An aerial photograph showing a mix of agricultural fields, a residential neighborhood, and an airport. The airport is centrally located, with runways and taxiways visible. To the left is a dense residential area with many houses and streets. To the right and top are large, rectangular agricultural plots in various shades of green and brown. A road or canal runs vertically through the right side of the image.

**MARINA MUNICIPAL AIRPORT MASTER PLAN UPDATE**

**Prepared for  
CITY OF MARINA**

**Prepared by  
ARIES CONSULTANTS LTD.**

**February 2008**

## **FINAL REPORT**

### **MARINA MUNICIPAL AIRPORT MASTER PLAN UPDATE**

**Prepared for**

**CITY OF MARINA**

*The preparation of this report 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 view or policy of the FAA. Acceptance of this report 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 laws.*

**Prepared by**

**ARIES CONSULTANTS LTD.  
Morgan Hill, California**

**February 2008**

# TABLE OF CONTENTS

<u>Chapter</u>		<u>Page</u>
<b>1</b>	<b>INTRODUCTION.....</b>	<b>1-1</b>
<b>2</b>	<b>HISTORICAL AND FORECAST AVIATION ACTIVITY .....</b>	<b>2-1</b>
2.1	Introduction.....	2-1
2.2	The Airport Service Area.....	2-1
2.2.1	Population .....	2-2
2.2.2	Economic Outlook .....	2-2
2.3	Historical Air Traffic Activity .....	2-4
2.3.1	General Aviation .....	2-6
2.3.1.1	Based Aircraft .....	2-6
2.3.1.2	Distribution of Based Aircraft Owners .....	2-6
2.3.2	Aircraft Operations.....	2-8
2.3.2.1	Itinerant Operations.....	2-8
2.3.2.2	Local Operations .....	2-11
2.4	Review of Aviation Activity Trends and Forecasts.....	2-11
2.4.1	Federal Aviation Administration.....	2-11
2.4.2	Regional Airport System Plan.....	2-13
2.4.3	California Aviation System Plan.....	2-14
2.4.4	Aviation Activity Forecasts for the Marina Municipal Airport .....	2-15
2.5	Aviation Activity Forecasts .....	2-17
2.5.1	General Assumptions .....	2-17
2.5.2	Based Aircraft .....	2-18
2.5.3	Aircraft Operations.....	2-20
2.5.3.1	Air Taxi .....	2-20
2.5.3.2	General Aviation .....	2-20
2.5.3.3	Operations Per Based Aircraft .....	2-21
2.5.3.4	Peak Period Aviation Activity .....	2-21
2.6	Comparison of Aviation Activity Forecasts .....	2-21
2.7	Other Aviation Opportunities .....	2-24
<b>3</b>	<b>EXISTING AIRPORT FACILITIES .....</b>	<b>3-1</b>
3.1	Introduction.....	3-1
3.2	Airfield.....	3-1
3.2.1	Runways and Taxiways.....	3-1
3.2.2	Pavement Strength .....	3-4
3.2.3	Drainage .....	3-4

<u>Chapter</u>	<u>Page</u>
3.3	Avigation ..... 3-4
3.3.1	Airspace and Air Traffic Control ..... 3-4
3.3.1.1	Published Instrument Flight Rules Procedures ..... 3-7
3.3.1.2	Air Traffic Control ..... 3-8
3.3.1.3	Airspace Usage..... 3-8
3.3.1.4	Instrument Flight Rules Operations ..... 3-9
3.3.1.5	Visual Flight Rules Operations ..... 3-10
3.3.2	Approach Areas and Obstructions ..... 3-10
3.3.3	Runway Protection Zones ..... 3-11
3.3.4	Navigational and Landing Aids ..... 3-11
3.3.5	Meteorological Conditions..... 3-12
3.4	General Aviation..... 3-12
3.5	Airport Access and Parking ..... 3-13
3.6	Airport Support..... 3-14
3.7	Other Airport Land Use Areas..... 3-15
3.8	Off-Airport Land Use ..... 3-15
<b>4</b>	<b>AIRPORT FACILITY REQUIREMENTS..... 4-1</b>
4.1	Introduction..... 4-1
4.2	Airfield..... 4-1
4.2.1	Airport Classification ..... 4-1
4.2.2	Airfield Dimensions ..... 4-3
4.2.3	Airport Reference Code ..... 4-3
4.2.4	Runway Length ..... 4-4
4.2.5	Runway 11-29 ..... 4-5
4.2.6	Crosswind Coverage ..... 4-6
4.2.7	Airfield Capacity ..... 4-6
4.2.8	Taxiways ..... 4-7
4.2.9	Other Airfield Dimensions ..... 4-7
4.2.10	Pavement Strength ..... 4-10
4.2.11	Drainage ..... 4-10
4.3	Avigation ..... 4-10
4.3.1	Airspace and Air Traffic Control ..... 4-11
4.3.2	Approach Areas and Obstructions ..... 4-11
4.3.3	Runway Protection Zones ..... 4-11
4.3.4	Navigational and Landing Aids ..... 4-12
4.4	General Aviation..... 4-14
4.5	Airport Access and Parking ..... 4-16
4.6	Airport Support..... 4-17

<u>Chapter</u>	<u>Page</u>
<b>5 RECOMMENDED AIRPORT MASTER PLAN.....</b>	<b>5-1</b>
5.2 Airport Property.....	5-4
5.3 Airfield.....	5-5
5.3.1 Runway 11-29 .....	5-5
5.3.2 Taxiways.....	5-6
5.3.3 Airfield Pavement.....	5-6
5.4 Avigation .....	5-6
5.4.1 Airspace and Air Traffic Control .....	5-6
5.4.2 Approach Areas and Obstructions.....	5-7
5.4.3 Runway Protection Zones.....	5-7
5.4.4 Navigational and Landing Aids.....	5-7
5.5 General Aviation.....	5-8
5.6 Airport Access and Parking .....	5-10
5.7 Airport Support.....	5-11
5.7.1 Aircraft Rescue and Firefighting .....	5-11
5.7.2 Airport Maintenance Baseyard and Fuel Storage.....	5-11
5.7.3 Fencing and Security .....	5-12
5.7.4 Utilities .....	5-12
5.8 Other Airport Land Use Areas.....	5-13
5.9 Airport Layout Plan .....	5-13
5.10 Off-Airport Land Use .....	5-13
5.10.1 City of Marina General Plan.....	5-13
5.10.2 Monterey County General Plan .....	5-14
5.10.3 Monterey County Airport Land Use Commission .....	5-15
5.11 Environmental Evaluation .....	5-15
<b>6 CAPITAL IMPROVEMENT PROGRAM.....</b>	<b>6-1</b>
6.1 Introduction.....	6-1
6.2 Capital Improvement Program .....	6-1
6.3 Federal Aviation Administration Airport Capital Improvement Plan .....	6-6
6.4 Security Requirements.....	6-6
<b>7 FINANCIAL PLAN.....</b>	<b>7-1</b>
7.1 Introduction.....	7-1
7.2 Financial Analysis .....	7-1
7.2.1 Historical Revenues and Expenses.....	7-1
7.2.2 Forecast Revenues and Expenses.....	7-4

<u>Chapter</u>		<u>Page</u>
	7.2.2.1 Operating Revenues .....	7-6
	7.2.2.2 Operating Expenses.....	7-6
7.3	Sources and Uses of Funds .....	7-7
	7.3.1 Federal Aviation Administration Airport Improvement .....	7-7
	Program Grants	
	7.3.2 State of California .....	7-8
	7.3.3 City of Marina General Fund .....	7-9
	7.3.4 Private Financing .....	7-10
	7.3.5 Other Sources of Funds .....	7-10
7.4	Financial Considerations of the Phase II and Phase III .....	7-11
	Capital Improvement Program	

## **APPENDICES**

- A Alternative Airport Development Concepts
- B Airport Layout Plan

## LIST OF TABLES

<u>Number</u>		<u>Page</u>
2-1	Historical and Forecast Population Trends.....	2-3
2-2	Housing Units and Employment Forecasts.....	2-5
2-3	Historical Based Aircraft .....	2-7
2-4	Distribution of Based Aircraft Owners – 2005.....	2-9
2-5	Distribution of Based Aircraft Owners – 2003.....	2-10
2-6	Active General Aviation and Air Taxi Aircraft..... by Type of Aircraft	2-12
2-7	Comparison of Aviation Activity Forecasts .....	2-16
2-8	Aviation Activity Forecasts .....	2-19
4-1	Existing Facilities and Future Requirements.....	4-2
4-2	Airport Dimensional and Separation Standards .....	4-8
6-1	Capital Improvement Program.....	6-3
7-1	Historical and Forecast Revenues and Expenses .....	7-2

## LIST OF FIGURES

<u>Number</u>		<u>Page</u>
1-1	Location Map.....	1-2
2-1	Historical and Forecast Based Aircraft.....	2-22
2-2	Historical and Forecast Aircraft Operations .....	2-23
3-1	Existing Airport Facilities.....	3-2
3-2	Existing Terminal Area Facilities .....	3-3
3-3	Airspace Configuration.....	3-6
5-1	Airport Master Plan .....	5-2
5-2	Terminal Area and Access Plan.....	5-3
6-1	Airport Phasing Plan.....	6-2

## Chapter 1

### **INTRODUCTION**

In 2004, the City of Marina (the City) initiated an Airport Master Plan Update for the Marina Municipal Airport. The purpose of the study is to determine the type and extent of aviation facilities needed at the Airport through the year 2025 and to prepare an Airport Master Plan Update to accommodate the required development.

Marina Municipal Airport (referred to as the “Airport” throughout this report) is geographically located about 2 nautical miles east from the center of the City of Marina in Monterey County (the County), California. Access to the Airport is provided via Imjin Road at the intersection with Reservation Road.

The Airport is located on about 833 acres of land at an elevation of 137 feet above mean sea level (MSL). The Airport is classified as a General Aviation Airport in the *National Plan of Integrated Airport Systems* (NPIAS). The Airport is currently classified as a Limited Use Airport in the *California Aviation System Plan* (CASP) and is expected to be reclassified as a Community General Aviation Airport in the next update of the CASP. The location of the Airport with respect to nearby communities and other airports in the area is illustrated on Figure 1-1.

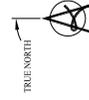
The study is being coordinated with the Federal Aviation Administration (FAA), State of California, Department of Transportation (Caltrans), Division of Aeronautics, and other State and local organizations.



**MARINA  
MUNICIPAL AIRPORT  
MASTER PLAN**

**LOCATION MAP**

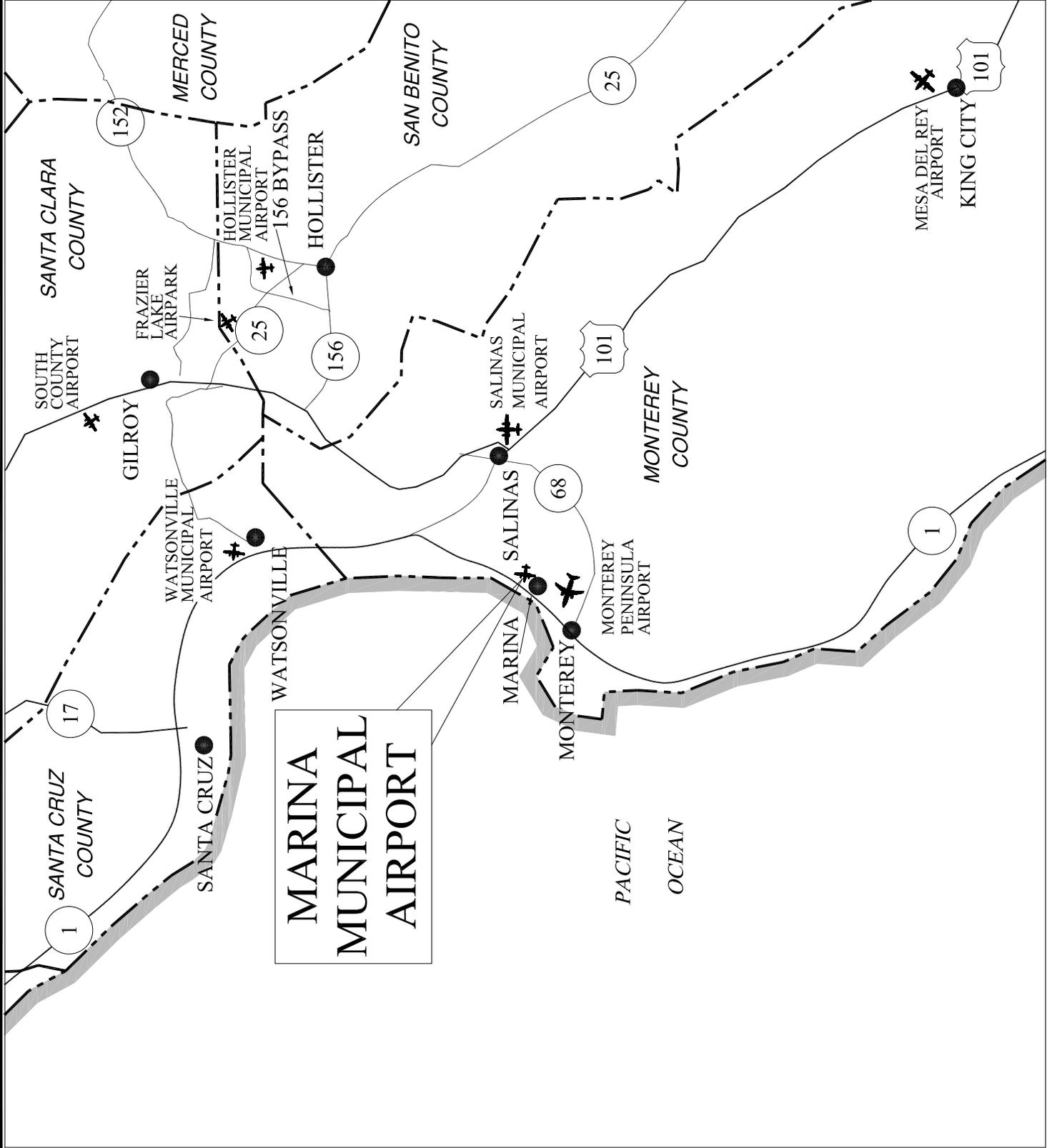
LEGEND	
	AIR CARRIER AIRPORT
	GENERAL AVIATION AIRPORT
	U.S. HIGHWAY
	CALIFORNIA STATE HIGHWAY



NOTE:  
THIS DRAWING IS FOR PLANNING PURPOSES ONLY AND  
IS NOT INTENDED FOR CONSTRUCTION OR NAVIGATIONAL  
PURPOSES.

**ARIES CONSULTANTS LTD.**

MARINA MUNICIPAL AIRPORT	FIGURE
MONTEREY COUNTY, CALIFORNIA	<b>1-1</b>
NAME: OAR-011M	NO: 4120-07
DATE: 02-07-2008	PLOT SCALE: 1"=52,000'



**MARINA  
MUNICIPAL  
AIRPORT**

PACIFIC  
OCEAN

## Chapter 2

### **HISTORICAL AND FORECAST AVIATION ACTIVITY**

#### **2.1 INTRODUCTION**

Aviation activity accommodated at an airport is a function of the population and economic characteristics of the area served by the airport – referred to as the “Airport Service Area.” An understanding of the present and likely future population and economy of the airport service area is, therefore, critical to the development of aviation activity forecasts.

This chapter defines the airport service area of the Marina Municipal Airport (Airport) and presents the historical and forecast population and economic indicators that will have an effect on forecast aviation activity. Historical aviation activity at the Airport is presented including based aircraft and aircraft operations. Aviation activity forecasts through 2025 are presented at the end of this chapter.

#### **2.2 THE AIRPORT SERVICE AREA**

The geographic area served by any airport is designated as the airport service area. Typically, the airport service area includes a densely-populated urban area (such as a city and its environs) within a larger, less densely-populated area that is usually defined (or limited) by the existence of other airports. Although the airport service area can seldom be precisely identified in terms of political boundaries, usually a city, county, or political region (such as a Standard Metropolitan Statistical Area) is selected to represent the airport service area because relevant population and economic data are readily available for such areas. Furthermore, trends in aviation demand typically correspond closely with general growth trends in the political subdivision containing the main concentration of population served by a given airport.

The Airport is located within the City of Marina (the City) limits at the eastern boundary. The Airport accommodates business, personal and recreational flying, flight training, skydiving and local emergency operations as well as providing air access to other nearby areas. The Airport serves the City and those parts of Monterey County (County) including Monterey, Carmel, Pacific Grove, Soledad, Seaside, Sand City, Del Rey Oaks, Salinas, and portions of Santa Cruz County including Santa Cruz, Soquel, Aptos, Watsonville and Capitola for which it is considered the most convenient airport by the aircraft owners.

### **2.2.1 Population**

Historical and forecast population data for the City and the County are presented in Table 2-1. A comparison is made with historical and forecast population data for the State of California and the United States as a whole.

The population in the City fluctuated from 21,000 in 1980 to 19,163 in 2000, an average annual decrease of 0.5 percent. Based on the *2004 State of The Region Report* prepared by the Association of Monterey Bay Area Governments (AMBAG), population in the City fluctuated and experienced additional decreases in population in the early 2000s as the City continued to adjust to population losses following the closure of Fort Ord in 1993. During the same timeframe, population in the County increased from 290,000 in 1980 to 401,312 in 2000, an average annual growth rate of 1.6 percent.

The population of the City decreased at an average annual rate of 0.5 percent from 1980 to 2000 while the population of the County increased at an average annual rate of 1.6 percent over the same period. The population of the State increased at an average annual rate of 1.8 percent from 1980 to 2000, while the population of the United States as a whole increased at slightly less than 1 percent over the same period.

Based on the 2004 AMBAG Population, Housing Unit and Employment Forecasts, population in the City is forecast to increase from the estimated 19,163 in 2000 to 30,657 by 2010, an average annual increase of 4.8 percent. Beyond 2010, the population is forecast to increase at an average annual rate of 0.9 percent and reach an estimated population of 34,900 by 2025. By comparison the County is forecast to increase from 401,312 in 2000 to 564,490 by 2025, an average annual increase of 1.4 percent.

The population of the State is forecast to increase from 34 million in 2000 to 48 million by 2025, an average annual increase of 1.4 percent and the United States population is forecast to increase from 275 million in 2000 to 335 million by 2025, an average annual increase of 0.8 percent.

### **2.2.2 Economic Outlook**

The economic outlook for the City and surrounding area is positive. Based on the *2007 Opportunities Analysis for Sites at the Marina Municipal Airport Economic Development Area* prepared for the City of Marina, the City has stabilized following population loss resulting from the closure of Fort Ord. Relatively middle-income households are transitioning towards a higher homeownership rate, although rental households still predominate more than in the surrounding parts of the region.

Table 2-1

**HISTORICAL AND FORECAST POPULATION TRENDS**  
**City of Marina, Monterey County**  
**State of California and United States**  
**1980-2025**

	Historical				Forecast			
	1980	1990	2000	2005	2010	2015	2020	2025
City of Marina	21,000 <sup>1</sup>	27,400 <sup>1</sup>	19,163 <sup>1</sup>	23,172 <sup>2</sup>	30,567 <sup>2</sup>	32,465 <sup>2</sup>	34,362 <sup>2</sup>	34,860 <sup>2</sup>
Monterey County	290,000 <sup>1</sup>	355,660 <sup>1</sup>	401,312 <sup>1</sup>	432,600 <sup>2</sup>	464,847 <sup>2</sup>	495,000 <sup>2</sup>	527,069 <sup>2</sup>	564,490 <sup>2</sup>
State of California <sup>1</sup>	23,667,902	29,760,021	33,871,648	37,473,500	40,262,400	42,711,200	45,821,900	47,900,000
United States <sup>3</sup>	226,545,805	248,709,873	275,306,000	285,981,000	297,716,000	310,133,000	322,742,000	335,050,000
	<b>Average Annual Percentage Change</b>							
	1980-1990	1990-2000	2000-2005	2005-2010	2010-2015	2015-2020	2020-2025	
City of Marina	2.7	-3.5	3.9	5.7	1.2	1.1	0.3	
Monterey County	2.1	1.2	1.5	1.4	1.3	1.3	1.4	
State of California	2.3	1.3	2.0	1.4	1.2	1.4	0.9	
United States	0.9	1.0	0.8	0.8	0.8	0.8	0.8	

1. State of California, Department of Finance  
2. 2004 AMBAG Population, Housing Unit & Employment Forecasts  
3. U.S. Department of Commerce, Bureau of the Census

Commute patterns in 2000 show that only about 16 percent of the Marina residents who work actually remain in Marina for their job location, and an additional 2,500 workers commute into Marina to fill local jobs. Household growth is expected to be strong over the next 25 years, with the City of Marina adding more than 6,000 new households. Employment growth is anticipated to be exceptionally strong for the next 25 years, with the City expected to add more than 7,000 jobs by 2025 as presented in Table 2-2. The challenge will be to expand the Marina economic base with employment opportunities for the needs of existing and future residents.

The University of California Monterey Bay Education, Science and Technology Center (UCMBEST) is located adjacent to the Marina Municipal Airport. The *1996 Monterey Bay Education, Science and Technology Center Master Plan*, prepared by UCMBEST, envisions development of about 500 acres of a mixed-use campus environment including public and private sector educationally related and research oriented activities, residential and other uses that will be complementary to the proposed adjacent Airport Business Park. The University has initiated development of a small business facility for high-technology businesses that is expected to generate 26,000 square feet of new office space and create 300 new jobs by 2015.

The *City of Marina at Monterey Bay News* published in the Summer of 2005, provides information to the Community on new challenges and opportunities for the City. The City has initiated a recovery and redevelopment process following the economic losses experienced after the closure of Fort Ord in 1993. A Strategic Development Center was formed by the City to facilitate meeting the challenges and opportunities associated with processing, reviewing and monitoring development projects within the City. A primary goal of the Center is to achieve the timely and effective resolution of issues related to planning and development programs with the City. One of the projects currently being processed through the Center is the development of the *Opportunities Analysis for Sites at the Marina Municipal Airport Economic Development Area* that addresses the potential development opportunities for two parcels on the Marina Municipal Airport. The study assesses a wide range of nonaviation and nonresidential land uses for the two parcels in order to narrow the range of feasible anchor land uses in preparation for subsequent solicitation by the City for a new master development partner.

