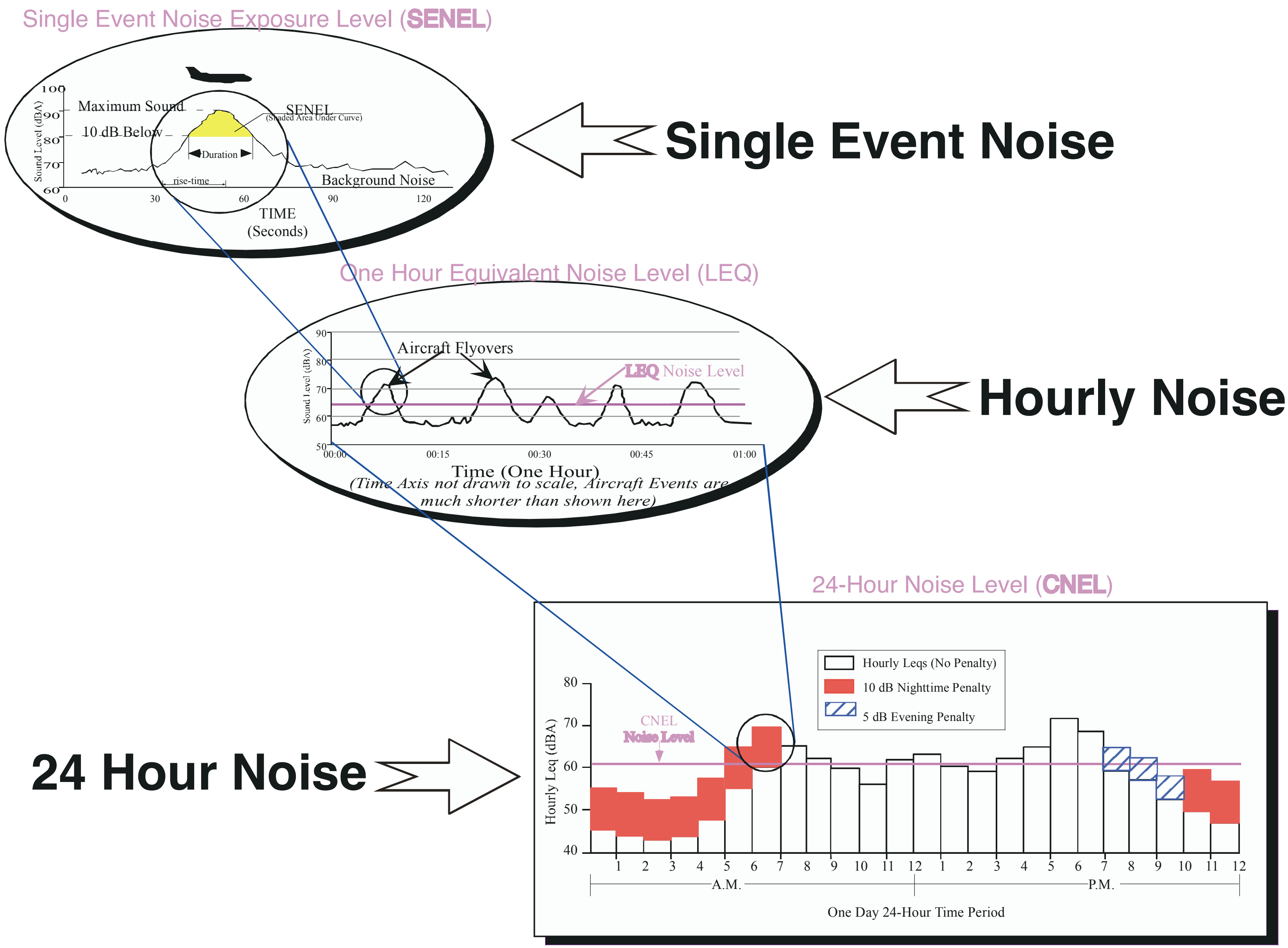
The description, analysis, and reporting of community sound levels is made difficult by the complexity of human response to sound and the myriad of sound-rating scales and metrics that have been developed for describing acoustic effects. Various rating scales have been devised to approximate the human subjective assessment of "loudness" or "noisiness" of a sound.

Noise metrics can be categorized as single event metrics and cumulative metrics. Single event metrics describe the noise from individual events, such as an aircraft flyover. Cumulative metrics describe the noise in terms of the total noise exposure throughout the day, year or other time period. The noise metrics used in this study are summarized below:

Single Event Metrics

Maximum Noise Level. The highest noise level reached during a noise event is called the "Maximum Noise Level," or L_{max}. For example, as an aircraft approaches, the sound of the aircraft begins to rise above ambient noise levels. The closer the aircraft gets, the louder it is until the aircraft is at its closest point directly overhead. As the aircraft passes, the noise level decreases until the sound level settles to ambient levels. This is plotted at the top of Figure 6, *EXAMPLES OF NOISE LEVELS*. It is this metric to which people generally respond when an aircraft flyover occurs.

Single Event Noise Exposure Level (SENEL). The SENEL is another metric reported for aircraft flyovers. It is computed from dB(A) sound levels or the area within 10 dB of the maximum noise level, which is the area from where SENEL is computed (referring again to the shaded area at the top of Figure 6). The SENEL value is the integration of all the acoustic energy contained within the event. Speech and sleep interference research can be assessed relative to SENEL data. This metric takes into account the maximum noise level of the event and the duration of the event. For aircraft flyovers, the SENEL value is typically about 10 dBA higher than the maximum noise level. Single event metrics are a convenient method for describing noise from individual aircraft events. This metric is useful in that airport noise models contain aircraft noise curve data based upon the SENEL metric. In addition, cumulative noise metrics such as LEQ and CNEL can be computed from SENEL data.



Source: Mestre Greve Associates

Figure 6 Single and Cumulative Noise Metric Definitions

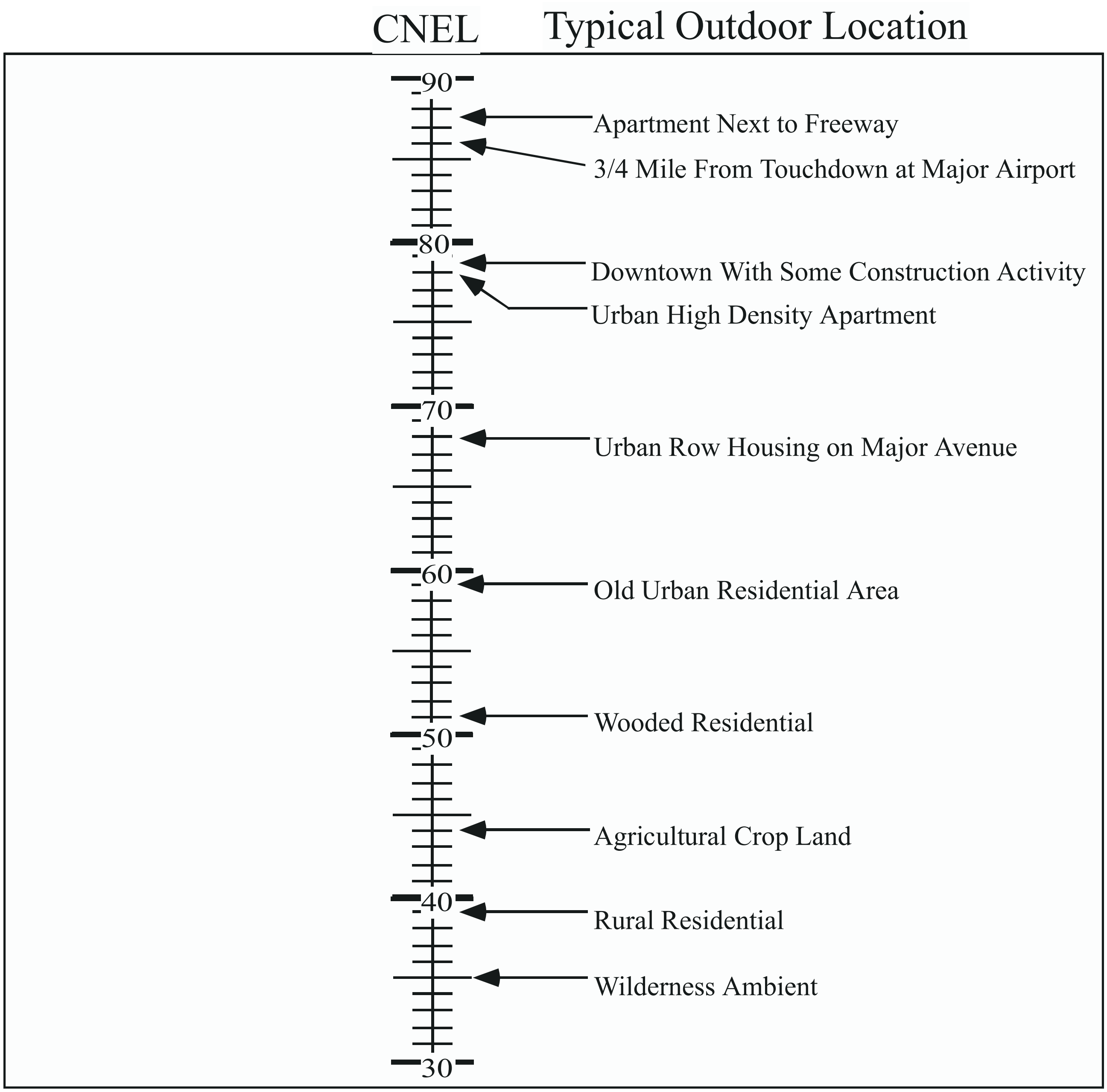
Cumulative Metrics

Cumulative noise metrics have been developed to assess community response to noise. They are useful because these scales attempt to include the loudness and duration of the noise, the total number of noise events and the time of day these events occur into one single number rating scale. They are designed to account for the known health effects of noise on people described earlier.

Equivalent Noise Level (L_{EQ}). L_{EQ} is the sound level corresponding to a steady-state A-weighted sound level containing the same total energy as a time-varying signal over a given sample period. L_{EQ} is the "energy" average taken from the sum of all the sound that occurs during a certain time period; however, it is based on the observation that the potential for a noise to impact people is dependent from the total acoustical energy content. This is graphically illustrated in the center graph of Figure 6, *EXAMPLES OF NOISE LEVELS*. L_{EQ} can be measured for any time period, but is typically measured for 15 minutes, 1 hour or 24-hours. L_{EQ} for one hour is used to develop the Day Night Noise Level (DNL) or Community Noise Equivalent Level (CNEL) values for aircraft operations.

Community Noise Equivalent Level (CNEL). The CNEL index is a measure of the overall noise experienced during an entire (24-hour) day; which includes time-weighted energy average noise level based on the A-weighted decibel. Time-weighted refers to the fact that noise that occurs during certain sensitive time periods and is penalized for occurring at these times. In the CNEL scale, noise occurring during the evening hours between 7 p.m. and 10 p.m. is penalized by 5 dB. Noise occurring during the nighttime hours between 10 p.m. and 7 a.m. is penalized by 10 dB. These penalties were selected to account for the higher sensitivity to noise in the evening and nighttime and the expected decrease in background noise levels that typically occur at these times. CNEL is specified by the State of California for community and airport noise assessment. CNEL is graphically illustrated at the bottom of Figure 6. Examples of various noise environments in terms of CNEL are presented in Figure 7, *TYPICAL OUTDOOR NOISE LEVELS IN CNEL*.

Day Night Noise Level (DNL). The DNL index is very similar to CNEL but does not include the evening (7 p.m. to 10 p.m.) penalty that is included in the CNEL. It does include the nighttime penalty (10 p.m. to 7 a.m.). DNL is specified by the FAA for airport noise assessment and by the Environmental Protection Agency (EPA) for community and airport noise assessment. FAA guidelines allow for the use of CNEL as a substitute for DNL within the State of California.



Source: Adapted from "Information on Levels of Environmental Noise Requisite to Protect Public Health and Welfare With an Adequate Margin of Safety", EPA, 1974

Figure 7 Typical Outdoor Nose Levels in Terms of CNEL

Noise/Land Use Compatibility Standards and Guidelines

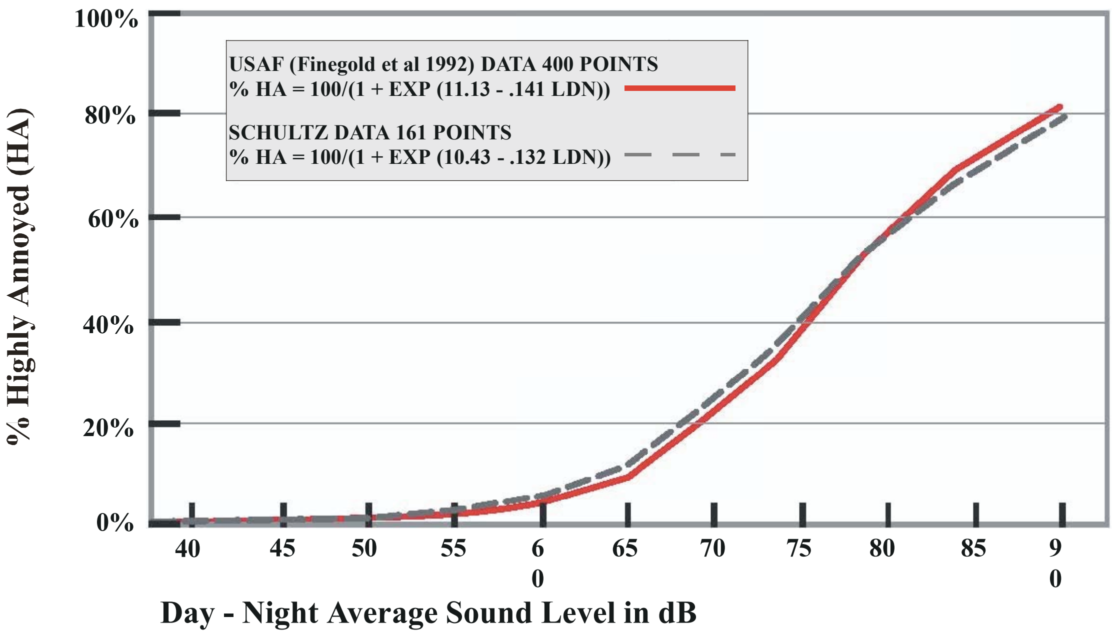
Land use and development regulations often include compatibility standards for various levels of environmental noise. The most common noise/land use compatibility standard or criteria used is 65 dB DNL for residential land use with outdoor activity areas. At 65 dB DNL, the Schultz curve, as shown in Figure 8, *EXAMPLES OF COMMUNITY REACTION TO AIRCRAFT NOISE,* predicts approximately 14% of the exposed population to be highly annoyed. At 60 dB DNL this decreases to approximately 8% of the population highly annoyed. However, recent updates to the Schultz curve indicate that a higher percentage of residents within these contours may experience annoyance.

Several agencies have utilized such research on the human response to aircraft noise and developed standards and guidelines for land use within certain areas exposed to aircraft noise. Such community standards also account for trade offs with the economic consequences of achieving noise and land use compatibility criteria. These laws and regulations provide the basis for local development of airport plans, analyses of airport impacts, and the enactment of compatibility policies.

A summary of pertinent regulations and guidelines are presented below:

- *Federal Aviation Regulations, Part 36, "Noise Standards: Aircraft Type and Airworthiness Certification"*

  Originally adopted in 1960, FAR Part 36 prescribes noise standards for issuance of new aircraft type certificates; it also limited noise levels for certification of new types of propeller-driven, small airplanes as well as for transport category, large airplanes. Subsequent amendments extended the standards to certain newly produced aircraft of older type designs. Other amendments extended the required compliance dates. Aircraft may be certificated as Stage 1, Stage 2, or Stage 3 aircraft based on their noise level, weight, number of engines and in some cases, number of passengers. Stage 1 aircraft are no longer permitted to operate in the U.S. Stage 2 aircraft were phased out of the U.S. fleet as discussed below under Airport Noise and Capacity Act of 1990. Although aircraft meeting Part 36 standards are noticeably quieter than many of the older aircraft, the regulations make no determination that such aircraft are acceptably quiet for operation at any given airport.



USAF	**0.41**	**0.831**	**1.66**	**3.31**	**6.48**	**12.29**	**22.1**	**36.47**	**53.74**	**70.16**	**82.64**
SCHULTZ	**0.576**	**1.11**	**2.12**	**4.03**	**7.52**	**13.59**	**23.32**	**37.05**	**53.25**	**68.78**	**81.0**

CALCULATED % HIGHLY ANNOYED (HA) POINTS

Source: Ficon 1992

Figure 8 Examples of Community Reaction to Aircraft Noise

- *Federal Aviation Regulations, Part 150, "Airport Noise Compatibility Planning"*

  As a means of implementing the Aviation Safety and Noise Abatement Act, the FAA adopted Federal Aviation Regulations Part 150 Airport Noise Compatibility Planning Programs including a noise and land use compatibility chart to be used for land use planning with respect to aircraft noise. An expanded version of this chart appears in Aviation Circular 150/5020-1 (dated August 5, 1983) and is reproduced in Figure 9 entitled, *FAA FAR PART 150 NOISE COMPATIBILITY*. These guidelines offer recommendations to local authorities for determining acceptability and compatibility of land uses. The guidelines specify the maximum amount of noise exposure (in terms of the cumulative noise metric DNL) that are considered acceptable or compatible to people in living and working areas.

- *Federal Aviation Order 5050.4 and Directive 1050.1 for Environmental Analysis of Aircraft Noise Around Airports*

  The FAA issued Order 5050.4A containing guidelines for the environmental analysis of airports. Federal requirements now dictate that increases in noise levels over 1.5 dB DNL within the 65 dB DNL contour are considered significant (1050.1D Directive 12.21.83) and require additional analysis. The FAA is only concerned for the noise impacts that occur at the 65 dB DNL or greater and does not require additional analysis in areas beyond the 65 dB DNL.

- *Airport Noise and Capacity Act of 1990*

  The Airport Noise and Capacity Act of 1990 (PL 101-508, 104 Stat. 1388), also known as ANCA or the Noise Act, established two broad directives for the FAA: (1) establish a method to review aircraft noise, and airport use or access restrictions imposed by airport proprietors, and (2) institute a program to phase-out Stage 2 aircraft over 75,000 pounds by December 31, 1999. (Stage 2 aircraft are older, noisier aircraft (B-737-200, B-727 and DC-9); Stage 3 aircraft are newer, quieter aircraft (B-737-300, B-757, MD-80/90).) To implement ANCA, FAA amended Part 91 to address the phase-out of large Stage 2 aircraft and the phase-in of Stage 3 aircraft. In addition, Part 91 states that all Stage 2 aircraft over 75,000 pounds, were to be removed from the domestic fleet by December 31, 1999. There are a few exceptions but only Stage 3 aircraft greater than 75,000 pounds are now in the domestic fleet. The airlines have phased out Stage 2 aircraft, and the mainland domestic fleet is now all Stage 3 aircraft.

Land Use	Yearly Day - Night Average Sound Level (Ldn) in Decibels					
	Below 65	65-70	70-75	75-80	80-85	Over 85
RESIDENTIAL						
Residential, other than mobile homes and transient lodging	Y	N(1)	N(1)	N	N	N
Mobile home parks	Y	N	N	N	N	N
Transient lodgings	Y	N(1)	N(1)	N(1)	N	N
PUBLIC USE						
Schools	Y	N(1)	N(1)	N	N	N
Hospitals and nursing homes	Y	25	30	N	N	N
Churches, auditoriums, and concert halls	Y	25	30	N	N	N
Government services	Y	Y	25	30	N	N
Transportation	Y	Y	Y(2)	Y(3)	Y(4)	Y(4)
Parking	Y	Y	Y(2)	Y(3)	Y(4)	N
COMMERCIAL USE						
Offices, business and professional	Y	Y	25	30	N	N
Wholesale and retail-building materials, hardware and farm equipment	Y	Y	Y(2)	Y(3)	Y(4)	N
Retail trade-general	Y	Y	25	30	N	N
Utilities	Y	Y	Y(2)	Y(3)	Y(4)	N
Communication	Y	Y	25	30	N	N
MANUFACTURING AND PRODUCTION						
Manufacturing, general	Y	Y	Y(2)	Y(3)	Y(4)	N
Photographic and optical	Y	Y	25	30	N	N
Agriculture (except livestock) and forestry	Y	Y(6)	Y(7)	Y(8)	Y(8)	Y(8)
Livestock farming and breeding	Y	Y(6)	Y(7)	N	N	N
Mining and fishing, resource production and extraction	Y	Y	Y	Y	Y	Y
RECREATIONAL						
Outdoor sports arenas and spectator sports	Y	Y(5)	Y(5)	N	N	N
Outdoor music shells, amphitheaters	Y	N	N	N	N	N
Nature exhibits and zoos	Y	Y	N	N	N	N
Amusements, parks, resorts, and camps	Y	Y	Y	N	N	N
Golf courses, riding stables and water recreation	Y	Y	25	30	N	N

Numbers in parenthesis refer to notes.
**The designations contained in this table do not constitute a Federal determination that any use of land covered by the program is acceptable or unacceptable underFederal, State, or local law. The responsibility for determining the acceptable and permissible land uses and the relationship between specific properties and specific noise*

TABLE KEY

SLUCM	Standard Land Use Coding Manual.
Y (YES)	Land Use and related structures compatible without restrictions.
N (No)	Land Use and related structures are not compatible and should be prohibited.
NLR	Noise Level Reduction (outdoor to indoor) to be achieved through incorporation of noise attenuation into the design and construction of the structure.
25, 30, or 35	Land use and related structures generally compatible; measures to achieve NLR of 25, 30 or 35 dB must be incorporated into design and construction of the structure.

NOTES

(1) Where the community determines that residential or school uses must be allowed, measures to achieve outdoor to indoor Noise Level Reduction (NLR) of at least 25 dB and 30 dB should be incorporated into building codes and be considered in individual approvals. Normal residential construction can be expected to provide a NLR of 20 dB, thus, the reduction requirements are often stated as 5, 10 or 15 dB over standard construction and normally assume mechanical ventilation and closed windows year round. However, the use of NLR criteria will not eliminate

(2) Measures to achieve NLR of 25 dB must be incorporated into the design and construction of portions of these buildingswhere the public is received, noise sensitive areas or where the normal noise level is low.

(3) Measures to achieve NLR of 30 dB must be incorporated into the design and construction of portions of these buildings where the public is received, office areas, noise sensitive areas or where the normal noise level is low.

(4) Measures to achieve NLR of 35 dB must be incorporated into the design and construction of portions of these buildings where the public is received, office areas, noise sensitive areas or where the normal noise level is low.

(5) Land use compatible provided special sound reinforcement systems are installed.

(6) Residential buildings require an NLR of 25

(7) Residential buildings require an NLR of 30.

(8) Residential buildings not permitted.

Source: FAR Part 150

Figure 9 FAA Part 150 Noise Compatibility

Furthermore, FAR Part 161 was adopted to institute a more stringent review and approval process for implementing use or access restrictions by airport proprietors. Part 161 sets out the requirements and procedures for implementing new airport use and access restrictions by airport proprietors. They must use the DNL metric to measure noise effects, and the Part 150 land use guideline table, including 65 dB DNL/CNEL as the threshold contour to determine compatibility, unless there is a locally adopted standard that is more stringent.

Part 161 identifies three types of use restrictions and treats each one differently: negotiated restrictions, Stage 2 aircraft restrictions and Stage 3 aircraft restrictions. Generally speaking, any use restriction which affects the number or times of aircraft operations will be considered an access restriction. Even though the Part 91 phase-out does not apply to aircraft under 75,000 pounds, FAA has determined that Part 161 limitations on proprietors' authority also apply to smaller aircraft.

Negotiated restrictions are more favorable from the FAA's standpoint, but still require complex procedures for approval and implementation. They must be agreed upon by all airlines, and public notice must be given.

Stage 2 restrictions are more difficult, as one of the major reasons for ANCA was to discourage local restrictions more stringent that the ANCA's 1999 phase-out. To comply with the regulation and institute a new Stage 2 restriction, the proprietor must prepare a cost/benefit analysis of the proposed restriction and give proper notice. The cost/benefit analysis is extensive and entails considerable evaluation. Stage 2 restrictions do not require approval by the FAA.

Stage 3 restrictions are especially difficult to implement. A Stage 3 restriction involves considerable additional analysis, justification, evaluation and financial discussion. In addition, a Stage 3 restriction must result in a decrease in noise exposure of the 65 dB DNL to noise sensitive land uses (residences, schools, churches, parks). The regulation requires both public notice and FAA approval. ANCA applies to all local noise restrictions that are proposed after October 1990, and to amendments to existing restrictions proposed after October 1990.

- *Federal Interagency Committee on Noise (FICON) Report of 1992*

The reliance on the CNEL/DNL metric and the cumulative 65 dB criteria has been criticized by various interest groups concerning its usefulness in assessing aircraft noise impacts. As a result, at the direction of the EPA and the FAA, the Federal Interagency Committee On Noise (FICON) was formed to review specific elements of the assessment on airport noise impacts and to recommend procedures for potential improvements. FICON included representatives from the Departments of Transportation, Defense, Justice, Veterans Affairs, Housing and Urban Development, the Environmental Protection Agency, and the Council on Environmental Quality.

The FICON review focused primarily on the manner in which noise impacts are determined including whether aircraft noise impacts are fundamentally different from other transportation noise impacts; how noise impacts are described; and whether impacts outside of Day-Night Average A-Weighted Sound Level (DNL) 65 dB should be reviewed in a National Environmental Policy Act (NEPA) document.

The committee determined there are no new descriptors or metrics of sufficient scientific standing to substitute for the present DNL cumulative noise exposure metric. FICON determined that the DNL/CNEL method contains appropriate dose-response relationships to determine the noise impact and is properly used to assess noise impacts at both civil and military airports. The report does support agency discretion in the use of supplemental noise analysis, recommends public understanding of the DNL/CNEL and supplemental methodologies, as well as aircraft noise impacts.

FICON did, however, recommend that if screening analysis shows a 1.5 dB increase within a 65 DNL or a 3.0 dB increase within a 60-65 DNL, then additional analysis should be conducted.

- *Environmental Protection Agency Noise Assessment Guidelines*

  In March 1974 the EPA published "Information on Levels of Environmental Noise Requisite to Protect Public Health and Welfare with an Adequate Margin of Safety". (EPA 550/9-74-004). In this document, 55 DNL is described as the requisite level with an adequate margin of safety for areas with outdoor uses. This includes residences, and recreational areas. This document does not constitute EPA regulations or standards. Rather, it is intended to "provide State and Local governments as well as the Federal Government and the private sector with an informational point of departure for the purpose of decision-making". Note that these levels were developed for suburban uses. In some urban settings, the noise levels will be significantly above this level, while in some wilderness settings, the noise levels will be well below this level. While this "levels document" does not constitute a standard, specification or regulation, it does identify safe levels of environmental noise exposure without consideration for economic cost for achieving these levels.

Airport Noise Assessment Methodology

Existing and future aircraft noise environments for airports are typically determined through a combination of computer modeling and on-site noise measurements. Computer generated noise contours of existing aircraft noise are developed and then validated using the on-site measurements. Once reliable computer generated contours are developed for existing conditions, the computer input files are modified to reflect future conditions based on forecasts of future operations and/or proposed noise abatement aircraft operational measures. New computer generated data and contours are then developed to assess those future conditions. The following sections provide the details of this process.

Computer Modeling

Computer modeling generates maps or tabular data of an airport's noise environment expressed in the various metrics described above such as CNEL and SENEL. Computer models are most useful developing contours that depict, like elevation contours on a map, areas of equal noise exposure. Accurate noise contours are largely dependent on the use of a reliable, validated, and updated noise model, and collection of accurate aircraft operational data.

The FAA's Integrated Noise Model (INM) models civilian and military aviation operations. The original INM was released in 1977. The latest version, INM Version 6.1, was released for use in March 2003 and is the state-of-the-art in airport noise modeling. The program includes standard aircraft noise and performance data for over two hundred aircraft types that can be tailored to the characteristics of the airport in question. Version 6.1 includes an updated database that includes some newer aircraft, the ability to include run-ups and topography in the computations, and a provision to vary aircraft profiles in an automated fashion. It also includes more comprehensive and flexible contour plotting routines.