### **2.3 HISTORICAL AIR TRAFFIC ACTIVITY**

This section presents an analysis of the historical air traffic activity at the Airport through 2005. A review of the historical aviation activity is presented including based aircraft and annual aircraft operations. The data presented are based on Federal Aviation Administration (FAA) records at the National and local levels. Additional information was obtained from the State of California, Department of Transportation,

Table 2-2

**HOUSING UNITS AND EMPLOYMENT FORECASTS**

<u>Year</u>	<u>Housing Units</u>	<u>Percent Increase</u>	<u>Employment</u>	<u>Percent Increase</u>
2000	7,100	--	5,557	--
2005	8,553	20%	5,894	6%
2010	11,799	38%	7,277	23%
2015	12,600	7%	8,658	19%
2020	13,400	6%	10,038	16%
2025	13,498	1%	12,643	26%

SOURCE: 2004 AMBAG Population, Housing Unit & Employment Forecasts

Division of Aeronautics (Caltrans), Airport Management records and discussions with persons knowledgeable of the Airport. Other available sources of data were used as applicable.

### **2.3.1 General Aviation**

General aviation is defined as all civil aviation not classified as air carrier, commuter/air taxi or military. It includes a multitude of diverse and growing uses of aircraft, ranging from flying for enjoyment and the transportation of personnel or cargo by business firms and individuals in privately-owned aircraft, to highly specialized uses such as agricultural applications, pipeline patrol, and aerial advertising. It includes agricultural, industrial and business/corporate aviation, using an aircraft for flight training, the aviation of Federal, State and local governments, and miscellaneous other aviation uses.

#### **2.3.1.1 Based Aircraft**

Based aircraft are those aircraft that are hangared or on tiedowns at the Airport and include those aircraft based on leaseholder sites. The number of aircraft based at an airport is a function of many factors, including the number of active aircraft registered in the Airport's airport service area, aircraft registered elsewhere but used in the area (e.g., corporate or government aircraft), and the existence and location of other airports in the area. Although transient aircraft are not considered based aircraft, their needs for tiedown and hangar space must be considered at any airport.

Table 2-3 presents available historical data on based aircraft at the Marina Municipal Airport since the Airport opened as a public-use civil airport in 1995. Historical data is limited to information presented in the 1995 *Regional Airport System Plan*, prepared by AMBAG, the FAA Form 5010-1, *Airport Master Record*, and Airport Management records.

According to the City, based aircraft at the Airport increased from an estimated 29 based aircraft in 1995 to about 70 based aircraft in 2005, an overall increase of 141 percent. The 61 single-engine based aircraft account for 87 percent of the total aircraft; four multiengine based aircraft account for 6 percent of the total aircraft; two based helicopters account for 3 percent of the total aircraft; and three "others" account for the remaining 4 percent of total aircraft. While not specifically identified, the "other" category includes ultralights.

#### **2.3.1.2 Distribution of Based Aircraft Owners**

An analysis of the geographic distribution of based aircraft owners at the Airport was made based on information provided by the Monterey County Tax Assessor. This

Table 2-3

**HISTORICAL BASED AIRCRAFT  
Marina Municipal Airport  
Selected Years: 1995-2005**

<u>Year</u>	<u>Single- Engine</u>	<u>Multi- Engine</u>	<u>Jet</u>	<u>Heli- copter</u>	<u>Other</u>	<u>Total</u>
1995 <sup>1</sup>	29	0	0	0	0	29
2000 <sup>2</sup>	56	4	0	2	3	65
2005 <sup>3</sup>	61	4	0	2	3	70

1. Association of Monterey Bay Area Governments, *Regional Airport System Plan*, August 1995
2. FAA Form 5010-1, *Airport Master Record*
3. Airport Management Records

information is presented in Table 2-4 for 2005. The county tax assessor for each county maintains a list of aircraft based in the county for tax purposes. The data generally includes the tail number, address of the aircraft owner and location (where the aircraft is based in the county). It should be noted that typically the tax assessor data does not account for all of the aircraft based at an airport. It should also be noted that the Monterey County tax assessor data for the Marina Municipal Airport is unusually low when compared to other airports in the County. There are several reasons for these differences, e.g., aircraft may be elsewhere when the tax assessor surveys based aircraft, inconsistencies in reporting based aircraft by the airport sponsors and/or leaseholders, and limited time and resources to accurately account for based aircraft within the County.

The information is presented to gain an overall understanding of where the aircraft owners live who base their aircraft at the Airport. Close to 46 percent of the 24 reported aircraft based at the Airport are registered to owners in Monterey County with 18 percent of those within the City of Marina. The remaining 54 percent of the aircraft are registered to various owners in other counties, including Santa Cruz, Santa Clara, and Kern Counties.

The distribution of based aircraft owners at the Airport was also obtained from the Monterey County Tax Assessor for 2003 and is presented in Table 2-5. The 2003 data was compared to the 2005 data to gain an overall understanding of where the aircraft owners live who choose to base their aircraft at the Airport. The additional aircraft added to the tax assessor data in 2005, presented earlier in Table 2-4, have aircraft owner's addresses in Santa Cruz and Santa Clara Counties possibly reflecting a shift in based aircraft from the Watsonville Municipal Airport and from airports in the San Francisco Bay Area.

## **2.3.2 Aircraft Operations**

Historical data on aircraft operations at non-towered airports are limited. Based on the FAA Form 5010-1 *Airport Master Record* and the FAA *Terminal Area Forecasts*, there were an estimated 40,000 annual aircraft operations at the Airport in 2005. Annual aircraft operations are further defined as local and itinerant aircraft operations. In September and October 2006, Caltrans installed an acoustical aircraft operations counter at the Airport and based upon the data collected, the annualized count was estimated to approximate 38,900 aircraft operations.

### **2.3.2.1 Itinerant Operations**

Of the 40,000 general aviation operations, an estimated 24,000 (60 percent) are itinerant operations. Itinerant operations are conducted by aircraft that take off at one airport and land at another airport. They include the operations of aircraft based at the Airport and flights of other aircraft to and from the Airport.

Table 2-4

**DISTRIBUTION OF BASED AIRCRAFT OWNERS--2005  
Marina Municipal Airport**

<u>Location</u>	<u>Aircraft 2005</u>	<u>Location</u>	<u>Aircraft 2005</u>
<u>Monterey County</u>		<u>Santa Cruz County</u>	
Carmel	3	Santa Cruz	2
Marina	2	Soquel	2
Salinas	2	Aptos	1
Greenfield	1	Ben Lomond	1
Monterey	1	Capitola	1
Del Rey Oaks	1	Scotts Valley	<u>1</u>
Prunedale	<u>1</u>	Subtotal	8
Subtotal	11		
<u>Santa Clara County</u>		<u>Kern County</u>	
Cupertino	1	Tehachapi	<u>1</u>
Gilroy	1		1
San Jose	1		
Sunnyvale	<u>1</u>	Grand Total	24
	4		

SOURCE: Monterey County Tax Assessor

Table 2-5

**DISTRIBUTION OF BASED AIRCRAFT OWNERS--2003  
Marina Municipal Airport**

<u>Location</u>	<u>Aircraft 2003</u>	<u>Location</u>	<u>Aircraft 2003</u>
<u>Monterey County</u>		<u>Santa Cruz County</u>	
Marina	4	Santa Cruz	2
Monterey	2	Ben Lomond	1
Salinas	2	Capitola	<u>1</u>
Carmel	1	Subtotal	4
Del Rey Oaks	1		
Pebble Beach	<u>1</u>		
Subtotal	11	<u>Santa Clara County</u>	
<u>San Luis Obispo County</u>		Los Gatos	1
Oceano	<u>1</u>	Sunnyvale	<u>1</u>
Subtotal	1	Subtotal	2
<u>Alameda County</u>			
Union City	<u>1</u>	Grand Total	19
Subtotal	1		

SOURCE: Monterey County Tax Assessor

### **2.3.2.2 Local Operations**

Of the 40,000 annual aircraft operations, an estimated 16,000 aircraft operations (40 percent) were local operations. Local operations are performed by aircraft operating in the local traffic pattern and aircraft departing for, or arriving from, local practice areas. These operations include training operations (referred to as touch-and-goes) by both aircraft based at the Airport and aircraft from other airports in nearby areas.

## **2.4 REVIEW OF AVIATION ACTIVITY TRENDS AND FORECASTS**

A review of historical and forecast trends in aviation activity on the National, State and local levels was made. This review included historical data and forecast trends on the National and State levels prepared by the Federal Aviation Administration and the *1999 Statewide Forecasts* prepared by Caltrans as part of the State's continuous aviation system planning process. The aviation activity forecasts prepared for the *2005 Regional Airport System Plan*, prepared by AMBAG, were also reviewed.

### **2.4.1 Federal Aviation Administration**

Historical and forecast general aviation trends on a National level are published annually by the FAA to meet the budget and planning needs of the FAA and to provide information that can be used by state and local entities, the aviation industry, and the general public. The most recent edition was published in March 2005 and is entitled *FAA Aerospace Forecasts, Fiscal Years 2005-2016*.

The FAA forecasts general aviation and air taxi aircraft to increase by an estimated 13,365 aircraft over the short-term 12-year period (through 2016) as presented in Table 2-6. This increase represents an average annual increase of 0.5 percent. Of the 13,365 total increase in aircraft, 64 percent (8,575 aircraft) will be in the turboprop and turbojet aircraft category, 30 percent (4,000 aircraft) will be in the single-engine aircraft category, 8 percent (1,025 aircraft) will be in the rotocraft category, and 4 percent (580 aircraft) will be in the experimental aircraft category. There will be a 3 percent decrease (465 aircraft) in the multiengine turbine aircraft category and a 3 percent decrease (350 aircraft) in the all other aircraft category. In addition, there are 15,410 aircraft forecast to be in the new light-sport aircraft category by 2016 compared to an estimated 7,700 aircraft in 2005.

In September 2004 the FAA created a new rule for the manufacture, certification, operation, and maintenance of light-sport aircraft weighing less than 1,320 pounds. The new category of aircraft will allow operation of light-sport aircraft by certificated pilots for sport and recreation, to carry a passenger, and to conduct flight training and towing in a safe manner. The FAA estimates that about 10,000 existing aircraft will

Table 2-6

**ACTIVE GENERAL AVIATION AND AIR TAXI AIRCRAFT  
BY TYPE OF AIRCRAFT  
1999 - 2016**

Year	Fixed Wing						Rotorcraft				Total General Aviation Fleet	Total Fleet Less Sport AC
	Piston		Turbine		Turbojet	Piston	Turbine	Experi- mental	Sport Aircraft	Other		
	Single- engine	Multi- engine	Turboprop	Turbine								
<b>Historical</b>												
1999	150,886	21,038	5,679	7,120		2,564	4,884	20,528	NA	6,765	219,464	219,464
2000	149,422	21,091	5,762	7,001		2,680	4,470	20,407	NA	6,700	217,533	217,533
2001	145,034	18,281	6,596	7,787		2,292	4,491	20,421	NA	6,545	211,447	211,447
2002	143,503	17,584	6,841	8,355		2,351	4,297	21,936	NA	6,377	211,244	211,244
2003E	143,916	17,723	7,201	8,153		2,203	4,588	20,603	NA	6,213	210,600	210,600
2004E	144,000	17,700	7,300	8,425		2,240	4,650	20,800	NA	6,180	211,295	211,295
<b>Forecast</b>												
2005	144,150	17,645	7,400	8,750		2,270	4,715	21,000	7,700	6,150	219,780	212,080
2006	144,400	17,610	7,500	9,200		2,300	4,780	21,190	10,000	6,120	223,100	213,100
2007	144,950	17,570	7,600	9,800		2,330	4,845	21,300	10,350	6,090	224,835	214,485
2008	145,500	17,530	7,700	10,500		2,360	4,905	21,350	10,820	6,060	226,725	215,905
2009	145,900	17,430	7,800	11,200		2,390	4,960	21,370	11,390	6,030	228,470	217,080
2010	146,300	17,460	7,900	11,900		2,420	5,015	21,380	11,960	6,000	230,335	218,375
2011	146,650	17,420	8,000	12,650		2,445	5,070	21,380	12,620	5,970	232,205	219,585
2012	147,000	17,380	8,100	13,350		2,470	5,125	21,380	13,190	5,940	233,935	220,745
2013	147,300	17,345	8,200	14,000		2,495	5,180	21,380	13,760	5,910	235,570	221,810
2014	147,550	17,310	8,300	14,650		2,520	5,235	21,380	14,310	5,880	237,135	222,825
2015	147,800	17,270	8,350	15,300		2,545	5,290	21,380	14,860	5,850	238,645	223,785
2016	148,000	17,235	8,400	15,900		2,570	5,345	21,380	15,410	5,830	240,070	224,660

NOTE: Totals may not add due to rounding

E = Estimated

SOURCE: FAA Aerospace Forecasts, Fiscal Years 2005-2016

register in the light-sport aircraft category beginning in 2005, and approximately 300 to 500 newly-manufactured light-sport aircraft will enter the active aircraft fleet annually beginning in 2007. The introduction of the light-sport aircraft is also expected to increase the number of student pilots as pilot training requirements are reduced.

The FAA develops annual forecasts of aviation demand by airport to assist in the development of programs by assessing the resources needed to meet the anticipated demand for FAA services and are included in the FAA *Terminal Area Forecasts* (TAF). For towered airports or airports with air carrier or commuter passenger service the TAF corresponds to prevailing local and national trends. For non-towered airport facilities, like the Marina Municipal Airport, FAA relies on FAA Form 5010-1, *Airport Master Record* for aviation activity levels that are held constant in the future unless otherwise specified by an FAA official. Based on discussions with FAA personnel, based aircraft and aircraft operations data taken from the FAA Form 5010-1 are held constant for years if more reliable and updated information is not available.

#### **2.4.2 Regional Airport System Plan**

A review of the aviation activity forecasts prepared for the Airport in the 1995 *Regional Airport System Plan* (RASP) prepared by AMBAG was also made. Based aircraft in the Region were forecast to increase from 706 aircraft in 1995 to 790 aircraft in 2015, an average annual increase of 0.6 percent. Annual aircraft operations were forecast to increase from 320,720 operations in 1995 to 347,180 operations in 2015, an average annual increase of 0.4 percent. It should be noted that the forecasts for the 1995 RASP were included in the 1999 California Aviation System Plan presented below.

AMBAG updated the *Regional Airport System Plan*, in 2005, and general aviation activity forecasts were prepared for the Monterey, Santa Cruz, and San Benito Counties. Based aircraft in Monterey County are forecast to increase from 460 aircraft in 2003 to 620 aircraft in 2025, an average annual increase of 1.4 percent. Annual aircraft operations are forecast to increase from 173,100 operations in 2003 to 261,000 operations in 2025, an average annual increase of 1.9 percent.

In the 2005 *Regional Airport System Plan* it was noted that Airport capacity issues at the San Francisco Bay Area airports are generally not airfield-related but are concerned more with the availability and type of aircraft parking spaces, in particular, the shortage of hangar places for both small propeller aircraft and large corporate business jets. An increasing number of aircraft owners want hangar, rather than tiedown, space because of their investment in the aircraft as well as the cost of maintaining and operating the aircraft. There are significant waiting lists for hangar

space for both small propeller and large corporate aircraft at most San Francisco Bay Area airports. A related issue for corporate aviation is the lack of transient aircraft parking space, both in hangars and on tiedowns.

Based on the distribution of based aircraft owners at the AMBAG Region airports the greatest impact of accommodating aircraft with owners having addresses in one of the San Francisco Bay Area counties has been on the airports in San Benito County, e.g., the Frazier Lake Airpark and the Hollister Municipal Airport with close to 80 percent and 38 percent, respectively, of the based aircraft registered to owners with a San Francisco Bay Area address. Significantly, fewer aircraft registered to owners with a Bay Area address are currently accommodated at other AMBAG Region airports, e.g., Marina Municipal Airport with 17 percent; Salinas Municipal Airport with 7 percent; Watsonville Municipal Airport with 5 percent and the Monterey Peninsula Airport with 4 percent.

### **2.4.3 California Aviation System Plan**

The *1999 Statewide Forecasts* were prepared by Caltrans, Division of Aeronautics, as part of the State's continuous airport system planning process to identify the aviation facilities required to meet the air transportation needs of the State. The aviation forecasts were prepared by using a combination of forecasts from the FAA's *Terminal Area Forecasts*, the forecasts of the Metropolitan Planning Organizations including the Southern California Association of Governments, the Metropolitan Transportation Commission, and the Association of Monterey Bay Area Governments, and Caltrans forecasts for areas outside metropolitan areas.

The CASP predicts that, following years of stagnant (or negative) growth, general aviation based aircraft and annual aircraft operations will increase slightly over one percent annually from 1995 through 2015 on a Statewide basis. The CASP forecasts were prepared through 2020 for specific areas in the State.

Based aircraft in the Caltrans Central Coast Area for only San Benito, San Luis Obispo, and Santa Barbara Counties are forecast to increase from 1,234 based aircraft in 1995 to 2,007 based aircraft in 2020, an average annual increase of 2.0 percent. Annual general aviation aircraft operations in San Benito, San Luis Obispo, and Santa Barbara Counties are forecast to increase from 425,000 aircraft operations in 1995 to 672,000 aircraft operations in 2020, an average annual increase of 1.9 percent.

Monterey and Santa Cruz Counties are part of the Caltrans Central Coast Area. However, the aviation activity forecasts included in the CASP for Monterey and Santa Cruz Counties were prepared for the 1995 RASP by AMBAG and incorporated into the CASP as noted earlier. Based aircraft were forecast to increase from 706 aircraft in

1995 to 790 aircraft in 2015, an average annual increase of 0.6 percent. Annual aircraft operations were forecast to increase from 320,720 operations in 1995 to 347,180 operations in 2015, an average annual increase of 0.4 percent.

The aviation activity forecasts prepared for the 1995 RASP for Monterey and Santa Cruz Counties are significantly lower than those prepared by Caltrans for the other three counties in the Central Coast Area.

#### **2.4.4 Aviation Activity Forecasts for the Marina Municipal Airport**

Aviation activity forecasts for the Marina Municipal Airport are included in the 2005 FAA *Terminal Area Forecasts*, Caltrans 1999 *Statewide Forecasts*, the 1995 and 2005 *Monterey Bay Regional Airport System Plans*, the 1993 *General Aviation Feasibility/Airport Master Plan Study for Fritzsche Field* and the *Airport Master Plan Update* (presented in Section 2.5). The aviation activity forecasts are presented in Table 2-7 and discussed below. A graphic illustration comparing the different forecasts is presented at the end of this chapter.

Historical and forecast based aircraft and aircraft operations data for the Marina Municipal Airport are presented in the 2005 FAA *Terminal Area Forecasts*. According to the *Terminal Area Forecasts*, there were 65 based aircraft and an estimated 40,000 annual aircraft operations at the Airport beginning in 1999 and there will continue to be 65 based aircraft and 40,000 annual aircraft operations at the Airport through 2020 with no forecast change in activity.

The 1999 *Statewide Forecasts* prepared by Caltrans and the 1995 *Monterey Bay Regional Airport System Plan* prepared by AMBAG are as shown in Table 2-7. Based aircraft at the Marina Municipal Airport are forecast to increase from 29 based aircraft in 1995 to 31 based aircraft in 2015, an average annual increase of 0.3 percent. Annual aircraft operations are forecast to increase from 10,500 operations in 1995 to 12,560 operations in 2015 in the RASP, an average annual increase of 0.9 percent, and from 10,500 operations in 1995 to 15,560 operations in 2015 in the CASP, an average annual increase of 2.0 percent in the CASP. It should be noted that it appears that adjustments were made to the forecast annual aircraft operations when the CASP was published in 1999.

The aviation activity forecasts prepared for the 1993 *General Aviation Feasibility/Airport Master Plan Study for Fritzsche Field* were also reviewed. The Airport Master Plan was prepared based on the preferred reuse concept adopted by the Marina City Council and the Fort Ord Economic Development Authority in 1993.

Table 2-7

**COMPARISON OF AVIATION ACTIVITY FORECASTS  
Marina Municipal Airport**

	<u>Forecast Years</u>	<u>Based Aircraft</u>	<u>Total Aircraft Operations</u>
2005 FAA Terminal Area Forecasts	1999 Base Year	65	40,000
	2005	65	40,000
	2010	65	40,000
	2015	65	40,000
	2020	65	40,000
1999 California Aviation System Plan	1995 Base Year	29	10,500
	2000	28	11,490
	2005	28	12,840
	2010	30	14,180
	2015	31	15,560
1995 Monterey Bay Regional Airport System Plan	1995 Base Year	29	10,500
	2000	28	10,490
	2005	28	10,840
	2010	30	11,680
	2015	31	12,560
2005 Monterey Bay Regional Airport System Plan	2003 Base Year	70	30,000
	2005	74	31,800
	2010	82	36,900
	2015	90	42,300
	2020	98	47,530
	2025	108	55,080
1993 Airport Master Plan	1995	100	39,000
	2000	125	47,500
	2005	200	55,000
	2010	250	61,000
2008 Airport Master Plan Update	2005 Base Year	70	40,000
	2010	82	49,200
	2015	90	56,400
	2020	98	63,300
	2025	108	73,300

Based aircraft are forecast to increase from 100 aircraft in 1995 to 250 aircraft by 2010. Annual aircraft operations are forecast to increase from 39,000 aircraft operations in 1995 to 61,000 aircraft operations by 2010. The 1993 aviation activity forecasts were prepared based on a significantly higher base level of activity at the time the Airport was conveyed to the City of Marina as a civil-use airport. The increases in the forecast based aircraft were anticipated to occur after 2000 as a result of projected improvements to the runway and installation of sophisticated navigational aids making the Airport available to light, quiet business jets.

The aviation activity forecasts prepared for the Airport Master Plan Update are presented in the following section.

## **2.5 AVIATION ACTIVITY FORECASTS**

To assess existing facilities and to determine future requirements at the Marina Municipal Airport, it is necessary to forecast the demand for facilities expected to be generated by future aviation activity. Such demand is created by air taxi and general aviation activity and may be stated in terms of aircraft operations, aircraft basing demand and related components. In turn, the aviation activity generated at Marina Municipal Airport relates directly to the population and economy of the surrounding area; to general aviation trends and forecasts on the National, State and local levels; and to the aviation demand and airport facilities and services provided at other airports in the surrounding area.

The aviation activity forecasts presented in this section have been developed based on a review of the population and economic trends for the City of Marina and surrounding areas; an analysis of the historical aviation activity at the Marina Municipal Airport; and an assessment of aviation trends on the National, State and local levels that have, or may have, a potential effect on aviation activity at the Airport. Discussions with persons knowledgeable of the Airport, including representatives of the City and airport tenants and aircraft owners, have provided valuable insight into the preparation of the aviation activity forecasts.

### **2.5.1 General Assumptions**

The following general assumptions were used in the preparation of the forecasts:

- These forecasts are demand-based and are, therefore, unconstrained by facility limitations or policy considerations.
- No policies that would constrain aviation growth will be imposed on the Airport by any governmental entity.

- The population and economic analyses and forecasts presented in Section 2.2 are satisfactory for purposes of aviation demand forecasting.
- The historical aviation activity data presented in Section 2.3 form an adequate basis for the forecasts presented in this chapter.

These forecasts were prepared on the basis of the information and assumptions set forth above. Although the information and assumptions used constitute a reasonable basis for preparing the forecasts, the achievement of any such forecast may be affected by fluctuating conditions and is dependent upon the occurrence of future events, which cannot be assured. Therefore, the actual results achieved may vary from the forecasts, and such variations could be material.

It should also be noted that the potential long-term impacts on the aviation industry as a result of the September 11, 2001 events are not known at this time, particularly as these impacts may affect future general aviation activity. Congress is currently evaluating security and other requirements that may apply to general aviation airports. Continuous monitoring of these activities should be made as they relate to the Marina Municipal Airport and the need to incorporate any additional requirements at the Airport.

The aviation activity forecasts are presented in Table 2-8 and discussed below.

### **2.5.2 Based Aircraft**

The number of based aircraft at the Marina Municipal Airport is forecast to increase from 70 aircraft in 2005 to 108 aircraft by 2025 as shown in Table 2-8, an average annual growth rate of 2.1 percent. The forecast increase in based aircraft at the Airport is due in part to the forecast increases in population in the City, the City's continued planning and development of economic activity, including the development of the Airport Business Park, and a continuation of the Airport's attractiveness to based aircraft owners from Santa Cruz, San Benito, and Santa Clara Counties and the San Francisco Bay Area.

Single-engine aircraft are forecast to increase from 61 aircraft in 2005 to 87 aircraft by 2025, an average annual increase of 1.7 percent over the 21-year planning period but will decrease as a percent of the total based aircraft from 87 percent in 2005 to 80 percent by 2025. Multiengine aircraft are forecast to increase from four aircraft in 2005 to 12 aircraft by 2025, an average annual increase of 5.3 percent over the 21-year planning period and will increase as a percent of the total based aircraft from 6 percent in 2004 to 11 percent in 2025. It is also estimated that four helicopters and five ultralights will be based at the Airport by 2025.

Table 2-8

**AVIATION ACTIVITY FORECASTS**  
**Marina Municipal Airport**  
**2005-2025**

	Base Year <sup>1</sup>				Forecasts <sup>2</sup>		
	2005	2010	2015	2020	2025		
<b>GENERAL AVIATION BASED AIRCRAFT</b>							
Single-engine	61	68	74	79	87		
Multiengine	4	7	9	10	12		
Helicopter	2	3	3	4	4		
Ultralights	3	4	4	5	5		
Total	70	82	90	98	108		
<b>AIRCRAFT OPERATIONS</b>							
Air Taxi	0	300	400	500	600		
<b>General Aviation</b>							
Local	16,000	18,500	20,700	22,500	25,500		
Itinerant	24,000	30,400	35,300	40,300	47,200		
Subtotal	40,000	48,900	56,000	62,800	72,700		
Total Aircraft Operations	40,000	49,200	56,400	63,300	73,300		
<b>OPERATIONS PER BASED AIRCRAFT</b>							
	571	600	627	646	680		
<b>PEAK HOUR AIRCRAFT OPERATIONS</b>							
	27	32	36	41	48		

1. Marina Municipal Airport
2. Aries Consultants Ltd.

### **2.5.3 Aircraft Operations**

The number of annual aircraft operations at the Marina Municipal Airport, as presented in Table 2-8, is forecast to increase from an estimated 40,000 annual aircraft operations in 2005 to 73,300 annual aircraft operations by 2025. An aircraft landing or takeoff is counted as one aircraft operation and a touch-and-go is counted as two aircraft operations.

#### **2.5.3.1 Air Taxi**

Air taxi operations include the unscheduled operations of “for hire” air taxis carrying passengers and any operations by bank couriers or other small package carriers. The potential exists for air taxi operations at the Airport to serve persons accessing the growing population of the area and the increased use of the Airport businesses and visitors to the area.

The introduction of the very light jet (VLJ), a small passenger jet-powered aircraft with a single pilot and a maximum take off weight less than 10,000 pounds, into the general aviation aircraft fleet, represents a technological innovation that may result in expanded demand for small aircraft, and subsequent general aviation business, throughout California and the U.S. over the coming decade. The consensus among industry analysts is that the future viability of the VLJ market will depend on adequate demand for point-to-point air taxi service and lower operating costs compared to existing business jets. Many factors favor the success of the VLJ air taxi concept such as the ability of VLJs to land at airports with shorter runways, the faster speed of VLJs compared to twin-engine piston or turboprop aircraft, the distance range of the VLJs, and the consumer perception that jet engines are safer than turboprop engines. In addition, a regional air taxi system that is based at small airports would offer a travel alternative to relieve congested commercial airports.

Air taxi operations at the Marina Municipal Airport are forecast to gradually increase to 600 annual operations by 2025. The VLJ air taxi aircraft operations are included in these operations to the extent that the regional air taxi system is developed over the forecast years.

#### **2.5.3.2 General Aviation**

General aviation aircraft operations are forecast to continue to account for the largest share of total operations at the Airport. General aviation operations are forecast to increase from an estimated 40,000 annual operations in 2005 to 72,700 annual operations by 2025.

**Itinerant Operations.** Itinerant operations are forecast to increase slightly as a percent of total general aviation aircraft operations from 60 percent (24,000 operations) in 2005 to 65 percent (47,200 operations) by 2025 reflecting the increase use of the Airport for business and tourist-related activities in the area during the forecast period.

**Local Operations.** Local operations are forecast to decrease slightly as a percent of total general aviation aircraft operations from 40 percent (16,000 operations) in 2005 to 35 percent (25,500 operations) by 2025 as itinerant operations increase.

### **2.5.3.3 Operations Per Based Aircraft**

Operations per based aircraft is a useful guide to estimate the number and types of aircraft operations at a non-towered airport. Operations per based aircraft include the number of operations by visiting itinerant aircraft as well as those based at the Airport. The numbers also include training operations. Operations per based aircraft are forecast to increase from an estimated 571 annual operations in 2005 to 680 annual operations by 2025 reflecting a greater utilization of existing aircraft.

### **2.5.3.4 Peak Period Aviation Activity**

Key forecasts that affect airfield, passenger terminal, general aviation, access and automobile parking planning are those indicating the levels of activity during the average day of the peak month. The peak hour forecasts are intended for use in the demand/capacity analysis and determining requirements for future Airport facilities.

Peak hour aviation activity forecasts for aircraft operations during the average day of the peak month for Marina Municipal Airport are presented in Table 2-8. Based on information provided by Airport management, the peak month typically accounts for approximately 10 percent of the annual aircraft operations. The peak hour of an average day in the peak month typically accounts for approximately 15 percent of the total daily operations.

The total peak hour aircraft operations are forecast to increase from 27 aircraft operations in the peak hour of an average day in the peak month in 2005 to 48 aircraft operations in 2025.

## **2.6 COMPARISON OF AVIATION ACTIVITY FORECASTS**

Comparisons of the forecasts of aviation activity for the Marina Municipal Airport discussed previously in this chapter are graphically illustrated on Figures 2-1 and 2-2. Forecasts of based aircraft prepared in the FAA *Terminal Area Forecasts*, Caltrans 1999

# HISTORICAL AND FORECAST BASED AIRCRAFT

Marina Municipal Airport  
1995-2025

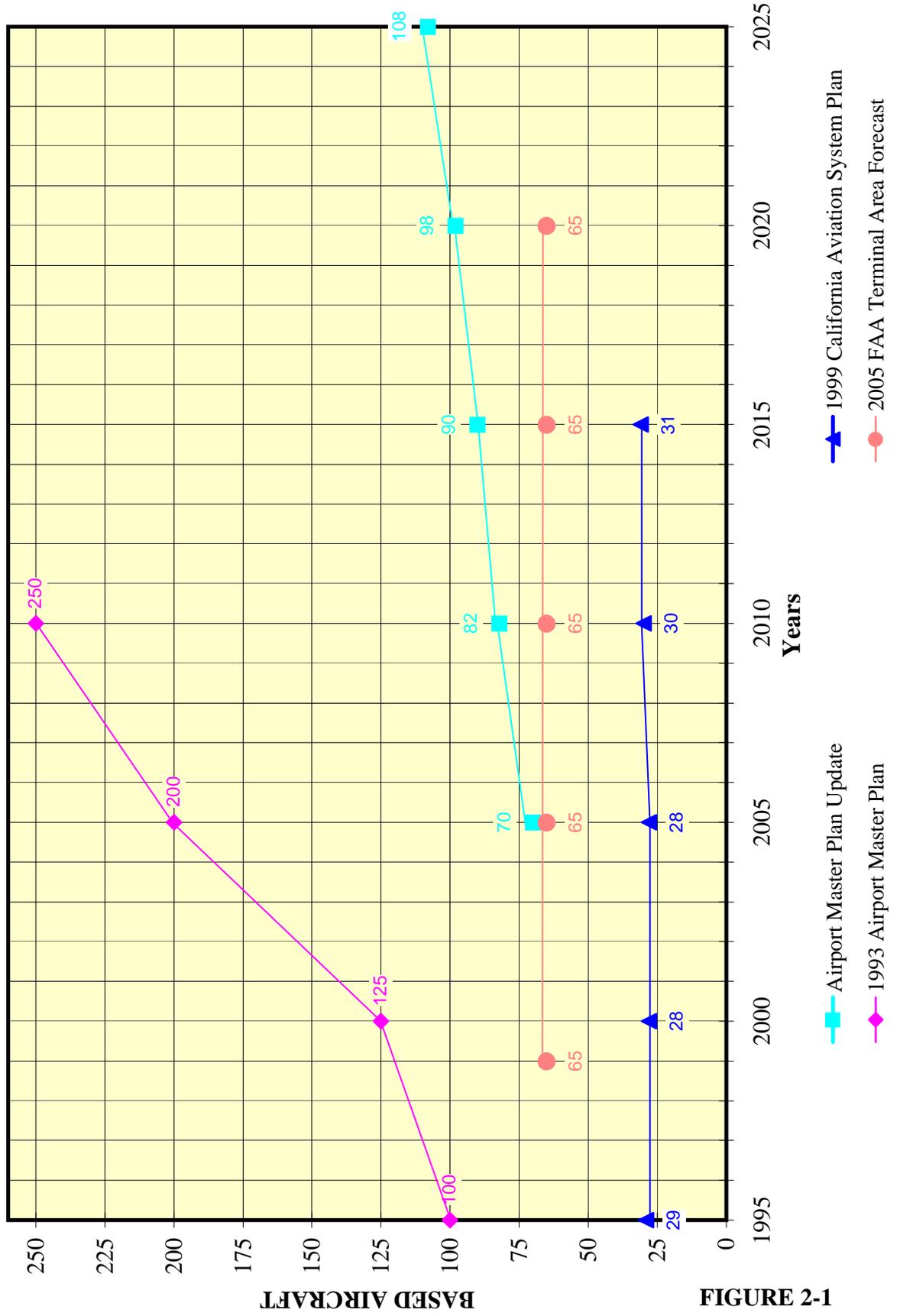


FIGURE 2-1

# HISTORICAL AND FORECAST AIRCRAFT OPERATIONS

Marina Municipal Airport  
1995-2025

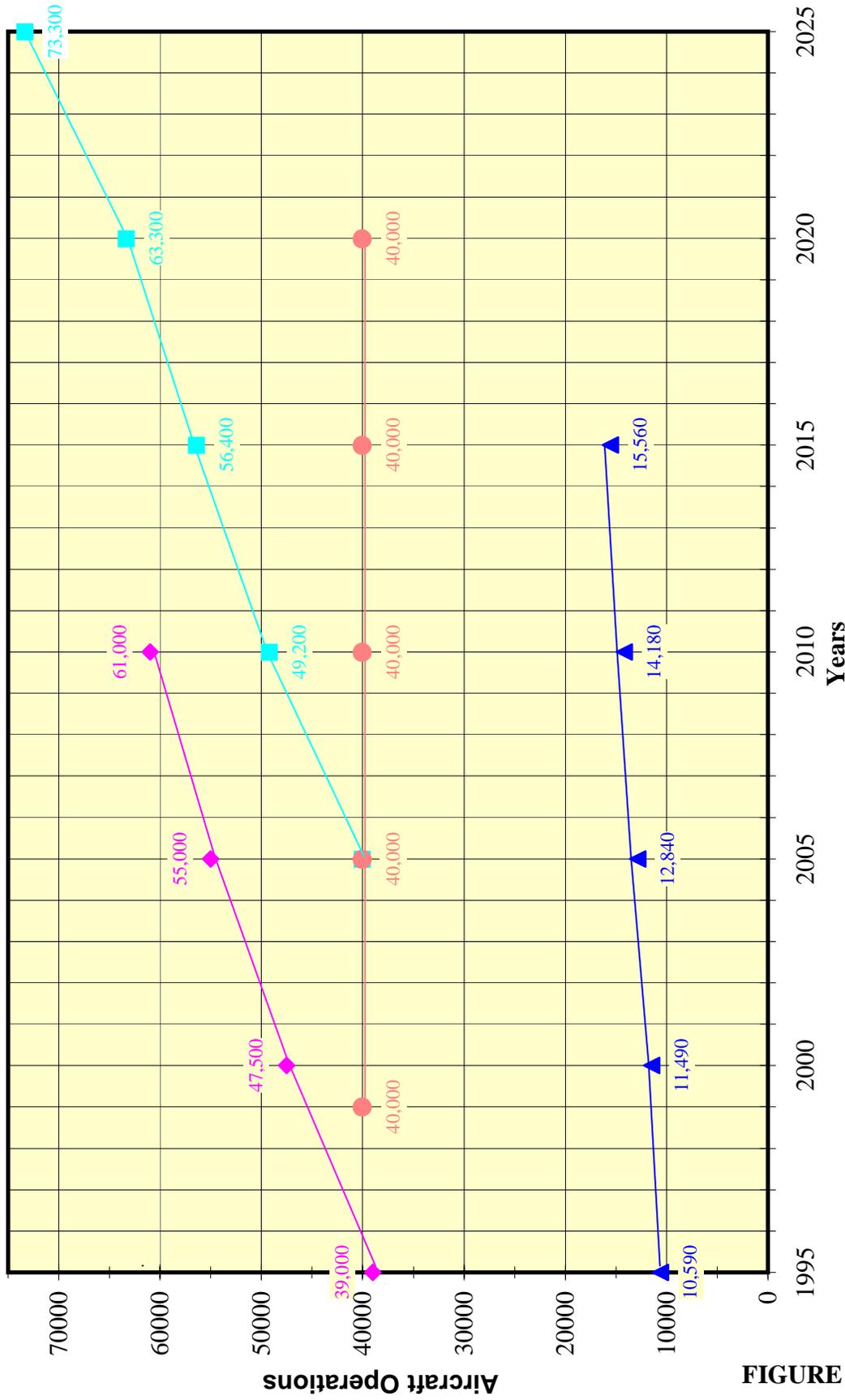


FIGURE 2-2

*Statewide Forecasts/1995 Regional Airport System Plan*, the *1993 Airport Master Plan*, and the *Airport Master Plan Update/Regional Airport System Plan* are graphically illustrated on Figure 2-1. Forecasts of annual general aviation aircraft operations are graphically illustrated on Figure 2-2. It should be noted that the forecasts were prepared at different times based on variations in both socioeconomic and aviation activity conditions.

## **2.7 OTHER AVIATION OPPORTUNITIES**

According to the 2007 *Opportunities Analysis for Sites at the Marina Municipal Airport Economic Development Area* prepared for the City, the Marina Municipal Airport provides a moderately-sized facility, with demand for fixed-base operator (FBO) services and tenant users reflecting the Airport's relative recent entry into the general aviation marketplace in Monterey County. The Airport's competitive advantages include developable land surrounding the airfield, although these parcels face certain constraints. The Airport has a competitive advantage of lower-priced fuel that stimulates aircraft operations for those pilots seeking cost-effective services. In addition, the Airport offers relatively good access to the North Monterey County region, although other competing general aviation airport facilities offer similar or superior vehicular access.

The acquisition of a former military airfield such as this Airport often poses challenges to the new operating entity since the facility comes with outdated structures and infrastructure, and the patterns of the private marketplace have been established elsewhere. The Marina Municipal Airport faces these marketplace challenges with a need to "catch up" its investment in facilities and services.

The City recognizes that the Airport is a significant asset and can be used as a catalyst for economic development. One of the goals of the City is to generate new high-paying jobs in the City. As presented earlier, the City is preparing the *Opportunities Analysis for Sites at the Marina Municipal Airport Economic Development Area* that addresses the potential development opportunities for areas on the Airport designated as nonaviation revenue-producing and an Airport Business Park. The study is assessing a wide range of business aviation and nonaviation land uses in order to narrow the range of feasible anchor land uses in preparation for solicitation of a master developer for the areas.

The results of the research and analysis for this study concluded that the Airport Business Park parcel at the southeast corner of the Airport offers a conveniently-sized site on the Airport, meaning that it offers a unique opportunity to target business owners who also own or pilot aircraft and recommends marketing the site to the business aviation industry. The study noted that a combination of carefully-planned

office and industrial uses could experience moderate to strong demand at the Airport Business Park parcel. Although Marina and surrounding communities have a small office market, the site offers a good setting for office users, combining proximity to the airfield (for business owners who also own or pilot aircraft), proximity to thousands of new housing units, and the potential to capture companies priced out of Monterey and Silicon Valley. The ownership market for small office condominiums as well as flexible sites for industrial / commercial space will be a key component of this type of business park. Specialized uses, including airport-related, food-related, and perhaps green building/modular housing manufacturing, all offer exciting opportunities to expand Marina's economic development initiatives. It will be key to position the Airport Business Park project in a unique way, to differentiate it from other upcoming office and mixed-use projects.

In addition, the growing sector of air shipment services aimed at high-value and/or just-in-time products was identified in the study. Oftentimes, this type of aviation activity is more focused on corporate executive transportation associated with the need to readily access nearby industry activity prevalent in a region. An example of this competitive advantage of the Marina Municipal Airport has occurred as the owner of PEMCON Refrigeration on Neeson Road is a pilot who said he based his decision to move from Salinas to Marina was due, in part, to wanting to be close to the Airport.

The study concluded that, while there are challenges associated with developing these two airport parcels, they are, in fact, economically viable and can be shaped to foster economic development and revenue generation goals for the City. Challenges that the Airport faces in reaching its development potential for these two parcels are:

- Potential uses will need to comply with Covenants Restricting the Use of the Property (CRUP) imposed on the property as part of the base closure process.
- Deed restrictions relative to the receipt of the property as a Public Benefit Conveyance (PBC) under the base closure process.
- FAA approval needed for potential development proposals.
- Design constraints to be consistent with environmental restrictions.
- Noise impacts and other specific FAA aviation regulations affecting development.

Although there are constraints to the development of these Airport parcels, the study states that it is possible to propose a development project on either Airport property parcel included in the report. The following recommendations were made to test the development potential of these two sites:

- Prepare an economic development-oriented Airport Business Plan.
- Clarify FAA imposed constraints on non-aviation use development opportunities.
- Formulate City of Marina and Marina Redevelopment Agency goals and development strategy for the two parcels
- Initiate Request For Proposal process focusing on golf resort or sports facility for the 203-acre parcel on the northside of the Airport.
- Initiate a Request For Proposal process focusing on aviation-related Business Park for the 64-acre parcel on the southeast side of the Airport.

Chapter 3

**EXISTING AIRPORT FACILITIES**

**3.1 INTRODUCTION**

Marina Municipal Airport is geographically located 2 nautical miles (NM) east of the center of the City of Marina in Monterey County, California. The Airport is located on about 833 acres of land at an elevation of 137 feet above mean sea level (MSL). The Airport is classified as a General Aviation Airport in the *National Plan of Integrated Airport Systems* (NPIAS). The Airport is currently classified as a Limited Use Airport in the *California Aviation System Plan* (CASP) and is expected to be reclassified as a Community General Aviation Airport in the next update of the CASP.

The existing facilities and conditions at the Airport that are important in the master planning process are the airfield, aviation, general aviation, airport access and parking, airport support and other areas. Existing facilities at the Airport are shown on Figure 3-1. Existing terminal area facilities are shown on Figure 3-2.

**3.2 AIRFIELD**

The airfield consists of a single runway (11-29) and a parallel taxiway on the southwest side of the runway with three entry/exit taxiways. There are various other taxiways that provide airport access from properties and activities on the southwest side of the Airport. The runway, taxiways, pavement conditions, drainage conditions, and runway markings and lighting on the Airport are described below.

**3.2.1 Runway and Taxiways**

Runway orientation, physical dimensions, and effective gradient of the runway are as follows:

<u>Runway</u>	<u>Orientation</u>	<u>Physical Dimensions (feet)</u>	<u>Effective Gradient (%)</u>
11-29	Northwest-Southeast	3,485 x 75	0.01

The runway orientation for Runway 11-29 is North 58 degrees, 02 minutes, and 17 seconds West, true.

Runway 11-29 is asphalt paved, in good condition, painted with basic runway markings and equipped with medium intensity runway lights (MIRL). Runway 29 is painted with nonprecision runway markings.