Operational data for input to the INM is gathered in a meticulous manner to assure its accuracy, and the data is arranged for input to the model. The INM program requires the input of the physical and operational characteristics of the airport. Physical characteristics include runway coordinates, airport altitude, and temperature and optionally, topographical data. Operational characteristics include aircraft types, flight tracks, departure procedures, arrival procedures and stage lengths (flight distance) that are specific to the operations at the airport. Aircraft data needed to generate noise contours include:

- Number of aircraft operations by type
- Models of aircraft
- Day/Night time distribution by type
- Flight tracks
- Flight track utilization by aircraft type
- Flight profiles
- Typical operational procedures
- Average Meteorological Conditions

On-site Noise Measurement Surveys

Measuring noise directly using calibrated and reliable monitoring devices augments computer modeling and offers several advantages over computer modeling alone. While not specifically required, such programs are often very useful and help the ensure accuracy of the model. The following describes the various aspects of noise monitoring programs.

Equipment Type

It is important that noise monitoring equipment be reliable and accurate. Type I Precision Sound Level Meters (as defined by American National Standards Institute (ANSI) and International Electrotechnical Commission (IEC)) are the most accurate field measurement equipment and have and end-to-end (windscreen, microphone, preamplifier and analyzer) accuracy of plus or minus 1.5 dB. Only specialized laboratory equipment is more accurate. Equipment should be calibrated frequently in compliance with manufacturers' procedures. Microphones and recording equipment must be of high quality and be capable of recording and calculating the various metrics described above. Noise assessment documents should provide the make, model numbers and calibration procedures for all equipment.

Duration of Noise Monitoring

Airport noise monitoring programs are typically classified by duration which often dictates the type of equipment used and the type of data collected.

Permanent Noise Monitoring System Sites (PNMS). Many airports operate permanent noise measurement systems that continually monitor aircraft noise events and provide a large data base. Typically these systems also tabulate aircraft operational data such as type of aircraft and flight track. Data from these systems is often used for the computer modeling effort and other purposes in the development of FAR Part 150 studies and environmental assessments. Equipment typically includes remote microphones connected to a central computer which records the data and calculates the noise metrics.

Semi-Permanent Measurements. To augment the permanent systems, supplemental measuring sites can be located for extended periods of time, for different seasons, or for other time periods relevant to the noise assessment. Equipment can either be additional remote microphones or stand alone recorders that are in a secure location and serviced frequently.

Short-Term Measurement Sites. Most noise assessments at general aviation airports include a relatively short duration monitoring program using portable noise measurement equipment. The portable monitoring equipment may be attended by a qualified technician who records the type of noise event while the equipment records the sound levels, duration and other noise data for later retrieval and analysis.

Noise Monitoring Site Selection Criteria

Sites for noise monitoring are typically chosen to reflect the particular conditions at each airport. Noise monitoring sites typically will be selected based upon technical suitability as well as locations of public interest. Information used to select noise monitoring sites can include any of the following:

- Aircraft activity
  - Departures and arrivals
  - Commercial jets, military jets, commuter and General Aviation
  - Ground noise and flight operations noise
  - Unusual aircraft or operations
- Noise Complaints
- Geophysical concerns peculiar to the airport such as wind, weather, humidity, elevation, or large bodies of water.
- Areas of general public interest
- Sensitive land uses such as schools or churches
- Equipment security and access

Use of Noise Monitoring Data

Under the guidelines for the development of the noise contours, noise measurements serve to accurately assess and to collect a sample of single event flyover noise levels. Noise measurements do not calibrate the model itself, but they serve the following purposes:

- Provide validation or a "reality check" on computer-generated contours.
- Determine noise levels associated directly with particular land uses, aircraft operations or geophysical conditions peculiar to the airport.
- Assist in public information programs and complaint handling.
- Build public confidence in procedures and analysis used in noise assessment programs.

Gillespie Field Noise Measurement Survey

This study includes a program of short-term on-site noise measurements to augment the analysis consistent with the background material provided in the last chapter. The noise measurement survey was conducted in conjunction with computer modeling to understand better the operational patterns at SEE for input into the database for the computer model. This section provides the details of how the program was conducted and summarizes the measurement results in terms of the metrics described previously. Actual measurement data is contained in Appendix A. The section is divided as follows:

- *Equipment Type*: Provides the make, model, specifications and capabilities of the equipment used in the survey.
- *Monitoring Sites:* Describes the various locations where monitoring was conducted and the reasoning for choosing them.
- *Duration of Monitoring:* Describes the time periods of monitoring at each site.
- *Noise Event Correlation:* Describes how noise events were matched to specific aircraft operations.
- *Noise Monitoring Results:* Describes the noise levels associated with aircraft operations at each site.

A summary of the basic elements of the noise monitoring data is provided in Table 2, *SUMMARY OF NOISE MEASUREMENT SURVEY*.

Table 2
SUMMARY OF NOISE MEASUREMENT SURVEY

Site Information	Site #1	Site #2	Site#3	Site #4
Location	Tree Farm	Localizer	County Maintenance Facility	1933 Hacienda Dr.
Latitude	32.82571°N	32.83040°N	32.82851°N	32.82212°N
Longitude	116.96014°W	116.98316°W	116.98852°W	116.99274°W
Elevation (ft. msl)	426.6	374.8	401.8	608.8
Primary Operations	Arrivals	Departures	Departures	Departures
Duration	Continuous	Periodic	Periodic	Continuous
Number of Measured Aircraft	187	146	141	116
Maximum Aircraft SEL	95.9 dB(A)	99.9 dB(A)	93.7 dB(A)	89.1 dB(A)
Energy Average Aircraft SEL	84.7 dB(A)	88.3 dB(A)	83.5 dB(A)	79.2 dB(A)

Equipment Type

State of the art equipment used in this program included the Bruel & Kajer model 2236 and 2230 sound level meters and model 4188 and 4155 1/2" microphones. These are Type I Precision Sound Level Meters (as defined by American National Standards Institute (ANSI) and International Electrotechnical Commission (IEC)), are the most accurate field measurement equipment available, and have an end-to-end (windscreen, microphone, preamplifier and analyzer) accuracy of plus or minus 1.5 dB. The equipment was calibrated in compliance with manufacturer's procedures. Microphones and recording equipment are the highest quality and are capable of recording and calculating the various metrics described above.

Noise Monitoring Sites

Sites for noise monitoring were chosen to reflect the particular conditions at Gillespie Field (SEE) including technical suitability and locations of public concern. The sites were chosen near dominant approach and departure paths and near the predicted 65 CNEL contour as accurately assessing the criterion 65 CNEL is of prime importance. Each site is shown in Figure 10, *NOISE MONITORING LOCATIONS*, and described below.

Site #1 was located east of the airport at the tree farm located at the intersection of Teton Drive and Pepper Drive as shown in Figure 10. The elevation at this location is 426.6' msl. The site is 0.2 miles from the arrival end of Runway 27R and typically experiences direct over-flights from arrivals. This site was monitored continuously.

Site #2 was located on the west side of the Airport in the vicinity of the localizer antenna as shown in Figure 10. The elevation at this site is 374.8' msl. This site is located 0.1 miles from the end of Runway 09L and was chosen to measure close-in departure noise events. This site was attended periodically during the measurement period allowing for field observations in addition to noise measurement data.

Site #3 was located to the west of the airport on Weld Road as shown in Figure 10. The elevation at this site is 401.8' msl. This site is located 0.4 miles from the end of Runway 09L and was chosen to capture sideline noise from aircraft departures and touch-and-go operations from Runway 27R and 27L. This site was attended periodically during the measurement period allowing for field observations in addition to noise measurement data.

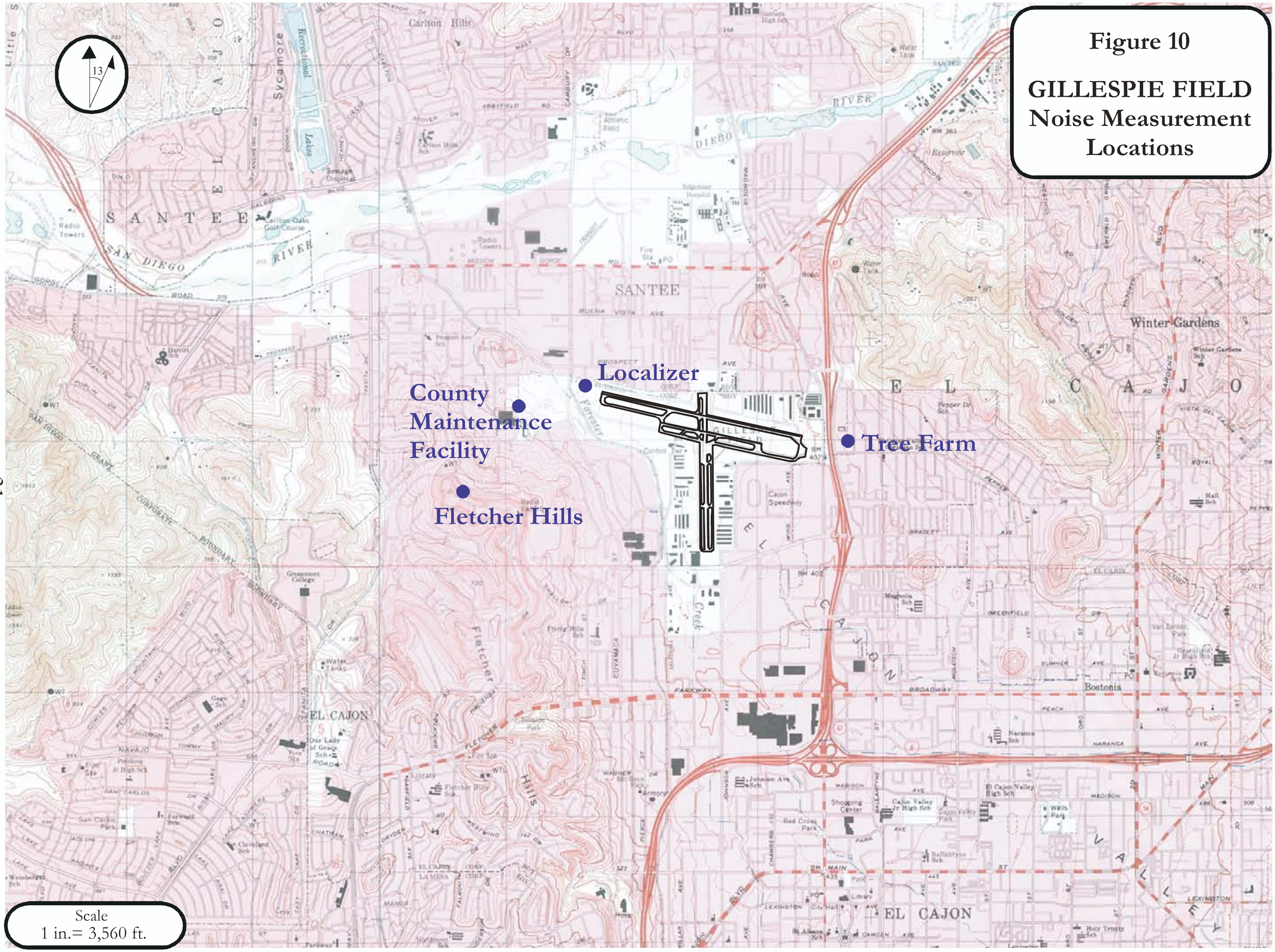


Figure 10

GILLESPIE FIELD Noise Measurement Locations

Site #4 was located to the southwest of the airport at 1933 Hacienda Dr. in the community of Fletcher Hills as shown in Figure 10. This is an area of community concern. The elevation of this site is 608.8' msl. This site is located 0.7 miles from the end of Runway 09L. The site experiences sideline noise from aircraft departures and touch-and-go operations from Runway 27R and 27L and occasional direct over-flight by aircraft arriving to Runway 09R from the west. This site was monitored continuously during the measurement period.

Duration of Monitoring

Noise monitoring was conducted at Gillespie Field on November 14th, 2003 and November 15th, 2003. These dates correspond to Friday and Saturday and were selected to provide a large volume of flight activity. Flight operations were unusually heavy on November 15th due to a previously scheduled public event. The weather during the monitoring period was generally mild with scattered or partially overcast cloud cover. Day time temperatures ranged between 62 and 73 degrees Fahrenheit. Prevailing winds during the measurement period were light and variable. Runways 27L/R were the primary runways in use during the measurement period. All monitoring sites are characterized as short term sites where monitoring was conducted for several hours. The monitors were calibrated at the beginning and end of each measurement period and the time and results of the calibration were logged.

- Site #1 was monitored continuously from 13:04 P.M. PST on November 14, 2003 through 6:00 P.M. PST on November 15, 2003. The equipment was set up in a protected location and allowed to run continuously and a technician visited the site periodically to insure proper operation. The site was equipped with a noise monitor and a palmtop computer. The noise monitor continuously fed noise levels to the computer. The computer contains software that uses known characteristics of aircraft noise to discriminate aircraft noise events from other noise sources. This allows for continuous unattended monitoring.
- Site #2 was monitored periodically throughout the day on November 15, 2003. Monitoring at this site was attended by a trained technician who recorded time, aircraft type, aircraft operation (arrival, departure, or touch-and-go), flight track, L_{max}, and SENEL. This process allows for positive identification and correlation of aircraft fly-overs with noise events.
- Site #3 was monitored periodically throughout the day on November 15, 2003 in the same manner as Site 2.
- Site #4 was monitored continuously from 2:07 P.M. PST on November 14, 2003 through 4:49 P.M. PST on November 15, 2003 in the same manner as Site 1. Aircraft

correlation at this site was conducted using observations from Site 2 as Sites 2 and 4 are in close proximity.

Noise Event Correlation

Measured aircraft noise events at the attended sites (Sites 2 and 3) were matched with specific aircraft operations using observation by the operator of the monitor at the site. Technicians employed in this effort are very familiar with the different aircraft types using Gillespie Field. They were also equipped with radios that monitored air traffic control communications. They simply logged in operational and noise data as they observed it.

Measured aircraft noise events at the continuously monitored sites (Sites 1 and 4) were matched with aircraft operations using software to discriminate aircraft noise from other noise sources. This method allows for the identification and measurement of aircraft noise sources but does not allow for positive correlation with specific aircraft events. Data at Site 4 was augmented with observations at Site 3 to allow for positive event correlation.

Noise Measurement Results

Noise level readings at each location were used to evaluate the noise environment at each location and to distinguish the various noise levels associated with individual aircraft operations. The metrics referenced below were explained fully in the previous section, *Background Information on Noise*.

Aircraft Noise

The noise measurement survey was designed to monitor the noise levels of a representative mix of aircraft operations at Gillespie Field. These operations primarily consists of general aviation operations. The runway utilization varies by aircraft type and operation. This is due to differences in the operational capabilities and performance characteristics of different aircraft. Runway utilization for single-engine and multi-engine aircraft are similar with regard to runway utilization. Runway utilization for jet aircraft is different as jet aircraft require longer runways.

Runway utilization for arrivals and departures is different than runway utilization for touch-and-go operations. Touch-and-goes tend to use the short runway, runway 27L/09R as this reserves the longer runway for arrival and departure operations. These trends are shown in Table 4 and Table 5. Runway utilization by aircraft type for arrival and departure operations is shown in Table 5 ARRIVAL *RUNWAY UTILIZATION BY AIRCRAFT TYPE.*

Table 4
ARRIVAL AND DEPARTURE RUNWAY UTILIZATION BY AIRCRAFT TYPE

Aircraft Type	Percent Runway Use					
	27R	27L	09R	09L	17	35
Single Engine Piston	56.6%	37.1%	0.5%	0.5%	2.7%	2.7%
Multi-Engine Piston	56.6%	37.1%	0.5%	0.5%	2.7%	2.7%
Business Jet	91.0%	0.0%	0.0%	1.0%	4.0%	4.0%
Other	56.6%	37.1%	0.5%	0.5%	2.6%	2.6%

Table 4 indicates that most operations occur on Runways 27 Left/Right for all aircraft types. The majority of these operations occur on Runway 27R as Runway 27R is the longer runway. Jet aircraft use Runway 27R almost exclusively.

Table 5
TOUCH -AND-GO RUNWAY UTILIZATION BY AIRCRAFT TYPE

Aircraft Type	Percent Runway Use					
	27R	27L	09R	09L	17	35
Single Engine Piston	20.0%	70.0%	0.0%	0.0%	5.0%	5.0%
Multi-Engine Piston	20.0%	70.0%	0.0%	0.0%	5.0%	5.0%
Business Jet	20.0%	70.0%	0.0%	0.0%	5.0%	5.0%
Other	20.0%	70.0%	0.0%	0.0%	5.0%	5.0%

Touch-and-go operations typically utilize Runway 27L. Runway 27R may be used for touch-and-goes as arrival and departure operations permit. A small number of touch-and-go operations use Runway 17/35. These operations occur during periods when wind conditions are unfavorable for Runway 27.

Runway utilization is perhaps the most important factor in determining the relative size of the noise contours. Aircraft noise is generally louder in the departure corridor than in the arrival corridor. This is due to the higher power setting used by departing aircraft. At distant locations this trend may reverse with arriving being louder than departing aircraft. This reversal is due to the difference in distance from the noise source to the receptor location. Departing aircraft climb at a greater angle than the typical 3° angle used by arriving aircraft. This results in greater altitude for departing aircraft than arriving aircraft. At distant locations this difference in altitude offsets the higher noise levels generated near the aircraft. The result of these interactions at Gillespie Field is a larger contour area west of the airport as compared to the contour east of the airport.

Aircraft SEL measurements

Individual aircraft noise events were measured using Single Event Noise Exposure Level (SENEL) which is described in the background section. Table 6, *SINGLE EVENT NOISE EXPOSURE LEVELS BY AIRCRAFT CATEGORY, OPERATION AND MEASURMENT SITE,* presents the lowest (MIN) and highest (MAX) SEL recorded and the Average (ENRG AVG) SEL for each type of aircraft and operation. Touch-and-go operations are included as arrivals and departures.

Table 6
SINGLE EVENT NOISE EXPOSURE LEVELS BY AIRCRAFT CATEGORY, OPERATIONS, AND MEASUREMENT SITE

Aircraft Type	Op		Site 1	Site 2	Site 3	Site 4
Single-engine	**D**	**COUNT**	**0**	**132**	**128**	**0**
		MIN	0.0	73.1	71.5	0.0
		MAX	0.0	94.6	91.9	0.0
		ENRG AVG	0.0	86.1	82.6	0.0
Multi-engine	**D**	**COUNT**	**0**	**13**	**12**	**0**
		MIN	0.0	89.3	76.4	0.0
		MAX	0.0	97.7	93.7	0.0
		ENRG AVG	0.0	94.4	87.8	0.0
Jet	**D**	**COUNT**	**0**	**1**	**1**	**0**
		MIN	0.0	99.9	90.2	0.0
		MAX	0.0	99.9	90.2	0.0
		ENRG AVG	0.0	99.9	90.2	0.0
ALL	**D**	**COUNT**	**0**	**0**	**0**	**116**
		MIN	0.0	0.0	0.0	73.2
		MAX	0.0	0.0	0.0	89.1
		ENRG AVG	0.0	0.0	0.0	79.2
ALL	**A**	**COUNT**	**187**	**0**	**0**	**0**
		MIN	73.9	0.0	0.0	0.0
		MAX	95.9	0.0	0.0	0.0
		ENRG AVG	84.7	0.0	0.0	0.0

As shown in Table 6, Sites 1 and 4 were continuously monitored, unattended sites. Correlation of noise events by aircraft type was not conducted at these locations. Sites 2 and 3 were attended sites which enabled positive aircraft identification and correlation.

The data for Sites 2 and 3 indicate that the most numerous aircraft are the single-engine aircraft. These aircraft include a wide variety of airplanes from the Cessna 172 aircraft that are frequently used for pilot instruction to higher performance single-engine aircraft used for recreational and personal travel purposes. The variety of aircraft types within this category is evident in the range or spread between the minimum SENEL and maximum SENEL. Generally, the low performance aircraft have lower noise levels than the high performance aircraft. This trend is related to engine horsepower and propeller configuration. Low performance single-engine aircraft typically use less powerful engines and fixed-pitch propellers. High performance aircraft typically use more powerful engines and variable-pitch propellers.

The second most numerous category is the multi-engine aircraft. These aircraft are equipped with two or more engines. During the measurement period all multi-engine aircraft were equipped with twin engines. These aircraft may be equipped with either reciprocating engines or turbo-prop engines. The reciprocating engines are used by the lower-performance aircraft and turbo-prop engines are used by the higher-performance aircraft. In general terms these aircraft follow the same trend as single-engine aircraft with the high performance aircraft being louder.

Jet aircraft are the loudest aircraft operating at Gillespie Field. These aircraft include the L-39 Albatross and numerous business jets. These aircraft are the least numerous operations at the facility. Unlike the single-engine and multi-engine aircraft where noise levels very closely correlate with performance, jet noise levels are more closely related to engine type.

There are basically two categories of jet engines. These are low-bypass engines and high by-pass engines. The older low-bypass engines are significantly louder and less fuel efficient than the newer high-bypass engines. The result is that noise levels for business jets are more closely related to the date of aircraft manufacture or aircraft age than aircraft performance. During the monitoring period only one jet aircraft noise event was recorded. This event was a L-39 Albatross, this aircraft is representative of an older, low-bypass jet.

Data at sites 1 and 4 is a compilation of all aircraft activity at the respective site. These sites were not attended by a technician and positive noise event correlation by aircraft category is not possible. Site 1 is a close-in arrival site and Site 4 is a distant sideline departure site. These data indicate that the average aircraft noise event at Site 1 is 84.7 dB(A) and the average aircraft noise event at Site 4 is 79.2 dB(A)

Gillespie Field Computer Modeling

Computer modeling is used in this study to generate noise contours depicting CNEL values for Gillespie Field. The FAA's Integrated Noise Model (INM) Version 6.1 was used for this purpose as described previously in the Airport Noise Assessment Methodology section. This section first provides the aircraft operational data and describes how it was compiled for input to the computer model and then provides the resulting contours. Details of the computer modeling inputs are contained in Appendix B. The section is divided as follows:

- *Aircraft Operations* Details the aircraft types and number of operations used in the modeling process.
- *Flight Tracks:* Describes the various flight tracks used by aircraft arriving and departing Gillespie Field.
- *Operational Conditions:* Describes the meteorological conditions and physical characteristics of the airfield.
- *Noise Contours:* Presents the 60, 65, and 70 CNEL contours for years 2000 and 2025.

Aircraft Operations

Annual operations for Gillespie Field for Year 2000 were compiled by P & D Aviation. Aircraft were categorized as single-engine, multi-engine, small business jet, medium business jet, large business jet, helicopter, and other. Data for each category were provided.

Operations at Gillespie Field are conducted by a large variety of aircraft. These aircraft are owned by a variety of entities including flight schools, private aircraft owners, corporate aircraft owners, fixed base operators, and flexible partnerships as well as government aircraft. Aircraft based at the facility include a large number of single-engine aircraft as well as multi-engine aircraft and corporate jets. Helicopter operations also occur at the facility, these include both transport and medical evacuation operations.

Flight schools located at Gillespie Field generate a large number of training operations. Many of these operations are touch-and-go operations as required for pilot instruction and proficiency. Typically, these touch-and-go operations are conducted by low-performance single-engine aircraft; however, touch-and-go operations were observed during the measurement period for many aircraft types including multi-engine aircraft.

In terms of total operations, touch-and-goes account for approximately 53% of total operations. A summary of operations for Year 2000 is shown in Table 7.

Table 7
YEAR 2000 OPERATIONS BY AIRCRAFT CATEGORY

Aircraft Category	Arrival/Departure Operations	Touch-and-Go Operations	Total Operations
Single-engine	78,055	88,020	166,075
Multi-engine	4,671	5,268	9,939
Jet			
Small	889	0	889
Medium	889	0	889
Large	889	0	889
Helicopter	1,835	4,952	6,787
Other	1,025	1,156	2,181
Total	88,254	99,398	187,652

Table 7 indicates that there was a total of 187,652 operations in Year 2000. The majority of aircraft operations (88%) were conducted by single-engine aircraft. This is favorable from a noise perspective as single-engine aircraft typically have lower noise levels than other aircraft types. In terms of daily activity, there are 514 daily operations at the airport.

Time of Day

The CNEL index is a measure of the overall noise experienced during an entire (24-hour) day; which includes time-weighted energy average noise level based on the A-weighted decibel. Time-weighted refers to the fact that noise that occurs during certain sensitive time periods and is penalized for occurring at these times. In the CNEL scale, noise occurring during the evening hours between 7 p.m. and 10 p.m. is penalized by 5 dB. Noise occurring during the nighttime hours between 10 p.m. and 7 a.m. is penalized by 10 dB. In order to determine the CNEL, operations must be determined for each time period. Table 8, *TIME OF DAY OF AIRCRAFT OPERATIONS* depicts the time of day of operations used for calculation of CNEL in terms of percent of total operations by aircraft category.

Table 8
TIME OF DAY OF AIRCRAFT OPERATIONS

Aircraft Category	Day 7:00 a.m.-7:00 p.m.	Evening 7:00 p.m.-10:00 p.m.	Night 10:00 p.m.-7:00 a.m.
Single-engine	92.33%	7.04%	0.64%
Multi-engine	92.36%	6.95%	0.69%
Jet			
Small	79.00%	9.50%	11.50%
Medium	79.00%	9.50%	11.50%
Large	79.00%	9.50%	11.50%
Helicopter	70.00%	20.00%	10.00%
Other	92.99%	7.01%	0.00%

Flight Tracks

Flight tracks are a critical component of the computer modeling process. Flight tracks are combined with performance data within the model to determine aircraft location and altitude. The aircraft's location and altitude are then used to calculate the distance from the aircraft to points on the ground. Arrival, departure and touch-and-go tracks were determined using several methods. Air navigation directives and maps were consulted. Observations from the noise monitoring technicians were considered and air traffic control personnel were interviewed.

The flight tracks developed from this process are shown in Figures 11-13. Figure 11 depicts the arrival tracks, Figure 12 depicts the departure tracks and Figure 13 depicts the touch-and-go tracks. Flight tracks are not precise paths over the ground; but rather, an area of variable width within which aircraft generally fly. Each flight track depicted in these figures represents an area of aircraft over flight centered around a primary flight track. The primary flight tracks are shown in bold and the thin flight tracks represent the areas of dispersion.

Of the three types of flight tracks, arrival, departure, and touch-and-go; departure flight tracks generally have the largest dispersion. This is due to aircraft turning at different locations during the departure procedure. During departure, aircraft turn to a heading based upon air traffic control instructions. The location of the turn point is determined by climb performance of the aircraft, safety considerations, and individual pilot technique. The combination of these factors yield a wide area of dispersion.

Arriving aircraft maneuver with the goal of placing the aircraft in a position to land. Arriving aircraft typically use either instrument guidance of terrain references. This positive guidance is more precise than maneuvering the aircraft without reference to precise locations on the ground. This results in a tighter dispersion pattern than the dispersion patterns observed during departure operations.