# MARINA MUNICIPAL AIRPORT MASTER PLAN

## EXISTING AIRPORT FACILITIES

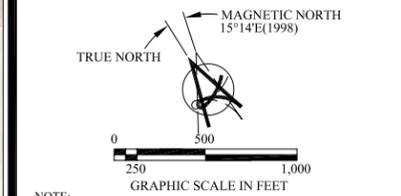


### LEGEND

EXISTING	ULTIMATE	DESCRIPTION
---	SAME	MUNICIPAL BOUNDARY
---	SAME	AIRPORT PROPERTY LINE
---	SAME	EASEMENT - HABITAT DEVELOPMENT
---	SAME	EASEMENT - APPROACH PROTECTION
---	SAME	NON-AVIATION
---	SAME	BUILDINGS/REF. #
---	SAME	BUILDINGS - TEMPORARY
---	SAME	RUNWAY - TAXIWAY - APRON
---	SAME	AIRPORT REFERENCE POINT
---	SAME	7' FENCE WITH 3 STRAND BARB WIRE
---	SAME	3 1/2' FENCE
---	SAME	15' OR 20' WIDE MANUAL VEHICLE GATE
---	SAME	4' WIDE MANUAL PEDESTRIAN GATE
---	SAME	8' WIDE GATE
---	SAME	15' WIDE 3 1/2' HIGH AUTOMATIC VEHICLE GATE
---	SAME	AIRPORT BEACON
---	SAME	THRESHOLD LIGHTING
---	SAME	BUILDING RESTRICTION LINE-MAXIMUM HEIGHT
---	SAME	IMPROVED (PAVED) ROAD
---	SAME	UNIMPROVED ROAD
---	SAME	AVIATION/NON-AVIATION USE LINE
---	SAME	LAND ACQUISITION OR AVIGATION EASEMENT

### FACILITIES LIST

REF#	DESCRIPTION	REF#	DESCRIPTION
504	Offices	5508	Middle Marker Site (Abandoned)
505	Wash Rack	5500	GCA Receiver (Abandoned)
507	Building/Offices	551	FAA ASR 8 Radar Site
510	Building/Shop	552	USN Wind Profiling Radar Site
514	ARFF Facility	553	FAA ASR 11 Radar Site
515	Control Tower (Closed) with Beacon	554	Aircraft Hangar
518	Offices	558	Runway Lighting Vault
519	Lighting Equipment Vault	559	AWOS Site
520	Airport Admin. Building	560	Compass Calibration Pad
521	Offices and Shop		
522	Fuel Island - 100LL and Jet A		
524	Aircraft Hangar/Shops		
525	Aircraft Washrack		
526	Office		
527	Building/Shops		
528	Hangars		
529	Airport Restaurant		
530	Sanitary Lin Station		
533	Building/Shops		
535	Sculpture Center		
548	Wind Indicator		
549	Segmented Circle and Lighted Wind Cone		



NOTE:  
THIS DRAWING IS FOR PLANNING PURPOSES ONLY AND IS NOT INTENDED FOR CONSTRUCTION OR NAVIGATIONAL PURPOSES.

**VARIES CONSULTANTS LTD.**

MARINA MUNICIPAL AIRPORT  
MONTEREY COUNTY, CALIFORNIA

FIGURE  
**3-1**

NAME: OAR-31-Existing Facilities-B.dwg NO: 4120-21  
DATE: 02-07-2008 PLOT SCALE: 1"=1,000'

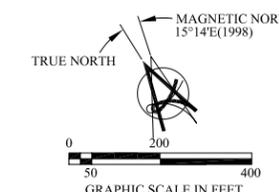


# MARINA MUNICIPAL AIRPORT MASTER PLAN

## EXISTING TERMINAL AREA FACILITIES

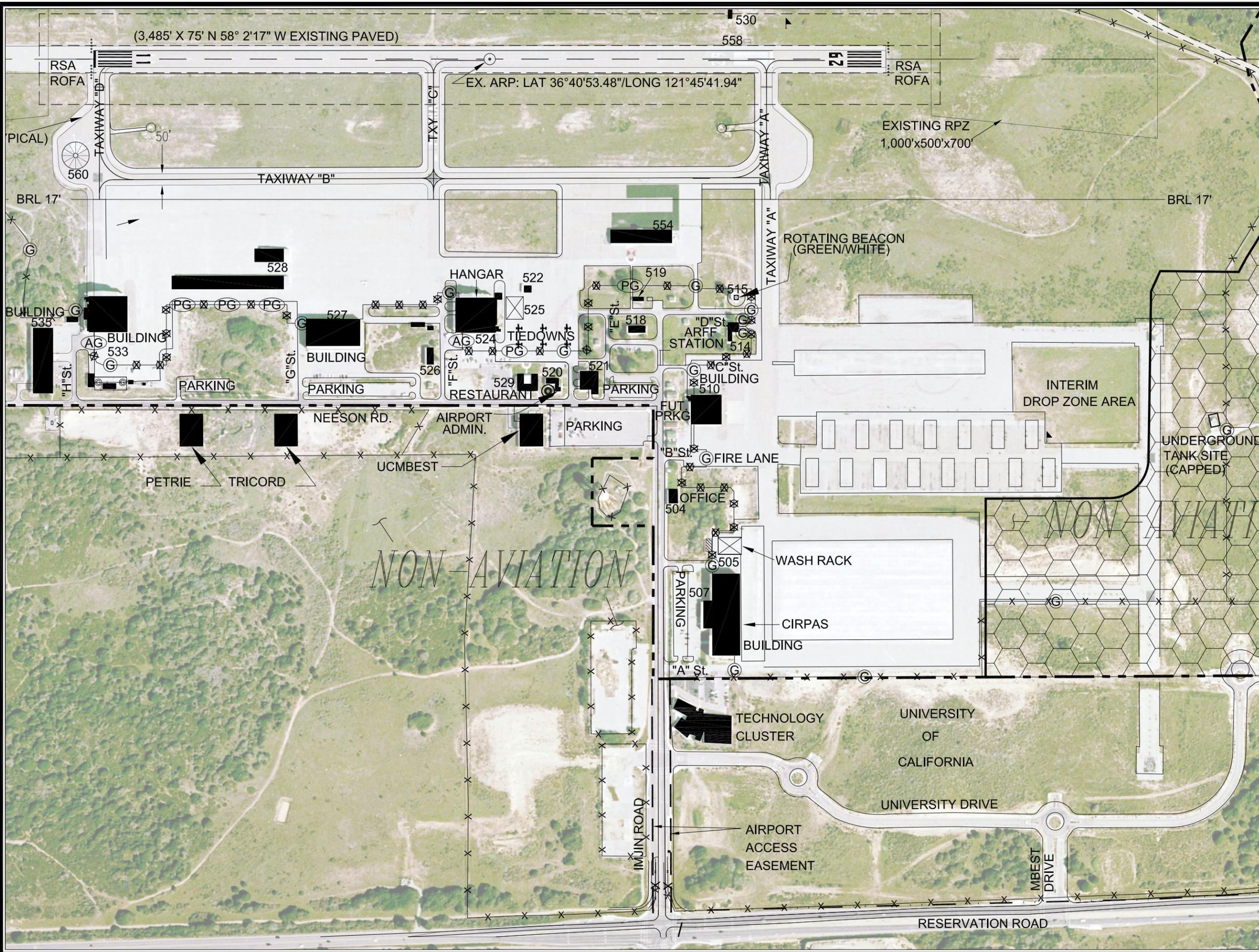
LEGEND		
EXISTING	ULTIMATE	MUNICIPAL BOUNDARY
---	SAME	AIRPORT PROPERTY LINE
---	SAME	EASEMENT - HABITAT DEVELOPMENT
---	SAME	EASEMENT - APPROACH PROTECTION
---	SAME	NON-AVIATION
---	BUILDINGS/REF. #	BUILDINGS - TEMPORARY
---	BUILDINGS - TEMPORARY	RUNWAY - TAXIWAY - APRON
---	RUNWAY - TAXIWAY - APRON	AIRPORT REFERENCE POINT
---	AIRPORT REFERENCE POINT	7' FENCE WITH 3 STRAND BARB WIRE
---	7' FENCE WITH 3 STRAND BARB WIRE	3 1/2" FENCE
---	3 1/2" FENCE	15' OR 20' WIDE MANUAL VEHICLE GATE
---	15' OR 20' WIDE MANUAL VEHICLE GATE	4' WIDE MANUAL PEDESTRIAN GATE
---	4' WIDE MANUAL PEDESTRIAN GATE	8' WIDE GATE
---	8' WIDE GATE	15' WIDE 3 1/2" HIGH AUTOMATIC VEHICLE GATE
---	15' WIDE 3 1/2" HIGH AUTOMATIC VEHICLE GATE	AIRPORT BEACON
---	AIRPORT BEACON	THRESHOLD LIGHTING
---	THRESHOLD LIGHTING	BUILDING RESTRICTION LINE-MAXIMUM HEIGHT
---	BUILDING RESTRICTION LINE-MAXIMUM HEIGHT	IMPROVED (PAVED) ROAD
---	IMPROVED (PAVED) ROAD	UNIMPROVED ROAD
---	UNIMPROVED ROAD	AVIATION/NON-AVIATION USE LINE
---	AVIATION/NON-AVIATION USE LINE	LAND ACQUISITION OR AVIGATION EASEMENT
---	LAND ACQUISITION OR AVIGATION EASEMENT	

FACILITIES LIST	
REF.#	DESCRIPTION
504	Offices
505	Wash Rack
507	Building/Offices
510	Building/Shop
514	ARFF Facility
515	Central Tower (Closed) with Beacon
518	Offices
519	Lighting Equipment Vault
520	Airport Admin. Building
521	Offices and Shop
522	Fuel Island - 100LL and Jet A
524	Aircraft Hangar/Shops
525	Aircraft Washrack
526	Office
527	Building/Shops
528	T-Hangars
529	Airport Restaurant
530	Sanitary LIR Station
533	Building/Shops
535	Sculpture Center
548	Wind Indicator
549	Segmented Circle and Lighted Wind Cone
550B	Middle Marker Site (Abandoned)
550D	GCA Receiver (Abandoned)
551	FAA ASR 8 Radar Site
552	USN Wind Profiling Radar Site
553	FAA ASR 11 Radar Site
554	Aircraft Hangar
558	Runway Lighting Vault
559	AWOS Site
560	Compass Calibration Pad



NOTE:  
THIS DRAWING IS FOR PLANNING PURPOSES ONLY AND IS NOT INTENDED FOR CONSTRUCTION OR NAVIGATIONAL PURPOSES.

**ARIES CONSULTANTS LTD.**



There is a full-length parallel Taxiway B on the southwest side of Runway 11-29 except for approximately 500 feet at the east end. There are entry/exit taxiways at the end of Runway 11 and about 500 feet west of the end of Runway 29. There is another exit taxiway from the runway near mid-field. The parallel taxiway is 530 feet from the runway centerline. The taxiways are 50 feet wide.

### 3.2.2 Pavement Strength

According to the latest FAA Form 5010-1, *Airport Master Record*, last inspected in August 2006, the runway is of asphalt construction and is considered to be in good condition. The California Department of Transportation (Caltrans), Division of Aeronautics, completed an Airport Pavement Management System (APMS) study in 2005, and all the runway, taxiway and aircraft parking apron pavements were rated as good or satisfactory.

The current estimated maximum gross weight of aircraft (runway pavement strength), by aircraft landing gear configuration, is as follows:

	<u>Aircraft Maximum Gross Weight (pounds)</u>	
<u>Runway</u>	<u>Single-wheel</u>	<u>Dual-Wheel</u>
11-29	20,000	50,000

### 3.2.3 Drainage

About 2.5 miles of surface drains carry the water away from the airfield and aircraft parking apron pavement areas. There is about 1 mile of underground red clay pipe (RCP), ranging in size from 15 to 36 inches in diameter, that drains the building areas of the Airport. All water runoff is routed to natural depressions on the Airport, except for one outfall to the Salinas River to the northeast. Many of the drains are dry wells.

## 3.3 AVIGATION

Avigation (air navigation) considerations include airspace and air traffic control, approach areas and obstructions, runway protection zones (formerly called clear zones), and navigational and landing aids and meteorological conditions.

### 3.3.1 Airspace and Air Traffic Control

Controlled airspace within the United States is classified either as Class A, B, C, D or E. Class G airspace is uncontrolled. Class A applies to all airspace above 18,000 feet. Classes B, C and D are applied to airports with operational air traffic control towers. Class B applies to the nation's busiest airports, including San Francisco

International Airport. Class C applies to the next busiest group of airports, which includes Metropolitan Oakland International, San Jose International and Monterey Peninsula Airports. Class D applies to the rest of the airports with an operational air traffic control tower which includes Salinas Municipal Airport. All other controlled airspace is Class E airspace, including Federal airways and the transition areas to and from terminal or en route environment. Class G is any other airspace not designated Class A through Class E, and is therefore uncontrolled airspace. Class G extends upward to a higher class of airspace or 14,500 feet mean sea level (MSL), whichever is lower. Class E airspace then extends upward to, but not including, 18,000 feet MSL.

The airspace in the general area above the Marina Municipal Airport is Class E controlled airspace with a floor of 700 feet above ground level (AGL), with Class G uncontrolled airspace below. The airspace from the surface of the Airport up to 700 feet is therefore Class G uncontrolled airspace.

However, a part of the Class C controlled airspace associated with the Monterey Peninsula Airport overlies the Marina Municipal Airport as illustrated on Figure 3-3. The core area of the Class C airspace extends from the ground up to 4,200 feet MSL, within 5 nautical miles (NM) of the center of the Monterey Peninsula Airport. This core comes within 2 NM of the Marina Municipal Airport. The outer area encircles the core area from 5 NM out to 10 NM, except for an area to the south of the core area. The part of the outer area that overlies the Marina Municipal Airport has a floor of 2,500 feet MSL and extends upward to 4,200 feet MSL. The part of the outer area to the west over the Pacific Ocean has a floor of 1,500 feet MSL and extends upward to 4,200 feet. Additionally, the Class D controlled airspace associated with the Salinas Municipal Airport is within approximately 3 NM to the east of the Marina Municipal Airport. The Salinas Class D controlled airspace extends from the ground up to 2,500 feet MSL, within approximately 4 NM of the center of the Salinas Municipal Airport.

The airspace overlying the Marina Municipal Airport is Class G uncontrolled airspace from the ground, at 137 feet MSL, up to 700 feet AGL (837 feet MSL). Class E controlled airspace extends from 837 feet MSL up to 2,500 feet MSL. Class C controlled airspace extends from 2,500 feet MSL up to 4,200 feet MSL with more Class E controlled airspace extending above 4,200 feet MSL.

Within the above described airspace classifications, aircraft operating under visual flight rules (VFR) must maintain at least the prescribed distances from clouds and have at least 3 miles of flight visibility while in controlled airspace. Conversely, aircraft that operate under VFR in uncontrolled Class G airspace only have to remain clear of clouds and have 1 mile of flight visibility while in uncontrolled airspace. Controlled airspace includes all classes other than Class G. Therefore, as used herein, Classes C, D and E are controlled airspace.



# MARINA MUNICIPAL AIRPORT MASTER PLAN

## AIRSPACE CONFIGURATION

LEGEND	
V 23	LOW ALTITUDE AIRWAY
	COMBINED VOR AND TACAN (VORTAC)
	VHF OMNI RANGE (VOR)
IR 203	MILITARY TRAINING INSTRUMENT ROUTES
VR 1257	MILITARY TRAINING VISUAL ROUTES
	NONPRECISION IFR APPROACH
	PRECISION IFR APPROACH
	LOCALIZER ONLY

TRUE NORTH  
MAGNETIC NORTH  
14°45'E(2001)

0 2 5 10  
GRAPHIC SCALE IN NAUTICAL MILES

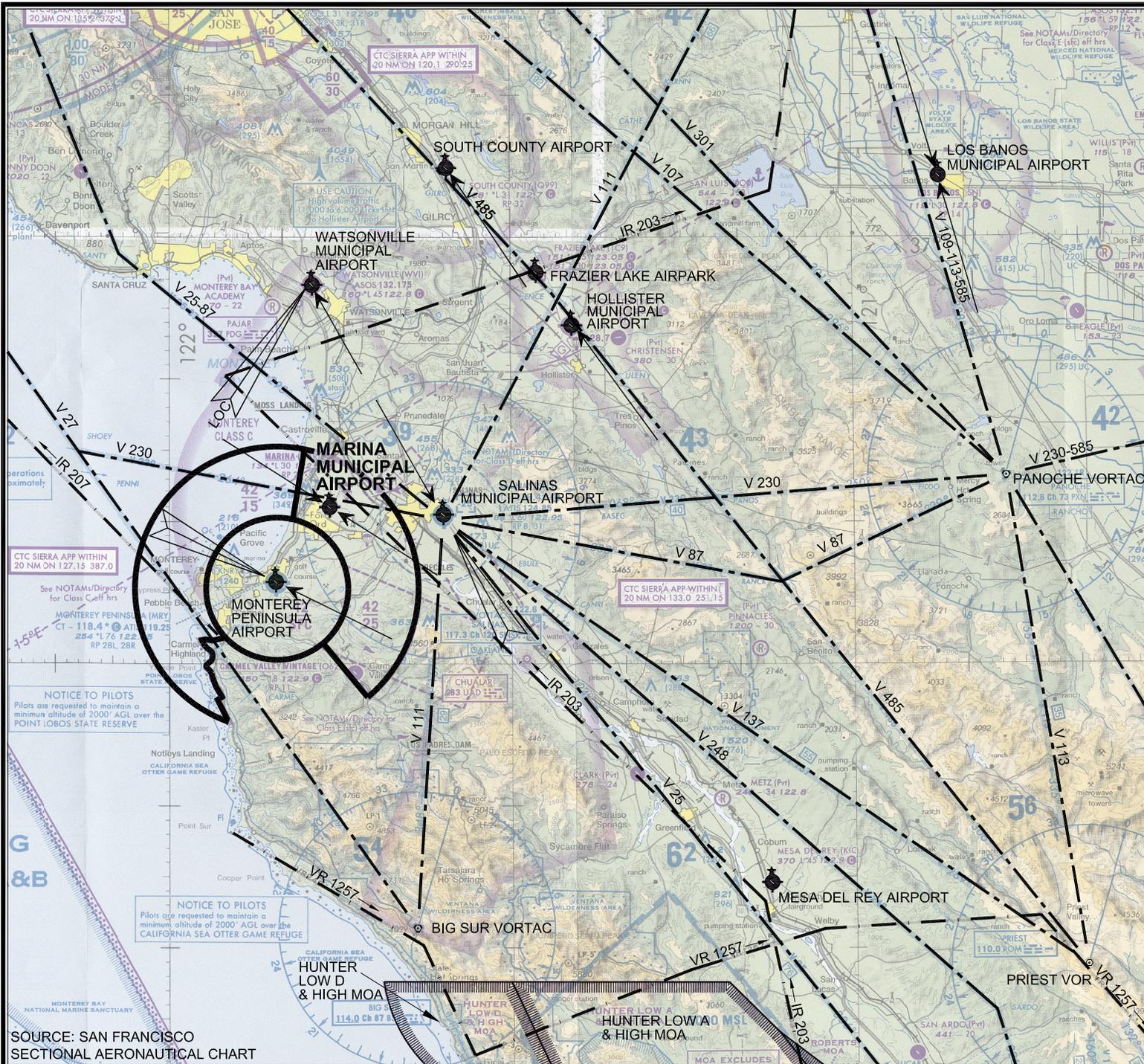
NOTE:  
THIS DRAWING IS FOR PLANNING PURPOSES ONLY AND IS NOT INTENDED FOR CONSTRUCTION OR NAVIGATIONAL PURPOSES.

**ARIES CONSULTANTS LTD.**

MARINA MUNICIPAL AIRPORT  
MONTEREY COUNTY, CALIFORNIA

FIGURE  
**3-3**

NAME: OAR-33-Airspace Config-A.dwg | NO: 4120-03  
DATE: 02-07-2008 | PLOT SCALE: 1"=10 NM



SOURCE: SAN FRANCISCO  
SECTIONAL AERONAUTICAL CHART

Aircraft operating in Class C airspace must have two-way radios and transponders with altitude reporting capability and must make radio contact and be acknowledged before entering Class C airspace and maintain radio contact while in Class C airspace.

Figure 3-3 shows the Marina Municipal Airport in relation to the Class C airspace, major navigational aids, low altitude airways, and low altitude military training routes, military operations areas (MOA), restricted areas, instrument flight rules (IFR) approaches and other airports in the area.

There are several navigational aids that provide the basis of the low altitude airway structure in the area. The closest navigational aids that forms the low altitude airway to the east is the Salinas VORTAC located at 8 NM to the east. The closest navigational aid that forms the low altitude airway to the west is the Big Sur VORTAC located 30 NM to the south-southeast. The Salinas VORTAC serves as the basis for IFR approaches to Runways 11 and 29 at Marina Municipal Airport, as well as the basis for an IFR approach to Runway 13 at Salinas Municipal Airport. A VORTAC is the collocation of a very high frequency omnidirectional radio range (VOR) and military tactical air navigational and distance measuring equipment (DME). A VOR/DME is the collocation of distance measuring equipment with a VOR. The other low altitude airway navigational aids in the area located by nautical miles and general direction are:

<u>Name</u>	<u>Location Relative to the Marina Municipal Airport</u>
Woodside VORTAC	49 NM Northwest
San Jose VOR/DME	42 NM North northwest
Panoche VORTAC	48 NM East
Priest VOR	62 NM Southeast
Paso Robles VORTAC	82 NM Southeast

### **3.3.1.1 Published Instrument Flight Rules Procedures**

There are presently four published IFR nonprecision approach procedures at the Marina Municipal Airport. They are identified as VOR RWY 11, VOR/DME RWY 29, RNAV (GPS) RWY 11, and RNAV (GPS) RWY 29. The latter approach has published straight-in minimums as low as 620 feet MSL (483 feet AGL) and 1 mile visibility for aircraft in approach categories A and B.

The aircraft approach categories are as follows:

- Category A: Speed less than 91 knots
- Category B: Speed 91 knots or more but less than 121 knots
- Category C: Speed 121 knots or more but less than 141 knots

- Category D: Speed 141 knots or more but less than 166 knots
- Category E: Speed 166 knots or more

### **3.3.1.2 Air Traffic Control**

The Oakland Air Route Traffic Control Center (ARTCC), commonly known as center, provides en route air traffic control (ATC) for aircraft operating under instrument flight rules (IFR) passing overhead the Marina Municipal Airport. Centers may delegate airspace for IFR approach/departure control. Oakland Center has delegated airspace to the Northern California terminal radar approach control (TRACON) for a large area of northern California. Airspace delegated to Northern California TRACON overlies Marina Municipal Airport and, therefore, Northern California TRACON provides approach/departure control for IFR aircraft arriving or departing Marina Municipal Airport. In radio transmissions during flight, the Northern California TRACON is commonly referred to as NORCAL Approach or Departure control, depending on the phase of flight.

There is no air traffic control tower (ATCT) located at the Marina Municipal Airport and it is classified by FAA as an uncontrolled airport. The current airport surveillance radar (ASR-8), is used by NORCAL approach/departure control for air traffic control of a large part of their delegated airspace. The ASR-8 covers an area of California generally extending from a few miles west of Los Banos to a few miles south of San Jose down to Big Sur and out to 12 NM off shore over the Pacific Ocean. The new ASR-11, which will become operational in 2008, will cover the same area.

A common traffic advisory frequency (CTAF/UNICOM) of 122.7 has been established for pilots to advise other traffic of their location and operational intentions.

### **3.3.1.3 Airspace Usage**

The use of airspace in the Marina area is influenced by mountainous terrain to the north, east and south. The terrain and obstructions keep minimum en route altitudes (MEA) relatively high (5,000 feet MSL and higher) along Victor airways in the area. Obstructions over 4,000 feet MSL exist within 26 NM to the north. Mountain peaks rise to over 3,400 feet MSL within 22 NM and over 4,000 feet MSL within approximately 50 NM to the south southeast of the Airport. Obstructions rise to over 3,600 feet MSL within 11 NM and terrain rises to over 3,500 feet MSL within 14 NM to the southeast of the Airport. To the south of the Airport terrain rises to over 4,400 feet MSL within 18 NM and to over 4,700 feet MSL within 20 NM.

The airspace around the Marina area serves a wide range of civil and military aircraft operations, both IFR and VFR. The main difference between IFR and VFR is that the pilot maintains spatial orientation of the aircraft by reference to instruments for IFR operations and by visual reference to the ground for VFR operations. VFR activity requires good visibility whereas IFR activity can be accomplished in poor visibility. Meteorological conditions that permit flight under VFR rules are prescribed in the Federal Aviation Regulations (FAR), Part 91, *General Operating and Flight Rules*, Paragraph 155, *Basic VFR Weather Minimums*, in terms of visibility and distance from clouds.

#### **3.3.1.4 Instrument Flight Rules Operations**

All IFR flights en route to and from the Marina Municipal Airport pass through airspace controlled by the Oakland Center, unless the flight originated in airspace that Oakland Center has delegated to Northern California terminal radar approach control (TRACON). This facility, commonly known as NORCAL approach/departure control depending on the phase of flight, provides approach/departure and some en-route control, at relatively low altitudes, for airports within their delegated airspace including the Marina Municipal Airport. For example, IFR flights at low altitudes originating from airports in the San Francisco Bay Area destined for the Marina Municipal Airport or vice versa would be within NORCAL's delegated airspace and would receive en route as well as approach/departure control. Generally, such flights would not climb up into the Oakland Center's airspace.

As arriving aircraft approach the Marina Municipal Airport terminal area airspace, an air traffic controller directs the arriving aircraft so that it descends to approximately 10,000 feet MSL or lower depending on the aircraft involved. If the arriving aircraft is above and descending into NORCAL's airspace, air traffic control is transferred from the Oakland Center to NORCAL approach, which then has the responsibility of controlling arriving aircraft from the point of entry to the final approach course for the airport of intended landing. When the aircraft is at 5 to 10 NM out they are descended to the final approach fix altitude and cleared to change to the common traffic advisory frequency (CTAF) of 122.7 to advise other air traffic of its location and operational intentions.

Departing IFR aircraft are cleared within a departure time window and after lift off are separated by NORCAL's departure controller from other departing and arriving aircraft operating to and from all other airports in the general area. As the aircraft departs or climbs above NORCAL's delegated airspace, control is transferred to Oakland Center for en route air traffic control.

### **3.3.1.5 Visual Flight Rules Operations**

Unlike IFR flights, VFR flights are not controlled by the air traffic control system in the area around the Marina Municipal Airport. The airspace overlying the Marina Municipal Airport is Class G uncontrolled airspace from the ground, at 137 feet MSL, up to 700 feet AGL (837 feet MSL); Class E controlled airspace extending from 837 feet MSL upward to 2,500 feet MSL; Class C controlled airspace extends from 2,500 feet MSL up to 4,200 feet MSL with more Class E controlled airspace extending above 4,200 feet MSL. The significance of controlled airspace to VFR traffic is the basic VFR weather minimums are higher in controlled airspace than in the uncontrolled airspace below that surrounds the Airport, such as 3 miles instead of 1 mile visibility and prescribed distances from clouds instead of clear of clouds.

Two-way radios and transponders with altitude reporting capability are generally required while operating within the Monterey Peninsula Airport's Class C airspace.

The Marina Municipal Airport is near one of the busiest VFR corridors in the world along the west coast of California with considerable air traffic passing through and around the Monterey/Marina area airspace. A significant portion of the air traffic between the Los Angeles and San Francisco Bay Area traverses the Monterey/Marina area. For some of the traffic using this north-south corridor, the Marina Municipal Airport is the origin or destination airport.

Rectangular VFR airport traffic patterns have been established on the northeast side of Runway 11-29. Runway 11 has standard left turns and Runway 29 has required right turns to their respective base leg and final approaches. The traffic pattern altitude is 1,137 feet MSL for all aircraft i.e., 1,000 feet above ground level (AGL). Runway 29 is the calm wind runway. Aircraft departing on Runway 29, when safe, make a 45-degree right turn to avoid a noise sensitive residential area west of the Airport.

The Airport serves a number of twin-engine turboprop and piston aircraft as well as various single-engine aircraft. There are skydivers and a few ultralights operating on and in the vicinity of the Airport.

### **3.3.2 Approach Areas and Obstructions**

The FAA Form 5010-1, *Airport Master Record*, and other charts and documents were reviewed to identify obstructions as defined by Federal Aviation Regulations FAR Part 77, *Objects Affecting Navigable Airspace*. FAR Part 77 establishes imaginary surfaces related to airports and their runways that are used to identify obstructions.

The following tabular data shows the FAR Part 77 approach slopes compared with existing obstacles / obstruction controlled approach slopes and other information relative to the controlling obstacle/obstructions.

Runway Number	Runway Elevation (feet)	FAR Part 77 Slope	Actual Slope	Type	Controlling Obstacle/Obstruction Location from Runway Threshold, Related to Extended Runway Centerline	
					Height Above Threshold (feet)	Location
11	137	34:1	50:1	N/A	N/A	N/A
29	137	34:1	50:1	N/A	N/A	N/A

### 3.3.3 Runway Protection Zones

Both runway protection zones (RPZ) for Runway 11-29 are entirely within the airport property line.

The RPZ dimensions are established in the FAA Advisory Circular 150/5300-13, *Airport Design*, for each individual runway, by approach visibility minimum for, and by category of aircraft that the individual runway will serve. The runway protection zones for a runway are at ground level. FAR Part 77 approach surface slopes, however, are inclined planes above the ground. The following tabular data shows the type of existing runway protection zone and dimensions that have been established.

Runway	Approach Visibility Minimums	Length (feet)	Inner Width (feet)	Outer Width (feet)
11	Visual and Not Lower than 1-mile	1,000	500	700
29	Visual and Not Lower than 1-mile	1,000	500	700

### 3.3.4 Navigational and Landing Aids

The Marina Municipal Airport underlies the 260-degree radial of the Salinas VORTAC at a distance of 8 NM. The Airport also underlies the 334-degree radial of the Big Sur VORTAC at a distance of 30 NM.

There is an FAA airport surveillance radar (ASR) site located at the north end of the Airport. The ASR-8 is in the process of being upgraded to an ASR-11 and relocated about 600 feet to the southwest of the former location. The ASR-11 has been installed and will become operational in 2008. There is also a U.S. Navy wind profiling radar site near, and north of, the existing ASR-8 site.

Runway 11-29 is equipped with high intensity runway lights that are operated at a medium intensity level (MIRL). Runway lighting is pilot controlled on CTAF/UNICOM frequency 122.7. There is medium intensity taxiway lighting (MITL) on the parallel and entry/exit taxiways, but it is inactive. There are now taxiway reflectors on the north side of parallel Taxiway B and on both sides of the entry/exit taxiways.

An airport rotating beacon is located to the east of the aircraft tiedown parking apron area, north of Imjin Road, on the top of the old inactive air traffic control tower. There is a segmented circle and lighted wind cone on the north side of the airfield approximately equidistant from both runway ends. There is a wind sock near, and north of, the end of Runway 29. There is also a wind sock for use by parachutists near the interim parachute drop zone southeast of Runway 29.

### **3.3.5 Meteorological Conditions**

FAA criteria for aircraft operations requires a runway orientation resulting in a crosswind component not exceeding the limit of the most critical aircraft, more than 5 percent of the time, thereby providing at least 95 percent wind coverage. The most critical aircraft for the Marina Municipal Airport are in Airport Reference Codes A-I (e.g., Cessna 172, Beech Bonanza) and B-I (e.g., Cessna 402, Piper 31-Navajo) with a limited crosswind component of 10.5 knots (12 miles per hour).

Based on wind data collected during the period from January 1982 through December 1991 at Fritzsche Army Airfield (now Marina Municipal Airport), the orientation of Runway 11-29 provides 98.93 percent wind coverage for the most critical aircraft expected to use the Airport with 10.5 knots (12 mph) crosswinds. The prevailing wind direction is from the west. In November through January the prevailing wind direction is from the southwest.

The mean maximum daily temperature during the hottest month (September) is 69 degrees Fahrenheit and the mean minimum daily temperature during the coldest month (January) is 40 degrees Fahrenheit.

The average precipitation is 14.77 inches of rain annually with an average of 2.88 inches in January.

## **3.4 GENERAL AVIATION**

There are large aircraft parking apron tiedown areas on the Airport south of Runway 11-29. One apron south of Taxiway B provides space for about 70 tiedowns. There is also space for another 100 tiedowns on the east side of the Airport east of Taxiway A. Transient aircraft can park at any of the tiedowns provided east of hangar Building 524.

There is space for 10 aircraft on tiedown leases in a City-owned hangar (the 36,007 square foot Building 524). There is space for 7 aircraft on tiedown leases in another City-owned hangar (the 35,000 square foot Building 533). Another City-owned hangar (the 21,947 square foot Building 510) could also accommodate aircraft but is currently vacant. There is space for 20 aircraft in a 20 unit T-hangar owned by Marina Aviation and for six aircraft in a 2-unit hangar owned by Selby and Stillwagon. Tait/Forsyth owns a 12-unit hangar building with a two-story office in the center.

There are currently no fixed base operators (FBO) at the Airport. Al Edwards, in hangar Building 524, provides aircraft maintenance.

There is no designated helipad.

There is an aircraft pollution abatement facility (wash rack) located just east of hangar Building 524 and is dedicated for use by aircraft based on the Airport. Another pollution abatement facility is located just north of the U. S. Navy Center for Interdisciplinary Remotely Piloted Aircraft Study (CIRPAS) in hangar Building 507 that is only utilized by aircraft in Building 507.

The Civil Air Patrol uses the former air traffic control tower.

There are public-use restrooms in the Airport Administration Building and the southeast corner of Building 524 which is located northwest of the Airport Administration Building.

### **3.5 AIRPORT ACCESS AND PARKING**

Access to the Airport from the center of Marina is via Reservation Road to Imjin Road and Neeson Road. The Airport is about five miles east of the intersection of Reservation Road and State Highway 1.

Vehicular parking is provided adjacent to the buildings in several areas along Neeson Road and Imjin Road.

There is a dirt perimeter service road around the east, north and west sides of Runway 11-29.

Ground transportation is available from Monterey-Salinas Transit with a stop located on Reservation Road at Imjin Road. Enterprise Rent-a-Car will drive to the Airport on demand as will Marina Cab.

### **3.6 AIRPORT SUPPORT**

Airport support facilities for the Marina Municipal Airport include the following facilities.

The Airport administration offices are located in Building 520.

There is a fire station on the Airport property and it will be staffed by the City in the near future. At present, the nearest staffed City of Marina Fire Department station is located downtown at City Hall approximately 2 miles away on Hillcrest Avenue.

The City provides 100 low-lead and Jet A fuel from a self-serve 24-hour automated credit card fuel island located east of hangar Building 524. Both the 100 low-lead and Jet A fuel are stored in two individual above ground 12,000-gallon tanks.

Water is provided by the Marina Coast Water District. There is an 18 inch water line along Imjin Road that serves the terminal area. There is an elevated 300,000-gallon water storage tank owned by the Marina Coast Water District on Airport property south of the terminal area that is no longer in use and is tentatively scheduled to be removed in early 2008.

Sewer service is provided by Marina Coast Water District and the sewage is piped to the Wastewater Treatment Plant which is operated by the Monterey Regional Water Pollution Control Agency and is located by the Monterey Peninsula Landfill and Recycling Facility.

Solid waste is collected by Waste Management and conveyed to the Monterey Peninsula Landfill and Recycling Facility, operated by the Monterey Regional Waste Management District, located less than 2 miles to the northwest of Runway 11-29.

Electrical power and natural gas service is provided by PG&E.

Telephone service is provided by AT&T.

Security is provided by the City of Marina Police Department.

There is 3.5-foot high fencing and gates in the terminal area. The gates are either automatic access controlled or padlocked. There is a 7-foot chain link fencing with 3-strand barbed wire extending east from Imjin Road to Blanco Road and then to the north and then west, north of Runway 11-29, to the east side of the habitat conservation area. The fencing then extends south around the west end of Runway 11-29. The fencing then extends east, north of Neeson Road, at a 3.5-foot height dividing the airside and landside portions of the Airport.

### **3.7 OTHER AIRPORT LAND USE AREAS**

Other tenants on the Airport include the U. S. Navy Center for Interdisciplinary Remotely Piloted Aircraft Study (CIRPAS) in the 64,920 square foot hangar Building 507. The U.S. Navy CIRPAS conducts weather research and has three aircraft and three unmanned aerial vehicles (UAV) at the Airport. The U.S. Navy also owns an approximate 2 acre site (Facility 552) adjacent to the north end of the Airport, near the current ASR-8 site, for their wind profiling radar site.

The FAA leases an approximate 3.4 acre area at the north end of the Airport for the ASR radar facility. The ASR-8 is being upgraded to an ASR-11 and relocated about 600 feet to the southwest to an approximate one acre site as noted earlier.

The Airport restaurant in Building 529 is currently closed.

There are other tenants in the buildings along Neeson Road and Imjin Road. Integrated Composites uses the 39,446 square foot Building 527 for mostly nonaviation uses and the Monterey Sculpture Center uses the 27,456 square foot Building 535. Desert Star manufactures underwater cameras and uses Building 518.

There is the 130 acre Marina Airport and the 43 acre Salinas River habitat conservation areas on the west and east sides of the Airport, respectively.

There is an approximately 203 acre area north of the airfield that is designated for revenue producing uses. This includes a 12 acre parcel, north of the airfield, which was conveyed to the City as an Economic Development Conveyance to accommodate facilities to potentially support a golf resort. There is another approximately 52 acre area southeast of the airfield, along Blanco Road, that is also designated for revenue producing uses.

There is an 8 acre highway easement along the east side of the Airport and Blanco Road.

### **3.8 OFF-AIRPORT LAND USE**

The Airport is surrounded by other uses of former Fort Ord property to the southwest and east. These include the University of California, Monterey Bay Education, Science and Technology (UCMBEST) Center. Other areas of the former Fort Ord Military Reservation, to the south of the Airport and Reservation Road, are in the process of being converted to other civilian uses.

There is residential and other urban development within the City of Marina to the west and south of the Airport. There are plans for development of the undeveloped area west of the Airport that are currently being considered by the City of Marina on portions of the Armstrong Ranch that are within the City limits. The Marina General Plan calls for the area to be developed for Residential and associated Commercial uses.

The Monterey County General Plan designates the Armstrong Ranch property, located within the County and to the northwest of the Airport, as Permanent Grazing having 40 acres per unit with an Urban Reserve overlay. The area in Monterey County to the east and northeast, across the Salinas River, is in agricultural use.

The Monterey Peninsula Landfill and Recycling Facility and adjacent Monterey Regional Wastewater Treatment Plant are located about 2 miles to the north of the Airport.

The Salinas River abuts the Airport to the north.

The City of Marina has an aviation easement with the University of California over an area to the east of Blanco Road that is within the approach area to Runway 29 and is in Monterey County. In addition, the University of California has granted an aviation easement for aircraft operations over University of California, Monterey Bay Education, Science and Technology (UCMBEST) Center properties to the south and southeast of the Airport property lines.

The City of Marina municipal boundary generally follows the east boundary of the Airport along Blanco Road.

## Chapter 4

### AIRPORT FACILITY REQUIREMENTS

#### 4.1 INTRODUCTION

The major elements of the Airport, which were described in Chapter 3, must be analyzed individually and balanced in relation to one another as part of the airport master planning process for the Marina Municipal Airport. These major elements are:

- Airfield
- Avigation
- General Aviation
- Airport Access and Parking
- Airport Support
- Other Areas

The existing facilities must be evaluated and their ability to satisfy forecast aviation demand throughout the planning period, as set forth in Chapter 2, must be determined. From these evaluations, the requirements for any additional facilities and improvements can be established. These requirements will, in turn, provide the basis for the recommended 2025 Airport Master Plan.

A summary of the major requirements for facilities and improvements at the Airport through the year 2025 is presented in Table 4-1. Existing facilities are also listed for purposes of comparison.

#### 4.2 AIRFIELD

The following analysis of airfield requirements covers runway and taxiway dimensions, airfield pavement, and airfield capacity.

##### 4.2.1 Airport Classification

According to Federal Aviation Administration (FAA) planning criteria, Marina Municipal Airport is classified as a General Aviation Airport in the *National Plan of Integrated Airport Systems* (NPIAS). General Aviation airports serve those communities that do not receive scheduled commercial service. Marina Municipal Airport is currently classified as a Limited Use Airport in the 1998 *California Aviation System Plan* (CASP) Inventory Element. Limited Use Airports are airports that provide limited access; are usually located in non-urban areas; may be used for a

Table 4-1

**EXISTING FACILITIES AND FUTURE REQUIREMENTS**  
**Marina Municipal Airport**  
**2006-2025**

	<u>Existing</u>	<u>Future</u>			
	<u>2006</u>	<u>2010</u>	<u>2015</u>	<u>2020</u>	<u>2025</u>
<b>AIRFIELD</b>					
<b>Runway 11-29</b>					
Length (feet)	3,485	4,700	5,000	5,000	5,200
Width (feet)	75	100	100	100	100
Pavement strength (pounds)					
-- Single-wheel aircraft	20,000	30,000	30,000	30,000	30,000
-- Dual-wheel aircraft	50,000	60,000	60,000	60,000	60,000
<b>Taxiways</b>					
Width (feet)	50	35	35	35	35
<b>GENERAL AVIATION</b>					
Aircraft tiedown positions	70	70	70	70	70
Hangar spaces	75	75	85	95	105
<b>AIRPORT ACCESS</b>					
Access road lanes (two way)	2	2	2	2	2

SOURCE: Aries Consultants Ltd.

a single purpose; have few or no based aircraft; and provide no services. However, in the 2003 System Requirements Element of the CASP, Marina Municipal Airport was noted as one of eight airports in the Central Coast Region considered as highest priority in terms of system capacity and safety enhancements. The CASP also noted that the Marina Municipal Airport will miss meeting the Community General Aviation Airport minimums by only 200 feet of runway length once the automated weather observing system (AWOS) system is installed and operational, so reclassification is a consideration for the next update of the CASP. Since 2003, the runway length has been increased by 485 feet from 3,000 feet to 3,485 feet in 2005 and the AWOS has been installed in 2007. A precision approach path indicator (PAPI) and runway end identifier lights (REIL) should also be installed so that the Airport will meet all of the requirements of a Community General Aviation Airport.

Community Airports provide access to other regions and states. They are located near small communities or in remote locations. They serve, but are not limited to, recreational flying, training and local emergencies. They accommodate predominately single-engine aircraft under 12,500 pounds and provide basic or limited services for pilots or aircraft.

#### **4.2.2 Airfield Dimensions**

Airfield dimensions are determined by several factors; including airport classification, aircraft type, weight, approach speed, and wingspan of the most demanding aircraft. Generally speaking, no one aircraft can be expected to be the most demanding in all of these factors. Aircraft that may be the determinant for runway length may not be the most demanding aircraft for considerations of lateral separations of the runways, taxiways and taxilanes. Further, facilities used for small aircraft (12,500 pounds or less maximum gross takeoff weight) will have some different dimensional requirements than those facilities used by large aircraft (more than 12,500 pounds maximum gross takeoff weight).

#### **4.2.3 Airport Reference Code**

FAA Advisory Circular (AC) 150/5300-13, *Airport Design*, establishes an airport reference code (ARC) to identify specific design criteria appropriate for the types of aircraft expected to be accommodated at a particular airport. The ARC has two components. The first is a letter referring to the “aircraft approach category” in terms of approach speed. The second is a Roman numeral referring to the “airplane design group” in terms of wingspan. Aircraft in a lower ARC would be accommodated by a higher ARC (i.e., A-I fits into B-II).

According to the ARC definitions contained in FAA AC 150/5300-13, the existing airfield dimensions generally meet the criteria for aircraft in an ARC of A-II/B-II. Currently, the Airport is used primarily by small aircraft in ARC A-I, such as the Cessna 172 or the Beech Bonanza A36, up to small aircraft in ARC B-I, such as the Beech Baron 58, Cessna 402, Piper 31 Navajo, and Beech King Air F-90. Some larger turboprop and business jet aircraft in ARC B-II, such as the Beech Super King Air B-200 and Cessna Citation II, use the Airport.

#### 4.2.4 Runway Length

FAA AC 150/5325-4A, *Runway Length Requirements for Airport Design*, provides design standards and guidelines for determining recommended runway length. For aircraft of 60,000 pounds or less, runway length curves are provided for families of aircraft. The FAA has derived these curves with data from FAA approved aircraft flight manuals and assumed loading conditions.

The existing Runway 11-29 is 3,485 feet long and will accommodate almost 100 percent of small airplanes (12,500 pounds or less maximum gross takeoff weight). The recommended runway lengths to accommodate 100 percent of small airplanes at Marina Municipal Airport, corrected for a mean maximum daily temperature of 69 degrees Fahrenheit and elevation of 137 feet mean sea level, are as follow:

Less than ten (10) passenger seats = 3,425 feet  
 Ten (10) passenger seats or more = 3,950 feet

For aircraft between 12,500 and 60,000 pounds maximum allowable gross takeoff weight, FAA AC 150/5325-4A has recommended runway length curves for 75 and 100 percent of the fleet at 60 and 90 percent useful load. Useful load consists of passengers and baggage, cargo and usable fuel. For Marina Municipal Airport, the recommended runway lengths corrected for elevation (137 feet MSL), temperature (69 degrees Fahrenheit) and runway gradient (0.01 percent) are as follows:

<u>Percent of Fleet</u>	<u>Percent of Useful Load</u>	<u>Runway Length</u>
75	60	4,630
75	90	6,845
100	60	4,880
100	90	6,940

Runway gradient corrections are for takeoffs, which are generally more demanding than landings. However, for some turbojet aircraft, landings on a wet or slippery runway may be more demanding. A correction, without the runway gradient correction, may be required to accommodate these aircraft.