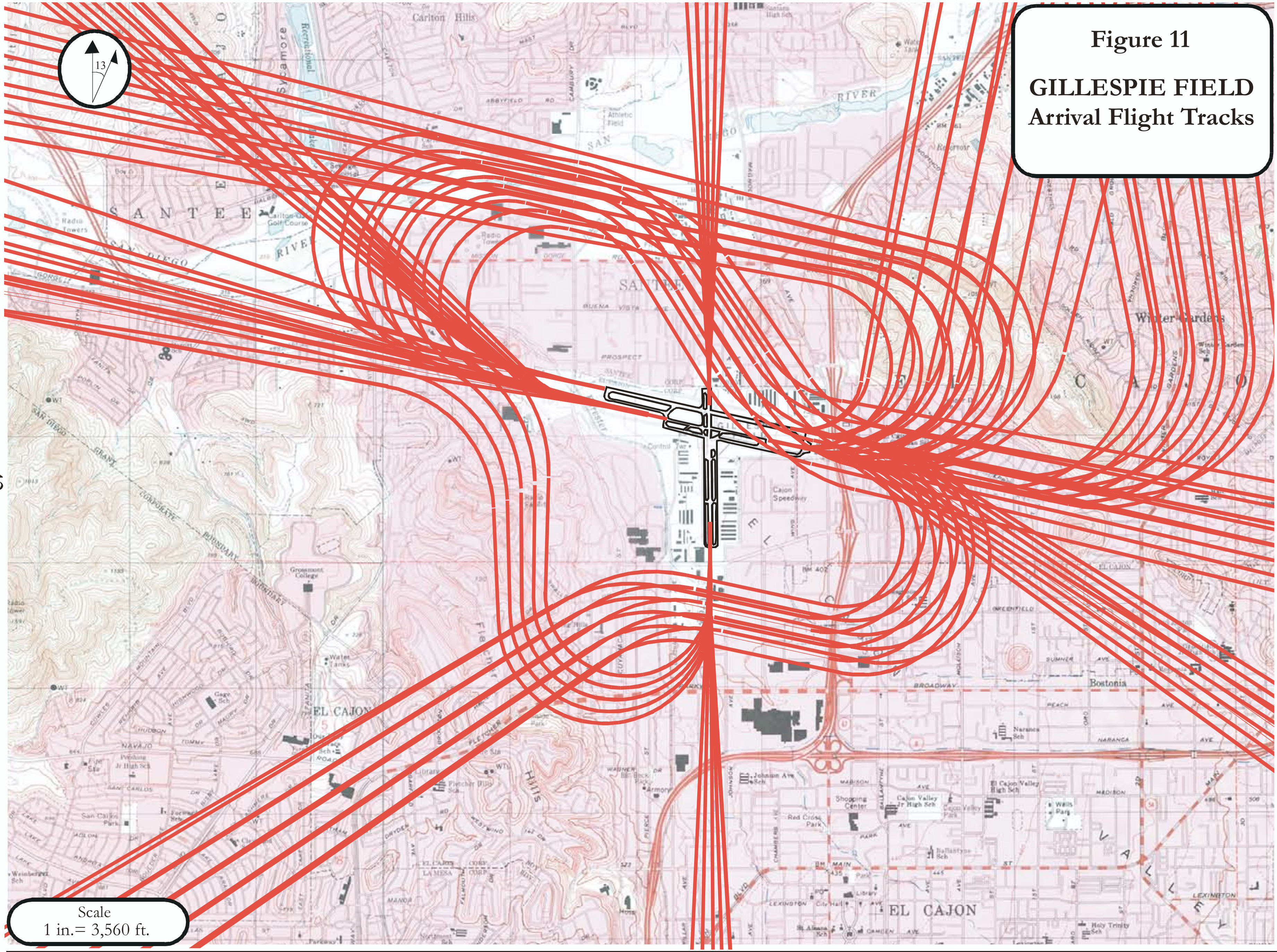


Figure 11

GILLESPIE FIELD
Arrival Flight Tracks

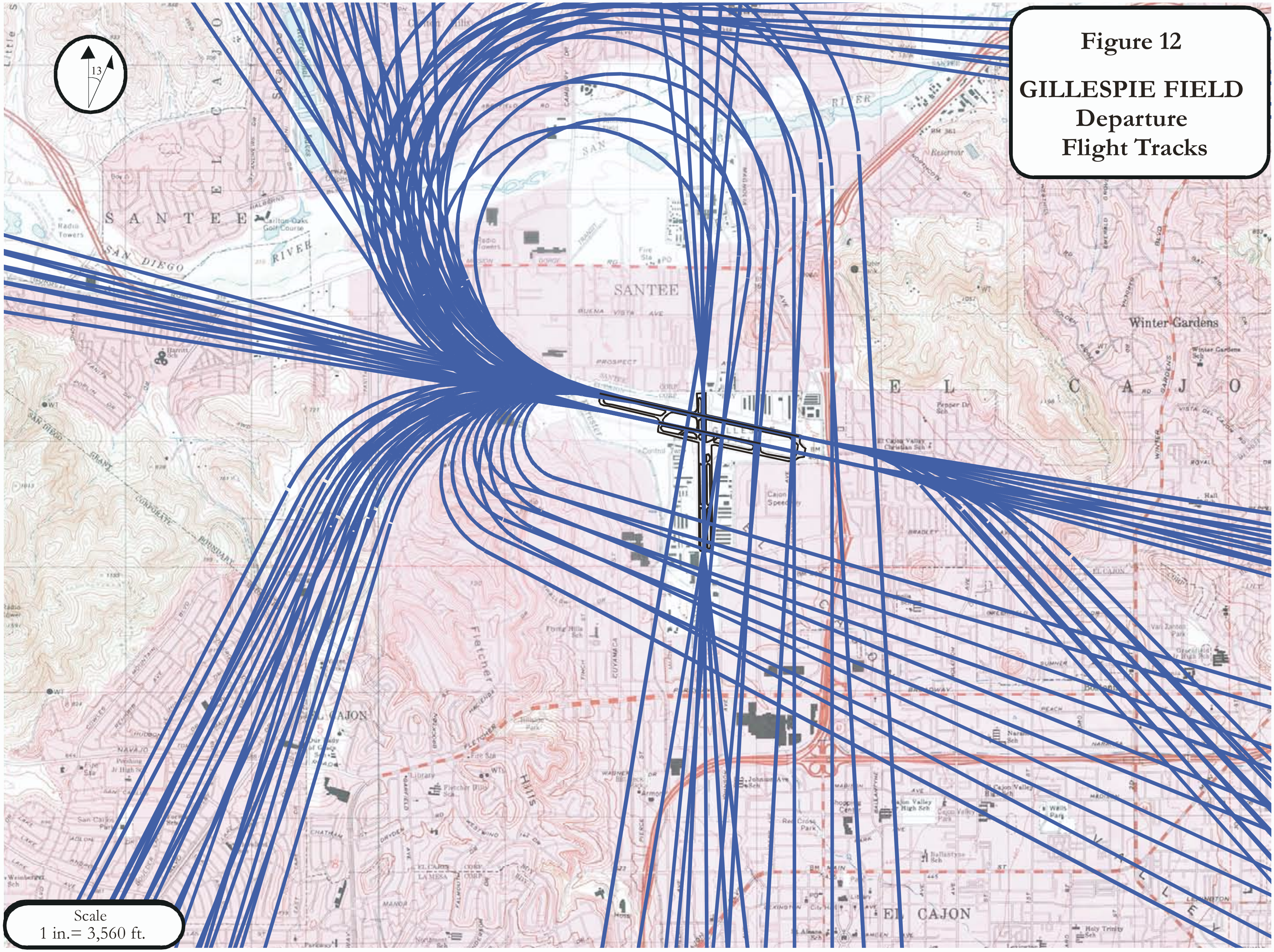


Figure 12

GILLESPIE FIELD
Departure
Flight Tracks

43

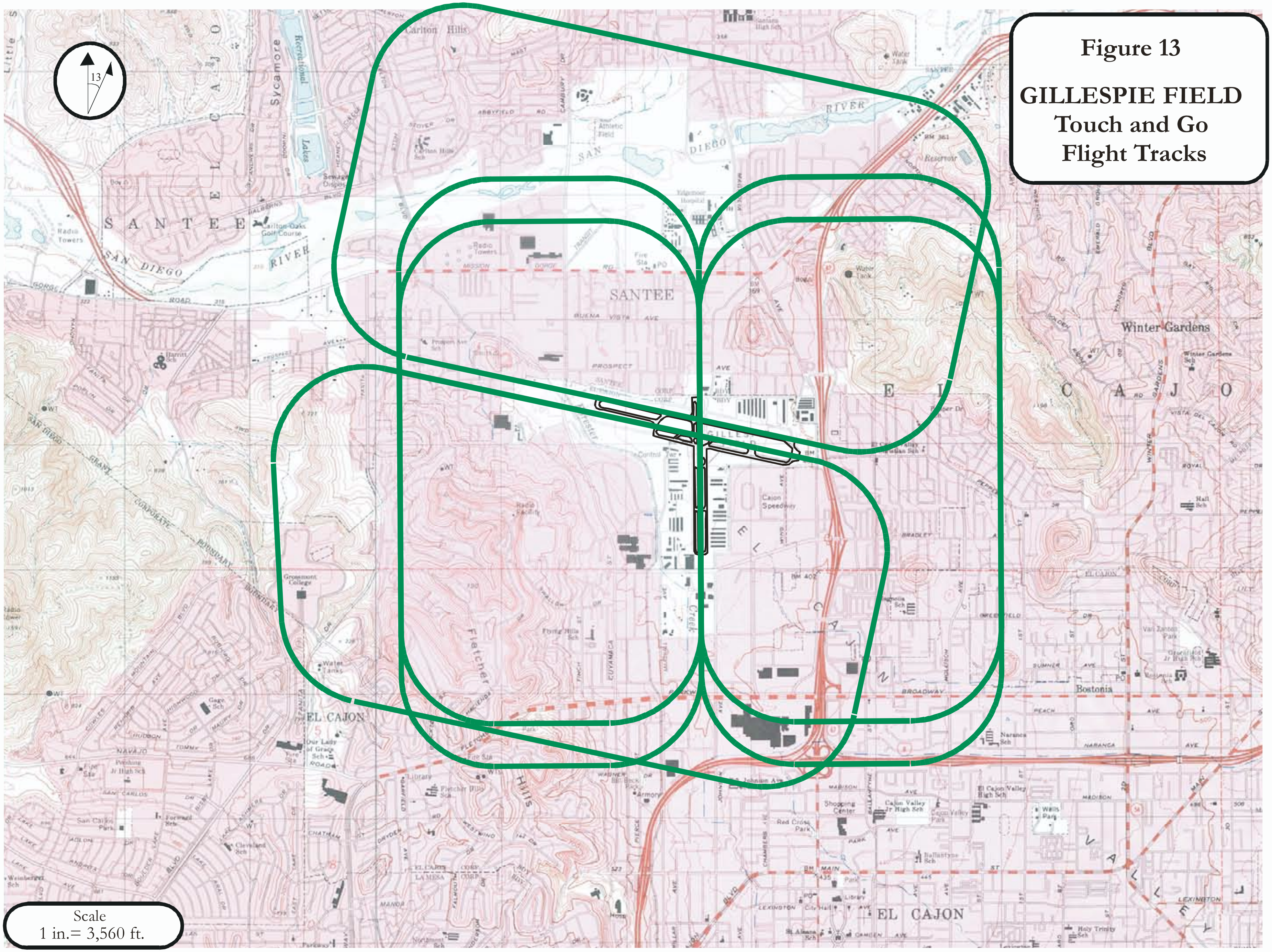


Figure 13

GILLESPIE FIELD
Touch and Go
Flight Tracks

Operational Conditions

Various physical and operational conditions are required by the INM to accurately describe the airport, the metrological conditions and operating parameters of aircraft. Data included in the modeling assumptions include an airport elevation of 387 feet mean sea level (MSL), an average temperature of 77° Fahrenheit, and an average humidity of 60 %.

Physical Characteristics

Physical characteristics of the airfield are an important part of the computer modeling process. The location of the runways, displaced thresholds and associated glideslopes are critical components used to determine aircraft location within the model. These data were determined from survey data provided in the Airport Layout Plan and aeronautical publications. These data are shown in Table 9, *GILLESPIE FIELD PHYSICAL CHARACTERISTICS (YEAR 2000)*.

Table 9
GILLESPIE FIELD PHYSICAL CHARACTERISTICS (Year 2000)

Runway	Latitude	Longitude	Length (ft.)	Elevation (ft. MSL)	Threshold Displacement (ft.)	Glideslope (degrees)
09L	32-49-46.0506	116-58-52.4986	5341	358.7	0	3.5
09R	32-49-38.5624	116-58-34.4552	2737	366.1	0	3.0
17	32-49-46.2489	116-58-20.9471	4147	366.1	450	4
27L	32-49-32.9017	116-58-03.0888	2737	379.5	0	3
27R	32-49-34.9913	116-57-51.2943	5341	387.2	1306	4.5
35	32-49-05.2154	116-58-20.6202	4147	384.8	687	4.0

Year 2000 Noise Contours

Using the data described above, the INM computer model was used to generate CNEL contours for Gillespie Field, as explained in the Background section. The CNEL contours for Year 2000 were developed for the 60, 65, and 70 dB(A) levels and are depicted in Figure 14, *YEAR 2000 CNEL CONTOURS*.

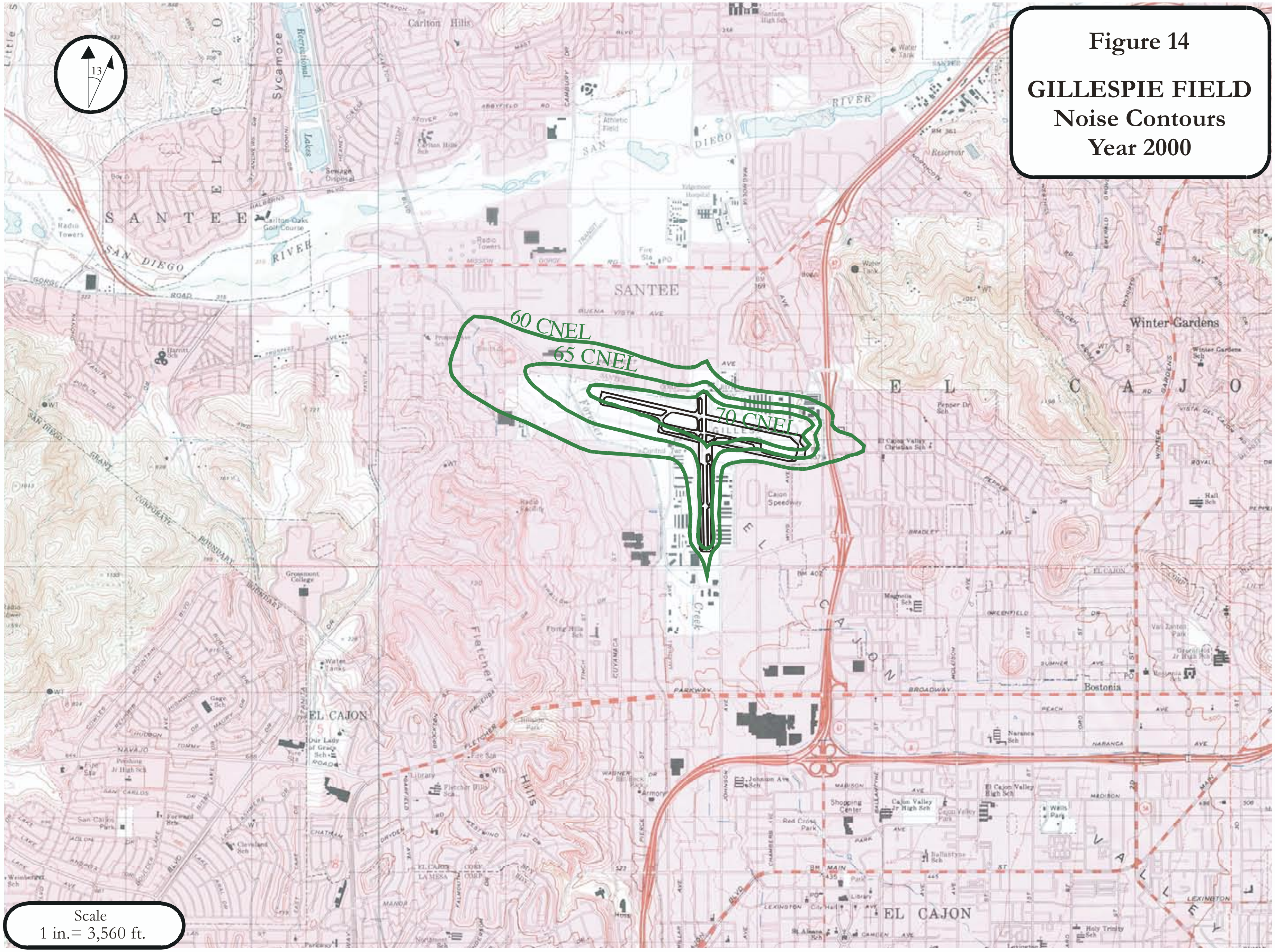


Figure 14

GILLESPIE FIELD
Noise Contours
Year 2000

Future Noise Contours

A major benefit of computer modeling is the ability to predict future noise based upon changes to existing or known conditions. Future noise contours for Gillespie Field were developed for Year 2025. The differences between the Year 2000 contours and these future conditions are an increase in the number of operations and an extension of Runway 09R/27L. All other assumptions are identical to the assumptions used for development of the Year 2000 CNEL contours.

Details regarding Year 2025 operational levels for each category of aircraft are shown in Table 10 *YEAR 2025 OPERATIONS BY AIRCRAFT CATEGORY.*

Table 10
YEAR 2025 OPERATIONS BY AIRCRAFT CATEGORY

Aircraft Category	Arrival/Departure Operations	Touch-and-Go Operations	Total Operations
Single-engine	102,863	137,095	239,958
Multi-engine	7,829	8,830	16,659
Jet			
Small	7,683	0	7,683
Medium	7,683	0	7,683
Large	7,683	0	7,683
Helicopter	3,176	8,571	11,747
Other	1,333	1,504	2,837
Total	138,250	156,000	294,250

As shown in Table 10, aircraft operations in 2025 are expected to increase by 106,598 annual operations compared to Year 2000 operational levels. The largest increase, in terms of numbers of operations, is operations by single-engine aircraft. The largest increase, in terms of percent change, is operations by jet aircraft.

Year 2025 Physical Characteristics

Physical characteristics of the airfield in Year 2025 are expected to be very similar to the Year 2000. The primary changes are an extension to the west end of Runway 09R/27L and a change in the displaced threshold for Runway 27R. These data are shown in Table 11 *GILLESPIE FIELD PHYSICAL CHARACTERISTICS (YEAR 2025).*

Table 11
GILLESPIE FIELD PHYSICAL CHARACTERISTICS (Year 2025)

Runway	Latitude	Longitude	Length (ft.)	Elevation (ft. MSL)	Threshold Displacement (ft.)	Glideslope (degrees)
09L	32-49-46.0506	116-58-52.4986	5341	358.7	0	3.5
09R	**32-49-39.4392**	**116-58-39.3348**	3162	**363.9**	0	3.0
17	32-49-46.2489	116-58-20.9471	4147	366.1	450	4
27L	32-49-32.9017	116-58-03.0888	2737	379.5	0	3
27R	32-49-34.9913	116-57-51.2943	5341	**383.4**	**440**	4.5
35	32-49-05.2154	116-58-20.6202	4147	384.8	687	4.0

Bold indicates change from Year 2000

Year 2025 Noise Contours

Using the data described above, the INM computer model was used to generate CNEL contours for Gillespie Field, as explained in the Background section. The CNEL contours for YEAR 2025 were developed for the 60, 65, and 70 dB(A) levels and are depicted in Figure 15, *YEAR 2025 CNEL CONTOURS*.

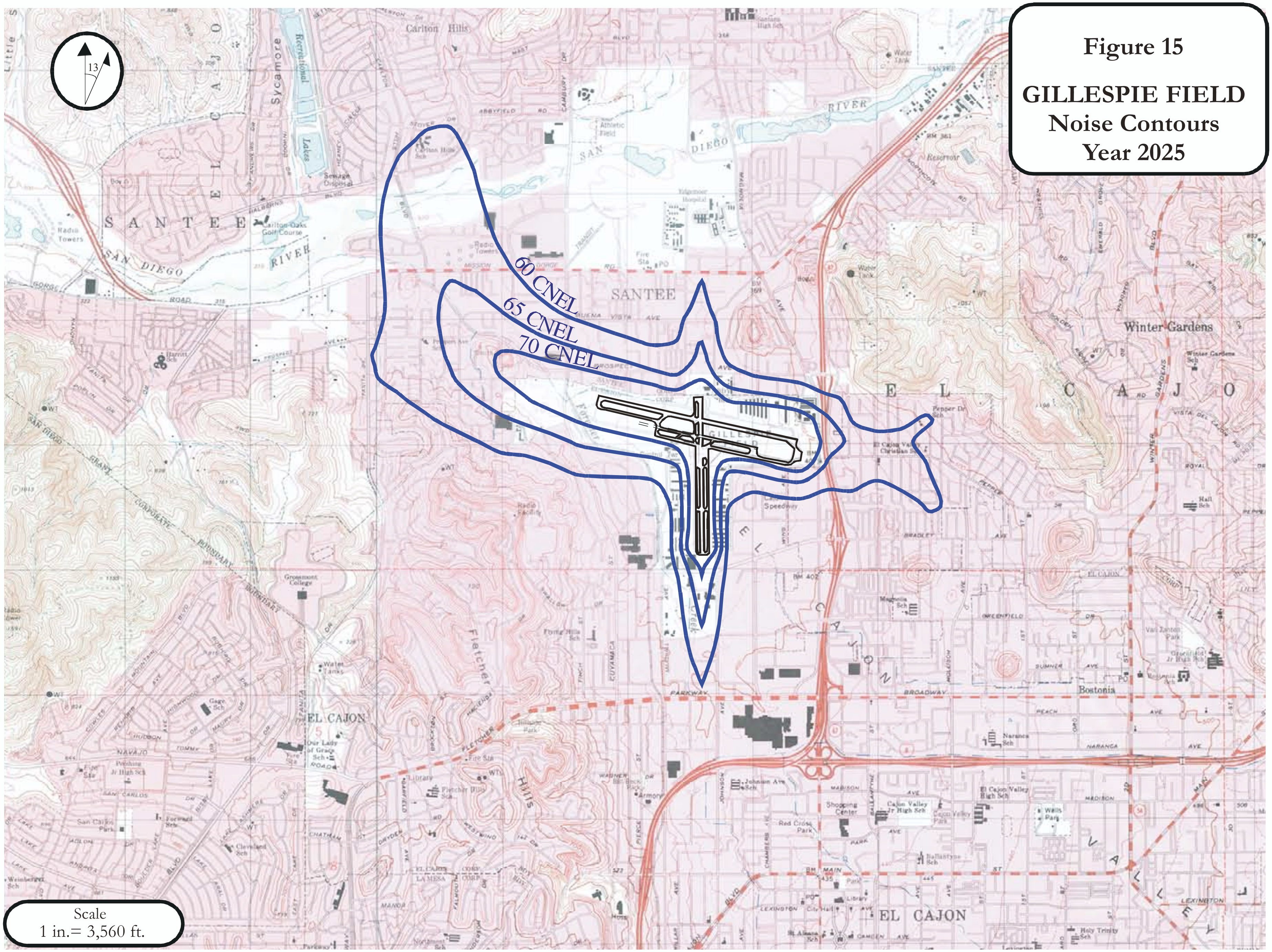


Figure 15

GILLESPIE FIELD
Noise Contours
Year 2025

APPENDIX A

Noise Measurements for Gillespie (SEE) Site 2

DATE	TIME	AIRCRAFT	DESCRIPTION	OPS	RUNWAY	FLIGHT TRACK	Lmax (dBA)	SEL (dBA)	CATEGORY
15-Nov-03	1559	HELO	HELO	D	27	ST OVER NM	80.6	89.1	1
15-Nov-03	1159	JET	ALBATROS	D	27	ST OVER NM	95.8	99.9	2
15-Nov-03	952	SE	BIPLANE	D	27	ST OVER NM	77.9	86.3	3
15-Nov-03	953	SE	C172	D	27	ST OVER NM		79.5	3
15-Nov-03	958	SE	4870H	D	27	ST OVER NM	66.6	74.3	3
15-Nov-03	959	SE	6BG c721	D	27	ST OVER NM	78	84.5	3
15-Nov-03	959	SE	29G	D	27	ST OVER NM	69.7	78.1	3
15-Nov-03		SE		D	27	ST OVER NM	73.7	80.9	3
15-Nov-03	1004	SE	7121N	D	27	ST OVER NM	87.3	90.8	3
15-Nov-03	1007	SE	16X	D	27	ST OVER NM	68.1	76.1	3
15-Nov-03	1010	SE		D	27	ST OVER NM	70.5	77.3	3
15-Nov-03	1010	SE		D	27	ST OVER NM	74.8	82.4	3
15-Nov-03	1013	SE		D	27	ST OVER NM	70.4	77.3	3
15-Nov-03	1016	SE	80E	D	27	ST OVER NM	76.8	83.8	3
15-Nov-03	1017	SE		D	27	ST OVER NM	83		3
15-Nov-03	1018	SE		D	27	ST OVER NM	69.6	79	3
15-Nov-03	1020	SE	4428E	D	27	ST OVER NM	75.6	84.8	3
15-Nov-03	1020	SE	V36	D	27	ST OVER NM	82.1	88.1	3
15-Nov-03	1021	SE		D	27	ST OVER NM	76	82.8	3
15-Nov-03	1021	SE		D	27	ST OVER NM	78.1	84.6	3
15-Nov-03	1023	SE		D	27	ST OVER NM	79.6	87.7	3
15-Nov-03	1025	SE		D	27	ST OVER NM	74.9	79.5	3
15-Nov-03	1027	SE	8GL	D	27	ST OVER NM	70.6	78.9	3
15-Nov-03	1028	SE	51V	D	27	ST OVER NM	79.2	84.6	3
15-Nov-03	1031	SE	44GS	D	27	ST OVER NM	71.5	80.4	3
15-Nov-03	1033	SE	36C	D	27	ST OVER NM	70.4	78.2	3
15-Nov-03	1034	SE		D	27	ST OVER NM	78.5	84.9	3
15-Nov-03	1034	SE		D	27	ST OVER NM	78.2	85.5	3
15-Nov-03	1035	SE		D	27	ST OVER NM			3
15-Nov-03	1054	SE		D	27	ST OVER NM	74	82.7	3
15-Nov-03	1108	SE	SEHW	D	27	ST OVER NM	76	82.9	3
15-Nov-03	1109	SE	SEHW	D	27	ST OVER NM	76.5	84.6	3
15-Nov-03		SE	124W	D	27	ST OVER NM	81.4	87.2	3
15-Nov-03	1139	SE		D	27	ST OVER NM	85	91.7	3
15-Nov-03	1140	SE		D	27	ST OVER NM	79.3	85.9	3
15-Nov-03	1146	SE		D	27	ST OVER NM	79	84.4	3
15-Nov-03	1158	SE	55V	D	27	ST OVER NM	78.2	85.6	3
15-Nov-03	1507	SE	4438T	D	27	ST OVER NM	81.1	88.5	3
15-Nov-03	1510	SE	16X	D	27	SELW / TWIN	84.8	92	3
15-Nov-03	1524	SE	3080E	D	27	ST OVER NM	76.2	84.3	3
15-Nov-03	1526	SE		D	27	ST OVER NM			3
15-Nov-03	1531	SE	5216E	D	27	ST OVER NM	79.6	85.7	3
15-Nov-03	1557	SE	5216E	D	27	ST OVER NM	79.8	76.2	3
15-Nov-03	1602	SE		D	27	ST OVER NM	73.9	82	3
15-Nov-03	1024	SEHW		D	27	ST OVER NM	83.7	89.4	3
15-Nov-03	1039	SEHW	229V C172	D	27	ST OVER NM	78.3		3
15-Nov-03	1048	SEHW		D	27	ST OVER NM	74.3	82.1	3
15-Nov-03	1050	SEHW	C172	D	27	ST OVER NM	66.7	75.1	3
15-Nov-03	1059	SEHW	C172	D	27	ST OVER NM	71.2	79.6	3
15-Nov-03	1059	SEHW	C172	D	27	ST OVER NM	76.4	81.5	3
15-Nov-03		SEHW		D	27	ST OVER NM	82.5	87.6	3
15-Nov-03	1101	SEHW	C172	D	27	ST OVER NM	77	83.3	3
15-Nov-03	1103	SEHW	C172	D	27	ST OVER NM	74.2	81.8	3
15-Nov-03	1152	SEHW	SEHW	D	27	ST OVER NM	71.9	79.7	3
15-Nov-03		SEHW	60P C172	D	27	ST OVER NM	77.6	84.6	3
15-Nov-03	1438	SEHW	SEHW	D	27	ST OVER NM	78.3	85.2	3
15-Nov-03	1440	SEHW	62P	D	27	ST OVER NM	82.8	88.4	3
15-Nov-03	1443	SEHW	C172	D	27	ST OVER NM	82.6	88.7	3
15-Nov-03	1504	SEHW	42421	D	27	ST OVER NM	84.2	89.2	3
15-Nov-03	1528	SEHW		D	27	ST OVER NM	89.9	92.5	3
15-Nov-03	1529	SEHW	2WJ C172	D	27	ST OVER NM	80.3	86.6	3
15-Nov-03	1535	SEHW	SEHW	D	27	ST OVER NM	68.6	77.1	3
15-Nov-03	1536	SEHW	SEHW	D	27	ST OVER NM		85.4	3
15-Nov-03	1537	SEHW	SEHW	D	27	ST OVER NM	72.9	80.6	3

Noise Measurements for Gillespie (SEE) Site 2

DATE	TIME	AIRCRAFT	DESCRIPTION	OPS	RUNWAY	FLIGHT TRACK	Lmax (dBA)	SEL (dBA)	CATEGORY
15-Nov-03	1537	SEHW	SEHW	D	27	ST OVER NM	83	88.8	3
15-Nov-03	1539	SEHW	SEHW	D	27	ST OVER NM	76.1	83.6	3
15-Nov-03	1540	SEHW	SEHW	D	27	ST OVER NM	83.9	88.6	3
15-Nov-03	1543	SEHW	SEHW	D	27	ST OVER NM	74.8	81.7	3
15-Nov-03	1544	SEHW	SEHW	D	27	ST OVER NM	70.4	79.4	3
15-Nov-03	1546	SEHW	SEHW	D	27	ST OVER NM	77.3	83.7	3
15-Nov-03	1547	SEHW	SEHW	D	27	ST OVER NM	75.6	84	3
15-Nov-03	1548	SEHW	SEHW	D	27	ST OVER NM	84.1	90.9	3
15-Nov-03	1550	SEHW	SEHW	D	27	ST OVER NM	71.6	79.6	3
15-Nov-03	1550	SEHW		D	27	ST OVER NM	66.2	75.4	3
15-Nov-03	1554	SEHW	C172	D	27	ST OVER NM	71	79.6	3
15-Nov-03	1558	SEHW		D	27	ST OVER NM	71.2	79.2	3
15-Nov-03	1600	SEHW	80E C172	D	27	ST OVER NM	83.1	75.9	3
15-Nov-03	1602	SEHW	5216E C172	D	27	ST OVER NM	79.3	85.4	3
15-Nov-03	1604	SEHW	C172	D	27	ST OVER NM	70.6	78.5	3
15-Nov-03	1605	SEHW	2MJ C172	D	27	ST OVER NM	81.3	87.5	3
15-Nov-03	1605	SEHW		D	27	ST OVER NM			3
15-Nov-03	1609	SEHW		D	27	ST OVER NM	79.5	86	3
15-Nov-03	1610	SEHW		D	27	ST OVER NM	70.4	78.6	3
15-Nov-03	1612	SEHW		D	27	ST OVER NM	77.2	84	3
15-Nov-03	1614	SEHW		D	27	ST OVER NM	79.8	87.5	3
15-Nov-03	1615	SEHW		D	27	ST OVER NM	70	78.4	3
15-Nov-03	1617	SEHW		D	27	ST OVER NM	79.4	86.7	3
15-Nov-03	1619	SEHW		D	27	ST OVER NM	81.7	87.6	3
15-Nov-03	1620	SEHW		D	27	ST OVER NM	76.3	82.6	3
15-Nov-03	1622	SEHW		D	27	ST OVER NM	71.6	79.8	3
15-Nov-03	1626	SEHW		D	27	ST OVER NM	65.1	73.1	3
15-Nov-03	1628	SEHW		D	27	ST OVER NM	69.3	79.9	3
15-Nov-03	1629	SEHW		D	27	ST OVER NM	86.2	91.7	3
15-Nov-03	1630	SEHW		D	27	ST OVER NM	71.7	80.4	3
15-Nov-03		SEL	SELW	D	27	ST OVER NM	80.9	88.1	3
15-Nov-03		SEL	SELW	D	27	ST OVER NM	85.2	89.6	3
15-Nov-03	1132	SEL	SELW	D	27	ST OVER NM	76.6		3
15-Nov-03	1134	SEL	SELW	D	27	ST OVER NM	74.8	82	3
15-Nov-03	1139	SEL	SELW	D	27	ST OVER NM	74.5	80.4	3
15-Nov-03	1141	SEL	CHEROKEE	D	27	ST OVER NM	92	94.6	3
15-Nov-03	1142	SEL	CHEROKEE	D	27	ST OVER NM	82.4	87.7	3
15-Nov-03	1146	SEL	CHEROKEE	D	27	ST OVER NM	82.4	87.7	3
15-Nov-03	1157	SEL	CHEROKEE	D	27	ST OVER NM	82.8	88.2	3
15-Nov-03	1158	SEL	SELW	D	27	ST OVER NM	71.6	78.1	3
15-Nov-03	1434	SEL	SELW	D	27	ST OVER NM	79	86	3
15-Nov-03	1439	SEL	SELW	D	27	ST OVER NM	81.8	88.4	3
15-Nov-03	1446	SEL	CHEROKEE	D	27	ST OVER NM	68.1	78	3
15-Nov-03	1517	SEL	SELW	D	27	ST OVER NM	79.1	85.5	3
15-Nov-03	1519	SEL	SELW	D	27	ST OVER NM	85.7	91.3	3
15-Nov-03	1522	SEL	SELW	D	27	ST OVER NM	75	83.1	3
15-Nov-03	1524	SEL	SELW	D	27	2 A/C	78.2	87.6	3
15-Nov-03	1533	SEL	SELW	D	27	ST OVER NM	76.4	83.9	3
15-Nov-03	1538	SEL	40 CHEROKEE	D	27	ST OVER NM	77.5	85.2	3
15-Nov-03	1542	SEL	40 CHEROKEE	D	27	ST OVER NM	75.6	83.9	3
15-Nov-03	1556	SEL	963 CHEROKEE	D	27	ST OVER NM	71.8	80.7	3
15-Nov-03	1600	SEL	CHEROKEE	D	27	ST OVER NM	74.4	83	3
15-Nov-03	1606	SEL	CHEROKEE	D	27	ST OVER NM	76.4	84.7	3
15-Nov-03	954	SELW	36335?	D	27	ST OVER NM	67.1	76.2	3
15-Nov-03	957	SELW		D	27	ST OVER NM	81.1	87.7	3
15-Nov-03		SELW		D	27	ST OVER NM	74.9	80.8	3
15-Nov-03	1008	SELW		D	27	ST OVER NM	74.6	79.3	3
15-Nov-03	1014	SELW	84P	D	27	ST OVER NM	73.9	80.6	3
15-Nov-03	1018	SELW		D	27	ST OVER NM	82.9	89	3
15-Nov-03	1023	SELW		D	27	ST OVER NM	79.4	84.4	3
15-Nov-03	1037	SELW		D	27	ST OVER NM	85.3	89.1	3
15-Nov-03	1040	SELW	3GS CHEROKEE	D	27	ST OVER NM	76.6	84.2	3
15-Nov-03	1043	SELW		D	27	ST OVER NM	82.5	89.3	3
15-Nov-03	1044	SELW		D	27	ST OVER NM	82.7	88.4	3

Noise Measurements for Gillespie (SEE) Site 2

DATE	TIME	AIRCRAFT	DESCRIPTION	OPS	RUNWAY	FLIGHT TRACK	Lmax (dBA)	SEL (dBA)	CATEGORY
15-Nov-03	1110	SELW	CHEROKEE	D	27	ST OVER NM	77.5	84.7	3
15-Nov-03	1111	SELW	CHEROKEE	D	27	ST OVER NM	82.7	87.4	3
15-Nov-03		SELW	SELW	D	27	ST OVER NM	71		3
15-Nov-03	1112	SELW	SELW	D	27	ST OVER NM	81.1	85.1	3
15-Nov-03	1151	SELW	179SW	D	27	ST OVER NM	95.2	91.3	3
15-Nov-03	1153	SELW	300E	D	27	ST OVER NM	76.1	83.9	3
15-Nov-03	1502	SELW	8750W	D	27	ST OVER NM	82.7	87.3	3
15-Nov-03	1527	SELW		D	27	ST OVER NM	83.1	88.6	3
15-Nov-03	1552	SELW	40 CHEROKEE	D	27	ST OVER NM	77.7	84.4	3
15-Nov-03	1553	SELW		D	27	ST OVER NM	85.4	91.3	3
15-Nov-03	1553	SELW		D	27	ST OVER NM	75.8	83.8	3
15-Nov-03	1450	SELWRG	8PB	D	27	ST OVER NM	75.1	83.2	3
15-Nov-03	1525	SELWRG		D	27	ST OVER NM	84.4	89.4	3
15-Nov-03		TWIN	TWIN B58	D	27	ST OVER NM	88.6	97.7	4
15-Nov-03	1036	TWIN	TWIN C340	D	27	ST OVER NM	83.6	89.3	4
15-Nov-03	1045	TWIN	TWIN C340	D	27	ST OVER NM	85	90.9	4
15-Nov-03	1113	TWIN	TWIN	D	27	ST OVER NM	84.9	90	4
15-Nov-03	1114	TWIN	TWIN	D	27	ST OVER NM	89.2	97	4
15-Nov-03	1200	TWIN	TWIN	D	27	ST OVER NM	84.4	89.6	4
15-Nov-03	1452	TWIN	TWIN DUCHESS	D	27	ST OVER NM	84.5	90.8	4
15-Nov-03	1457	TWIN	TWIN	D	27	ST OVER NM	90.1	95.5	4
15-Nov-03	1503	TWIN	TWIN	D	27	ST OVER NM	88.5	95	4
15-Nov-03	1515	TWIN	DUCHESS	D	27	ST OVER NM	88.6	94.6	4
15-Nov-03	1522	TWIN	DUCHESS	D	27	ST OVER NM	90.1	95.4	4
15-Nov-03	1527	TWIN	TWIN	D	27	ST OVER NM	89.5	95.5	4
15-Nov-03	1532	TWIN	DUCHESS	D	27	ST OVER NM	88.5	94.4	4

Noise Measurements for Gillespie (SEE) Site 3

DATE	TIME	AIRCRAFT	DESCRIPTION	OPS	RUNWAY	FLIGHT TRACK	Lmax (dBA)	SEL (dBA)	CATEGORY
15-Nov-03	1507	ARROW		D	R	ST	70.2	79.6	3
15-Nov-03	1505	C1	42421	D			75.3	76.7	3
15-Nov-03	947	GASE		D	R	ST	69.3	78.2	3
15-Nov-03	951	GASE	2 BIPLANE	D	R	RT ABEAM SITE	66.3	77.8	3
15-Nov-03	952	GASE	C172	D	R	ST	67.6	77.7	3
15-Nov-03	954	GASE		D	R	LT PAST SITE	66.4	75.5	3
15-Nov-03	957	GASE		D	R	RT ABEAM SITE	68.4	77.4	3
15-Nov-03	958	GASE	X23	D	R/L	SIMO	71.4	81.6	3
15-Nov-03	959	GASE	C172	D	L	ST	66.3	76.9	3
15-Nov-03	1002	GASE	CHEROKEE	D	L	ST	72.2	81.7	3
15-Nov-03	1002	GASE	CESSNA	D	R	ST			3
15-Nov-03	1004	GASE	V36	D	R	ST	73.6	81.8	3
15-Nov-03	1005	GASE	C172	D	L	ST	65.8	76.2	3
15-Nov-03	1006	GASE	C172	D	L	ST	69.6	78.8	3
15-Nov-03	1008	GASE	2	D	R/L	ST	78.8	86.7	3
15-Nov-03	1009	GASE	C172	D	L	ST			3
15-Nov-03	1009	GASE	VARIEZ	D	R	VARIEZ	69.5	81.6	3
15-Nov-03	1010	GASE		D	L	ST	69.6	79.2	3
15-Nov-03	1013	GASE	C172	D	L	ST	70.1	82.2	3
15-Nov-03	1014	GASE		D	R	ST	67.8	77.7	3
15-Nov-03	1016	GASE	C172	D	R	ST	65.6	77	3
15-Nov-03	1017	GASE	X3	D	R/L	LT PAST SITE	73.3	85.4	3
15-Nov-03	1018	GASE	CHEROKEE	D	L	ST	79.2	86.5	3
15-Nov-03	1019	GASE	CHEROKEE	D	L	ST	79.4	87.9	3
15-Nov-03	1020	GASE	V36	D	R	ST	76.2	84.7	3
15-Nov-03	1021	GASE	PIPER	D	R	ST	70	80.2	3
15-Nov-03	1022	GASE	PIPER	D	R	ST	64.5	74.8	3
15-Nov-03	1022	GASE	C172	D	L	ST	69.8	78.5	3
15-Nov-03	1023	GASE	UNK	D	R	ST	69.8	80.8	3
15-Nov-03	1024	GASE	PIPER	D	R	ST	67.6	77.6	3
15-Nov-03	1025	GASE	X23	D	R/L	ST	72.6	83.3	3
15-Nov-03	1027	GASE	C172	D	L	ST	70	78.4	3
15-Nov-03	1028	GASE	V36	D	L	ST	82.7	88.5	3
15-Nov-03	1031	GASE	C172	D	L	ST	72.5	81.7	3
15-Nov-03	1033	GASE	?	D	R	ST	63.2	75.2	3
15-Nov-03	1034	GASE	C172	D	R	ST	64.5	75.7	3
15-Nov-03	1035	GASE	C172	D	R	ST	73.2	82.6	3
15-Nov-03	1036	GASE	C340	D	R	ST	74.1	81.8	3
15-Nov-03	1037	GASE	C172	D	R	ST	69.7	73.8	3
15-Nov-03	1038	GASE	C172	D	R	RT ABEAM SITE			3
15-Nov-03	1042	GASE	UNK	D	R	ST	70.9	81.2	3
15-Nov-03	1043	GASE	C172	D	R	ST	68.2	78.2	3
15-Nov-03	1046	GASE	C172	D	L	ST	66.5	77.5	3
15-Nov-03	1048	GASE	C172	D	R	ST	61	72.4	3
15-Nov-03	1049	GASE	C172	D	L	ST	72.2	81.4	3
15-Nov-03	1053	GASE	C172	D	R	LT PAST SITE	70.7	80.5	3
15-Nov-03	1054	GASE		D	L	ST	72.9	81.9	3
15-Nov-03	1058	GASE	229G C172	D	L	ST	73.7	82.2	3
15-Nov-03	1059	GASE	C172	D	R	ST	71.5	80.2	3
15-Nov-03	1101	GASE	C172	D	R	ST	67.9	77.3	3
15-Nov-03	1103	GASE	C172	D	R	ST			3
15-Nov-03	1106	GASE	C172	D	R	RT ABEAM SITE	65.3	74.9	3
15-Nov-03	1109	GASE	C172	D	R	ST	65	76.7	3
15-Nov-03	1110	GASE	CHEROKEE	D	R	ST	67.8	77.9	3
15-Nov-03	1111	GASE	CHEROKEE	D	R	L JOG NEAR SITE	75.1	83.8	3
15-Nov-03	1112	GASE	CHEROKEE	D	R	ST	73.1	79.2	3
15-Nov-03	1112	GASE	PIPER	D	R	RT TURN PRIOR	63.1	71.5	3
15-Nov-03	1112	GASE	PIPER	D	R	LT OVER SITE	72	88.1	3
15-Nov-03	1115	GASE	C172	D	R	ST	69.5	80.6	3
15-Nov-03	1118	GASE	RG	D	R	ST	72.2	81.4	3
15-Nov-03	1124	GASE	C172	D	R	ST	65.8	77	3
15-Nov-03	1125	GASE	C172	D	R	ST	74.6	83.4	3
15-Nov-03	1126	GASE	C172	D	R	ST	76.3	82.9	3
15-Nov-03	1127	GASE	C172	D	R	ST	64	75.2	3

Noise Measurements for Gillespie (SEE) Site 3

DATE	TIME	AIRCRAFT	DESCRIPTION	OPS	RUNWAY	FLIGHT TRACK	Lmax (dBA)	SEL (dBA)	CATEGORY
15-Nov-03	1131	GASE	CHEROKEE	D	R	ST	66.4	75.6	3
15-Nov-03	1133	GASE	LW	D	L	ST	71.1	79.4	3
15-Nov-03	1138	GASE	X23	D	R	ST	76.5	85.7	3
15-Nov-03	1139	GASE		D	R	ST			3
15-Nov-03	1140	GASE	C172	D	L	ST	74.6	83.6	3
15-Nov-03	1140	GASE	CHEROKEE	D	R	ST	81.4	89.7	3
15-Nov-03	1142	GASE	CHEROKEE	D	R	ST	66.8	75.1	3
15-Nov-03	1145	GASE	C172	D	L	LT PAST SITE	73.7	83.7	3
15-Nov-03	1146	GASE	CHEROKEE	D	R	ST	68.1	78.3	3
15-Nov-03	1151	GASE	CHEROKEE	D	R	ST	82.8	89.5	3
15-Nov-03	1151	GASE	C172	D	L	ST	70	77.9	3
15-Nov-03	1152	GASE	C172	D	R	ST	65.6	76.4	3
15-Nov-03	1154	GASE	C172	D	L	ST	69.5	79.3	3
15-Nov-03	1155	GASE	C172	D	R	ST	64.8	75.9	3
15-Nov-03	1156	GASE	CHEROKEE	D	R	ST	73.2	82.6	3
15-Nov-03	1158	GASE	C172	D	R	RT 340 ABEAM	68.8	78.9	3
15-Nov-03	1431	GASE	C172	D	L	ST	65.5	76.3	3
15-Nov-03	1435	GASE	C172	D	R/L	ST	60.4	80.1	3
15-Nov-03	1438	GASE	39N	D			69.4	83	3
15-Nov-03	1440	GASE	C172	D	L	ST	69.2	78.7	3
15-Nov-03	1443	GASE	C172	D	R	ST	67.9	77.4	3
15-Nov-03	1446	GASE	C172	D	L	ST			3
15-Nov-03	1450	GASE	LW	D	R	ST	68.8	79.6	3
15-Nov-03	1501	GASE	8750W	D	R		71	80.3	3
15-Nov-03	1518	GASE	LW	D	R	ST			3
15-Nov-03	1519	GASE	LW	D	R	ST	85.5	91.9	3
15-Nov-03	1522	GASE	C172	D	R	ST	65	76.8	3
15-Nov-03	1523	GASE		D	R/L	ST			3
15-Nov-03	1524	GASE	C172	D	R		66.1	77.5	3
15-Nov-03	1525	GASE	C172	D	R		74.6	83.8	3
15-Nov-03	1526	GASE	C172	D	L	ST			3
15-Nov-03	1527	GASE	LW	D	R				3
15-Nov-03	1527	GASE		D	L		75.9	87.1	3
15-Nov-03	1529	GASE	C172	D	R	ST			3
15-Nov-03		GASE	LW	D	L		72	88.3	3
15-Nov-03	1530	GASE	C172	D	L	ST	64.4	76.3	3
15-Nov-03	1531	GASE	C172	D	L	ST	78.6	86.7	3
15-Nov-03		GASE		D	L	EARLY RT TURN			3
15-Nov-03	1535	GASE	C172	D	L	ST	66.2	76.9	3
15-Nov-03	1536	GASE		D	R	GANNER	68.1	80.5	3
15-Nov-03	1537	GASE	C172	D	L	LT OVER SITE	78	84.4	3
15-Nov-03	1538	GASE	LW	D	L	ST	75	84.9	3
15-Nov-03	1539	GASE	C172	D	R	ST	59.9	71.9	3
15-Nov-03	1540	GASE	C172	D	L	ST	73.6	81.9	3
15-Nov-03	1543	GASE	LW	D	L	ST	76.4	85.3	3
15-Nov-03	1544	GASE	C172	D	R	ST	65.8	76.8	3
15-Nov-03	1545	GASE	C172	D	L	ST	65.8	77.9	3
15-Nov-03	1546	GASE	C172	D	L	ST	61.6	74	3
15-Nov-03	1547	GASE	LW	D	L	ST	75.4	85.5	3
15-Nov-03	1549	GASE	C172	D	R	ST	69.5	80.1	3
15-Nov-03	1549	GASE	C172	D	L	ST			3
15-Nov-03	1550	GASE		D	L	ST	71.1	79.8	3
15-Nov-03	1552	GASE	LW	D	L	ST	75.2	85.2	3
15-Nov-03	1553	GASE	LW	D	L	ST	84.6	91.1	3
15-Nov-03	1554	GASE	LW	D	R	ST			3
15-Nov-03	1555	GASE	C172	D	L	ST	64.8	77.8	3
15-Nov-03	1556	GASE	LW	D	L	ST	72.1	81	3
15-Nov-03	1557	GASE	C172	D	L	ST	79	86.8	3
15-Nov-03	1558	GASE	C172	D	L	ST	66	77.2	3
15-Nov-03	1600	GASE	C172	D	L	ST	77.2	87.4	3
15-Nov-03	1602	GASE	LW	D	L	ST	80.1	87.5	3
15-Nov-03	1603	GASE	C172	D	L	ST	73.2	81.9	3
15-Nov-03	1605	GASE	C172	D	L	ST	64.5	76.4	3
15-Nov-03	1606	GASE	C172	D	L	ST			3

Noise Measurements for Gillespie (SEE) Site 3

DATE	TIME	AIRCRAFT	DESCRIPTION	OPS	RUNWAY	FLIGHT TRACK	Lmax (dBA)	SEL (dBA)	CATEGORY
15-Nov-03	1606	GASE	LW	D	R	ST	69.5	80.4	3
15-Nov-03	1607	GASE	C172	D	L	ST	75.3	85.2	3
15-Nov-03	1609	GASE	C172	D	R	ST			3
15-Nov-03	1609	GASE	C172	D	L	ST	65.4	77.2	3
15-Nov-03	1611	GASE	C172	D	L	ST	63.4	76.3	3
15-Nov-03	1612	GASE	TD	D	L	ST	65.8	77.5	3
15-Nov-03	1614	GASE		D	R	ST			3
15-Nov-03	1614	GASE	C172	D	L	ST	66.7	80.3	3
15-Nov-03	1617	GASE	C172	D	L	ST	66.2	76.8	3
15-Nov-03	1618	GASE	C172	D	L	ST	75.1	84.1	3
15-Nov-03	1620	GASE	C172	D	R	ST	72.3	81	3
15-Nov-03	1622	GASE	C172	D	L	ST	64.4	75.8	3
15-Nov-03	1623	GASE	C172	D	L	ST	66.2	76.9	3
15-Nov-03	1627	GASE	C172	D	R	RT PRIOR TO RENA	60.2	72.9	3
15-Nov-03	1629	GASE	C172	D	L	ST	67.4	78.2	3
15-Nov-03	1629	GASE	C172	D	L	ST	83.4	81.4	3
15-Nov-03	1630	GASE	C172	D	L	ST	63.6	76.2	3
15-Nov-03	1034	GATE	B58	D	R	ST	84.5	93.7	4
15-Nov-03	1044	GATE	C340	D	R	ST	75.8	85.3	4
15-Nov-03	1113	GATE	C340	D	R	ST	74.4	81.5	4
15-Nov-03	1113	GATE	B58	D	R	ST	83.2	93.2	4
15-Nov-03	1200	GATE	C340	D	R	ST	73.4	81.4	4
15-Nov-03	1453	GATE	DUCHESS	D	R	ST	74	84.8	4
15-Nov-03	1457	GATE	DUCHESS	D	R	ST	76	86.4	4
15-Nov-03	1504	GATE	DUCHESS	D	R		75.1	84.7	4
15-Nov-03	1515	GATE	DUCHESS	D	R	ST	74.4	85.5	4
15-Nov-03	1521	GATE	DUCHESS	D	R	ST	75.9	76.4	4
15-Nov-03	1526	GATE	DUCHESS	D	R	ST	74.8	85.9	4
15-Nov-03	1532	GATE	DUCHESS	D	R	ST	74.6	85.1	4
15-Nov-03	1559	HELO	LW	D	L	LIFE FLT	70.4	80.7	1
15-Nov-03	1159	JET	ALBATROS	D	R	ST	81.8	90.2	2
15-Nov-03	1509			D	R/L	C172 AND DUCHESS	78.2	89.4	

APPENDIX B

QC Summary for OPS_FLT.dbf
3/22/04
Gillespie Field 2000

TOTAL ANNUAL OPERATIONS: 187332.418

TOTAL DAILY OPERATIONS SUMMARY:

Total Operations:	513.2395
Total Arrivals:	120.3953
Total Departures:	121.2182
Total T+G Operations:	271.626

OPERATIONS BY TIME OF DAY:

Operation	Day	Evening	Night
Departures:	110.8572	9.1538	1.2072
Arrivals:	109.738	9.091	1.5663
Touch and Go's:	250.7672	19.1192	1.7396
Total:	471.3624	37.364	4.5131

DAILY OPERATIONS PERCENTAGES BY TIME OF DAY:

Operation	Day	Evening	Night
Departures:	91.4526	7.5515	0.9959
Arrivals:	91.1481	7.551	1.301
Touch and Go's:	92.3208	7.0388	0.6404

AIRCRAFT NAMES USED IN THIS STUDY:
BEC58P
CIT3
CL600
CL601
CNA172
CNA206
CNA20T
CNA441
CNA500
CNA55B
CNA750
COMJET
COMSEP
DHC6
FAL20
GASEPF
GASEPV
GIV
GV
IA1125
LEAR25
LEAR35
MU3001
SABR80
SD330
SF340

RUNWAYS TRACKS AND DAILY OPERATIONS USED IN THIS STUDY:
(touch and go tracks show depa not total operations - per INM input)

Runway		Tracks	Day	Eve	Night	Total	% Ops
Runway	09L	Tracks	Day	Eve	Night	Total	% Ops
		09LA11	0.0306	0.0028	0.0005	0.0339	0.0066
		09LA12	0.0306	0.0028	0.0005	0.0339	0.0066
		09LA13	0.0098	0.0008	0.0001	0.0107	0.0021
		09LA14	0.0098	0.0008	0.0001	0.0107	0.0021
		09LA1P	0.1243	0.0119	0.0029	0.1391	0.0271
		09LA21	0.0261	0.002	0.0001	0.0282	0.0055
		09LA22	0.0261	0.002	0.0001	0.0282	0.0055
		09LA23	0.0083	0.0006	0	0.0089	0.0017
		09LA24	0.0083	0.0006	0	0.0089	0.0017
		09LA2P	0.1061	0.0083	0.0014	0.1158	0.0226
		09LA31	0.0261	0.002	0.0001	0.0282	0.0055
		09LA32	0.0261	0.002	0.0001	0.0282	0.0055
		09LA33	0.0083	0.0006	0	0.0089	0.0017
		09LA34	0.0083	0.0006	0	0.0089	0.0017
		09LA3P	0.1061	0.0083	0.0014	0.1158	0.0226
		09LD11	0.0425	0.0032	0.0003	0.046	0.009
		09LD12	0.0425	0.0032	0.0003	0.046	0.009
		09LD13	0.0141	0.001	0.0001	0.0152	0.003
		09LD14	0.0141	0.001	0.0001	0.0152	0.003
		09LD1P	0.1697	0.0141	0.0018	0.1856	0.0362
		09RA11	0.0259	0.002	0.0001	0.028	0.0055
		09RA12	0.0259	0.002	0.0001	0.028	0.0055
		09RA13	0.0085	0.0006	0	0.0091	0.0018
		09RA14	0.0085	0.0006	0	0.0091	0.0018
		09RA1P	0.1036	0.0078	0.0006	0.112	0.0218
		09LD21	0.042	0.0031	0.0003	0.0454	0.0088
		09LD22	0.042	0.0031	0.0003	0.0454	0.0088
		09LD2P	0.1676	0.0136	0.0016	0.1828	0.0356
		09LD23	0.0139	0.001	0.0001	0.015	0.0029
		09LD24	0.0139	0.001	0.0001	0.015	0.0029
Runway	09R	Tracks	Day	Eve	Night	Total	% Ops
		09RA11	0.0259	0.002	0.0001	0.028	0.0055
		09RA12	0.0259	0.002	0.0001	0.028	0.0055
		09RA13	0.0085	0.0006	0	0.0091	0.0018
		09RA14	0.0085	0.0006	0	0.0091	0.0018
		09RA1P	0.1036	0.0078	0.0006	0.112	0.0218