#### 4.2.5 Runway 11-29

The existing runway length of 3,485 feet with a runway gradient of 0.06 percent is adequate to accommodate 100 percent of the small airplanes of 12,500 pounds or less allowable gross takeoff weight with less than ten passenger seats. Some aircraft of more than 12,500 pounds maximum allowable gross takeoff weight can operate from this runway length on an occasional basis (less than 500 operations per year according to FAA AC 150/5325-4A). Additionally, some other large aircraft could operate from this runway under conditions of low temperature and/or dry runway conditions. Some large aircraft (more than 12,500 pounds maximum allowable gross takeoff weight) can be accommodated with the lateral separation standards that exist for this runway. Existing taxiway separation and other dimensional standards, such as runway protection zones (RPZ), runway safety areas (RSA), and runway object free areas (ROFA) will accommodate aircraft in ARC A-II and B-II. When aircraft operations reach 500 operations per year by an aircraft in a higher ARC they should be accommodated. A runway extension ultimately to 5,200 feet and widening to 100 feet would be required to provide a precision instrument approach capability and to accommodate large aircraft in ARC A-II/B-II. This will be addressed during the evaluation of the alternatives for the Marina Municipal Airport described in Appendix A.

According to the California Aviation System Plan, a Community Airport should have sufficient runway length to accommodate 100 percent of the aircraft fleet having less than 10 passengers in accordance with FAA AC 150/5325-4A. This requires a runway length of at least 3,430 feet. To meet the minimum standards for a Regional General Aviation Airport (such as Hollister Municipal, Salinas Municipal and Watsonville Municipal Airports) the runway length should be sufficient to accommodate 100 percent of the aircraft fleet at 60 percent useful load in accordance with FAA AC 150/5325-4A. This requires a runway length of at least 4,900 feet.

The existing 75-foot width of Runway 11-29 is adequate for ARC A-II/B-II aircraft with visibility minimums not lower than 3/4 statute mile. However, a 100-foot width is required for visibility minimums lower than 3/4 statute mile (i.e., precision approach minimums).

In the past, the military flew Lockheed C-130 aircraft in and out of the Airport. To meet civil FAA design criteria ARC for C-IV aircraft (e.g., Lockheed C-130) to use the Airport on a frequent basis (over 500 annual operations) would require a runway length of at least 5,000 feet and a width of 150 feet. However, the Lockheed C-130 could operate at the Airport on the existing airfield on an infrequent basis as it has in the past.

#### **4.2.6 Crosswind Coverage**

The crosswind coverage for Runway 11-29 is 99.6 percent for a 13 knots (15 miles per hour) crosswind component, the maximum for aircraft in ARC A-II/B-II based on wind data collected at the Airport between January 1982 and December 1991. However, the maximum crosswind component for aircraft in ARC A-I/B-I is 10.5 knots (12 miles per hour) and Runway 11-29 provides approximately 98.9 percent crosswind coverage.

According to FAA AC 150/5300-13, a crosswind runway is recommended when the main runway orientation provides less than 95 percent crosswind coverage. Therefore, a crosswind runway at the Airport is not required.

#### **4.2.7 Airfield Capacity**

The FAA technique for estimating airfield capacity (FAA Advisory Circular 150/5060-5, *Airport Capacity and Delay*) was used to compute hourly capacity and annual service volumes for both the existing airfield and potential improvements evaluated as part of this study.

A single runway airfield, with a parallel taxiway, has an hourly capacity of about 90 operations during visual flight rule (VFR) conditions. This same runway would have an hourly capacity of about 30 to 40 aircraft operations during instrument flight rules (IFR) conditions.

The peak hour demand is forecast to be aircraft operations per hour during an average day of the peak month by the end of the planning period. The hourly capacity is adequate to accommodate forecast hourly demand with only minor delays during IFR conditions (when operations would normally be reduced). It can be expected that improved IFR approaches and procedures will be published during the planning period that will improve IFR capacity.

Annual service volume (ASV) is a reasonable estimate of an airport's annual capacity in terms of aircraft operations that may be used as a reference in airport planning. The ASV is the annual volume of aircraft operations beyond which the average delay to each aircraft increases rapidly with relatively small increases in aircraft operations (and beyond which the levels of service on the airfield deteriorate).

The ASV of single runway airfield with a parallel taxiway and an IFR approach procedure is estimated at about 230,000 aircraft operations. By comparison, according to the forecasts presented in Chapter 2, air traffic is expected to reach a

level of only 73,300 aircraft operations by the year 2025. Therefore, the single runway airfield would provide adequate capacity to accommodate the forecast demand throughout the 2025 planning period.

#### **4.2.8 Taxiways**

The existing taxiway system is basically adequate for the forecast demand for large aircraft in ARC A-II/B-II. Additional entry/exit taxiways and an extension to the existing parallel taxiway will be required in conjunction with any extension of Runway 11-29.

The existing parallel taxiway is separated from Runway 11-29 by 530 feet centerline-to-centerline. The required taxiway separation for ARC A-II/B-II for a runway with a visibility minimum of less than 3/4 statute mile is 300 feet. The required taxiway separation for ARC C-II for a runway with a visibility minimum of less than 3/4 statute mile is 400 feet. A future parallel taxiway should also be considered north of Runway 11-29 at 300 feet or 400 feet separation for future aviation development in this area.

The aircraft holding position markings on the entry/exit taxiways will need to be increased from the current 125 feet from the runway centerline to 250 feet for a precision instrument approach.

The existing taxiways are 50 feet wide and, in the future, new taxiways could be built at a 35-foot width for design group II aircraft or, preferably, 50 feet to be consistent with the existing taxiways.

#### **4.2.9 Other Airfield Dimensions**

Applicable runway and separation standards for the Marina Municipal Airport are shown in Table 4-2. For comparative purposes, and for use in evaluating alternatives or potential runway extensions, standards for aircraft in ARC A-II/B-II and C-II large airplanes (over 12,500 pounds) are included in Table 4-2.

The FAA design criteria require runway safety areas (RSA), runway object free areas (ROFA) and runway obstacle free area (ROFZ) to be provided of specified width and length, beyond the ends of the runways, based on the existing and expected airplane design groups that will use the runway. The RSA, ROFA and ROFZ are rectangular areas centered about the runway centerline.

Table 4-2

**AIRPORT DIMENSIONAL AND SEPARATION STANDARDS**  
**Marina Municipal Airport**  
**(feet)**

ITEM	AIRPORT REFERENCE CODE			
	A-I/B-I <sup>1</sup>	A-II/B-II <sup>2</sup>	A-II/B-II <sup>3</sup>	C-II <sup>4</sup>
Runway Width	60	75	100	100
Runway Shoulder Width	10	10	10	10
Runway Blast Pad Width	80	95	120	120
Runway Blast Pad Length	60	150	150	150
Runway Safety Area Width	120	150	300	500
Runway Safety Area and Object Free				
Area Length Beyond Each Runway End	240	300	600	1,000
Runway Object Free Area Width	250	500	800	800
Obstacle Free Zone Width	250	400	400	400
Runway Centerline to Taxiway Centerline	150	240	300	300
Runway Centerline to Aircraft Parking Area	125	250	400	400
Taxiway Width	25	35	35	35
Taxiway Shoulder Width	10	10	10	10
Taxiway Safety Area Width	49	79	79	79
Taxiway Object Free Area Width	89	131	131	131
Taxiway Centerline to Parallel Taxiway Centerline	69	105	105	105
Taxiway Centerline to Fixed or Movable Object	44.5	65.5	65.5	65.5
Taxilane Centerline to Fixed to Movable Object	39.5	57.5	57.5	57.5
Runway Protection Zone <sup>5,6,7</sup>				
Length	1,000	1,000	1,000	1,700
Inner Width	250	500	500	500
Outer Width	450	700	700	1,010

1. ARC A-I/B-I for small aircraft (12,500 pounds or less) exclusively with visibilities not less than 1 statute mile.
2. ARC A-II/B-II for large aircraft (over 12,500 pounds) and visibility minimums not less than 3/4 statute mile.
3. ARC A-II/B-II for large aircraft (over 12,500 pounds) and visibility minimums less than 3/4 statute mile.
4. ARC C-II for small and large aircraft with all visibility minimums.
5. Runway protection zone dimensional standards for are visual runways and runways with not lower than one (1) statute mile approach visibility minimums.
6. For both small and large aircraft in approach categories A and B, with a nonprecision approach, with not lower than 3/4 statute mile approach visibility minimums, the runway protection zone has a length of 1,700 feet, inner width of 1,000 feet and outer width of 1,510 feet.
7. For both small and large aircraft, a precision runway protection zone has a length of 2,500 feet, inner width of 1,000 feet and outer width of 1,750 feet.

SOURCE: FAA AC 150/5300-13 *Airport Design*

For Runway 11-29, assuming large aircraft in ARC B-II are to be accommodated on a regular basis, the requirements are:

For visibilities not less than 3/4 statute miles – nonprecision approach

- RSA – 150 feet wide and extending 300 feet beyond the runway ends.
- ROFA – 500 feet wide and extending 300 feet beyond the runway ends.
- ROFZ – 400 feet wide and extending 200 feet beyond the runway ends.

For visibilities less than 3/4 statute miles – precision approach with approach lighting system

- RSA – 300 feet wide and extending 1,000 feet beyond the runway ends.
- ROFA – 800 feet wide and extending 1,000 feet beyond the runway ends.
- ROFZ – 400 feet wide and extending 200 feet beyond the last light in approach lighting system.

For Runway 11-29, assuming large aircraft in ARC C-II are to be accommodated on a regular basis, the requirements are:

For visibilities not less than 3/4 statute miles – nonprecision approach

- RSA – 500 feet wide and extending 1,000 feet beyond the runway ends.
- ROFA – 800 feet wide and extending 1,000 feet beyond the runway ends.
- ROFZ – 400 feet wide and extending 200 feet beyond the runway ends.

For visibilities less than 3/4 statute miles – precision approach with approach lighting system

- RSA – 500 feet wide and extending 1,000 feet beyond the runway ends.
- ROFA – 800 feet wide and extending 1,000 feet beyond the runway ends.
- ROFZ – 400 feet wide and extending 200 feet beyond the last light in approach lighting system.

All on-airport buildings are located outside of the established building restriction lines (BRL), set at 619 feet from the Runway 11-29 centerline, on the south side of the runway for a building height of 17 feet, and set at 640 feet from the Runway 11-29 centerline, on the north side of the runway for a building height of 20 feet.

To preserve the full capability of a precision instrument approach, a BRL of at least 640 feet from the Runway 11-29 centerline should be considered which would allow buildings of 20 feet in height at the BRL. The nearest existing hangar building is located at approximately 1,005 feet from the runway centerline and that would allow a 72-foot high building.

Applicable taxiway design and separation standards for ARC A-1/B-I small and A-II/B-II large aircraft at Marina Municipal Airport are shown in Table 4-2. The FAA taxiway design criteria for ARC A-II/B-II require taxiway safety areas (TSA) of 79 feet in width and taxiway object free areas (TOFA) of 131 feet in width. The applicable standards for ARC C-II large aircraft (e.g., Cessna Citation 650 and Learjet 35/36) are also included in Table 4-2.

#### **4.2.10 Pavement Strength**

The estimated existing airfield pavement strength for Runway 11-29 is 20,000 pounds single-wheel configuration and 50,000 pounds dual-wheel configuration as shown in Table 4-1. This strength is adequate for the aircraft presently using the Airport. Runway pavement overlays or reconstruction may be required in the future. An ultimate pavement strength of up to 30,000 pounds for single-wheel and up to 60,000 pounds to accommodate a dual-wheel landing gear configuration on Runway 11-29 should be considered.

According to the Airport Pavement Management System (APMS) study completed by Caltrans in 2005, all the runway, taxiway and aircraft parking apron pavements were rated as good or satisfactory.

#### **4.2.11 Drainage**

The existing surface drainage system that serves the airfield will require extension for any runway and taxiway extensions. The water runoff will be routed to natural depressions on the Airport. The existing underground drainage system that serves the building area along Imjin Road and Neeson Road will need to be extended to any new development in this area.

### **4.3 AVIGATION**

Avigation (air navigation) considerations include (1) airspace and air traffic control, (2) approach areas and obstructions, runway protection zones, and (3) navigational and landing aids.

### **4.3.1 Airspace and Air Traffic Control**

Existing airspace procedures and air traffic control (ATC) facilities for airspace above the Marina Municipal Airport provide for the safe, orderly and expeditious flow of air traffic. Airspace and ATC considerations do not limit the capacity of aviation activity at the Marina Municipal Airport, and they are not expected to limit capacity in the future. Forecast demand does not indicate qualification for an air traffic control tower (ATCT) by the year 2025.

In the vicinity of the Marina Municipal Airport, existing procedures stated in the *Aeronautical Information Manual (AIM)*, published by the FAA, in Paragraphs 4-1-9 b and c, *Communicating on a Common Frequency*, and *Recommended Traffic Advisory Practices*, are adequate for the present and forecast traffic levels. These paragraphs provide information about the Common Traffic Advisory Frequency (CTAF) program and recommended communications procedures. The CTAF for the Marina Municipal Airport is 122.7 and is listed in the *Airport/Facility Directory* and *U.S. Terminal Procedures, Southwest Volume 2*, published by the FAA National Aeronautical Charting Office (NACO).

The common traffic advisory frequency (CTAF) of 122.7 will continue to be the individual pilot's means for advising other pilots in the area and possible service vehicles on the Airport, of his/her position and intentions of aircraft movements. Northern California (NORCAL) Terminal Radar Approach (TRACON) will continue to provide approach/departure control for the Marina Municipal Airport. The Oakland Air Route Traffic Control Center (ARTCC), commonly known as Center, will continue to provide en route air traffic control for aircraft passing overhead of, and outside of, NORCAL TRACON's delegated airspace.

### **4.3.2 Approach Areas and Obstructions**

According to the FAA Form 5010-1, *Airport Master Record*, last inspection date August 2006, and other charts and documents, there are no penetrations to the Federal Aviation Regulations (FAR) Part 77, *Objects Affecting Navigable Airspace*, approach surfaces to the existing Runway 11-29. It appears that there will be no penetrations to future FAR Part 77 approach surfaces. FAR Part 77 establishes imaginary surfaces, related to airports and their runways, which are used to identify obstructions.

### **4.3.3 Runway Protection Zones**

The current RPZ dimensional standards established in FAA Advisory Circular 150/5300-13, *Airport Design*, are shown in Table 4-2. The existing runway protection zones (RPZs) of 1,000 feet in length, 500 feet inner width and 700 feet

outer width for Runway 11-29, meet the requirements for large aircraft in approach categories A and B for visual and not lower than 1-mile visibility minimums and are adequate in size for forecast activity through the planning period to the year 2025 for the current approach procedures. However, the existing FAA approved Airport Layout Plan shows a future RPZ for Runway 29 of 2,500 feet long, 1,000 feet inner width and 1,750 feet outer width. This is the required size to accommodate a precision instrument approach with less than 3/4 statute mile visibility minimums and should be retained in the Plan. To accommodate a nonprecision approach to Runway 11 with not lower than 3/4 statute mile approach visibility minimums would require a RPZ of 1,700 feet long, 1,000 feet inner width and 1,510 feet outer width and should be protected in the Plan.

#### **4.3.4 Navigational and Landing Aids**

In light of progress in the development of the global positioning system (GPS) and wide area augmentation system (WAAS), new IFR procedures using the new technology will be developed at low activity airports within the planning period. In general, WAAS provides greater accuracy to GPS for those aircraft appropriately equipped. Recently the FAA lowered the minima for WAAS enhanced GPS approaches to 200 feet decision height and 1/2 mile visibility. This is the minima for an ILS category I precision instrument approach. It will probably be a few years before the FAA develops such a procedure for the Marina Municipal Airport. However, it is reasonable to expect such a procedure within the 20 year planning period.

A WAAS enhanced GPS approach to Runway 29 with vertical guidance down to a nonprecision minimum descent altitude (MDA) of approximately 300 feet AGL should be possible in the near term. A lateral precision with vertical guidance (LPV) GPS approach down to "ILS minimums" (200 feet AGL), may be possible in the intermediate term.

With new navigational technology comes new terminology. New GPS IFR approach procedures will be identified as RNAV (GPS). In the minimums section of the published procedure new terminology will appear. LNAV means lateral navigation without vertical guidance, VNAV means vertical navigation and LNAV/VNAV is like a nonprecision approach with vertical guidance. LPV means lateral precision with vertical guidance. In the paragraph above each of the procedures may be identified as RNAV (GPS) RWY 29 and shown on the same chart. In the minimums section the first example could have LNAV MDA meaning no vertical guidance (similar to a nonprecision approach down to around 500 feet AGL). The second example could have LNAV/VNAV DA meaning vertical guidance (similar to a nonprecision approach with vertical guidance down to a decision altitude of around 350 feet AGL).

The third example could have LPV DA meaning lateral precision approach with vertical guidance (similar to ILS approach with vertical guidance down to not lower than 200 feet AGL). All three of these minimums could be published in the minimums section of the procedure. These minimums apply according to the equipment capability aboard the individual aircraft executing the approach.

On some RNAV (GPS) procedures the term GLS PA DA appears in the minimums section. However, NA (not authorized) is shown instead of minimums. None of these procedures have been approved. The GLS PA DA minima line will be removed from existing RNAV (GPS) approach charts when LPV minima is published.

The existing airfield lighting system is in need of replacement. The high intensity runway lights are operated at a medium intensity level and the taxiway lighting does not work. There are taxiway reflectors on the north side of parallel Taxiway B and on both sides of the entry/exit taxiways. New medium intensity runway lights (MIRL) should be planned for the existing runway and any runway extension. The existing medium intensity taxiway lighting (MITL) on the parallel taxiway and entry/exit taxiways should be replaced. Additional MITL should be planned for any parallel taxiway extension, new entry/exit taxiways and other taxiways. Precision approach path indicators (PAPI-4) and runway end identifier lights (REIL) should be installed at each end of the runway and would have to be relocated along with any runway extension.

The City is planning to install an automated weather observing system (AWOS) in 2007. This could facilitate IFR approaches and provide all aircraft with useful meteorological data when departing or arriving at the Airport. Obstructions (e.g., vegetation, buildings) related to AWOS installations within a radius of 500 feet should be at least 15 feet lower than the wind sensor, and within a radius of 1,000 feet no higher than 10 feet above the wind sensor. (The wind sensor is typically between 30 and 33 feet above ground level.) Ideally, the minimum distance from the runway centerline for the sensor is 500 feet and the maximum distance is 1,000 feet. However, according to FAA Order 6560.2B, *Siting Criteria for Automated Weather Observing Systems (AWOS)*, the sensors may be located closer to the runway as long as they are outside the runway or taxiway object free area, runway or taxiway safety area, obstacle free zone or instrument flight procedures surfaces as described in FAA AC 150/5300-13, *Airport Design*, or FAA Handbook 8260.3B, *United States Standard for Terminal Instrument Procedures (TERPS)* criteria.

The airport surveillance radar (ASR) is in the process of being upgraded to an ASR-11 and relocated about 600 feet to the southwest of the former location. The ASR-11 has been installed and will become operational in 2008. A 1,500-foot clear area from any building or object that may cause electronic reflections, and at least one half mile from other electronic equipment, should be maintained around the ASR location.

The Airport does not meet current FAA airport signage standards. Additional airfield signage is also required that meets current FAA design standards. Any runway extension and new taxiways should be signed in accordance with current FAA design standards. The markings for taxiways to the aircraft parking aprons and for the aircraft tiedowns need to be changed to meet FAA civil airport standards.

The segmented circle requires upgrading. The wind sock at the end of Runway 29 needs replacing and a wind sock should be installed at the end of Runway 11.

#### **4.4 GENERAL AVIATION**

On the basis of the general aviation activity forecasts presented in Table 2-8, it is estimated that space will be required for about 108 based aircraft by the year 2025.

Based on discussions with airport tenants, users and trends at other airports, it is estimated that a high percentage of aircraft owners and potential users of this Airport would prefer to hangar their aircraft rather than use outside tiedowns. It is estimated that by the year 2025, at least 95 percent of the based aircraft could be attracted to, and accommodated by, T-hangars, portable hangars and conventional hangars in approximately 105 spaces. At the present time there are approximately 75 hangar spaces of which approximately 25 of the 75 are not occupied.

Providing space for additional hangar facilities will allow for construction of new hangars capable of accommodating larger twin-engine aircraft. Because of the important role the Airport serves for the businesses in the City of Marina area that will continue to grow in the future, space should also be provided for corporate/executive aviation facilities. Ideally, any new aircraft storage hangars should be consolidated in the same general area.

It is desirable to provide for larger aircraft in a separate tiedown area from small aircraft, and a tiedown area should be provided for itinerant aircraft near the terminal/administration building. It is estimated that about 40 tiedown spaces will be needed by the year 2025. About 5 of the tiedowns will accommodate the based aircraft and the other 35 will be for transient aircraft. (Note: There are currently about 70 based and itinerant aircraft tiedown parking positions south of Taxiway B.) Some tiedown spaces should be located as part of fixed base operator/commercial aviation facilities.

Space is also required for potential helicopter activity. Helicopters should use fixed wing patterns and procedures and helicopters should land and takeoff on the runway and hover taxi to the helicopter parking spaces. There is no designated heliport located at the Marina Municipal Airport for landing and takeoff. At the present time,

helicopters should use the existing runway for landing and takeoff and hover-taxi to park on the existing fixed wing aircraft parking apron. As helicopter operations increase it would be desirable to provide at least 4 parking positions for helicopters. Helicopters could be accommodated east of Taxiway A where the military helicopters used to be parked.

Adequate space should be provided for expanded and/or additional fixed base operator/commercial aviation activity. The plots should have expansion capability and access to the airfield and provide adequate vehicular parking space for employees and patrons. In addition, sufficient areas should be reserved for other aviation-related activities, including, aircraft refueling, aircraft pollution abatement facility and vehicular parking areas.

There is an interim skydive drop zone located about 1,500 feet southeast of the end of Runway 11-29. This interim skydive drop zone will need to be relocated to another location either on or off the Airport in the future as it is located immediately adjacent to an area where the City is actively considering developing an Airport Business Park which may cause a potential use conflict. The 1999 *Airport Economic and Community Impact Report*, prepared for the City, indicated that the interim skydive drop zone location was incompatible with proposed development on this adjacent portion of Airport property.

The 1996 Airport Master Plan and Airport Layout Plan stated that the current location of the skydive drop zone was only an interim measure. The 2001, *Interaction of Aeronautical Activities at Marina Municipal Airport* report, prepared for the City, suggested moving the drop zone about 1,000 to 1,500 feet south of the interim location to a new site on airport property. However, the City concluded that this would not be cost effective due to environmental mitigation issues.