		09LD21	0.042	0.0031	0.0003	0.0454	0.0088
		09LD22	0.042	0.0031	0.0003	0.0454	0.0088
		09LD2P	0.1676	0.0136	0.0016	0.1828	0.0356
		09LD23	0.0139	0.001	0.0001	0.015	0.0029
		09LD24	0.0139	0.001	0.0001	0.015	0.0029
		09RA31	0.0254	0.002	0.0001	0.0275	0.0054
		09RA32	0.0254	0.002	0.0001	0.0275	0.0054
		09RA33	0.0084	0.0006	0	0.009	0.0018
		09RA34	0.0084	0.0006	0	0.009	0.0018
		09RA3P	0.1011	0.0075	0.0006	0.1092	0.0213
		09RD11	0.039	0.0029	0.0001	0.042	0.0082
		09RD12	0.039	0.0029	0.0001	0.042	0.0082
		09RD13	0.0129	0.0009	0	0.0138	0.0027
		09RD14	0.0129	0.0009	0	0.0138	0.0027
		09RD1P	0.156	0.0117	0.001	0.1687	0.0329
		17A11	0.4273	0.0338	0.005	0.4661	0.0908
		17A12	0.4273	0.0338	0.005	0.4661	0.0908
		17A13	0.1427	0.0112	0.0016	0.1555	0.0303
		17A14	0.1427	0.0112	0.0016	0.1555	0.0303
		17A1P	1.7066	0.1321	0.0212	1.8599	0.3624
		09RA21	0.0252	0.002	0.0001	0.0273	0.0053
		09RA22	0.0252	0.002	0.0001	0.0273	0.0053
		09RA23	0.0083	0.0006	0	0.0089	0.0017
		09RA24	0.0083	0.0006	0	0.0089	0.0017
		09RA2P	0.1005	0.0075	0.0006	0.1086	0.0212
		09RD21	0.0386	0.0028	0.0001	0.0415	0.0081
		09RD22	0.0386	0.0028	0.0001	0.0415	0.0081
		17D11	0.4389	0.0343	0.0035	0.4767	0.0929
		17D12	0.4389	0.0343	0.0035	0.4767	0.0929
		17D13	0.1457	0.0111	0.0011	0.1579	0.0308
		09RD23	0.0128	0.0009	0	0.0137	0.0027
		09RD24	0.0128	0.0009	0	0.0137	0.0027
		09RD2P	0.1543	0.0116	0.001	0.1669	0.0325
Runway	17	Tracks	Day	Eve	Night	Total	% Ops
		17A11	0.4273	0.0338	0.005	0.4661	0.0908
		17A12	0.4273	0.0338	0.005	0.4661	0.0908
		17A13	0.1427	0.0112	0.0016	0.1555	0.0303
		17A14	0.1427	0.0112	0.0016	0.1555	0.0303
		17A1P	1.7066	0.1321	0.0212	1.8599	0.3624
		09RA21	0.0252	0.002	0.0001	0.0273	0.0053
		09RA22	0.0252	0.002	0.0001	0.0273	0.0053
		09RA23	0.0083	0.0006	0	0.0089	0.0017
		09RA24	0.0083	0.0006	0	0.0089	0.0017
		09RA2P	0.1005	0.0075	0.0006	0.1086	0.0212
		09RD21	0.0386	0.0028	0.0001	0.0415	0.0081
		09RD22	0.0386	0.0028	0.0001	0.0415	0.0081
		17D11	0.4389	0.0343	0.0035	0.4767	0.0929
		17D12	0.4389	0.0343	0.0035	0.4767	0.0929
		17D13	0.1457	0.0111	0.0011	0.1579	0.0308
		09RD23	0.0128	0.0009	0	0.0137	0.0027
		09RD24	0.0128	0.0009	0	0.0137	0.0027
		09RD2P	0.1543	0.0116	0.001	0.1669	0.0325
		T17W	3.1346	0.2388	0.0219	3.3953	0.6615
		17D14	0.1457	0.0111	0.0011	0.1579	0.0308
		17D1P	1.7551	0.1383	0.0147	1.9081	0.3718
		T27LS	87.7686	6.6923	0.6083	95.0692	18.5234
		27LA11	0.0056	0.0004	0	0.006	0.0012
		T17E	3.1346	0.2388	0.0219	3.3953	0.6615
Runway	27L	Tracks	Day	Eve	Night	Total	% Ops
		17D1P	1.7551	0.1383	0.0147	1.9081	0.3718
		T27LS	87.7686	6.6923	0.6083	95.0692	18.5234
		27LA11	0.0056	0.0004	0	0.006	0.0012
		T17E	3.1346	0.2388	0.0219	3.3953	0.6615
		27LA13	0.0019	0.0001	0	0.002	0.0004
		27LA14	0.0019	0.0001	0	0.002	0.0004
		27LA1P	0.0226	0.0017	0	0.0243	0.0047
		27LA21	0.0113	0.0009	0	0.0122	0.0024
		27LA22	0.0113	0.0009	0	0.0122	0.0024
		27LA23	0.0038	0.0003	0	0.0041	0.0008
		27LA24	0.0038	0.0003	0	0.0041	0.0008
		27LA2P	0.0451	0.0034	0	0.0485	0.0094
		27LA31	0.0155	0.0012	0	0.0167	0.0033
		27LA32	0.0155	0.0012	0	0.0167	0.0033
		27LA33	0.0052	0.0004	0	0.0056	0.0011
		27LA34	0.0052	0.0004	0	0.0056	0.0011
		27LA3P	0.062	0.0047	0	0.0667	0.013
		27LA41	0.0705	0.0053	0	0.0758	0.0148
		27LA42	0.0705	0.0053	0	0.0758	0.0148
		27LA43	0.0235	0.0018	0	0.0253	0.0049
		27LA44	0.0235	0.0018	0	0.0253	0.0049
		27LA4P	0.2819	0.0213	0	0.3032	0.0591
		27LA51	0.0381	0.0029	0	0.041	0.008
		27LA52	0.0381	0.0029	0	0.041	0.008
		27LA53	0.0127	0.001	0	0.0137	0.0027
		27LA54	0.0127	0.001	0	0.0137	0.0027
		27LA5P	0.1522	0.0115	0	0.1637	0.0319
		27LD11	0.0056	0.0004	0	0.006	0.0012
		27LD12	0.0056	0.0004	0	0.006	0.0012
		27LD13	0.0019	0.0001	0	0.002	0.0004
		27LD14	0.0019	0.0001	0	0.002	0.0004
		27LD1P	0.0226	0.0017	0	0.0243	0.0047
		27LD21	0.0113	0.0009	0	0.0122	0.0024
		27LD22	0.0113	0.0009	0	0.0122	0.0024
		27LD23	0.0038	0.0003	0	0.0041	0.0008
		27LD24	0.0038	0.0003	0	0.0041	0.0008
		27LD2P	0.0451	0.0034	0	0.0485	0.0094
		27LD31	0.0155	0.0012	0	0.0167	0.0033

		27LD32	0.0155	0.0012	0	0.0167	0.0033
		27LD33	0.0052	0.0004	0	0.0056	0.0011
		27LD34	0.0052	0.0004	0	0.0056	0.0011
		27LD3P	0.062	0.0047	0	0.0667	0.013
		27LD41	0.0155	0.0012	0	0.0167	0.0033
		27LD42	0.0155	0.0012	0	0.0167	0.0033
		27LD43	0.0052	0.0004	0	0.0056	0.0011
		27LD44	0.0052	0.0004	0	0.0056	0.0011
		27LD4P	0.062	0.0047	0	0.0667	0.013
		27LD51	0.0155	0.0012	0	0.0167	0.0033
		27LD52	0.0155	0.0012	0	0.0167	0.0033
		27LD53	0.0052	0.0004	0	0.0056	0.0011
		27LD54	0.0052	0.0004	0	0.0056	0.0011
		27LD5P	0.062	0.0047	0	0.0667	0.013
		27LD61	0.0155	0.0012	0	0.0167	0.0033
		27LD62	0.0155	0.0012	0	0.0167	0.0033
		27LD63	0.0052	0.0004	0	0.0056	0.0011
		27LD64	0.0052	0.0004	0	0.0056	0.0011
		27LD6P	0.062	0.0047	0	0.0667	0.013
		35A11	0.2135	0.0163	0.0024	0.2322	0.0452
		35A12	0.2135	0.0163	0.0024	0.2322	0.0452
		35A13	0.0708	0.0051	0.0003	0.0762	0.0148
		35A14	0.0708	0.0051	0.0003	0.0762	0.0148
		35A1P	0.8535	0.0661	0.0105	0.9301	0.1812
		35A21	0.2161	0.0169	0.0026	0.2356	0.0459
		35A22	0.2161	0.0169	0.0026	0.2356	0.0459
		35A23	0.0717	0.0053	0.0004	0.0774	0.0151
		35A24	0.0717	0.0053	0.0004	0.0774	0.0151
		35A2P	0.8646	0.0685	0.0116	0.9447	0.1841
Runway	27R	Tracks	Day	Eve	Night	Total	% Ops
		27LA44	0.0235	0.0018	0	0.0253	0.0049
		27LA4P	0.2819	0.0213	0	0.3032	0.0591
		27LA51	0.0381	0.0029	0	0.041	0.008
		27LA52	0.0381	0.0029	0	0.041	0.008
		27LA53	0.0127	0.001	0	0.0137	0.0027
		27LA54	0.0127	0.001	0	0.0137	0.0027
		27LA5P	0.1522	0.0115	0	0.1637	0.0319
		27LD11	0.0056	0.0004	0	0.006	0.0012
		27LD12	0.0056	0.0004	0	0.006	0.0012
		27LD13	0.0019	0.0001	0	0.002	0.0004
		27LD14	0.0019	0.0001	0	0.002	0.0004
		27LD1P	0.0226	0.0017	0	0.0243	0.0047
		27LD21	0.0113	0.0009	0	0.0122	0.0024
		27LD22	0.0113	0.0009	0	0.0122	0.0024
		27LD23	0.0038	0.0003	0	0.0041	0.0008
		27LD24	0.0038	0.0003	0	0.0041	0.0008
		27LD2P	0.0451	0.0034	0	0.0485	0.0094
		27LD31	0.0155	0.0012	0	0.0167	0.0033
		27LD32	0.0155	0.0012	0	0.0167	0.0033
		27LD33	0.0052	0.0004	0	0.0056	0.0011
		27LD34	0.0052	0.0004	0	0.0056	0.0011
		27LD3P	0.062	0.0047	0	0.0667	0.013
		27LD41	0.0155	0.0012	0	0.0167	0.0033
		27LD42	0.0155	0.0012	0	0.0167	0.0033
		27LD43	0.0052	0.0004	0	0.0056	0.0011
		27LD44	0.0052	0.0004	0	0.0056	0.0011
		27LD4P	0.062	0.0047	0	0.0667	0.013
		27LD51	0.0155	0.0012	0	0.0167	0.0033
		27LD52	0.0155	0.0012	0	0.0167	0.0033
		27LD53	0.0052	0.0004	0	0.0056	0.0011
		27LD54	0.0052	0.0004	0	0.0056	0.0011
		27LD5P	0.062	0.0047	0	0.0667	0.013
		27LD61	0.0155	0.0012	0	0.0167	0.0033
		27LD62	0.0155	0.0012	0	0.0167	0.0033
		27LD63	0.0052	0.0004	0	0.0056	0.0011
		27LD64	0.0052	0.0004	0	0.0056	0.0011
		27LD6P	0.062	0.0047	0	0.0667	0.013
		35A11	0.2135	0.0163	0.0024	0.2322	0.0452
		35A12	0.2135	0.0163	0.0024	0.2322	0.0452
		35A13	0.0708	0.0051	0.0003	0.0762	0.0148
		35A14	0.0708	0.0051	0.0003	0.0762	0.0148
		35A1P	0.8535	0.0661	0.0105	0.9301	0.1812
		35A21	0.2161	0.0169	0.0026	0.2356	0.0459
		35A22	0.2161	0.0169	0.0026	0.2356	0.0459
		35A23	0.0717	0.0053	0.0004	0.0774	0.0151
		35A24	0.0717	0.0053	0.0004	0.0774	0.0151
		35A2P	0.8646	0.0685	0.0116	0.9447	0.1841
		35D11	0.4297	0.0324	0.0027	0.4648	0.0906
		35D12	0.4297	0.0324	0.0027	0.4648	0.0906
		35D13	0.1427	0.0104	0.0008	0.1539	0.03
		35D14	0.1427	0.0104	0.0008	0.1539	0.03
		35D1P	1.7178	0.1306	0.0114	1.8598	0.3624
		T35E	3.1346	0.2388	0.0219	3.3953	0.6615
		T35W	3.1346	0.2388	0.0219	3.3953	0.6615
		27RD6P	7.6832	0.5846	0.0535	8.3213	1.6213
		27RD71	1.988	0.1509	0.0134	2.1523	0.4194
		27RD72	1.988	0.1509	0.0134	2.1523	0.4194
		27RD73	0.6628	0.0502	0.0041	0.7171	0.1397
		27RD74	0.6628	0.0502	0.0041	0.7171	0.1397
		27RD7P	7.9517	0.6051	0.0549	8.6117	1.6779
		27RD81	2.0762	0.1987	0.0398	2.3147	0.451
		27RD82	2.0762	0.1987	0.0398	2.3147	0.451
		27RD83	0.6921	0.066	0.0132	0.7713	0.1503
		27RD84	0.6921	0.066	0.0132	0.7713	0.1503
		27RD8P	8.3052	0.7943	0.1594	9.2589	1.804
		T27RN	25.0766	1.9121	0.1739	27.1626	5.2924
		27RA51	3.154	0.2745	0.0546	3.4831	0.6787

	27RA52	3.154	0.2745	0.0546	3.4831	0.6787
	27RA53	1.0509	0.091	0.0175	1.1594	0.2259
	27RA54	1.0509	0.091	0.0175	1.1594	0.2259
	27RA5P	12.6172	1.0993	0.2158	13.9323	2.7146
	27RD11	1.8498	0.1449	0.0149	2.0096	0.3916
	27RD12	1.8498	0.1449	0.0149	2.0096	0.3916
	27RD13	0.6162	0.048	0.005	0.6692	0.1304
	27RD14	0.6162	0.048	0.005	0.6692	0.1304
	27RD1P	7.4011	0.5786	0.0611	8.0408	1.5667
	27RD21	1.8737	0.1564	0.0215	2.0516	0.3997
	27RD22	1.8737	0.1564	0.0215	2.0516	0.3997
	27RD23	0.6245	0.052	0.0072	0.6837	0.1332
	27RD24	0.6245	0.052	0.0072	0.6837	0.1332
	27RD2P	7.4954	0.6254	0.0864	8.2072	1.5991
	27RD31	1.8112	0.1434	0.0159	1.9705	0.3839
	27RD32	1.8112	0.1434	0.0159	1.9705	0.3839
	27RA11	3.0227	0.2465	0.0414	3.3106	0.645
	27RA12	3.0227	0.2465	0.0414	3.3106	0.645
	27RA13	1.0071	0.0819	0.0131	1.1021	0.2147
	27RA14	1.0071	0.0819	0.0131	1.1021	0.2147
	27RA1P	12.0927	0.9879	0.1634	13.244	2.5805
	27RA21	2.9609	0.2334	0.0353	3.2296	0.6293
	27RA22	2.9609	0.2334	0.0353	3.2296	0.6293
	27RA23	0.9865	0.0774	0.011	1.0749	0.2094
	27RA24	0.9865	0.0774	0.011	1.0749	0.2094
	27RA2P	11.845	0.9354	0.1386	12.919	2.5171
	27RA31	3.1576	0.2753	0.0549	3.4878	0.6796
	27RA32	3.1576	0.2753	0.0549	3.4878	0.6796
	27RA33	1.0521	0.0913	0.0176	1.161	0.2262
	27RA34	1.0521	0.0913	0.0176	1.161	0.2262
	27RA3P	12.6318	1.1024	0.2173	13.9515	2.7183
	27RA41	3.0082	0.2434	0.04	3.2916	0.6413
	27RA42	3.0082	0.2434	0.04	3.2916	0.6413
	27RA43	1.0023	0.0807	0.0126	1.0956	0.2135
	27RA44	1.0023	0.0807	0.0126	1.0956	0.2135
	27RA4P	12.0343	0.9756	0.1576	13.1675	2.5656
	27RD33	0.6036	0.0477	0.0053	0.6566	0.1279
	27RD34	0.6036	0.0477	0.0053	0.6566	0.1279
	27RD3P	7.2452	0.5733	0.064	7.8825	1.5358
	27RD41	2.0597	0.1889	0.0338	2.2824	0.4447
	27RD42	2.0597	0.1889	0.0338	2.2824	0.4447
	27RD43	0.6862	0.0626	0.0112	0.76	0.1481
	27RD44	0.6862	0.0626	0.0112	0.76	0.1481
	27RD4P	8.2404	0.7537	0.1367	9.1308	1.7791
	27RD51	1.9087	0.1573	0.0202	2.0862	0.4065
	27RD52	1.9087	0.1573	0.0202	2.0862	0.4065
	27RD53	0.6358	0.052	0.0067	0.6945	0.1353
	27RD54	0.6358	0.052	0.0067	0.6945	0.1353
	27RD5P	7.6366	0.6278	0.0823	8.3467	1.6263
	27RD61	1.9211	0.1458	0.0133	2.0802	0.4053
	27RD62	1.9211	0.1458	0.0133	2.0802	0.4053
	27RD63	0.6399	0.0488	0.0041	0.6928	0.135
	27RD64	0.6399	0.0488	0.0041	0.6928	0.135
Runway 35	Tracks	Day	Eve	Night	Total	% Ops
	27LD34	0.0052	0.0004	0	0.0056	0.0011
	27LD3P	0.062	0.0047	0	0.0667	0.013
	27LD41	0.0155	0.0012	0	0.0167	0.0033
	27LD42	0.0155	0.0012	0	0.0167	0.0033
	27LD43	0.0052	0.0004	0	0.0056	0.0011
	27LD44	0.0052	0.0004	0	0.0056	0.0011
	27LD4P	0.062	0.0047	0	0.0667	0.013
	27LD51	0.0155	0.0012	0	0.0167	0.0033
	27LD52	0.0155	0.0012	0	0.0167	0.0033
	27LD53	0.0052	0.0004	0	0.0056	0.0011
	27LD54	0.0052	0.0004	0	0.0056	0.0011
	27LD5P	0.062	0.0047	0	0.0667	0.013
	27LD61	0.0155	0.0012	0	0.0167	0.0033
	27LD62	0.0155	0.0012	0	0.0167	0.0033
	27LD63	0.0052	0.0004	0	0.0056	0.0011
	27LD64	0.0052	0.0004	0	0.0056	0.0011
	27LD6P	0.062	0.0047	0	0.0667	0.013
	35A11	0.2135	0.0163	0.0024	0.2322	0.0452
	35A12	0.2135	0.0163	0.0024	0.2322	0.0452
	35A13	0.0708	0.0051	0.0003	0.0762	0.0148
	35A14	0.0708	0.0051	0.0003	0.0762	0.0148
	35A1P	0.8535	0.0661	0.0105	0.9301	0.1812
	35A21	0.2161	0.0169	0.0026	0.2356	0.0459
	35A22	0.2161	0.0169	0.0026	0.2356	0.0459
	35A23	0.0717	0.0053	0.0004	0.0774	0.0151
	35A24	0.0717	0.0053	0.0004	0.0774	0.0151
	35A2P	0.8646	0.0685	0.0116	0.9447	0.1841
	35D11	0.4297	0.0324	0.0027	0.4648	0.0906
	35D12	0.4297	0.0324	0.0027	0.4648	0.0906
	35D13	0.1427	0.0104	0.0008	0.1539	0.03
	35D14	0.1427	0.0104	0.0008	0.1539	0.03
	35D1P	1.7178	0.1306	0.0114	1.8598	0.3624
	T35E	3.1346	0.2388	0.0219	3.3953	0.6615
	T35W	3.1346	0.2388	0.0219	3.3953	0.6615

NUMBER OF DAILY OPERATIONS BY AIRCRAFT TYPE
(includes touch and gos as 1 departure and 1 arrival)

Aircraft	Day Dept	Eve Dept	Nt Dept	Day Arr	Eve Arr	Nt Arr	Total	%
BEC58P	9.9384	0.753	0.071	9.9166	0.7514	0.0707	21.5011	4.1893
CIT3	0.1096	0.0071	0.0002	0.0922	0.0107	0.0134	0.2332	0.0454
CL600	0.2724	0.0204	0.0014	0.2332	0.026	0.0355	0.5889	0.1147
CL601	0.2724	0.0204	0.0014	0.2332	0.026	0.0355	0.5889	0.1147

CNA172	20.751	1.5825	0.1445	20.7068	1.5792	0.1434	44.9074	8.7498
CNA206	10.3765	0.7896	0.0714	10.3534	0.7885	0.0709	22.4503	4.3742
CNA20T	10.3765	0.7896	0.0714	10.3534	0.7885	0.0709	22.4503	4.3742
CNA441	0.6202	0.0464	0.0041	0.6196	0.0462	0.0045	1.341	0.2613
CNA500	0.1096	0.0071	0.0002	0.0922	0.0107	0.0134	0.2332	0.0454
CNA55B	0.0162	0.0012	0	0.0134	0.001	0.0021	0.0339	0.0066
CNA750	0.1096	0.0071	0.0002	0.0922	0.0107	0.0134	0.2332	0.0454
COMJET	0.2943	0.0217	0.0014	0.2526	0.0272	0.0355	0.6327	0.1233
COMSEP	20.7063	1.5792	0.1444	20.7068	1.5792	0.1434	44.8593	8.7404
DHC6	14.1415	1.7996	0.5472	13.6861	1.6713	0.484	32.3297	6.2991
FAL20	0.1096	0.0071	0.0002	0.0922	0.0107	0.0134	0.2332	0.0454
GASEPF	103.533	7.896	0.7157	103.5336	7.8947	0.717	224.29	43.7008
GASEPV	41.4143	3.1565	0.2865	41.4132	3.1582	0.286	89.7147	17.4801
GIV	0.2724	0.0204	0.0014	0.2332	0.026	0.0355	0.5889	0.1147
GV	0.2724	0.0204	0.0014	0.2332	0.026	0.0355	0.5889	0.1147
IA1125	0.0886	0.0061	0.0002	0.0658	0.0076	0.0101	0.1784	0.0348
LEAR25	0.1627	0.0128	0.0009	0.14	0.0145	0.0212	0.3521	0.0686
LEAR35	1.0623	0.0773	0.0046	0.873	0.0989	0.1314	2.2475	0.4379
MU3001	0.2724	0.0204	0.0014	0.2332	0.026	0.0355	0.5889	0.1147
SABR80	0.0536	0.0042	0.0002	0.0463	0.0043	0.0074	0.116	0.0226
SD330	0.286	0.021	0.0016	0.2866	0.0209	0.002	0.6181	0.1204
SF340	0.619	0.0463	0.0041	0.6196	0.0462	0.0045	1.3397	0.261

OPERATIONS BY AIRCRAFT TYPE BY RUNWAY

RUNWAY: 19

ac	day depart	eve depart	nt depart	day arriv	eve arriv	nt arriv
BEC58P	0	0	0	0	0	0
CIT3	0	0	0	0	0	0
CL600	0	0	0	0	0	0
CL601	0	0	0	0	0	0
CNA172	0	0	0	0	0	0
CNA206	0	0	0	0	0	0
CNA20T	0	0	0	0	0	0
CNA441	0	0	0	0	0	0
CNA500	0	0	0	0	0	0
CNA55B	0	0	0	0	0	0
CNA750	0	0	0	0	0	0
COMJET	0	0	0	0	0	0
COMSEP	0	0	0	0	0	0
DHC6	0	0	0	0	0	0
FAL20	0	0	0	0	0	0
GASEPF	0	0	0	0	0	0
GASEPV	0	0	0	0	0	0
GIV	0	0	0	0	0	0
GV	0	0	0	0	0	0
IA1125	0	0	0	0	0	0
LEAR25	0	0	0	0	0	0
LEAR35	0	0	0	0	0	0
MU3001	0	0	0	0	0	0
SABR80	0	0	0	0	0	0
SD330	0	0	0	0	0	0
SF340	0	0	0	0	0	0

RUNWAY: 01

ac	day depart	eve depart	nt depart	day arriv	eve arriv	nt arriv
BEC58P	0	0	0	0	0	0
CIT3	0	0	0	0	0	0
CL600	0	0	0	0	0	0
CL601	0	0	0	0	0	0
CNA172	0	0	0	0	0	0
CNA206	0	0	0	0	0	0
CNA20T	0	0	0	0	0	0
CNA441	0	0	0	0	0	0
CNA500	0	0	0	0	0	0
CNA55B	0	0	0	0	0	0
CNA750	0	0	0	0	0	0
COMJET	0	0	0	0	0	0
COMSEP	0	0	0	0	0	0
DHC6	0	0	0	0	0	0
FAL20	0	0	0	0	0	0
GASEPF	0	0	0	0	0	0
GASEPV	0	0	0	0	0	0
GIV	0	0	0	0	0	0
GV	0	0	0	0	0	0
IA1125	0	0	0	0	0	0
LEAR25	0	0	0	0	0	0
LEAR35	0	0	0	0	0	0
MU3001	0	0	0	0	0	0
SABR80	0	0	0	0	0	0
SD330	0	0	0	0	0	0
SF340	0	0	0	0	0	0

AIRCRAFT NUMBERS BY STAGE LENGTH (Daily Depts):

Aircraft	Class A	Class AA	Class E	Stage 1	Stage 2	Stage 3	Stage 4	Stage 5	Stage 6	Stage 7
BEC58P	0	0	0	16.537	0	0	0	0	0	0
CIT3	0	0	0	0.1169	0	0	0	0	0	0
CL600	0	0	0	0.2942	0	0	0	0	0	0
CL601	0	0	0	0.2942	0	0	0	0	0	0
CNA172	0	0	0	34.5363	0	0	0	0	0	0
CNA206	0	0	0	17.2671	0	0	0	0	0	0
CNA20T	0	0	0	17.2671	0	0	0	0	0	0
CNA441	0	0	0	1.0315	0	0	0	0	0	0
CNA500	0	0	0	0.1169	0	0	0	0	0	0
CNA55B	0	0	0	0.0174	0	0	0	0	0	0

CNA750	0	0	0	0.1169	0	0	0	0	0	0
COMJET	0	0	0	0.3174	0	0	0	0	0	0
COMSEP	0	0	0	34.4882	0	0	0	0	0	0
DHC6	0	0	0	25.2191	0	0	0	0	0	0
FAL20	0	0	0	0.1169	0	0	0	0	0	0
GASEPF	0	0	0	172.4378	0	0	0	0	0	0
GASEPV	0	0	0	68.9744	0	0	0	0	0	0
GIV	0	0	0	0.2942	0	0	0	0	0	0
GV	0	0	0	0.2942	0	0	0	0	0	0
IA1125	0	0	0	0.0949	0	0	0	0	0	0
LEAR25	0	0	0	0.1764	0	0	0	0	0	0
LEAR35	0	0	0	1.1442	0	0	0	0	0	0
MU3001	0	0	0	0.2942	0	0	0	0	0	0
SABR80	0	0	0	0.058	0	0	0	0	0	0
SD330	0	0	0	0.3086	0	0	0	0	0	0
SF340	0	0	0	1.0302	0	0	0	0	0	0

NUMBER OF DAILY OPERATIONS BY RUNWAY

Runway		Day	Eve	Night	Total	% D/A
09L	Departures:	0.5623	0.0443	0.005	0.6116	0.2383
	Arrivals:	0.5549	0.0461	0.0073	0.6083	0.237
09R	Departures:	0.5169	0.0383	0.0024	0.5576	0.2173
	Arrivals:	0.5086	0.0384	0.0024	0.5494	0.2141
17	Departures:	2.9243	0.2291	0.0239	3.1773	1.2381
	Arrivals:	2.8466	0.2221	0.0344	3.1031	1.2092
	T + G's:	6.2692	0.4776	0.0438	13.5812	5.2923
27L	Departures:	0.7333	0.0559	0	0.7892	0.3075
	Arrivals:	0.94	0.0712	0	1.0112	0.394
	T + G's:	87.7686	6.6923	0.6083	190.1384	74.0934
27R	Departures:	103.2578	8.57	1.1575	112.9853	44.0283
	Arrivals:	102.0256	8.4914	1.4887	112.0057	43.6466
	T + G's:	25.0766	1.9121	0.1739	54.3252	21.1695
35	Departures:	2.8626	0.2162	0.0184	3.0972	1.2069
	Arrivals:	2.8623	0.2218	0.0335	3.1176	1.2149
	T + G's:	6.2692	0.4776	0.0438	13.5812	5.2923

AIRCRAFT OPERATIONS BY AIRCRAFT TYPE AND RUNWAY:

Aircraft	Rwy	Op	Day	Eve	Night	Total
BEC58P	09L	D	0.023	0.0014	0.0002	0.0246
	09L	A	0.0229	0.0016	0	0.0245
	09R	D	0.023	0.0014	0.0002	0.0246
	09R	A	0.0229	0.0016	0	0.0245
	17	D	0.1239	0.0094	0.0008	0.1341
	17	A	0.1239	0.0094	0.0008	0.1341
	17	T	0.2478	0.0188	0.0016	0.5776
	27L	D	0	0	0	0
	27L	A	0	0	0	0
	27L	T	0	0	0	8.0842
	27R	D	4.3135	0.3248	0.0321	4.6704
	27R	A	4.292	0.323	0.032	4.647
	27R	T	8.584	0.646	0.064	2.3098
	35	D	0.1239	0.0094	0.0008	0.1341
	35	A	0.1238	0.0092	0.001	0.134
	35	T	0.2476	0.0184	0.002	0.5776
CIT3	09L	D	0.001	0	0	0.001
	09L	A	0.0006	0	0	0.0006
	09R	D	0	0	0	0
	09R	A	0	0	0	0
	17	D	0.0044	0.0002	0	0.0046
	17	A	0.0038	0.0005	0.0005	0.0048
	27L	D	0	0	0	0
	27L	A	0	0	0	0
	27R	D	0.0998	0.0067	0.0002	0.1067
	27R	A	0.084	0.01	0.0125	0.1065
	35	D	0.0044	0.0002	0	0.0046
	35	A	0.0038	0.0002	0.0004	0.0044
CL600	09L	D	0.0028	0.0002	0	0.003
	09L	A	0.0021	0.0003	0.0003	0.0027
	09R	D	0	0	0	0
	09R	A	0	0	0	0
	17	D	0.0108	0.0007	0	0.0115
	17	A	0.0094	0.0012	0.0015	0.0121
	27L	D	0	0	0	0
	27L	A	0	0	0	0
	27R	D	0.248	0.0188	0.0014	0.2682
	27R	A	0.2125	0.0235	0.0325	0.2685
	35	D	0.0108	0.0007	0	0.0115
	35	A	0.0092	0.001	0.0012	0.0114
CL601	09L	D	0.0028	0.0002	0	0.003
	09L	A	0.0021	0.0003	0.0003	0.0027
	09R	D	0	0	0	0
	09R	A	0	0	0	0
	17	D	0.0108	0.0007	0	0.0115
	17	A	0.0094	0.0012	0.0015	0.0121
	27L	D	0	0	0	0
	27L	A	0	0	0	0
	27R	D	0.248	0.0188	0.0014	0.2682
	27R	A	0.2125	0.0235	0.0325	0.2685
	35	D	0.0108	0.0007	0	0.0115
	35	A	0.0092	0.001	0.0012	0.0114
CNA172	09L	D	0.048	0.0038	0.0002	0.052
	09L	A	0.048	0.0039	0.0003	0.0522
	09R	D	0.048	0.0038	0.0002	0.052
	09R	A	0.048	0.0039	0.0003	0.0522
	17	D	0.2585	0.0198	0.0019	0.2802

		17	A	0.2585	0.0198	0.0019	0.2802
		17	T	0.517	0.0396	0.0038	1.2056
	27L		D	0	0	0	0
	27L		A	0	0	0	0
	27L		T	0	0	0	16.882
	27R		D	9.0055	0.6865	0.0633	9.7553
	27R		A	8.961	0.683	0.0625	9.7065
	27R		T	17.922	1.366	0.125	4.8234
		35	D	0.2585	0.0198	0.0019	0.2802
		35	A	0.2588	0.0198	0.0014	0.28
		35	T	0.5176	0.0396	0.0028	1.2056
CNA206	09L		D	0.024	0.0014	0	0.0254
	09L		A	0.0239	0.0018	0	0.0257
	09R		D	0.024	0.0014	0	0.0254
	09R		A	0.0239	0.0018	0	0.0257
		17	D	0.1294	0.0099	0.0007	0.14
		17	A	0.1294	0.0099	0.0007	0.14
		17	T	0.2588	0.0198	0.0014	0.6032
	27L		D	0	0	0	0
	27L		A	0	0	0	0
	27L		T	0	0	0	8.441
	27R		D	4.5032	0.3426	0.0313	4.8771
	27R		A	4.4805	0.341	0.0305	4.852
	27R		T	8.961	0.682	0.061	2.4118
		35	D	0.1294	0.0099	0.0007	0.14
		35	A	0.1292	0.0096	0.001	0.1398
		35	T	0.2584	0.0192	0.002	0.6032
CNA20T	09L		D	0.024	0.0014	0	0.0254
	09L		A	0.0239	0.0018	0	0.0257
	09R		D	0.024	0.0014	0	0.0254
	09R		A	0.0239	0.0018	0	0.0257
		17	D	0.1294	0.0099	0.0007	0.14
		17	A	0.1294	0.0099	0.0007	0.14
		17	T	0.2588	0.0198	0.0014	0.6032
	27L		D	0	0	0	0
	27L		A	0	0	0	0
	27L		T	0	0	0	8.441
	27R		D	4.5032	0.3426	0.0313	4.8771
	27R		A	4.4805	0.341	0.0305	4.852
	27R		T	8.961	0.682	0.061	2.4118
		35	D	0.1294	0.0099	0.0007	0.14
		35	A	0.1292	0.0096	0.001	0.1398
		35	T	0.2584	0.0192	0.002	0.6032
CNA441	09L		D	0.0012	0	0	0.0012
	09L		A	0.0015	0	0	0.0015
	09R		D	0.0012	0	0	0.0012
	09R		A	0.0015	0	0	0.0015
		17	D	0.0078	0.0005	0	0.0083
		17	A	0.0078	0.0005	0	0.0083
		17	T	0.0156	0.001	0	0.036
	27L		D	0	0	0	0
	27L		A	0	0	0	0
	27L		T	0	0	0	0.5052
	27R		D	0.2692	0.0201	0.0016	0.2909
	27R		A	0.268	0.02	0.002	0.29
	27R		T	0.536	0.04	0.004	0.1444
		35	D	0.0078	0.0005	0	0.0083
		35	A	0.0078	0.0004	0	0.0082
		35	T	0.0156	0.0008	0	0.036
CNA500	09L		D	0.001	0	0	0.001
	09L		A	0.0006	0	0	0.0006
	09R		D	0	0	0	0
	09R		A	0	0	0	0
		17	D	0.0044	0.0002	0	0.0046
		17	A	0.0038	0.0005	0.0005	0.0048
	27L		D	0	0	0	0
	27L		A	0	0	0	0
	27R		D	0.0998	0.0067	0.0002	0.1067
	27R		A	0.084	0.01	0.0125	0.1065
		35	D	0.0044	0.0002	0	0.0046
		35	A	0.0038	0.0002	0.0004	0.0044
CNA55B	09L		D	0	0	0	0
	09L		A	0	0	0	0
	09R		D	0	0	0	0
	09R		A	0	0	0	0
		17	D	0.0006	0	0	0.0006
		17	A	0.0005	0	0.0001	0.0006
	27L		D	0	0	0	0
	27L		A	0	0	0	0
	27R		D	0.015	0.0012	0	0.0162
	27R		A	0.0125	0.001	0.002	0.0155
		35	D	0.0006	0	0	0.0006
		35	A	0.0004	0	0	0.0004
CNA750	09L		D	0.001	0	0	0.001
	09L		A	0.0006	0	0	0.0006
	09R		D	0	0	0	0
	09R		A	0	0	0	0
		17	D	0.0044	0.0002	0	0.0046
		17	A	0.0038	0.0005	0.0005	0.0048
	27L		D	0	0	0	0
	27L		A	0	0	0	0
	27R		D	0.0998	0.0067	0.0002	0.1067
	27R		A	0.084	0.01	0.0125	0.1065
		35	D	0.0044	0.0002	0	0.0046
		35	A	0.0038	0.0002	0.0004	0.0044
COMJET	09L		D	0.0028	0.0002	0	0.003
	09L		A	0.0022	0.0003	0.0003	0.0028

	09R		D	0	0	0	0
	09R		A	0	0	0	0
		17	D	0.0109	0.0007	0	0.0116
		17	A	0.0094	0.0012	0.0015	0.0121
	27L		D	0	0	0	0
	27L		A	0	0	0	0
	27R		D	0.2698	0.0201	0.0014	0.2913
	27R		A	0.2318	0.0247	0.0325	0.289
		35	D	0.0108	0.0007	0	0.0115
		35	A	0.0092	0.001	0.0012	0.0114
COMSEP	09L		D	0.048	0.0038	0.0002	0.052
	09L		A	0.048	0.0039	0.0003	0.0522
	09R		D	0.048	0.0038	0.0002	0.052
	09R		A	0.048	0.0039	0.0003	0.0522
		17	D	0.2585	0.0198	0.0019	0.2802
		17	A	0.2585	0.0198	0.0019	0.2802
		17	T	0.517	0.0396	0.0038	1.2056
	27L		D	0	0	0	0
	27L		A	0	0	0	0
	27L		T	0	0	0	16.882
	27R		D	8.9608	0.6832	0.0632	9.7072
	27R		A	8.961	0.683	0.0625	9.7065
	27R		T	17.922	1.366	0.125	4.8234
		35	D	0.2585	0.0198	0.0019	0.2802
		35	A	0.2588	0.0198	0.0014	0.28
		35	T	0.5176	0.0396	0.0028	1.2056
DHC6	09L		D	0.0246	0.0051	0.0026	0.0323
	09L		A	0.0249	0.0052	0.0024	0.0325
	09R		D	0.0109	0.0007	0	0.0116
	09R		A	0.0027	0	0	0.0027
		17	D	0.0652	0.0132	0.0055	0.0839
		17	A	0.0078	0.0005	0	0.0083
		17	T	0.0156	0.001	0	0.8732
	27L		D	0.7333	0.0559	0	0.7892
	27L		A	0.94	0.0712	0	1.0112
	27L		T	1.88	0.1424	0	12.223
	27R		D	5.2395	1.1099	0.4828	6.8322
	27R		A	4.6255	0.9758	0.4237	6.025
	27R		T	9.251	1.9516	0.8474	3.4922
		35	D	0.0078	0.0005	0	0.0083
		35	A	0.025	0.0043	0.0016	0.0309
		35	T	0.05	0.0086	0.0032	0.8732
FAL20	09L		D	0.001	0	0	0.001
	09L		A	0.0006	0	0	0.0006
	09R		D	0	0	0	0
	09R		A	0	0	0	0
		17	D	0.0044	0.0002	0	0.0046
		17	A	0.0038	0.0005	0.0005	0.0048
	27L		D	0	0	0	0
	27L		A	0	0	0	0
	27R		D	0.0998	0.0067	0.0002	0.1067
	27R		A	0.084	0.01	0.0125	0.1065
		35	D	0.0044	0.0002	0	0.0046
		35	A	0.0038	0.0002	0.0004	0.0044
GASEPF	09L		D	0.2396	0.0186	0.0014	0.2596
	09L		A	0.239	0.0181	0.0015	0.2586
	09R		D	0.2396	0.0186	0.0014	0.2596
	09R		A	0.239	0.0181	0.0015	0.2586
		17	D	1.2925	0.0985	0.0088	1.3998
		17	A	1.2925	0.0985	0.0088	1.3998
		17	T	2.585	0.197	0.0176	6.0292
	27L		D	0	0	0	0
	27L		A	0	0	0	0
	27L		T	0	0	0	84.4106
	27R		D	44.8056	3.4176	0.3096	48.5328
	27R		A	44.8075	3.417	0.3105	48.535
	27R		T	89.615	6.834	0.621	24.1172
		35	D	1.2925	0.0985	0.0088	1.3998
		35	A	1.2924	0.0988	0.009	1.4002
		35	T	2.5848	0.1976	0.018	6.0292
GASEPV	09L		D	0.0958	0.0072	0.0004	0.1034
	09L		A	0.0957	0.0073	0.0003	0.1033
	09R		D	0.0958	0.0072	0.0004	0.1034
	09R		A	0.0957	0.0073	0.0003	0.1033
		17	D	0.5172	0.0395	0.0036	0.5603
		17	A	0.5172	0.0395	0.0036	0.5603
		17	T	1.0344	0.079	0.0072	2.4116
	27L		D	0	0	0	0
	27L		A	0	0	0	0
	27L		T	0	0	0	33.7642
	27R		D	17.9232	1.3656	0.124	19.4128
	27R		A	17.9225	1.367	0.1235	19.413
	27R		T	35.845	2.734	0.247	9.6468
		35	D	0.5172	0.0395	0.0036	0.5603
		35	A	0.517	0.0396	0.0038	0.5604
		35	T	1.034	0.0792	0.0076	2.4116
GIV	09L		D	0.0028	0.0002	0	0.003
	09L		A	0.0021	0.0003	0.0003	0.0027
	09R		D	0	0	0	0
	09R		A	0	0	0	0
		17	D	0.0108	0.0007	0	0.0115
		17	A	0.0094	0.0012	0.0015	0.0121
	27L		D	0	0	0	0
	27L		A	0	0	0	0
	27R		D	0.248	0.0188	0.0014	0.2682
	27R		A	0.2125	0.0235	0.0325	0.2685
		35	D	0.0108	0.0007	0	0.0115

		35	A	0.0092	0.001	0.0012	0.0114
GV	09L		D	0.0028	0.0002	0	0.003
	09L		A	0.0021	0.0003	0.0003	0.0027
	09R		D	0	0	0	0
	09R		A	0	0	0	0
		17	D	0.0108	0.0007	0	0.0115
		17	A	0.0094	0.0012	0.0015	0.0121
	27L		D	0	0	0	0
	27L		A	0	0	0	0
	27R		D	0.248	0.0188	0.0014	0.2682
	27R		A	0.2125	0.0235	0.0325	0.2685
		35	D	0.0108	0.0007	0	0.0115
		35	A	0.0092	0.001	0.0012	0.0114
IA1125	09L		D	0.0002	0	0	0.0002
	09L		A	0.0004	0	0	0.0004
	09R		D	0	0	0	0
	09R		A	0	0	0	0
		17	D	0.0008	0	0	0.0008
		17	A	0	0	0	0
	27L		D	0	0	0	0
	27L		A	0	0	0	0
	27R		D	0.0876	0.0061	0.0002	0.0939
	27R		A	0.0652	0.0076	0.0101	0.0829
		35	D	0	0	0	0
		35	A	0.0002	0	0	0.0002
LEAR25	09L		D	0.0014	0	0	0.0014
	09L		A	0.0015	0	0	0.0015
	09R		D	0	0	0	0
	09R		A	0	0	0	0
		17	D	0.0065	0.0005	0	0.007
		17	A	0.0056	0.0006	0.0007	0.0069
	27L		D	0	0	0	0
	27L		A	0	0	0	0
	27R		D	0.1483	0.0118	0.0009	0.161
	27R		A	0.1275	0.0135	0.0195	0.1605
		35	D	0.0065	0.0005	0	0.007
		35	A	0.0054	0.0004	0.001	0.0068
LEAR35	09L		D	0.0089	0.0004	0	0.0093
	09L		A	0.0068	0.0007	0.0007	0.0082
	09R		D	0	0	0	0
	09R		A	0	0	0	0
		17	D	0.0338	0.002	0	0.0358
		17	A	0.0264	0.0034	0.004	0.0338
	27L		D	0	0	0	0
	27L		A	0	0	0	0
	27R		D	0.9892	0.0731	0.0046	1.0669
	27R		A	0.8131	0.0923	0.1234	1.0288
		35	D	0.0304	0.0018	0	0.0322
		35	A	0.0267	0.0025	0.0033	0.0325
MU3001	09L		D	0.0028	0.0002	0	0.003
	09L		A	0.0021	0.0003	0.0003	0.0027
	09R		D	0	0	0	0
	09R		A	0	0	0	0
		17	D	0.0108	0.0007	0	0.0115
		17	A	0.0094	0.0012	0.0015	0.0121
	27L		D	0	0	0	0
	27L		A	0	0	0	0
	27R		D	0.248	0.0188	0.0014	0.2682
	27R		A	0.2125	0.0235	0.0325	0.2685
		35	D	0.0108	0.0007	0	0.0115
		35	A	0.0092	0.001	0.0012	0.0114
SABR80	09L		D	0.0004	0	0	0.0004
	09L		A	0.0003	0	0	0.0003
	09R		D	0	0	0	0
	09R		A	0	0	0	0
		17	D	0.0021	0.0001	0	0.0022
		17	A	0.0019	0.0001	0.0002	0.0022
	27L		D	0	0	0	0
	27L		A	0	0	0	0
	27R		D	0.049	0.004	0.0002	0.0532
	27R		A	0.0425	0.004	0.007	0.0535
		35	D	0.0021	0.0001	0	0.0022
		35	A	0.0016	0.0002	0.0002	0.002
SD330	09L		D	0.0012	0	0	0.0012
	09L		A	0.0015	0	0	0.0015
	09R		D	0.0012	0	0	0.0012
	09R		A	0.0015	0	0	0.0015
		17	D	0.0078	0.0005	0	0.0083
		17	A	0.0078	0.0005	0	0.0083
	27L		D	0	0	0	0
	27L		A	0	0	0	0
	27R		D	0.268	0.02	0.0016	0.2896
	27R		A	0.268	0.02	0.002	0.29
		35	D	0.0078	0.0005	0	0.0083
		35	A	0.0078	0.0004	0	0.0082
SF340	09L		D	0.0012	0	0	0.0012
	09L		A	0.0015	0	0	0.0015
	09R		D	0.0012	0	0	0.0012
	09R		A	0.0015	0	0	0.0015
		17	D	0.0078	0.0005	0	0.0083
		17	A	0.0078	0.0005	0	0.0083
		17	T	0.0156	0.001	0	0.036
	27L		D	0	0	0	0
	27L		A	0	0	0	0
	27L		T	0	0	0	0.5052
	27R		D	0.268	0.02	0.0016	0.2896
	27R		A	0.268	0.02	0.002	0.29

27R		T	0.536	0.04	0.004	0.1444
	35	D	0.0078	0.0005	0	0.0083
	35	A	0.0078	0.0004	0	0.0082
	35	T	0.0156	0.0008	0	0.036

QC Summary for OPS_FLT.dbf
3/22/04
Gillespie Field 2025

TOTAL ANNUAL OPERATIONS: 294781.519

TOTAL DAILY OPERATIONS SUMMARY:

Total Operations:	807.6206
Total Arrivals:	189.7895
Total Departures:	191.5991
Total T+G Operations:	426.232

OPERATIONS BY TIME OF DAY:

Operation	Day	Evening	Night
Departures:	175.0705	14.5521	1.9765
Arrivals:	169.3469	14.9351	5.5075
Touch and Go's:	393.501	30.0042	2.7268
Total:	737.9184	59.4914	10.2108

DAILY OPERATIONS PERCENTAGES BY TIME OF DAY:

Operation	Day	Evening	Night
Departures:	91.3733	7.5951	1.0316
Arrivals:	89.2288	7.8693	2.9019
Touch and Go's:	92.3208	7.0394	0.6397

AIRCRAFT NAMES USED IN THIS STUDY:
BEC58P
CIT3
CL600
CL601
CNA172
CNA206
CNA20T
CNA441
CNA500
CNA55B
CNA750
COMJET
COMSEP
DHC6
FAL20
GASEPF
GASEPV
GIV
GV
IA1125
LEAR25
LEAR35
MU3001
SABR80
SD330
SF340

RUNWAYS TRACKS AND DAILY OPERATIONS USED IN THIS STUDY:
(touch and go tracks show depa not total operations - per INM input)

Runway	09L	Tracks	Day	Eve	Night	Total	% Ops
		09LA11	0.0536	0.005	0.0033	0.0619	0.0077
		09LA12	0.0536	0.005	0.0033	0.0619	0.0077
		09LA13	0.0173	0.0013	0.0011	0.0197	0.0024
		09LA14	0.0173	0.0013	0.0011	0.0197	0.0024
		09LA1P	0.2159	0.0225	0.0112	0.2496	0.0309
		09LA21	0.0448	0.0033	0.0024	0.0505	0.0063
		09LA22	0.0448	0.0033	0.0024	0.0505	0.0063
		09LA23	0.0142	0.0008	0.0008	0.0158	0.002
		09LA24	0.0142	0.0008	0.0008	0.0158	0.002
		09LA2P	0.1795	0.0159	0.0074	0.2028	0.0251
		09LA31	0.0448	0.0033	0.0024	0.0505	0.0063
		09LA32	0.0448	0.0033	0.0024	0.0505	0.0063
		09LA33	0.0142	0.0008	0.0008	0.0158	0.002
		09LA34	0.0142	0.0008	0.0008	0.0158	0.002
		09LA3P	0.1795	0.0159	0.0074	0.2028	0.0251
		09LD11	0.076	0.0063	0.0007	0.083	0.0103
		09LD12	0.076	0.0063	0.0007	0.083	0.0103
		09LD13	0.0253	0.0015	0.0002	0.027	0.0033
		09LD14	0.0253	0.0015	0.0002	0.027	0.0033
		09LD1P	0.3021	0.0247	0.0029	0.3297	0.0408
		09RA11	0.0345	0.0024	0.0001	0.037	0.0046
		09RA12	0.0345	0.0024	0.0001	0.037	0.0046
		09RA13	0.0114	0.0008	0	0.0122	0.0015
		09RA14	0.0114	0.0008	0	0.0122	0.0015
		09RA1P	0.1384	0.0105	0.0009	0.1498	0.0185
		09LD21	0.0748	0.006	0.0006	0.0814	0.0101
		09LD22	0.0748	0.006	0.0006	0.0814	0.0101
		09LD23	0.025	0.0015	0.0002	0.0267	0.0033
		09LD24	0.025	0.0015	0.0002	0.0267	0.0033
		09LD2P	0.2974	0.0239	0.0026	0.3239	0.0401
Runway	09R	Tracks	Day	Eve	Night	Total	% Ops

		09RA11	0.0345	0.0024	0.0001	0.037	0.0046
		09RA12	0.0345	0.0024	0.0001	0.037	0.0046
		09RA13	0.0114	0.0008	0	0.0122	0.0015
		09RA14	0.0114	0.0008	0	0.0122	0.0015
		09RA1P	0.1384	0.0105	0.0009	0.1498	0.0185
		09LD21	0.0748	0.006	0.0006	0.0814	0.0101
		09LD22	0.0748	0.006	0.0006	0.0814	0.0101
		09LD23	0.025	0.0015	0.0002	0.0267	0.0033
		09LD24	0.025	0.0015	0.0002	0.0267	0.0033
		09LD2P	0.2974	0.0239	0.0026	0.3239	0.0401
		09RA31	0.0337	0.0024	0.0001	0.0362	0.0045
		09RA32	0.0337	0.0024	0.0001	0.0362	0.0045
		09RA33	0.011	0.0008	0	0.0118	0.0015
		09RA34	0.011	0.0008	0	0.0118	0.0015
		09RA3P	0.1353	0.0104	0.0009	0.1466	0.0182
		09RD11	0.0523	0.004	0.0003	0.0566	0.007
		09RD12	0.0523	0.004	0.0003	0.0566	0.007
		09RD13	0.0177	0.0013	0.0001	0.0191	0.0024
		09RD14	0.0177	0.0013	0.0001	0.0191	0.0024
		09RD1P	0.2085	0.016	0.0015	0.226	0.028
		17A11	0.6856	0.0576	0.0241	0.7673	0.095
		17A12	0.6856	0.0576	0.0241	0.7673	0.095
		17A13	0.2281	0.0193	0.0078	0.2552	0.0316
		17A14	0.2281	0.0193	0.0078	0.2552	0.0316
		17A1P	2.7449	0.2296	0.0975	3.072	0.3804
		09RA21	0.0335	0.0024	0.0001	0.036	0.0045
		09RA22	0.0335	0.0024	0.0001	0.036	0.0045
		09RA23	0.0109	0.0008	0	0.0117	0.0014
		09RA24	0.0109	0.0008	0	0.0117	0.0014
		09RA2P	0.1345	0.0103	0.0009	0.1457	0.018
		09RD21	0.0518	0.004	0.0003	0.0561	0.0069
		09RD22	0.0518	0.004	0.0003	0.0561	0.0069
		17D11	0.7293	0.0573	0.0062	0.7928	0.0982
		17D12	0.7293	0.0573	0.0062	0.7928	0.0982
		17D13	0.2427	0.019	0.0018	0.2635	0.0326
		09RD23	0.0175	0.0013	0.0001	0.0189	0.0023
		09RD24	0.0175	0.0013	0.0001	0.0189	0.0023
		09RD2P	0.2063	0.0158	0.0015	0.2236	0.0277
Runway	17	Tracks	Day	Eve	Night	Total	% Ops
		17A11	0.6856	0.0576	0.0241	0.7673	0.095
		17A12	0.6856	0.0576	0.0241	0.7673	0.095
		17A13	0.2281	0.0193	0.0078	0.2552	0.0316
		17A14	0.2281	0.0193	0.0078	0.2552	0.0316
		17A1P	2.7449	0.2296	0.0975	3.072	0.3804
		09RA21	0.0335	0.0024	0.0001	0.036	0.0045
		09RA22	0.0335	0.0024	0.0001	0.036	0.0045
		09RA23	0.0109	0.0008	0	0.0117	0.0014
		09RA24	0.0109	0.0008	0	0.0117	0.0014
		09RA2P	0.1345	0.0103	0.0009	0.1457	0.018
		09RD21	0.0518	0.004	0.0003	0.0561	0.0069
		09RD22	0.0518	0.004	0.0003	0.0561	0.0069
		17D11	0.7293	0.0573	0.0062	0.7928	0.0982
		17D12	0.7293	0.0573	0.0062	0.7928	0.0982
		17D13	0.2427	0.019	0.0018	0.2635	0.0326
		09RD23	0.0175	0.0013	0.0001	0.0189	0.0023
		09RD24	0.0175	0.0013	0.0001	0.0189	0.0023
		09RD2P	0.2063	0.0158	0.0015	0.2236	0.0277
		T17W	4.9189	0.3752	0.034	5.3281	0.6597
		17D14	0.2427	0.019	0.0018	0.2635	0.0326
		17D1P	2.9163	0.2305	0.0245	3.1713	0.3927
		T27LS	137.7249	10.5012	0.9547	149.1808	18.4716
		27LA11	0.0073	0.0006	0	0.0079	0.001
		T17E	4.9189	0.3752	0.034	5.3281	0.6597
Runway	27L	Tracks	Day	Eve	Night	Total	% Ops
		17D1P	2.9163	0.2305	0.0245	3.1713	0.3927
		T27LS	137.7249	10.5012	0.9547	149.1808	18.4716
		27LA11	0.0073	0.0006	0	0.0079	0.001
		T17E	4.9189	0.3752	0.034	5.3281	0.6597
		27LA13	0.0024	0.0002	0	0.0026	0.0003
		27LA14	0.0024	0.0002	0	0.0026	0.0003
		27LA1P	0.0293	0.0022	0	0.0315	0.0039
		27LA21	0.0147	0.0011	0	0.0158	0.002
		27LA22	0.0147	0.0011	0	0.0158	0.002
		27LA23	0.0049	0.0004	0	0.0053	0.0007
		27LA24	0.0049	0.0004	0	0.0053	0.0007
		27LA2P	0.0587	0.0044	0	0.0631	0.0078
		27LA31	0.0202	0.0015	0	0.0217	0.0027
		27LA32	0.0202	0.0015	0	0.0217	0.0027
		27LA33	0.0067	0.0005	0	0.0072	0.0009
		27LA34	0.0067	0.0005	0	0.0072	0.0009
		27LA3P	0.0806	0.0061	0	0.0867	0.0107
		27LA41	0.0916	0.0069	0	0.0985	0.0122
		27LA42	0.0916	0.0069	0	0.0985	0.0122
		27LA43	0.0305	0.0023	0	0.0328	0.0041
		27LA44	0.0305	0.0023	0	0.0328	0.0041
		27LA4P	0.3666	0.0276	0	0.3942	0.0488
		27LA51	0.0495	0.0037	0	0.0532	0.0066
		27LA52	0.0495	0.0037	0	0.0532	0.0066
		27LA53	0.0165	0.0012	0	0.0177	0.0022
		27LA54	0.0165	0.0012	0	0.0177	0.0022
		27LA5P	0.1979	0.0149	0	0.2128	0.0263
		27LD11	0.0073	0.0006	0	0.0079	0.001
		27LD12	0.0073	0.0006	0	0.0079	0.001
		27LD13	0.0024	0.0002	0	0.0026	0.0003
		27LD14	0.0024	0.0002	0	0.0026	0.0003
		27LD1P	0.0293	0.0022	0	0.0315	0.0039
		27LD21	0.0147	0.0011	0	0.0158	0.002