One option to consider would be to relocate the drop zone elsewhere on the Airport. Another option would be to locate a drop zone off-airport property away from all the established aircraft approach, departure and traffic patterns. There is an existing off-airport drop zone located about 4 miles southeast of the Airport that is shown on the San Francisco Sectional Aeronautical Chart. These options will be addressed in the alternatives analysis.

FAR Part 105, *Parachute Operations*, specifies the requirements for skydiving operations. Section 105.23, *Parachute Operations over or onto Airports*, specifies that “for airports without an operating control tower, (no person may conduct parachute operations unless) prior approval has been obtained from the management of the airport to conduct parachute operations over or on that airport.”

The United States Parachute Association guidance for the size of the drop zone (landing area) is shown below.

1. Areas used for skydiving should be unobstructed, with the following minimum radial distances to the nearest hazard:
  - a. Solo students and A-license holders – 100 meters (about 330 feet)
  - b. B- and C-license holders – 50 meters
  - c. D-license holders – unlimited
2. Hazards are defined as telephone and power lines, towers, buildings, open bodies of water, highways, automobiles, and clusters of trees covering more than 3,000 square meters.
3. Manned ground-to-air communications (e.g., radios, panels, smoke, and lights) are to be present on the drop zone during skydiving operations.

These criteria should be considered if a drop zone is to remain at the Airport. However, the City of Marina must provide approval to conduct parachute operations at the Airport.

Skydiving, or parachute jumping, is an FAA recognized “aeronautical activity” and each request to establish a skydiving/parachute drop zone within the boundaries of a FAA funded airport must be evaluated by airport management on the basis that any restriction, limitation or ban against parachute jumping onto the airport may be imposed only when necessary to serve the civil aviation needs in the interest of safety and/or efficiency (see FAA Order 5190.6A *Airport Compliance Requirements*). According to FAA Order 5190.6A, the Airport owner (City of Marina) is not required to permit parachute/skydiving activity if, in their judgment, it increases a safety hazard to the normal operations of aircraft arriving or departing from the airport, nor is the airport owner required to close the airport to provide a safe environment for the parachute jumpers. The FAA will make the final determination concerning the reasonableness of airport imposed restrictions and/or limitations.

#### **4.5 AIRPORT ACCESS AND PARKING**

At present, there is one access road into the Airport on the southwest side. Imjin Road enters the Airport from Reservation Road that extends to the west into the center of the City of Marina. Imjin Road is a two lane roadway. This access road should be adequate to serve the south side of the Airport through the planning period, depending upon the long-term development concept selected for the Airport. Neeson Road extends to the northwest from Imjin Road and provides access to the Airport Administration building, restaurant, hangars and various other aviation and nonaviation use buildings.

A new access road will be required to serve any aviation or nonaviation uses north of the runway. The City is planning a new road, Golf Boulevard (City of Marina General Plan designation), across the north side of the Airport from Blanco Road on the east to Del Monte Boulevard on the west that will serve this area. The location of the future right-of-way for this road is still to be determined and needs to be coordinated with the Airport Master Plan so as not to adversely impact the potential development of the Airport or the Habitat Conservation Areas to the east and west. The City is also considering new or realigned roads to serve the commercial/industrial/research area in the southeast corner of the Airport. The dirt road, off Blanco Road, that crosses the Airport and serves property in the County to the northeast of the Airport will have to be realigned before the runway is extended to the east. These roads also need to be planned so as not to compromise the long-term potential development of the Airport.

Several parking lots are located along and adjacent to both Imjin and Neeson Roads. However, more convenient parking spaces will be required as new facilities are developed. Any new fixed base operators (FBOs), and other aviation and nonaviation development should provide enough parking spaces within their lease lots for customers visitors and employees. The number of parking spaces required, in some locations, would depend upon the City policy with respect to whether or not aircraft owners are allowed to park their vehicles in their hangars or on their tiedown spaces.

#### **4.6 AIRPORT SUPPORT**

Airport support facilities include airport administration/terminal facilities, fuel storage, airport maintenance facilities, drainage and utility systems and aircraft rescue and fire fighting (ARFF) equipment.

While there is no current requirement for an ARFF facility on the Airport the old Army ARFF facility still exists. This facility will be staffed by City of Marina Fire Department Personnel in the near future. The Airport should have written procedural agreements with the City of Marina Fire Department to guarantee back-up response in case of any emergency when required. The City is also trying to find space for a police substation on the Airport.

The current fuel storage system consists of above ground 12,000-gallon 100 low lead (100 LL) and 12,000-gallon Jet A (Jet-A) fuel tanks and these can accommodate future needs. The fueling systems operate with a 24-hour automated self-serve, credit card system at a fuel island located north of the Airport Administration building on part of the aircraft parking apron. The 12,000-gallon Jet A fuel tank with an automated credit card system for civil aircraft is similar to that used for the 100 low lead fuel.

The Airport will require aircraft parking apron area security lighting for both existing apron areas and when new areas of the Airport are developed. This lighting should be photocell-controlled and installed at locations on the apron either on buildings or where the poles themselves do not present a hazard. An emergency generator will also be required for the airfield lighting, airport rotating beacon and other airport facilities. The removal of the old and installation of new infrastructure at the electrical vault is required.

A facility should be provided for airport maintenance equipment to be stored on the Airport.

The future requirements for utilities and drainage will be refined based on the recommended 2025 Airport Master Plan concept selected by the City. At the present time, utilities are provided by the Marina Coast Water District, Monterey Regional Water Pollution Control Agency, Waste Management, Monterey Regional Waste Management District, Pacific Gas And Electric (PG&E), and AT&T.

Security is provided by the City of Marina Police Department.

A 7-foot chain link fencing with 3-strand barbed wire encompasses most of the Airport. The terminal area between the airside and landside portions of the Airport is currently fenced with 3.5-foot high fencing and this should be replaced with either the same 7-foot chain link fencing with 3-strand barbed wire or a standard 6-foot chain link and barbed wire fencing. There may also be a requirement for new or improved Airport fencing and signage as a result of evolving airport security requirements.

The Airport was originally built as a military base and the electrical system has deficiencies. The replacement of this obsolete system is necessary as any attempt to salvage the existing system would not be feasible. Since the opening of the Airport in the 1990s for civil use, the electrical system has been rigged to operate and has operated at reduced power levels as noted earlier. To enhance the safety and utility of the Airport, a modern electrical system plan that encompasses all aviation infrastructures should be developed and electrical improvements built as soon as possible before the existing electrical system fails.

## **RECOMMENDED AIRPORT MASTER PLAN**

### **5.1 INTRODUCTION**

The recommended year 2025 Airport Master Plan (the Plan) for the Marina Municipal Airport is illustrated on Figure 5-1. The Terminal Area and Access Plan is illustrated on Figure 5-2. The Plan integrates long-term airfield and terminal area requirements with forecast aviation needs and airport access and parking needs. It represents a guide for airport development through the year 2025 planning period and indicates possible developments beyond the year 2025 for which land should be reserved at this time.

Several alternative airport development concepts were formulated and evaluated for review prior to the City's selection of the recommended long-range 2025 Airport Master Plan. These alternative development concepts were presented and discussed with the City at a public meeting of the Airport Master Plan Advisory Committee on September 26, 2007. They were also distributed to other interested parties for their review and comments.

Subsequent to the September 26, 2007 meeting, the City held additional meetings with potential airport users and other interested parties to further discuss the draft Airport Master Plan. A public meeting of the Airport Master Plan Advisory Committee was held on January 9, 2008 to review the recommended Airport Master Plan and to discuss the implementation of the Plan. The recommended Airport Master Plan concept has been finalized based on the comments and suggestions received as a result of the City of Marina, Airport Master Plan Advisory Committee, Federal Aviation Administration (FAA) and State of California, Department of Transportation (Caltrans), Division of Aeronautics, potential Airport users and public review and comments. On January 17, 2008 the City of Marina Public Works Commission recommended that the Airport Master Plan be adopted and on January 24, 2008 the City of Marina Planning Commission recommended that the Airport Master Plan be adopted.

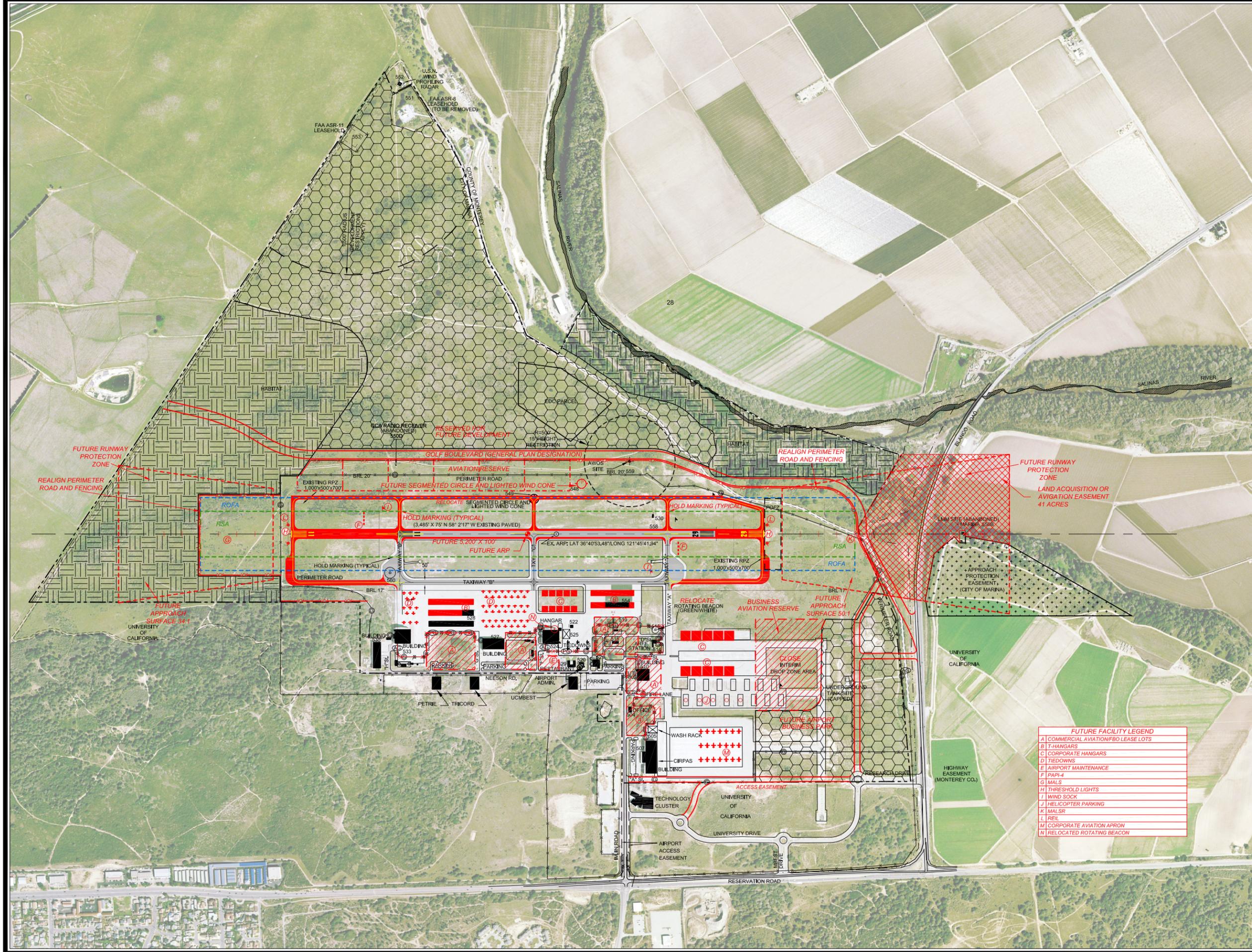
The primary functional areas of the Plan, as illustrated on Figure 5-1, are:

- Airport Property
- Airfield
- Avigation
- General Aviation
- Airport Access and Parking
- Airport Support
- Other Areas



# MARINA MUNICIPAL AIRPORT MASTER PLAN

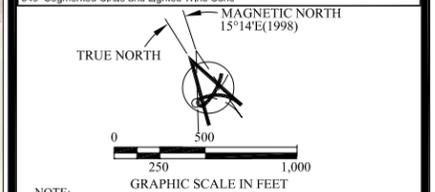
## AIRPORT MASTER PLAN



EXISTING	ULTIMATE	LEGEND
---	---	MUNICIPAL BOUNDARY
---	---	AIRPORT PROPERTY LINE
---	---	EASEMENT - HABITAT DEVELOPMENT
---	---	EASEMENT - APPROACH PROTECTION
---	---	BUILDINGS/REF. #
---	---	BUILDINGS - TEMPORARY
---	---	RUNWAY - TAXIWAY - APRON
---	---	AIRPORT REFERENCE POINT
---	---	7' FENCE WITH 3 STRAND BARB WIRE
---	---	3 1/2" FENCE
---	---	15' OR 20' WIDE MANUAL VEHICLE GATE
---	---	4' WIDE MANUAL PEDESTRIAN GATE
---	---	8' WIDE GATE
---	---	15' WIDE 3 1/2" HIGH AUTOMATIC VEHICLE GATE
---	---	AIRPORT BEACON
---	---	THRESHOLD LIGHTING
---	---	BUILDING RESTRICTION LINE-MAXIMUM HEIGHT
---	---	IMPROVED (PAVED) ROAD
---	---	UNIMPROVED ROAD
---	---	AVIATION/NON-AVIATION USE LINE
---	---	LAND ACQUISITION OR AVIGATION EASEMENT

REF#	DESCRIPTION	REF#	DESCRIPTION
504	Offices	550B	Middle Marker Site (Abandoned)
505	Wash Rack	550D	GCA Receiver (Abandoned)
507	Building/Offices	551	FAA ASR 8 Radar Site
510	Building/Shop	552	USN Wind Profiling Radar Site
514	ARFF Facility	553	FAA ASR 11 Radar Site
515	Control Tower (Closed) with Beacon	554	Aircraft Hangar
518	Offices	558	Runway Lighting Vault
519	Lighting Equipment Vault	559	AWOS Site
520	Airport Adm. Building	560	Compass Calibration Pad
521	Offices and Shop		
522	Fuel Island - 100LL and Jet A		
524	Aircraft Hangar/Shops		
525	Aircraft Washrack		
526	Office		
527	Building/Shops		
528	T-Hangars		
529	Airport Restaurant		
530	Sanitary LTR Station		
533	Building/Shops		
535	Sculpture Center		
548	Wind Indicator		
549	Segmented Circle and Lighted Wind Cone		

FUTURE FACILITY LEGEND	
A	COMMERCIAL AVIATION/FBO LEASE LOTS
B	T-HANGARS
C	CORPORATE HANGARS
D	TIEDOWNS
E	AIRPORT MAINTENANCE
F	PAPI-4
G	MALS
H	THRESHOLD LIGHTS
I	WIND SOCK
J	HELICOPTER PARKING
K	MALS/R
L	RESIL
M	CORPORATE AVIATION APRON
N	RELOCATED ROTATING BEACON



NOTE:  
THIS DRAWING IS FOR PLANNING PURPOSES ONLY AND IS NOT INTENDED FOR CONSTRUCTION OR NAVIGATIONAL PURPOSES.

**V**ARIES CONSULTANTS LTD.

MARINA MUNICIPAL AIRPORT  
MONTEREY COUNTY, CALIFORNIA

FIGURE  
**5-1**

NAME: OAR-51-Master Plan-B.dwg NO: 4120-21  
DATE: 02-07-2008 PLOT SCALE: 1"=1,000'



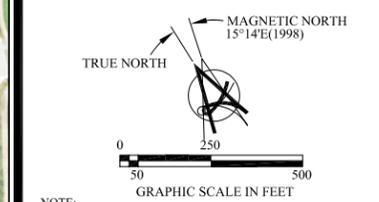
# MARINA MUNICIPAL AIRPORT MASTER PLAN

## TERMINAL AREA AND ACCESS PLAN

LEGEND		
---	SAME	MUNICIPAL BOUNDARY
- - -	SAME	AIRPORT PROPERTY LINE
- . - .	SAME	EASEMENT - HABITAT DEVELOPMENT
- x - x	SAME	EASEMENT - APPROACH PROTECTION
■	SAME	BUILDINGS - REF. #
■	SAME	BUILDINGS - TEMPORARY
---	SAME	RUNWAY - TAXIWAY - APRON
○	SAME	AIRPORT REFERENCE POINT
⊗	SAME	7' FENCE WITH 3 STRAND BARB WIRE
⊗	SAME	3 1/2" FENCE
⊗	SAME	15' OR 20' WIDE MANUAL VEHICLE GATE
⊗	SAME	4' WIDE MANUAL PEDESTRIAN GATE
⊗	SAME	8' WIDE GATE
⊗	SAME	15' WIDE 3 1/2" HIGH AUTOMATIC VEHICLE GATE
⊗	SAME	AIRPORT BEACON
⊗	SAME	THRESHOLD LIGHTING
⊗	SAME	AVIATION RESTRICTION LINE - MAXIMUM HEIGHT
---	SAME	IMPROVED (PAVED) ROAD
---	SAME	UNIMPROVED ROAD
---	SAME	AVIATION NON-AVIATION USE LINE
---	SAME	LAND ACQUISITION OR AVIGATION EASEMENT

FACILITIES LIST			
REF.#	DESCRIPTION	REF.#	DESCRIPTION
504	Offices	550B	Middle Marker Site (Abandoned)
505	Wash Rack	550D	GCA Receiver (Abandoned)
507	Building/Offices	551	FAA ASR 8 Radar Site
510	Building/Shop	552	USN Wind Profiling Radar Site
514	ARFF Facility	553	FAA ASR 11 Radar Site
515	Control Tower (Closed) with Beacon	554	Aircraft Hangar
518	Offices	558	Runway Lighting Vault
519	Lighting Equipment Vault	559	AWOS Site
520	Airport Admin. Building	560	Compass Calibration Pad
521	Offices and Shop		
522	Fuel Island - 100LL and Jet A		
524	Aircraft Hangar/Shops		
525	Aircraft Washrack		
526	Office		
527	Building/Shops		
528	T-Hangars		
529	Airport Restaurant		
530	Sanitary Lift Station		
533	Building/Shops		
548	Wind Indicator		
549	Segmented Circle and Lighted Wind Cone		

FUTURE FACILITY LEGEND	
A	COMMERCIAL AVIATION/FBO LEASE LOTS
B	T-HANGARS
C	CORPORATE HANGARS
D	TIEDOWNS
E	AIRPORT MAINTENANCE
F	PAPL-4
G	MALS
H	THRESHOLD LIGHTS
I	WIND SOCK
J	HELICOPTER PARKING
K	MALS
L	REL
M	CORPORATE AVIATION APRON
N	RELOCATED ROTATING BEACON



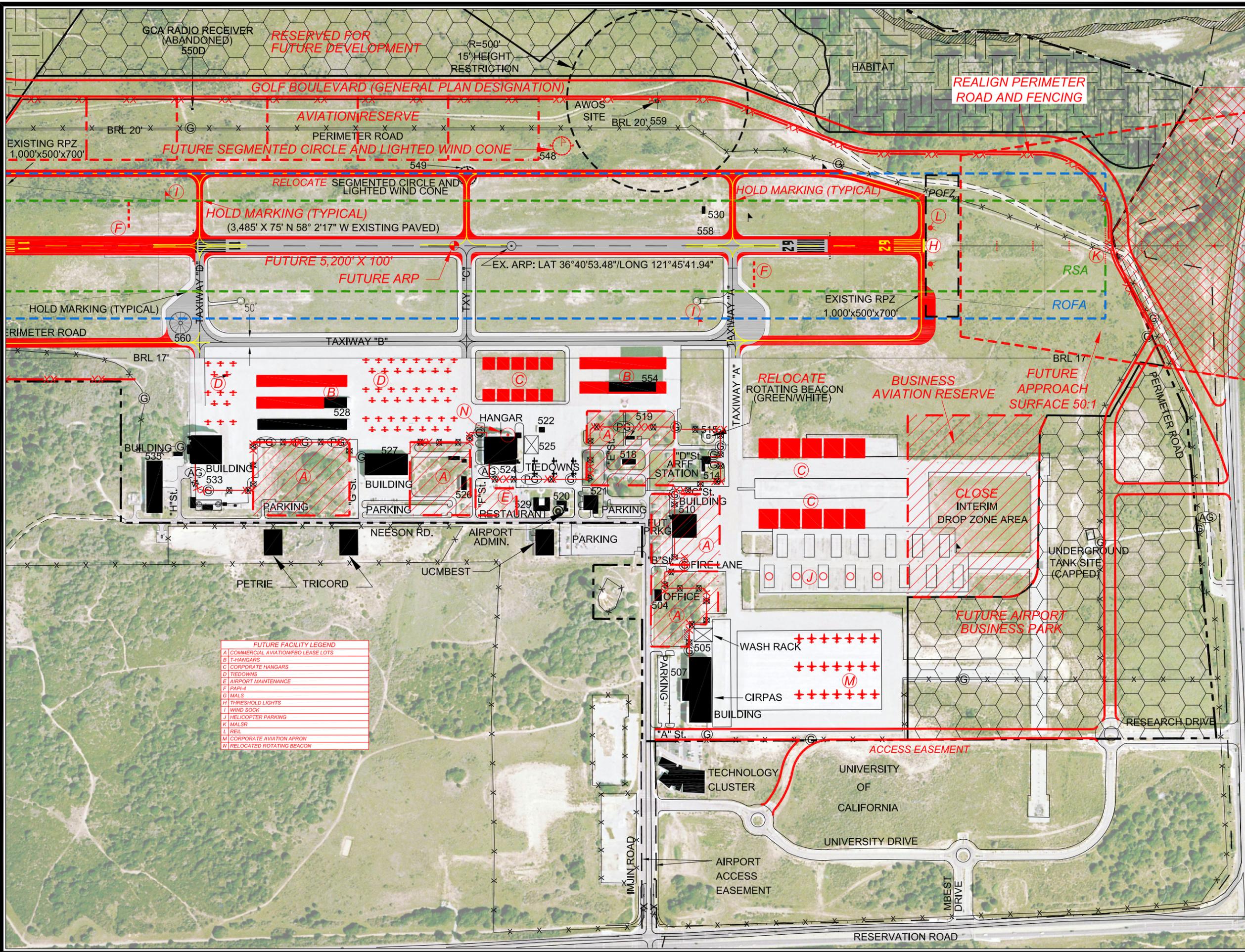
NOTE:  
THIS DRAWING IS FOR PLANNING PURPOSES ONLY AND IS NOT INTENDED FOR CONSTRUCTION OR NAVIGATIONAL PURPOSES.