		27LD22	0.0147	0.0011	0	0.0158	0.002
		27LD23	0.0049	0.0004	0	0.0053	0.0007
		27LD24	0.0049	0.0004	0	0.0053	0.0007
		27LD2P	0.0587	0.0044	0	0.0631	0.0078
		27LD31	0.0202	0.0015	0	0.0217	0.0027
		27LD32	0.0202	0.0015	0	0.0217	0.0027
		27LD33	0.0067	0.0005	0	0.0072	0.0009
		27LD34	0.0067	0.0005	0	0.0072	0.0009
		27LD3P	0.0806	0.0061	0	0.0867	0.0107
		27LD41	0.0202	0.0015	0	0.0217	0.0027
		27LD42	0.0202	0.0015	0	0.0217	0.0027
		27LD43	0.0067	0.0005	0	0.0072	0.0009
		27LD44	0.0067	0.0005	0	0.0072	0.0009
		27LD4P	0.0806	0.0061	0	0.0867	0.0107
		27LD51	0.0202	0.0015	0	0.0217	0.0027
		27LD52	0.0202	0.0015	0	0.0217	0.0027
		27LD53	0.0067	0.0005	0	0.0072	0.0009
		27LD54	0.0067	0.0005	0	0.0072	0.0009
		27LD5P	0.0806	0.0061	0	0.0867	0.0107
		27LD61	0.0202	0.0015	0	0.0217	0.0027
		27LD62	0.0202	0.0015	0	0.0217	0.0027
		27LD63	0.0067	0.0005	0	0.0072	0.0009
		27LD64	0.0067	0.0005	0	0.0072	0.0009
		27LD6P	0.0806	0.0061	0	0.0867	0.0107
		35A11	0.3426	0.0289	0.0125	0.384	0.0475
		35A12	0.3426	0.0289	0.0125	0.384	0.0475
		35A13	0.1141	0.009	0.0039	0.127	0.0157
		35A14	0.1141	0.009	0.0039	0.127	0.0157
		35A1P	1.3724	0.1154	0.0493	1.5371	0.1903
		35A21	0.3482	0.03	0.0132	0.3914	0.0485
		35A22	0.3482	0.03	0.0132	0.3914	0.0485
		35A23	0.116	0.0093	0.0041	0.1294	0.016
		35A24	0.116	0.0093	0.0041	0.1294	0.016
		35A2P	1.395	0.1197	0.0519	1.5666	0.194
Runway	27R	Tracks	Day	Eve	Night	Total	% Ops
		27LA44	0.0305	0.0023	0	0.0328	0.0041
		27LA4P	0.3666	0.0276	0	0.3942	0.0488
		27LA51	0.0495	0.0037	0	0.0532	0.0066
		27LA52	0.0495	0.0037	0	0.0532	0.0066
		27LA53	0.0165	0.0012	0	0.0177	0.0022
		27LA54	0.0165	0.0012	0	0.0177	0.0022
		27LA5P	0.1979	0.0149	0	0.2128	0.0263
		27LD11	0.0073	0.0006	0	0.0079	0.001
		27LD12	0.0073	0.0006	0	0.0079	0.001
		27LD13	0.0024	0.0002	0	0.0026	0.0003
		27LD14	0.0024	0.0002	0	0.0026	0.0003
		27LD1P	0.0293	0.0022	0	0.0315	0.0039
		27LD21	0.0147	0.0011	0	0.0158	0.002
		27LD22	0.0147	0.0011	0	0.0158	0.002
		27LD23	0.0049	0.0004	0	0.0053	0.0007
		27LD24	0.0049	0.0004	0	0.0053	0.0007
		27LD2P	0.0587	0.0044	0	0.0631	0.0078
		27LD31	0.0202	0.0015	0	0.0217	0.0027
		27LD32	0.0202	0.0015	0	0.0217	0.0027
		27LD33	0.0067	0.0005	0	0.0072	0.0009
		27LD34	0.0067	0.0005	0	0.0072	0.0009
		27LD3P	0.0806	0.0061	0	0.0867	0.0107
		27LD41	0.0202	0.0015	0	0.0217	0.0027
		27LD42	0.0202	0.0015	0	0.0217	0.0027
		27LD43	0.0067	0.0005	0	0.0072	0.0009
		27LD44	0.0067	0.0005	0	0.0072	0.0009
		27LD4P	0.0806	0.0061	0	0.0867	0.0107
		27LD51	0.0202	0.0015	0	0.0217	0.0027
		27LD52	0.0202	0.0015	0	0.0217	0.0027
		27LD53	0.0067	0.0005	0	0.0072	0.0009
		27LD54	0.0067	0.0005	0	0.0072	0.0009
		27LD5P	0.0806	0.0061	0	0.0867	0.0107
		27LD61	0.0202	0.0015	0	0.0217	0.0027
		27LD62	0.0202	0.0015	0	0.0217	0.0027
		27LD63	0.0067	0.0005	0	0.0072	0.0009
		27LD64	0.0067	0.0005	0	0.0072	0.0009
		27LD6P	0.0806	0.0061	0	0.0867	0.0107
		35A11	0.3426	0.0289	0.0125	0.384	0.0475
		35A12	0.3426	0.0289	0.0125	0.384	0.0475
		35A13	0.1141	0.009	0.0039	0.127	0.0157
		35A14	0.1141	0.009	0.0039	0.127	0.0157
		35A1P	1.3724	0.1154	0.0493	1.5371	0.1903
		35A21	0.3482	0.03	0.0132	0.3914	0.0485
		35A22	0.3482	0.03	0.0132	0.3914	0.0485
		35A23	0.116	0.0093	0.0041	0.1294	0.016
		35A24	0.116	0.0093	0.0041	0.1294	0.016
		35A2P	1.395	0.1197	0.0519	1.5666	0.194
		35D11	0.7095	0.0537	0.0048	0.768	0.0951
		35D12	0.7095	0.0537	0.0048	0.768	0.0951
		35D13	0.2361	0.0178	0.0013	0.2552	0.0316
		35D14	0.2361	0.0178	0.0013	0.2552	0.0316
		35D1P	2.8374	0.2161	0.0187	3.0722	0.3804
		T35E	4.9189	0.3752	0.034	5.3281	0.6597
		T35W	4.9189	0.3752	0.034	5.3281	0.6597
		27RD6P	13.9788	1.0606	0.093	15.1324	1.8737
		27RD71	3.8949	0.2956	0.026	4.2165	0.5221
		27RD72	3.8949	0.2956	0.026	4.2165	0.5221
		27RD73	1.2989	0.0981	0.009	1.406	0.1741
		27RD74	1.2989	0.0981	0.009	1.406	0.1741
		27RD7P	15.5797	1.1811	0.1029	16.8637	2.0881
		27RD81	3.0145	0.2993	0.0653	3.3791	0.4184
		27RD82	3.0145	0.2993	0.0653	3.3791	0.4184

	27RD83	1.0049	0.0998	0.0217	1.1264	0.1395
	27RD84	1.0049	0.0998	0.0217	1.1264	0.1395
	27RD8P	12.0583	1.198	0.2602	13.5165	1.6736
	T27RN	39.35	3.0001	0.2727	42.6228	5.2776
	27RA51	4.9109	0.4562	0.176	5.5431	0.6863
	27RA52	4.9109	0.4562	0.176	5.5431	0.6863
	27RA53	1.6364	0.1517	0.0585	1.8466	0.2286
	27RA54	1.6364	0.1517	0.0585	1.8466	0.2286
	27RA5P	19.6453	1.8248	0.7037	22.1738	2.7456
	27RD11	2.8045	0.2198	0.0238	3.0481	0.3774
	27RD12	2.8045	0.2198	0.0238	3.0481	0.3774
	27RD13	0.9344	0.0731	0.0078	1.0153	0.1257
	27RD14	0.9344	0.0731	0.0078	1.0153	0.1257
	27RD1P	11.2191	0.8803	0.094	12.1934	1.5098
	27RD21	2.5847	0.2205	0.033	2.8382	0.3514
	27RD22	2.5847	0.2205	0.033	2.8382	0.3514
	27RD23	0.8615	0.0735	0.0109	0.9459	0.1171
	27RD24	0.8615	0.0735	0.0109	0.9459	0.1171
	27RD2P	10.3391	0.8819	0.1315	11.3525	1.4057
	27RD31	2.4519	0.1959	0.023	2.6708	0.3307
	27RD32	2.4519	0.1959	0.023	2.6708	0.3307
	27RA11	4.6414	0.4029	0.145	5.1893	0.6425
	27RA12	4.6414	0.4029	0.145	5.1893	0.6425
	27RA13	1.5466	0.134	0.0481	1.7287	0.214
	27RA14	1.5466	0.134	0.0481	1.7287	0.214
	27RA1P	18.5674	1.6108	0.5793	20.7575	2.5702
	27RA21	4.5141	0.3777	0.1303	5.0221	0.6218
	27RA22	4.5141	0.3777	0.1303	5.0221	0.6218
	27RA23	1.5042	0.1254	0.0432	1.6728	0.2071
	27RA24	1.5042	0.1254	0.0432	1.6728	0.2071
	27RA2P	18.0586	1.5096	0.5204	20.0886	2.4874
	27RA31	4.9184	0.4579	0.1769	5.5532	0.6876
	27RA32	4.9184	0.4579	0.1769	5.5532	0.6876
	27RA33	1.6389	0.1523	0.0588	1.85	0.2291
	27RA34	1.6389	0.1523	0.0588	1.85	0.2291
	27RA3P	19.6752	1.8307	0.7072	22.2131	2.7504
	27RA41	4.6117	0.3968	0.1415	5.15	0.6377
	27RA42	4.6117	0.3968	0.1415	5.15	0.6377
	27RA43	1.5367	0.1319	0.047	1.7156	0.2124
	27RA44	1.5367	0.1319	0.047	1.7156	0.2124
	27RA4P	18.4477	1.587	0.5655	20.6002	2.5507
	27RD33	0.8174	0.0652	0.0076	0.8902	0.1102
	27RD34	0.8174	0.0652	0.0076	0.8902	0.1102
	27RD3P	9.8079	0.7842	0.0917	10.6838	1.3229
	27RD41	3.2499	0.3018	0.0571	3.6088	0.4468
	27RD42	3.2499	0.3018	0.0571	3.6088	0.4468
	27RD43	1.0829	0.1004	0.019	1.2023	0.1489
	27RD44	1.0829	0.1004	0.019	1.2023	0.1489
	27RD4P	13.0006	1.2078	0.2274	14.4358	1.7874
	27RD51	2.9297	0.2427	0.0331	3.2055	0.3969
	27RD52	2.9297	0.2427	0.0331	3.2055	0.3969
	27RD53	0.9761	0.0807	0.011	1.0678	0.1322
	27RD54	0.9761	0.0807	0.011	1.0678	0.1322
	27RD5P	11.7192	0.9722	0.1315	12.8229	1.5877
	27RD61	3.4945	0.2652	0.0234	3.7831	0.4684
	27RD62	3.4945	0.2652	0.0234	3.7831	0.4684
	27RD63	1.1647	0.0883	0.008	1.261	0.1561
	27RD64	1.1647	0.0883	0.008	1.261	0.1561
Runway 35	Tracks	Day	Eve	Night	Total	% Ops
	27LD34	0.0067	0.0005	0	0.0072	0.0009
	27LD3P	0.0806	0.0061	0	0.0867	0.0107
	27LD41	0.0202	0.0015	0	0.0217	0.0027
	27LD42	0.0202	0.0015	0	0.0217	0.0027
	27LD43	0.0067	0.0005	0	0.0072	0.0009
	27LD44	0.0067	0.0005	0	0.0072	0.0009
	27LD4P	0.0806	0.0061	0	0.0867	0.0107
	27LD51	0.0202	0.0015	0	0.0217	0.0027
	27LD52	0.0202	0.0015	0	0.0217	0.0027
	27LD53	0.0067	0.0005	0	0.0072	0.0009
	27LD54	0.0067	0.0005	0	0.0072	0.0009
	27LD5P	0.0806	0.0061	0	0.0867	0.0107
	27LD61	0.0202	0.0015	0	0.0217	0.0027
	27LD62	0.0202	0.0015	0	0.0217	0.0027
	27LD63	0.0067	0.0005	0	0.0072	0.0009
	27LD64	0.0067	0.0005	0	0.0072	0.0009
	27LD6P	0.0806	0.0061	0	0.0867	0.0107
	35A11	0.3426	0.0289	0.0125	0.384	0.0475
	35A12	0.3426	0.0289	0.0125	0.384	0.0475
	35A13	0.1141	0.009	0.0039	0.127	0.0157
	35A14	0.1141	0.009	0.0039	0.127	0.0157
	35A1P	1.3724	0.1154	0.0493	1.5371	0.1903
	35A21	0.3482	0.03	0.0132	0.3914	0.0485
	35A22	0.3482	0.03	0.0132	0.3914	0.0485
	35A23	0.116	0.0093	0.0041	0.1294	0.016
	35A24	0.116	0.0093	0.0041	0.1294	0.016
	35A2P	1.395	0.1197	0.0519	1.5666	0.194
	35D11	0.7095	0.0537	0.0048	0.768	0.0951
	35D12	0.7095	0.0537	0.0048	0.768	0.0951
	35D13	0.2361	0.0178	0.0013	0.2552	0.0316
	35D14	0.2361	0.0178	0.0013	0.2552	0.0316
	35D1P	2.8374	0.2161	0.0187	3.0722	0.3804
	T35E	4.9189	0.3752	0.034	5.3281	0.6597
	T35W	4.9189	0.3752	0.034	5.3281	0.6597

NUMBER OF DAILY OPERATIONS BY AIRCRAFT TYPE
(includes touch and gos as 1 departure and 1 arrival)

Aircraft	Day Dept	Eve Dept	Nt Dept	Day Arr	Eve Arr	Nt Arr	Total	%
BEC58P	16.6573	1.2619	0.1182	16.6196	1.2583	0.1183	36.0336	4.4617
CIT3	0.9441	0.071	0.0052	0.8057	0.0912	0.1219	2.0391	0.2525
CL600	2.3602	0.1774	0.0144	2.0144	0.2301	0.3069	5.1034	0.6319
CL601	2.3602	0.1774	0.0144	2.0144	0.2301	0.3069	5.1034	0.6319
CNA172	30.015	2.2886	0.2066	29.9565	2.284	0.2077	64.9584	8.0432
CNA206	15.008	1.1436	0.1056	14.9773	1.1409	0.1031	32.4785	4.0215
CNA20T	15.008	1.1436	0.1056	14.9773	1.1409	0.1031	32.4785	4.0215
CNA441	1.0406	0.0778	0.0081	1.0381	0.078	0.007	2.2496	0.2785
CNA500	0.9441	0.071	0.0052	0.8057	0.0912	0.1219	2.0391	0.2525
CNA55B	0.1406	0.01	0.0003	0.1209	0.0134	0.0184	0.3036	0.0376
CNA750	0.9441	0.071	0.0052	0.8057	0.0912	0.1219	2.0391	0.2525
COMJET	2.5513	0.1915	0.0153	2.1806	0.2423	0.3075	5.4885	0.6796
COMSEP	29.9557	2.2839	0.2061	29.9565	2.284	0.2077	64.8939	8.0352
DHC6	22.8055	2.9883	0.9437	22.019	2.7667	0.8327	52.3559	6.4827
FAL20	0.9441	0.071	0.0052	0.8057	0.0912	0.1219	2.0391	0.2525
GASEPF	149.7863	11.4201	1.0403	149.7843	11.4209	1.0377	324.4896	40.1785
GASEPV	59.9147	4.5694	0.4156	59.9134	4.5687	0.414	129.7958	16.0714
GIV	2.3602	0.1774	0.0144	2.0144	0.2301	0.3069	5.1034	0.6319
GV	2.3602	0.1774	0.0144	2.0144	0.2301	0.3069	5.1034	0.6319
IA1125	0.765	0.0571	0.0044	0.5688	0.0649	0.086	1.5462	0.1915
LEAR25	1.4158	0.1068	0.0083	1.2092	0.1384	0.1843	3.0628	0.3792
LEAR35	9.1904	0.6906	0.0544	7.5602	0.8614	1.1493	19.5063	2.4153
MU3001	2.3602	0.1774	0.0144	2.0144	0.2301	0.3069	5.1034	0.6319
SABR80	0.4712	0.0357	0.0027	0.4033	0.0458	0.0619	1.0206	0.1264
SD330	0.4798	0.0358	0.004	0.4795	0.0353	0.0031	1.0375	0.1285
SF340	1.0384	0.0785	0.0079	1.0381	0.078	0.007	2.2479	0.2783

OPERATIONS BY AIRCRAFT TYPE BY RUNWAY

RUNWAY: 19

ac	day depart	eve depart	nt depart	day arriv	eve arriv	nt arriv
BEC58P	0	0	0	0	0	0
CIT3	0	0	0	0	0	0
CL600	0	0	0	0	0	0
CL601	0	0	0	0	0	0
CNA172	0	0	0	0	0	0
CNA206	0	0	0	0	0	0
CNA20T	0	0	0	0	0	0
CNA441	0	0	0	0	0	0
CNA500	0	0	0	0	0	0
CNA55B	0	0	0	0	0	0
CNA750	0	0	0	0	0	0
COMJET	0	0	0	0	0	0
COMSEP	0	0	0	0	0	0
DHC6	0	0	0	0	0	0
FAL20	0	0	0	0	0	0
GASEPF	0	0	0	0	0	0
GASEPV	0	0	0	0	0	0
GIV	0	0	0	0	0	0
GV	0	0	0	0	0	0
IA1125	0	0	0	0	0	0
LEAR25	0	0	0	0	0	0
LEAR35	0	0	0	0	0	0
MU3001	0	0	0	0	0	0
SABR80	0	0	0	0	0	0
SD330	0	0	0	0	0	0
SF340	0	0	0	0	0	0

RUNWAY: 01

ac	day depart	eve depart	nt depart	day arriv	eve arriv	nt arriv
BEC58P	0	0	0	0	0	0
CIT3	0	0	0	0	0	0
CL600	0	0	0	0	0	0
CL601	0	0	0	0	0	0
CNA172	0	0	0	0	0	0
CNA206	0	0	0	0	0	0
CNA20T	0	0	0	0	0	0
CNA441	0	0	0	0	0	0
CNA500	0	0	0	0	0	0
CNA55B	0	0	0	0	0	0
CNA750	0	0	0	0	0	0
COMJET	0	0	0	0	0	0
COMSEP	0	0	0	0	0	0
DHC6	0	0	0	0	0	0
FAL20	0	0	0	0	0	0
GASEPF	0	0	0	0	0	0
GASEPV	0	0	0	0	0	0
GIV	0	0	0	0	0	0
GV	0	0	0	0	0	0
IA1125	0	0	0	0	0	0
LEAR25	0	0	0	0	0	0
LEAR35	0	0	0	0	0	0
MU3001	0	0	0	0	0	0
SABR80	0	0	0	0	0	0
SD330	0	0	0	0	0	0
SF340	0	0	0	0	0	0

AIRCRAFT NUMBERS BY STAGE LENGTH (Daily Depts):

Aircraft	Class A	Class AA	Class E	Stage 1	Stage 2	Stage 3	Stage 4	Stage 5	Stage 6	Stage 7
BEC58P	0	0	0	27.715	0	0	0	0	0	0
CIT3	0	0	0	1.0203	0	0	0	0	0	0
CL600	0	0	0	2.552	0	0	0	0	0	0
CL601	0	0	0	2.552	0	0	0	0	0	0
CNA172	0	0	0	51.2923	0	0	0	0	0	0

CNA206	0	0	0	25.6479	0	0	0	0	0	0
CNA20T	0	0	0	25.6479	0	0	0	0	0	0
CNA441	0	0	0	1.7317	0	0	0	0	0	0
CNA500	0	0	0	1.0203	0	0	0	0	0	0
CNA55B	0	0	0	0.1509	0	0	0	0	0	0
CNA750	0	0	0	1.0203	0	0	0	0	0	0
COMJET	0	0	0	2.7581	0	0	0	0	0	0
COMSEP	0	0	0	51.2278	0	0	0	0	0	0
DHC6	0	0	0	41.1455	0	0	0	0	0	0
FAL20	0	0	0	1.0203	0	0	0	0	0	0
GASEPF	0	0	0	256.157	0	0	0	0	0	0
GASEPV	0	0	0	102.4638	0	0	0	0	0	0
GIV	0	0	0	2.552	0	0	0	0	0	0
GV	0	0	0	2.552	0	0	0	0	0	0
IA1125	0	0	0	0.8265	0	0	0	0	0	0
LEAR25	0	0	0	1.5309	0	0	0	0	0	0
LEAR35	0	0	0	9.9354	0	0	0	0	0	0
MU3001	0	0	0	2.552	0	0	0	0	0	0
SABR80	0	0	0	0.5096	0	0	0	0	0	0
SD330	0	0	0	0.5196	0	0	0	0	0	0
SF340	0	0	0	1.73	0	0	0	0	0	0

NUMBER OF DAILY OPERATIONS BY RUNWAY

Runway		Day	Eve	Night	Total	% D/A
09L	Departures:	1.0017	0.0792	0.0089	1.0898	0.2699
	Arrivals:	0.9527	0.0833	0.0476	1.0836	0.2683
09R	Departures:	0.6934	0.053	0.0046	0.751	0.186
	Arrivals:	0.6782	0.0504	0.0033	0.7319	0.1812
17	Departures:	4.8603	0.3831	0.0405	5.2839	1.3085
	Arrivals:	4.5723	0.3834	0.1613	5.117	1.2672
	T + G's:	9.8378	0.7504	0.068	21.3124	5.2778
27L	Departures:	0.953	0.0718	0	1.0248	0.2538
	Arrivals:	1.2217	0.092	0	1.3137	0.3253
	T + G's:	137.7249	10.5012	0.9547	298.3616	73.8866
27R	Departures:	162.8335	13.6059	1.8916	178.331	44.1621
	Arrivals:	157.3128	13.9365	5.1267	176.376	43.6779
	T + G's:	39.35	3.0001	0.2727	85.2456	21.1103
35	Departures:	4.7286	0.3591	0.0309	5.1186	1.2676
	Arrivals:	4.6092	0.3895	0.1686	5.1673	1.2796
	T + G's:	9.8378	0.7504	0.068	21.3124	5.2778

AIRCRAFT OPERATIONS BY AIRCRAFT TYPE AND RUNWAY:

Aircraft	Rwy	Op	Day	Eve	Night	Total
BEC58P	09L	D	0.0386	0.003	0.0002	0.0418
	09L	A	0.0384	0.0024	0.0003	0.0411
	09R	D	0.0386	0.003	0.0002	0.0418
	09R	A	0.0384	0.0024	0.0003	0.0411
	17	D	0.2075	0.0156	0.0015	0.2246
	17	A	0.2075	0.0156	0.0015	0.2246
	17	T	0.415	0.0312	0.003	0.9676
	27L	D	0	0	0	0
	27L	A	0	0	0	0
	27L	T	0	0	0	13.549
	27R	D	7.2304	0.5436	0.053	7.827
	27R	A	7.193	0.541	0.053	7.787
	27R	T	14.386	1.082	0.106	3.871
	35	D	0.2075	0.0156	0.0015	0.2246
	35	A	0.2076	0.0158	0.0014	0.2248
	35	T	0.4152	0.0316	0.0028	0.9676
CIT3	09L	D	0.0092	0.0008	0	0.01
	09L	A	0.0078	0.0006	0.0012	0.0096
	09R	D	0	0	0	0
	09R	A	0	0	0	0
	17	D	0.0379	0.0027	0.0001	0.0407
	17	A	0.0322	0.0038	0.0047	0.0407
	27L	D	0	0	0	0
	27L	A	0	0	0	0
	27R	D	0.8591	0.0648	0.005	0.9289
	27R	A	0.7335	0.083	0.111	0.9275
	35	D	0.0379	0.0027	0.0001	0.0407
	35	A	0.0322	0.0038	0.005	0.041
CL600	09L	D	0.0238	0.0014	0	0.0252
	09L	A	0.0199	0.0021	0.0036	0.0256
	09R	D	0	0	0	0
	09R	A	0	0	0	0
	17	D	0.0944	0.0073	0.0005	0.1022
	17	A	0.0806	0.0093	0.0121	0.102
	27L	D	0	0	0	0
	27L	A	0	0	0	0
	27R	D	2.1476	0.1614	0.0134	2.3224
	27R	A	1.8335	0.2095	0.279	2.322
	35	D	0.0944	0.0073	0.0005	0.1022
	35	A	0.0804	0.0092	0.0122	0.1018
CL601	09L	D	0.0238	0.0014	0	0.0252
	09L	A	0.0199	0.0021	0.0036	0.0256
	09R	D	0	0	0	0
	09R	A	0	0	0	0
	17	D	0.0944	0.0073	0.0005	0.1022
	17	A	0.0806	0.0093	0.0121	0.102
	27L	D	0	0	0	0
	27L	A	0	0	0	0
	27R	D	2.1476	0.1614	0.0134	2.3224
	27R	A	1.8335	0.2095	0.279	2.322
	35	D	0.0944	0.0073	0.0005	0.1022
	35	A	0.0804	0.0092	0.0122	0.1018

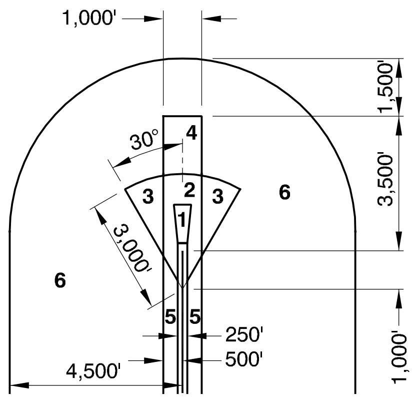
CNA172	09L	D	0.063	0.0048	0.0002	0.068
	09L	A	0.0629	0.0048	0.0003	0.068
	09R	D	0.063	0.0048	0.0002	0.068
	09R	A	0.0629	0.0048	0.0003	0.068
	17	D	0.3406	0.026	0.0024	0.369
	17	A	0.3406	0.026	0.0024	0.369
	17	T	0.6812	0.052	0.0048	1.8784
	27L	D	0	0	0	0
	27L	A	0	0	0	0
	27L	T	0	0	0	26.2948
	27R	D	11.8681	0.9047	0.0813	12.8541
	27R	A	11.81	0.9005	0.082	12.7925
	27R	T	23.62	1.801	0.164	7.5126
	35	D	0.3406	0.026	0.0024	0.369
	35	A	0.3404	0.0256	0.0026	0.3686
	35	T	0.6808	0.0512	0.0052	1.8784
CNA206	09L	D	0.0318	0.0026	0.0002	0.0346
	09L	A	0.0314	0.0021	0	0.0335
	09R	D	0.0318	0.0026	0.0002	0.0346
	09R	A	0.0314	0.0021	0	0.0335
	17	D	0.1702	0.0128	0.0013	0.1843
	17	A	0.1702	0.0128	0.0013	0.1843
	17	T	0.3404	0.0256	0.0026	0.9388
	27L	D	0	0	0	0
	27L	A	0	0	0	0
	27L	T	0	0	0	13.1474
	27R	D	5.9343	0.4519	0.0425	6.4287
	27R	A	5.904	0.45	0.0405	6.3945
	27R	T	11.808	0.9	0.081	3.7564
	35	D	0.1702	0.0128	0.0013	0.1843
	35	A	0.1706	0.013	0.0012	0.1848
	35	T	0.3412	0.026	0.0024	0.9388
CNA20T	09L	D	0.0318	0.0026	0.0002	0.0346
	09L	A	0.0314	0.0021	0	0.0335
	09R	D	0.0318	0.0026	0.0002	0.0346
	09R	A	0.0314	0.0021	0	0.0335
	17	D	0.1702	0.0128	0.0013	0.1843
	17	A	0.1702	0.0128	0.0013	0.1843
	17	T	0.3404	0.0256	0.0026	0.9388
	27L	D	0	0	0	0
	27L	A	0	0	0	0
	27L	T	0	0	0	13.1474
	27R	D	5.9343	0.4519	0.0425	6.4287
	27R	A	5.904	0.45	0.0405	6.3945
	27R	T	11.808	0.9	0.081	3.7564
	35	D	0.1702	0.0128	0.0013	0.1843
	35	A	0.1706	0.013	0.0012	0.1848
	35	T	0.3412	0.026	0.0024	0.9388
CNA441	09L	D	0.0026	0.0002	0	0.0028
	09L	A	0.0021	0	0	0.0021
	09R	D	0.0026	0.0002	0	0.0028
	09R	A	0.0021	0	0	0.0021
	17	D	0.0128	0.0008	0.0001	0.0137
	17	A	0.0128	0.0008	0.0001	0.0137
	17	T	0.0256	0.0016	0.0002	0.0608
	27L	D	0	0	0	0
	27L	A	0	0	0	0
	27L	T	0	0	0	0.8468
	27R	D	0.4512	0.0331	0.004	0.4883
	27R	A	0.4495	0.0335	0.003	0.486
	27R	T	0.899	0.067	0.006	0.242
	35	D	0.0128	0.0008	0.0001	0.0137
	35	A	0.013	0.001	0	0.014
	35	T	0.026	0.002	0	0.0608
CNA500	09L	D	0.0092	0.0008	0	0.01
	09L	A	0.0078	0.0006	0.0012	0.0096
	09R	D	0	0	0	0
	09R	A	0	0	0	0
	17	D	0.0379	0.0027	0.0001	0.0407
	17	A	0.0322	0.0038	0.0047	0.0407
	27L	D	0	0	0	0
	27L	A	0	0	0	0
	27R	D	0.8591	0.0648	0.005	0.9289
	27R	A	0.7335	0.083	0.111	0.9275
	35	D	0.0379	0.0027	0.0001	0.0407
	35	A	0.0322	0.0038	0.005	0.041
CNA55B	09L	D	0.0012	0	0	0.0012
	09L	A	0.0012	0	0	0.0012
	09R	D	0	0	0	0
	09R	A	0	0	0	0
	17	D	0.0056	0.0005	0	0.0061
	17	A	0.0047	0.0005	0.0006	0.0058
	27L	D	0	0	0	0
	27L	A	0	0	0	0
	27R	D	0.1282	0.009	0.0003	0.1375
	27R	A	0.11	0.0125	0.017	0.1395
	35	D	0.0056	0.0005	0	0.0061
	35	A	0.005	0.0004	0.0008	0.0062
CNA750	09L	D	0.0092	0.0008	0	0.01
	09L	A	0.0078	0.0006	0.0012	0.0096
	09R	D	0	0	0	0
	09R	A	0	0	0	0
	17	D	0.0379	0.0027	0.0001	0.0407
	17	A	0.0322	0.0038	0.0047	0.0407
	27L	D	0	0	0	0
	27L	A	0	0	0	0
	27R	D	0.8591	0.0648	0.005	0.9289

	27R	A	0.7335	0.083	0.111	0.9275
	35	D	0.0379	0.0027	0.0001	0.0407
	35	A	0.0322	0.0038	0.005	0.041
COMJET	09L	D	0.0247	0.0014	0	0.0261
	09L	A	0.0207	0.0021	0.0036	0.0264
	09R	D	0	0	0	0
	09R	A	0	0	0	0
	17	D	0.0965	0.0074	0.0005	0.1044
	17	A	0.0806	0.0093	0.0121	0.102
	27L	D	0	0	0	0
	27L	A	0	0	0	0
	27R	D	2.3357	0.1754	0.0143	2.5254
	27R	A	1.9983	0.2217	0.2796	2.4996
	35	D	0.0944	0.0073	0.0005	0.1022
	35	A	0.081	0.0092	0.0122	0.1024
COMSEP	09L	D	0.063	0.0048	0.0002	0.068
	09L	A	0.0629	0.0048	0.0003	0.068
	09R	D	0.063	0.0048	0.0002	0.068
	09R	A	0.0629	0.0048	0.0003	0.068
	17	D	0.3406	0.026	0.0024	0.369
	17	A	0.3406	0.026	0.0024	0.369
	17	T	0.6812	0.052	0.0048	1.8784
	27L	D	0	0	0	0
	27L	A	0	0	0	0
	27L	T	0	0	0	26.2948
	27R	D	11.8088	0.9	0.0808	12.7896
	27R	A	11.81	0.9005	0.082	12.7925
	27R	T	23.62	1.801	0.164	7.5126
	35	D	0.3406	0.026	0.0024	0.369
	35	A	0.3404	0.0256	0.0026	0.3686
	35	T	0.6808	0.0512	0.0052	1.8784
DHC6	09L	D	0.04	0.0091	0.0043	0.0534
	09L	A	0.0397	0.0091	0.0041	0.0529
	09R	D	0.0152	0.0012	0	0.0164
	09R	A	0.0035	0.0001	0	0.0036
	17	D	0.1046	0.022	0.0096	0.1362
	17	A	0.0128	0.0008	0.0001	0.0137
	17	T	0.0256	0.0016	0.0002	1.4412
	27L	D	0.953	0.0718	0	1.0248
	27L	A	1.2217	0.092	0	1.3137
	27L	T	2.4434	0.184	0	20.1706
	27R	D	8.3783	1.8691	0.8376	11.085
	27R	A	7.3992	1.6431	0.7337	9.776
	27R	T	14.7984	3.2862	1.4674	5.763
	35	D	0.0128	0.0008	0.0001	0.0137
	35	A	0.0405	0.0073	0.0027	0.0505
	35	T	0.081	0.0146	0.0054	1.4412
FAL20	09L	D	0.0092	0.0008	0	0.01
	09L	A	0.0078	0.0006	0.0012	0.0096
	09R	D	0	0	0	0
	09R	A	0	0	0	0
	17	D	0.0379	0.0027	0.0001	0.0407
	17	A	0.0322	0.0038	0.0047	0.0407
	27L	D	0	0	0	0
	27L	A	0	0	0	0
	27R	D	0.8591	0.0648	0.005	0.9289
	27R	A	0.7335	0.083	0.111	0.9275
	35	D	0.0379	0.0027	0.0001	0.0407
	35	A	0.0322	0.0038	0.005	0.041
GASEPF	09L	D	0.3156	0.024	0.0026	0.3422
	09L	A	0.3155	0.0241	0.0018	0.3414
	09R	D	0.3156	0.024	0.0026	0.3422
	09R	A	0.3155	0.0241	0.0018	0.3414
	17	D	1.7034	0.1299	0.0119	1.8452
	17	A	1.7034	0.1299	0.0119	1.8452
	17	T	3.4068	0.2598	0.0238	9.3912
	27L	D	0	0	0	0
	27L	A	0	0	0	0
	27L	T	0	0	0	131.4742
	27R	D	59.0496	4.5016	0.4104	63.9616
	27R	A	59.048	4.5025	0.4095	63.96
	27R	T	118.096	9.005	0.819	37.564
	35	D	1.7034	0.1299	0.0119	1.8452
	35	A	1.7032	0.1296	0.0118	1.8446
	35	T	3.4064	0.2592	0.0236	9.3912
GASEPV	09L	D	0.1266	0.0094	0.001	0.137
	09L	A	0.1259	0.01	0.0006	0.1365
	09R	D	0.1266	0.0094	0.001	0.137
	09R	A	0.1259	0.01	0.0006	0.1365
	17	D	0.6814	0.052	0.0046	0.738
	17	A	0.6814	0.052	0.0046	0.738
	17	T	1.3628	0.104	0.0092	3.7564
	27L	D	0	0	0	0
	27L	A	0	0	0	0
	27L	T	0	0	0	52.5898
	27R	D	23.6192	1.8024	0.164	25.5856
	27R	A	23.6195	1.8005	0.163	25.583
	27R	T	47.239	3.601	0.326	15.0256
	35	D	0.6814	0.052	0.0046	0.738
	35	A	0.6812	0.052	0.0048	0.738
	35	T	1.3624	0.104	0.0096	3.7564
GIV	09L	D	0.0238	0.0014	0	0.0252
	09L	A	0.0199	0.0021	0.0036	0.0256
	09R	D	0	0	0	0
	09R	A	0	0	0	0
	17	D	0.0944	0.0073	0.0005	0.1022
	17	A	0.0806	0.0093	0.0121	0.102

	27L	D	0	0	0	0
	27L	A	0	0	0	0
	27R	D	2.1476	0.1614	0.0134	2.3224
	27R	A	1.8335	0.2095	0.279	2.322
	35	D	0.0944	0.0073	0.0005	0.1022
	35	A	0.0804	0.0092	0.0122	0.1018
GV	09L	D	0.0238	0.0014	0	0.0252
	09L	A	0.0199	0.0021	0.0036	0.0256
	09R	D	0	0	0	0
	09R	A	0	0	0	0
	17	D	0.0944	0.0073	0.0005	0.1022
	17	A	0.0806	0.0093	0.0121	0.102
	27L	D	0	0	0	0
	27L	A	0	0	0	0
	27R	D	2.1476	0.1614	0.0134	2.3224
	27R	A	1.8335	0.2095	0.279	2.322
	35	D	0.0944	0.0073	0.0005	0.1022
	35	A	0.0804	0.0092	0.0122	0.1018
IA1125	09L	D	0.0037	0.0002	0	0.0039
	09L	A	0.0033	0.0004	0.0005	0.0042
	09R	D	0	0	0	0
	09R	A	0	0	0	0
	17	D	0.0086	0.0006	0	0.0092
	17	A	0	0	0	0
	27L	D	0	0	0	0
	27L	A	0	0	0	0
	27R	D	0.7527	0.0563	0.0044	0.8134
	27R	A	0.5634	0.0644	0.0851	0.7129
	35	D	0	0	0	0
	35	A	0.0021	0.0001	0.0004	0.0026
LEAR25	09L	D	0.0144	0.001	0	0.0154
	09L	A	0.0121	0.0015	0.0018	0.0154
	09R	D	0	0	0	0
	09R	A	0	0	0	0
	17	D	0.0566	0.0042	0.0004	0.0612
	17	A	0.0484	0.0055	0.0074	0.0613
	27L	D	0	0	0	0
	27L	A	0	0	0	0
	27R	D	1.2882	0.0974	0.0075	1.3931
	27R	A	1.1005	0.126	0.1675	1.394
	35	D	0.0566	0.0042	0.0004	0.0612
	35	A	0.0482	0.0054	0.0076	0.0612
LEAR35	09L	D	0.0789	0.0053	0	0.0842
	09L	A	0.0661	0.0067	0.0112	0.084
	09R	D	0	0	0	0
	09R	A	0	0	0	0
	17	D	0.2938	0.0221	0.0013	0.3172
	17	A	0.2256	0.0262	0.0336	0.2854
	27L	D	0	0	0	0
	27L	A	0	0	0	0
	27R	D	8.5531	0.6432	0.0519	9.2482
	27R	A	7.0359	0.8018	1.0688	8.9065
	35	D	0.2646	0.02	0.0012	0.2858
	35	A	0.2326	0.0267	0.0357	0.295
MU3001	09L	D	0.0238	0.0014	0	0.0252
	09L	A	0.0199	0.0021	0.0036	0.0256
	09R	D	0	0	0	0
	09R	A	0	0	0	0
	17	D	0.0944	0.0073	0.0005	0.1022
	17	A	0.0806	0.0093	0.0121	0.102
	27L	D	0	0	0	0
	27L	A	0	0	0	0
	27R	D	2.1476	0.1614	0.0134	2.3224
	27R	A	1.8335	0.2095	0.279	2.322
	35	D	0.0944	0.0073	0.0005	0.1022
	35	A	0.0804	0.0092	0.0122	0.1018
SABR80	09L	D	0.0048	0.0002	0	0.005
	09L	A	0.0042	0.0003	0.0003	0.0048
	09R	D	0	0	0	0
	09R	A	0	0	0	0
	17	D	0.0187	0.0015	0.0001	0.0203
	17	A	0.0161	0.0019	0.0025	0.0205
	27L	D	0	0	0	0
	27L	A	0	0	0	0
	27R	D	0.429	0.0325	0.0025	0.464
	27R	A	0.367	0.042	0.0565	0.4655
	35	D	0.0187	0.0015	0.0001	0.0203
	35	A	0.016	0.0016	0.0026	0.0202
SD330	09L	D	0.0026	0.0002	0	0.0028
	09L	A	0.0021	0	0	0.0021
	09R	D	0.0026	0.0002	0	0.0028
	09R	A	0.0021	0	0	0.0021
	17	D	0.0128	0.0008	0.0001	0.0137
	17	A	0.0128	0.0008	0.0001	0.0137
	27L	D	0	0	0	0
	27L	A	0	0	0	0
	27R	D	0.449	0.0338	0.0038	0.4866
	27R	A	0.4495	0.0335	0.003	0.486
	35	D	0.0128	0.0008	0.0001	0.0137
	35	A	0.013	0.001	0	0.014
SF340	09L	D	0.0026	0.0002	0	0.0028
	09L	A	0.0021	0	0	0.0021
	09R	D	0.0026	0.0002	0	0.0028
	09R	A	0.0021	0	0	0.0021
	17	D	0.0128	0.0008	0.0001	0.0137
	17	A	0.0128	0.0008	0.0001	0.0137
	17	T	0.0256	0.0016	0.0002	0.0608

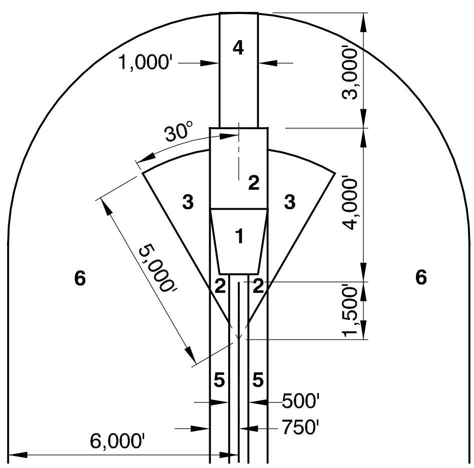
27L	D	0	0	0	0
27L	A	0	0	0	0
27L	T	0	0	0	0.8468
27R	D	0.449	0.0338	0.0038	0.4866
27R	A	0.4495	0.0335	0.003	0.486
27R	T	0.899	0.067	0.006	0.242
35	D	0.0128	0.0008	0.0001	0.0137
35	A	0.013	0.001	0	0.014
35	T	0.026	0.002	0	0.0608

Appendix D
Caltrans Airport Compatibility Planning Guidelines



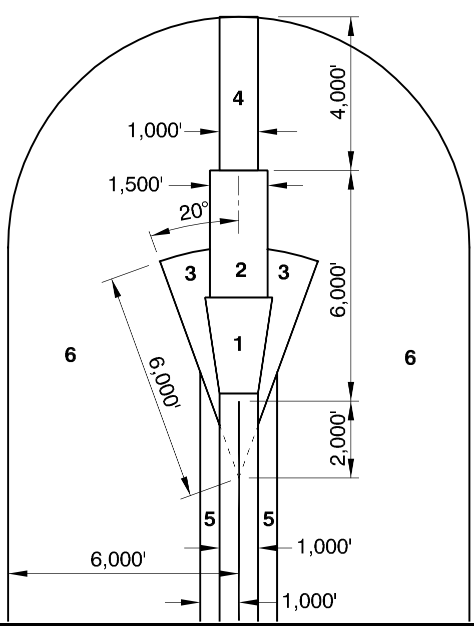
Example 1:
Short General Aviation Runway

Assumptions:
- Length less than 4,000 feet
- Approach visibility minimums ≥ 1 mile or visual approach only
- Zone 1 = 250' x 450' x 1,000'



Example 2:
Medium General Aviation Runway

Assumptions:
- Length 4,000 to 5,999 feet
- Approach visibility minimums ≥ 3/4 mile and < 1 mile
- Zone 1 = 1,000' x 1,510' x 1,700'



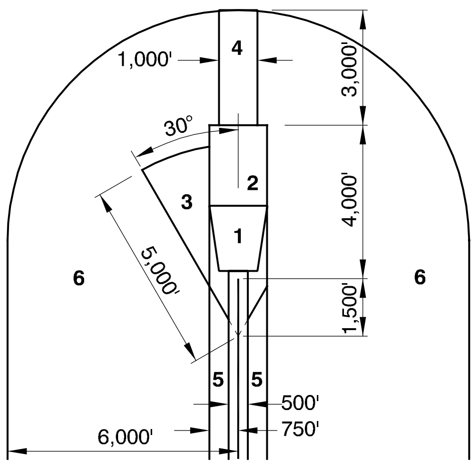
Example 3:
Long General Aviation Runway

Assumptions:
- Length 6,000 feet or more
- Approach visibility minimums < 3/4 mile
- Zone 1 = 1,000' x 1,750' x 2,500'

FIGURE 9K

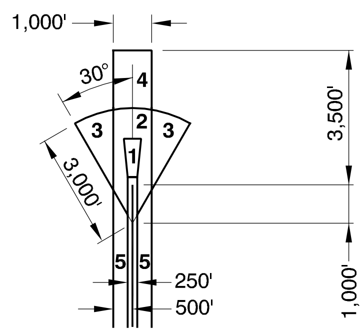
Safety Compatibility Zone Examples

General Aviation Runways



Example 4:
General Aviation Runway with Single-Sided Traffic Pattern

Assumptions:
- No traffic pattern on right
- Length 4,000 to 5,999 feet
- Approach visibility minimums ≥ 3/4 mile and < 1 mile
- Zone 1 = 1,000' x 1,510' x 1,700'



Example 5:
Low-Activity General Aviation Runway

Assumptions:
- Less than 2,000 takeoffs and landings per year at individual runway end.
- Length less than 4,000 feet
- Approach visibility minimums ≥ 1 mile or visual approach only
- Zone 1 = 250' x 450' x 1,000'

Legend

1. Runway Protection Zone
2. Inner Approach/Departure Zone
3. Inner Turning Zone
4. Outer Approach/Departure Zone
5. Sideline Zone
6. Traffic Pattern Zone

Notes:

- RPZ (Zone 1) size in each example is as indicated by FAA criteria for the approach type assumed. Adjustment may be necessary if the approach type differs.
- See Table 9A for factors to consider regarding other possible adjustments to these zones to reflect characteristics of a specific airport runway.
- See Tables 9B and 9C for guidance on compatibility criteria applicable with each zone.

These examples are intended to provide general guidance for establishment of airport safety compatibility zones. They do not represent California Department of Transportation standards or policy.

FIGURE 9K *CONTINUED*

The generic sets of compatibility zones shown in Figures 9K and 9L may need to be adjusted to take into account various operational characteristics of a particular airport runway. Among these characteristics are the following:

- **Instrument Approach Procedures**—At least within the final two to three miles which are of greatest interest to land use compatibility planning, the flight paths associated with precision instrument approach procedures are highly standardized from airport to airport. Other types of instrument approach procedures are less uniform, however. If such procedures are available at an airport, ALUCs should identify the flight paths associated with them and the extent to which they are used. Procedures which are regularly used should be taken into account in the configuration of safety zones (and in setting height limits for airspace protection). Types of procedures which may warrant special consideration include:
  - *Circling Approaches:* Most instrument approach procedures allow aircraft to circle to land at a different runway rather than continue straight-in to a landing on the runway for which the approach is primarily designed. When airports which have straight-in approaches to multiple runway ends, circling approaches are seldom necessary. However, when only one straight-in approach procedure is available and the wind direction precludes landings on that runway, aircraft may be forced to circle to land on at another runway end. Pilots must maintain sight of the runway while circling, thus turns are typically tight. Also, the minimum circling altitude is often less than the traffic pattern altitude. At airports where circling approaches are common, giving consideration to the associated risks when setting safety zone boundaries is appropriate.
  - *Nonprecision Approaches at Low Altitudes:* Nonprecision instrument approach procedures often involve aircraft descending to a lower altitude farther from the runway than occurs on either precision instrument or visual approaches. An altitude of 300 to 400 feet as much as two to three miles from the runway is not unusual. The safety (and noise) implications of such procedures need to be addressed at airports where they are in common use. (A need for corresponding restrictions on the heights of objects also exists along these routes.)
  - *Nonprecision Approaches not Aligned with the Runway:* Some types of nonprecision approaches bring aircraft toward the runway along a path that is not aligned with the runway. In many cases, these procedures merely enable the aircraft to reach the airport vicinity at which point they then proceed to land under visual conditions. In other instances, however, transition to the runway alignment occurs close to the runway and at a low altitude.
- **Other Special Flight Procedures or Limitations**—Single-sided traffic patterns represent only one type of special flight procedures or limitations which may be established at some airports. Factors such as nearby airports, high terrain, or noise-sensitive land uses may affect the size of the airport traffic pattern or otherwise dictate where and at what altitude aircraft fly when using the airport. These procedures may need to be taken into account in the design of safety compatibility zones.
- **Runway Use by Special-Purpose Aircraft**—In addition to special flight procedures which most or all aircraft may use at some airports, certain special-purpose types of aircraft often have their own particular flight procedures. Most common among these aircraft are fire attack, agricultural, and military airplanes. Helicopters also typically have their own special flight routes. The existence of these procedures needs to be investigated and, where warranted by the levels of usage, may need to be considered in the shaping of safety zones.
- **Small Aircraft Using Long Runways**—When small airplanes take off from long runways (especially runways in excess of 8,000 feet length), it is common practice for them to turn toward their intended direction of flight before passing over the far end of the runway. When mishaps occur, the resulting pattern of accident sites will likely be more dispersed around the runway end than is the case with shorter runways. With short runways, accident sites tend to be more tightly clustered around the runway end and along the extended runway centerline because aircraft are still following the runway heading as they begin their climb.
- **Runways Used Predominantly in One Direction**—Most runways are used sometimes in one direction and, at other times, in the opposite direction depending upon the direction of the wind. Even when used predominantly in one direction, a busy runway may experience a significant number of operations in the opposite direction (for example, a runway with 100,000 total annual operations, 90% of which are in one direction, will still have 10,000 annual operations in the opposite direction). Thus, in most situations, the generic safety zones—which take into account both takeoffs and landings at a runway end—are applicable. However, when the number of either takeoffs or landings at a runway end is less than approximately 2,000 per year, then adjustment of the safety compatibility zones to reflect those circumstances may be warranted.
- **Displaced Landing Thresholds**—A displaced threshold moves the landing location of aircraft down the runway from where they would land in the absence of the displacement. The distribution pattern of landing accident sites as shown in Appendix F would thus shift a corresponding amount. The pattern of accident locations for aircraft taking off toward that end of the runway does not necessarily shift, however. Whether the runway length behind the displaced threshold is usable for takeoffs toward that end of the runway is a key factor in this regard. The appropriateness of making adjustments to safety zone locations in response to the existence of a displaced threshold needs to be examined on a case-by-case basis. The numbers of landings at and takeoffs toward the runway end in question should be considered in making this determination.

TABLE 9A

Safety Zone Adjustment Factors

Airport Operational Variables

Zone 1: Runway Protection Zone

Risk Factors / Runway Proximity	*Basic Compatibility Qualities*
➤ Very high risk ➤ Runway protection zone as defined by FAA criteria ➤ For military airports, clear zones as defined by AICUZ criteria	➤ Airport ownership of property encouraged ➤ Prohibit all new structures ➤ Prohibit residential land uses ➤ Avoid nonresidential uses except if very low intensity in character and confined to the sides and outer end of the area

Zone 2: Inner Approach/Departure Zone

Risk Factors / Runway Proximity	*Basic Compatibility Qualities*
➤ Substantial risk: RPZs together with inner safety zones encompass 30% to 50% of near-airport aircraft accident sites (air carrier and general aviation) ➤ Zone extends beyond and, if RPZ is narrow, along sides of RPZ ➤ Encompasses areas overflown at low altitudes — typically only 200 to 400 feet above runway elevation	➤ Prohibit residential uses except on large, agricultural parcels ➤ Limit nonresidential uses to activities which attract few people (uses such as shopping centers, most eating establishments, theaters, meeting halls, multi-story office buildings, and labor-intensive manufacturing plants unacceptable) ➤ Prohibit children's schools, day care centers, hospitals, nursing homes ➤ Prohibit hazardous uses (e.g. aboveground bulk fuel storage)

Zone 3: Inner Turning Zone

Risk Factors / Runway Proximity	*Basic Compatibility Qualities*
➤ Zone primarily applicable to general aviation airports ➤ Encompasses locations where aircraft are typically turning from the base to final approach legs of the standard traffic pattern and are descending from traffic pattern altitude ➤ Zone also includes the area where departing aircraft normally complete the transition from takeoff power and flap settings to a climb mode and have begun to turn to their en route heading	➤ Limit residential uses to very low densities (if not deemed unacceptable because of noise) ➤ Avoid nonresidential uses having moderate or higher usage intensities (e.g., major shopping centers, fast food restaurants, theaters, meeting halls, buildings with more than three aboveground habitable floors are generally unacceptable) ➤ Prohibit children's schools, large day care centers, hospitals, nursing homes ➤ Avoid hazardous uses (e.g. aboveground bulk fuel storage)

TABLE 9B

Basic Safety Compatibility Qualities

Zone 4: Outer Approach/Departure Zone

Risk Factors / Runway Proximity

- Situated along extended runway centerline beyond Zone 3
- Approaching aircraft usually at less than traffic pattern altitude
- Particularly applicable for busy general aviation runways (because of elongated traffic pattern), runways with straight-in instrument approach procedures, and other runways where straight-in or straight-out flight paths are common
- Zone can be reduced in size or eliminated for runways with very-low activity levels

Basic Compatibility Qualities

- In undeveloped areas, limit residential uses to very low densities (if not deemed unacceptable because of noise); if alternative uses are impractical, allow higher densities as infill in urban areas
- Limit nonresidential uses as in Zone 3
- Prohibit children's schools, large day care centers, hospitals, nursing homes

Zone 5: Sideline Zone

Risk Factors / Runway Proximity

- Encompasses close-in area lateral to runways
- Area not normally overflown; primary risk is with aircraft (especially twins) losing directional control on takeoff
- Area is on airport property at most airports

Basic Compatibility Qualities

- Avoid residential uses unless airport related (noise usually also a factor)
- Allow all common aviation-related activities provided that height-limit criteria are met
- Limit other nonresidential uses similarly to Zone 3, but with slightly higher usage intensities
- Prohibit children's schools, large day care centers, hospitals, nursing homes

Zone 6: Traffic Pattern Zone

Risk Factors / Runway Proximity

- Generally low likelihood of accident occurrence at most airports; risk concern primarily is with uses for which potential consequences are severe
- Zone includes all other portions of regular traffic patterns and pattern entry routes

Basic Compatibility Qualities

- Allow residential uses
- Allow most nonresidential uses; prohibit outdoor stadiums and similar uses with very high intensities
- Avoid children's schools, large day care centers, hospitals, nursing homes

Definitions

As used in this table, the follow meanings are intended:

- *Allow:* Use is acceptable
- *Limit:* Use is acceptable only if density/intensity restrictions are met
- *Avoid:* Use generally should not be permitted unless no feasible alternative is available
- *Prohibit:* Use should not be permitted under any circumstances
- *Children's Schools:* Through grade 12
- *Large Day Care Centers:* Commercial facilities as defined in accordance with state law; for the purposes here, family day care homes and noncommercial facilities ancillary to a place of business are generally allowed.
- *Aboveground Bulk Storage of Fuel:* Tank size greater than 6,000 gallons (this suggested criterion is based on Uniform Fire Code criteria which are more stringent for larger tank sizes)

TABLE 9B *CONTINUED*

MAXIMUM RESIDENTIAL DENSITY

Current Setting	Safety Compatibility Zones[a] (1) Runway Protection Zone	(2) Inner Approach/ Departure Zone	(3) Inner Turning Zone	(4) Outer Approach/ Departure Zone	(5) Sideline Zone	(6) Traffic Pattern Zone
Average number of dwelling units per gross acre						
Rural Farmland / Open Space (Minimal Development)	0	Maintain current zoning if less than density criteria for rural / suburban setting				No limit
Rural / Suburban (Mostly to Partially Undeveloped)	0	1 d.u. per 10 – 20 ac.	1 d.u. per 2 – 5 ac.	1 d.u. per 2 – 5 ac.	1 d.u. per 1 – 2 ac.	No limit
Urban (Heavily Developed)	0	0	Allow infill at up to average of surrounding residential area[b]			No limit

[a] Clustering to preserve open land encouraged in all zones.
[b] See Chapter 3 for discussion of infill development criteria; infill is appropriate only if nonresidential uses are not feasible.

MAXIMUM NONRESIDENTIAL INTENSITY

Current Setting	Safety Compatibility Zones (1) Runway Protection Zone	(2) Inner Approach/ Departure Zone	(3) Inner Turning Zone	(4) Outer Approach/ Departure Zone	(5) Sideline Zone	(6) Traffic Pattern Zone
Average number of people per gross acre[a]						
Rural Farmland / Open Space (Minimal Development)	0[b]	10 – 25	60 – 80	60 – 80	80 – 100	150
Rural / Suburban (Mostly to Partially Undeveloped)	0[b]	25 – 40	60 – 80	60 – 80	80 – 100	150
Urban (Heavily Developed)	0[b]	40 – 60	80 – 100	80 – 100	100 – 150	No limit[c]
Multipliers for above numbers[d]						
Maximum Number of People per Single Acre	x 1.0	x 2.0	x 2.0	x 3.0	x 2.0	x 3.0
Bonus for Special Risk-Reduction Bldg. Design	x 1.0	x 1.5	x 2.0	x 2.0	x 2.0	x 2.0

[a] Also see Table 9B for guidelines regarding uses which should be prohibited regardless of usage intensity
[b] Exceptions can be permitted for agricultural activities, roads, and automobile parking provided that FAA criteria are satisfied.
[c] Large stadiums and similar uses should be prohibited.
[d] Multipliers are cumulative (e.g., maximum intensity per single acre in inner safety zone is 2.0 times the average intensity for the site, but with risk-reduction building design is 2.0 x 1.5 = 3.0 times the average intensity).

TABLE 9C

Safety Compatibility Criteria Guidelines

Land Use Densities and Intensities