**VARIES CONSULTANTS LTD.**

MARINA MUNICIPAL AIRPORT  
MONTEREY COUNTY, CALIFORNIA

FIGURE  
**5-2**

NAME: OAR-51-Master Plan-B.dwg | NO: 4120-03  
DATE: 02-07-2008 | PLOT SCALE: 1"=500'



A summary of the recommendations for the use of land adjacent to the Airport boundary to ensure long-term compatibility with airport and aircraft operations is also presented in this chapter. General adherence to land use recommendations and circulation patterns, as shown on Figure 5-1, will ensure that continuing development of the Airport may take place in an orderly manner within the framework of long-range potential development.

From a physical planning standpoint, the important consideration is to reserve or protect sufficient land now (before the surrounding land is further developed) for the development of airport facilities capable of accommodating possible long-range air traffic requirements associated with potential demand. Future community development can then be guided by the long-range air traffic potential so that, should the forecast demand become a reality, the Airport will be protected from encroachment by incompatible land uses, and the surrounding community will be protected from Airport operations. On the other hand, actual physical facilities should be constructed only as the demand arises.

In addition to the Airport development described in this chapter, the master planning process should properly provide for the reservation of sufficient land to accommodate facilities that may be required beyond the year 2025. The purpose is to preserve the long-range development potential of the Airport, thereby guaranteeing the longevity of the Airport beyond the current planning period.

There are several reasons for planning in this manner. If air traffic demand increases more rapidly than is forecast in this report, facilities beyond those recommended herein through the year 2025 may be needed. Conversely, if air traffic demand increases more slowly than is forecast, the construction of facilities may be deferred until the demand develops.

The primary purpose of the Terminal Area and Access Plan is to ensure that the necessary land area will be reserved for future general aviation, and other facility expansion requirements. In addition, the Terminal Area and Access Plan, like the Airport Master Plan, should be sufficiently flexible to permit expansion of individual elements as exact requirements are determined without affecting the overall terminal area concept. Specific tenant and user space requests will be necessary to establish precise dimensions and design requirements for the terminal area and related facilities.

The basic elements of the Plan are described below.

## **5.2 AIRPORT PROPERTY**

The City should acquire in fee title, or else aviation easements with adequate property interest, approximately 41 acres to the east of Runway 11-29 to provide for a

precision instrument runway protection zone (RPZ) that will extend beyond the existing airport property boundary. This includes land on both sides of Blanco Road.

### **5.3 AIRFIELD**

The recommended year 2025 airfield configuration illustrated on Figure 5-1 provides for the existing Runway 11-29 to be extended 1,165 feet to the west and 550 feet to the east for an ultimate length of 5,200 feet. Ultimately the runway is to be widened from 75 feet to 100 feet. The existing parallel taxiway will have to be extended along with the runway extensions to adequately handle the future air traffic demand. In addition the Plan provides for a full parallel taxiway with entry/exit taxiways and aircraft parking apron access taxiways as the future aviation reserve is developed on the north side of the airfield. It is recommended that the airfield be designed to accommodate large airplanes (over 12,500 pounds) in airport reference code (ARC) C-II (e.g. Cesena Citation 650 and Gates Learjet 35/36) with wingspans of less than 79 feet.

#### **5.3.1 Runway 11-29**

The Plan recommends Runway 11-29 be extended to a length of 5,200 feet to handle the aircraft expected to use the Airport during the planning period and beyond. The runway width is recommended to ultimately be widened to 100 feet. New aircraft holding aprons are provided for at both ends of the extended runway. A 500-foot wide runway safety area (RSA) extending 1,000 feet beyond both ends of the runway is provided for in the Plan for ARC C-II design aircraft. An 800-foot wide runway object free area (ROFA) extending 1,000 feet beyond both ends of the runway is also provided for in the Plan.

Additionally, a runway obstacle free zone (ROFZ) 400 feet wide and extending 200 feet beyond both ends of the runway will be required. Because an approach lighting system will be required to obtain a 1/2 mile visibility minimum for Runway 29 precision instrument approaches, an inner-approach obstacle free zone (OFZ), with a width the same as the ROFZ, and an inner-transitional OFZ will be required extending outward from the ROFZ to 200 feet beyond the last light unit in the approach lighting system. Also, because an approach lighting system will be required to obtain a 3/4 mile visibility minimum for Runway 11 nonprecision instrument approaches, an inner-approach OFZ, with a width the same as the ROFZ will be required extending outward from the ROFZ to 200 feet beyond the last light unit in the approach lighting system. However, an inner-transitional OFZ is not required for nonprecision approaches.

### **5.3.2 Taxiways**

The FAA runway-to-parallel taxiway separation standard precludes any part of an airplane (tail, wingtip, nose, etc.) on a parallel taxiway centerline from being within the runway safety area or penetrating the runway obstacle free zone (ROFZ). The existing runway centerline to taxiway centerline of 530 feet on the south side and the future north side parallel taxiway separation of 400 feet both meet this criteria and would allow precision instrument flight rules (IFR) approaches with visibility minimums of 1/2 mile. The aircraft holding position markings will need to be repainted at 250 feet from the runway centerline for precision instrument approaches. New taxiways should be at least 35 feet wide and, preferably, 50 feet wide to be consistent with the existing taxiways.

### **5.3.3 Airfield Pavement**

All future airfield pavement should be designed to accommodate single-wheel aircraft with a maximum gross weight of 30,000 pounds and 60,000 pounds for dual-wheel. A Pavement Maintenance Plan should be developed to identify the timing and costs for airfield pavement maintenance. The existing airfield pavement is in need of an overlay.

## **5.4 AVIGATION**

Avigation (air navigation) considerations in the Plan are airspace and air traffic control, approach areas and obstructions, runway protection zones, and airport navigational and landing aids.

### **5.4.1 Airspace and Air Traffic Control**

Existing airspace and air traffic control (ATC) procedures and facilities provide for safe, orderly and expeditious flow of traffic for the Marina Municipal Airport with the present level and nature of air traffic. There are presently four nonprecision instrument approaches – two are for Runway 29 and two are for Runway 11. The RNAV (GPS) approach to Runway 29 has a minimum descent altitude of 620 feet mean sea level (MSL), or 483 feet above ground level (AGL). However, a precision instrument approach to Runway 29 would enhance the capabilities and increase the utility of the Airport. This precision instrument approach might be an instrument landing system (ILS), or more likely, a global positioning (GPS) approach procedure with wide area augmentation system (WAAS) providing enhanced lateral and vertical guidance and named an LPV approach. LPV means lateral precision with vertical guidance. Recent advancements in this technology have allowed the FAA to approve LPV approaches with minimums as low as 200 feet AGL and 1/2 mile visibility.

Additionally, a nonprecision approach to Runway 11 with a visibility minimum of 3/4 mile would also add utility to the Airport. Therefore, the plan provides for a precision approach to Runway 29 with a visibility minimum of 1/2 mile and a nonprecision approach to Runway 11 with a visibility minimum of 3/4 mile.

#### **5.4.2 Approach Areas and Obstructions**

The Plan provides for a future 50:1 approach surface for Runway 29 and a future 34:1 approach surface for Runway 11. United States Geological Survey maps, aerial photographs, other maps and charts, and field surveys were used to determine any obstacles within the proposed approach areas that may become obstructions. There are no objects that might become potential obstructions when the runway is extended. The area of terrain off both ends of Runway 11-29 slopes downward. There are transmission lines at approximately 2,000 feet to the west of Runway 11 and transmission lines at approximately 6,000 feet to the east of Runway 29. However, these transmission lines are approximately 25 feet and 100 feet below the most critical point on the approach slopes for Runways 11 and 29 respectively.

A 40 to 1 departure surface is required for all instrument runways. A 40 to 1 departure surface is higher than the recommended 50 to 1 approach slope to Runway 29 and clears the transmission lines to the east by 120 feet. A 40 to 1 departure surface clears the transmission lines west of Runway 11 by 20 feet.

#### **5.4.3 Runway Protection Zones**

The runway protection zone (RPZ) for Runway 29 is to be 2,500 feet long by 1,000 feet inner width and 1,750 feet outer width to accommodate a precision IFR approach with visibility minimums of less than 3/4 mile. The future RPZ for Runway 29 extends approximately 1,500 feet to the east of the airport boundary. The Plan provides RPZ at the Runway 11 end of the runway that is entirely within the Airport boundary. The RPZ for Runway 11 is to be 1,700 feet long by 1,000 feet inner width and 1,010 feet outer width to accommodate a nonprecision IFR approach with visibility minimums of not less than 3/4 mile.

The City should acquire in fee title, or else avigation easements with adequate property interest, approximately 41 acres to the east of the Runway 29 to provide for a precision RPZ that will extend beyond the existing airport property boundary. This includes land on both sides of Blanco Road.

#### **5.4.4 Navigational and Landing Aids**

The plan provides for a precision instrument landing system (ILS), or more likely, a global positioning system/wide area augmentation system (GPS/WAAS) precision

IFR approach, identified as an LPV (lateral precision performance with vertical guidance) with a decision altitude (DA) with minimums of no lower than 200 feet above ground level (AGL) and 1/2 mile visibility to be published for Runway 29. The plan also provides for GPS nonprecision IFR approach with lateral navigation (LNAV) with a minimum decent altitude (MDA) identified as an LNAV MDA with minimums of approximately 400 feet AGL minimum descent altitude (MDA) and 3/4 mile visibility to be published for future Runway 11.

A medium intensity approach lighting system with runway alignment indicator lights (MALSR) is planned for Runway 29. A medium intensity approach lighting system without runway alignment indicator lights (MALS) is planned for Runway 11.

An automated weather observing system (AWOS) has recently been installed on the Airport near the end of Runway 29 with an obstruction clear area with a radius of 500 feet.

The Plan also provides for new medium intensity runway lighting (MIRL) along both sides of the existing runway as well as the new runway extensions. Medium intensity taxiway lighting (MITL) should be installed along both sides of the existing parallel and entry/exit taxiways as well as new parallel taxiway extensions and new entry/exit taxiways. New MITL should also be installed along both sides of the new parallel taxiway and entry/exit taxiways on the north side of the Airport. Precision approach path indicators (PAPI-4) should be installed at both ends of the runway. Runway end identifier lights (REIL) are recommended for installation at both ends of Runway 11-29.

The Airport rotating beacon, currently located on top of the old air traffic control tower, needs to be replaced and re-located. The old air traffic control tower should be demolished. It is recommended that the new airport rotating beacon be re-located in the general area of the Airport administration building or on top of Building 524. The antennas on top of the old air traffic control tower will also have to be re-located.

The segmented circle and lighted wind cone are recommended to be re-located to east of the present location. New lighted wind cones are recommended to be located near the new Runway 11 and 29 ends.

The existing airfield signage should be replaced and new airfield signage should be installed in accordance with FAA design standards.

## **5.5 GENERAL AVIATION**

The general aviation facilities are proposed to remain primarily south of Runway 11-29 as illustrated on Figure 5-2. Approximately 70 acres have been retained in the Plan

for general aviation uses such as hangars, tiedowns, fixed base operators and other commercial aviation service operators in these areas within the existing airport property. Additional space is reserved north of Runway 11-29.

An aircraft parking apron area for itinerant aircraft and based aircraft tiedowns is retained in the present general aviation area south of Runway 11-29. This provides space for about 45 tiedowns north of Building 527, about 15 tiedowns north of Building 533 and over 20 tiedowns east of Building 507. The six transient tiedowns are retained north of the Airport Administration Building 520.

It is recommended that hangars continue to be consolidated on the north side of the terminal area as illustrated on Figure 5-2. Over 15 acres are reserved which can be developed to accommodate over 150 hangar spaces. Space is reserved for development of corporate/executive hangars on existing concrete pads at the east end of the existing terminal area.

The plan provides space for an additional 34 T-hangars near the existing T-hangars by extending Building 528 and provides a new row of T-hangars parallel to and toward Taxiway B. It also provides space for an additional 28 T-hangars near the existing T-hangars by extending Building 554 and provides for one new row of T-hangars parallel to and toward Taxiway B. It provides space for two rows of five larger hangars (corporate/executive) to the north of Building 524. Space for another two rows of five larger hangars (corporate/executive) is provided to the east of Taxiway A across from the old aircraft rescue and firefighting facility. The Plan calls for the conversion to hangar facilities of underutilized aircraft parking apron area to the south of Runway 11-29 and also to the east of Taxiway A.

Space is reserved for future commercial aviation lease lots between the existing Airport access road (Neeson Road) and the aircraft parking apron and also east of Imjin Road. About 20 acres south of Runway 11-29 could potentially be developed for commercial aviation/fixed base operator/lease lots. Increased or additional commercial aviation/fixed based operator use of the existing large hangars for aviation uses should be encouraged. In addition, the plan provides space for five new commercial aviation/fixed-base operator/lease lots west of the old air traffic control tower, east of Building 527, north of Building 507, east of Building 533 and in the vicinity of Building 510.

An approximate 28 acre area to the north of Runway 11-29 is reserved for future aviation uses that could include commercial aviation/fixed base operator lease lots and hangar development. A future parallel taxiway and entry/exit taxiways are proposed to serve future aviation uses in this area and the new taxiways would connect to

Runway 11-29 and to the existing aircraft parking apron taxiways to the south. Vehicular access would be from the east around the end of Runway 11-29 along the proposed Golf Boulevard (General Plan designation).

A 16 acre area is reserved next to the proposed development in the southeast corner of the Airport for future business aviation use that would complement the proposed uses. Space is also provided for corporate aircraft on an existing aircraft parking apron in this area.

It is recommended that helicopters continue to use Runway 11-29 for landing and takeoff for emergency, government and other helicopter users, including training. It is recommended that helicopter parking be provided east of Taxiway A on some of the helicopter pads formerly used by the U.S. Army.

In the long-term it is recommended that the interim skydive drop zone be closed and re-located off the Airport as it is located immediately adjacent to an area where the City is actively considering development. This area is also recommended for future business aviation development.

## **5.6 AIRPORT ACCESS AND PARKING**

The present Imjin Road/Neeson Road access onto the Airport, off Reservation Road, is adequate to serve the south side of the Airport through the planning period. An extension of "A" Street, off Imjin Road, will be required to the east to provide future public access to aviation and related development on the southeast side of the Airport. A new public access road to the north side of the Airport could be developed off Blanco Road. This may require a realignment of the proposed Golf Boulevard (General Plan designation) north of the future end of Runway 29 so that the new access road meets the FAA required separations from Runway 11-29.

Golf Boulevard will clear the 50:1 approach surface on the extended runway centerline to the east with some moderate grading. On the north side, Golf Boulevard will require some minor cut, to clear the 50:1 approach surface, and some fill in a swale for the roadbed. Golf Boulevard would clear the 7:1 transitional surface to the north. Golf Boulevard will clear the RSA, although it will penetrate a triangular area of approximately 100 feet by 100 feet in the northeast corner of the ROFA. This may require requesting a modification to airport design standards from the FAA to demonstrate that the modification will provide an acceptable level of safety. Alternatively, the proposed Golf Boulevard would have to be realigned or put in a tunnel across the ROFA.

The location of the future right-of-way for Golf Boulevard is still to be determined and needs to be coordinated with the Airport Master Plan so as not to adversely impact the potential development of the Airport and the Habitat Conservation Areas, to the east and west. The City is also considering new or realigned roads to serve the commercial/industrial/research area in the southeast corner of the Airport. The dirt road, off Blanco Road, that crosses the Airport and serves property in the County to the northeast of the Airport will have to be realigned before the runway is extended to the east. These roads also need to be planned so as not to compromise the long-term potential development of the Airport.

New controlled access gate(s) will be needed off Neeson Road and Imjin Road on the south side of the Airport.

An extended and realigned perimeter service road is proposed around the east, north and west sides of the Airport around the extension of Runway 11-29.

Vehicular parking spaces should be retained in the terminal area for public and employee parking. Additional space for future parking needs in this area could be provided by expanding the vehicular parking spaces towards the north. Parking for visitors and employees should also be provided within individual lease lot boundaries.

## **5.7 AIRPORT SUPPORT**

The Plan provides space for the following airport support facilities.

### **5.7.1 Aircraft Rescue and Firefighting**

While there is no current requirement for an aircraft rescue and firefighting (ARFF) facility on the Airport, the Airport should have written procedural agreements with the City of Marina Fire Department to guarantee response in any emergency. The City will staff and equip the existing ARFF facility on the Airport in the near future.

### **5.7.2 Airport Maintenance Baseyard and Fuel Storage**

#### Airport Maintenance

Airport management offices will continue to be located in the administrative building. In the future, some space for a City maintenance baseyard is proposed in the area on the north side of Neeson Road.

#### Fuel Storage

An automated 24-hour self-serve, credit-card system is installed on the Airport with two above-ground 12,000 gallon tanks used for 100 low lead fuel and Jet A fuel.

### **5.7.3 Fencing and Security**

Existing fencing will need replacing and relocating as the aviation facilities are expanded to meet FAA standards of a 6-foot high chain link fence with barbed wire on top. Standard 6-foot high chain link and barbed wire perimeter fencing should be installed along the expanded airport perimeter and also around any future aviation-related development on the south and north sides of the Airport. There may also be a requirement for new or improved Airport fencing and signage as a result of evolving airport security requirements.

Security lighting should be installed along the aircraft parking apron and hangar area either on buildings or where the poles do not present a hazard. A card reader access control system should be installed for existing and future vehicle access control gates. A security camera system should be installed on the Airport. The security requirements for general aviation airports have not yet been established by the Transportation Security Administration (TSA), and these may result in additional security measures to implement.

### **5.7.4 Utilities**

Improvements will be required to the utility systems as described below.

#### Water

The water infrastructure should be extended to provide domestic service to all future airport businesses. Additionally, installation of additional fire hydrants at strategic locations throughout the Airport in accordance with City Fire Department spacing requirements would be prudent. Where practical, the distribution system should be looped to provide service redundancy.

#### Sewage

Sewer improvements should be designed to specifically serve future aviation businesses, as well as development on the east and north sides of the Airport.

#### Electric and Telephone

The electrical system is obsolete and requires replacement. The installation of an updated electrical system will involve removal of the old and installation of new infrastructure at the electrical vault. Installation of apron area lighting is recommended as the central aircraft parking apron is unlighted which contributes to a safety and possible security issue. An emergency generator should be installed for the airfield lighting, airport rotating beacon and other airport facilities.

Electrical and telephone extensions will be required to serve the recommended aviation development on the south side of the Airport as well as the recommended airfield improvements and any development on the north and southeast sides of the Airport.

#### Drainage

Future development of the Airport will require modifications to the drainage system that serves the Airport.

### **5.8 OTHER AIRPORT LAND USE AREAS**

The Plan retains other tenants on the Airport in their current locations.

The Plan recommends that about 203 acres to the north and about 52 acres to the southeast of Runway 11-29 be retained for future commercial/industrial uses. The City is currently developing plans for use of these areas that need to be coordinated with the Airport Master Plan and Airport Layout Plan.

The Plan retains the 130 acre Marina Airport and 43 acre Salinas River habitat conservation areas on the west and east sides of the Airport, respectively.

### **5.9 AIRPORT LAYOUT PLAN**

The recommended Airport Master Plan serves as the basis for the Airport Layout Plan. The Airport Layout Plan, Terminal Area and Access Plan, Airspace Plan and Airport Property Map (Exhibit A) for the Marina Municipal Airport derived from all the foregoing plans and analyses, are included in Appendix B. The Airport Layout Plan will be submitted to the FAA for review and approval.

### **5.10 OFF-AIRPORT LAND USE**

This section presents off-airport land use recommendations that relate to the City of Marina General Plan, Monterey County Airport Land Use Commission and the Monterey County General Plan.

#### **5.10.1 City of Marina General Plan**

The Airport is surrounded by other uses of former Fort Ord property to the southwest and east. These include the University of California, Monterey Bay Education, Science and Technology (UCMBEST) Center. Other areas of the former Fort Ord Military Reservation to the south of the Airport and Reservation Road are in the process of being converted to civilian uses.

There is residential and other urban development within the City of Marina to the west and south of the Airport. There are plans for the development of the undeveloped area west of the Airport that are currently being considered by the City of Marina on portions of the Armstrong Ranch that are within the City limits. The Marina General Plan calls for the area to be developed for Residential and associated Commercial uses.

The City of Marina municipal boundary generally follows the east boundary of the Airport along Blanco Road. The City of Marina has an avigation easement with the University of California over an area to the east of Blanco Road that is within the approach area to Runway 29 and is in Monterey County. In addition, the University of California has granted an avigation easement for air operations over the University of California, Monterey Bay Education, Science and Technology (UCMBEST) Center to the south of the Airport.

The City of Marina's General Plan indicates Urban Growth Boundary Open Space immediately west of the Airport. Further to the west of the Airport, future Light Industrial/Service Commercial, Habitat Reserve and Other Open Space and Parks and Recreation land uses are shown. Other surrounding areas are retained as Habitat Reserve and Other Open Space to the southwest, some Visitor Serving immediately east of Runway 11-29 and west of Blanco Road and Office Research to the southeast of the Airport. Some Visitor Serving, Parks and Recreation, and Habitat Reserve and Other Open Space land uses are shown east of Runway 11-29 and east of Blanco Road in the runway protection zone.

The Airport Master Plan and City General Plan need to be coordinated to maximize compatible land uses in the Airport vicinity. This is particularly important as a longer Runway 11-29 is recommended in the Airport Master Plan. This runway extension could impact, and be impacted by, development to the west of the Airport.

### **5.10.2 Monterey County General Plan**

The Monterey County General Plan, adopted January 3, 2007, designates the Armstrong Ranch property that is within the County and to the northwest of the Airport, as Permanent Grazing, 10 to 160 acres minimum lot with an Urban Reserve overlay. The area in Monterey County to the east and northeast, across the Salinas River, is in Agricultural Use and designated as Farmlands, 40 to 160 acre minimum lot. The area within the County east of Blanco Road and within the Fort Ord Master Plan is designated as a Planned Development Mixed Use District.

### **5.10.3 Monterey County Airport Land Use Commission**

The latest Marina Municipal Airport Land Use Compatibility Plan was adopted by the Monterey County Airport Land Use Commission in 1996. Recommendations have been prepared as part of the Airport Master Plan study for off-Airport land use planning for the area surrounding the Airport. These recommendations are based on noise, safety and height considerations described in the latest State of California, Department of Transportation (Caltrans), Aeronautics Division, *California Airport Land Use Planning Handbook*; FAR Part 77, *Objects Affecting Navigable Airspace*; FAR Part 150, *Airport Noise Compatibility Planning*; and Monterey County Airport Land Use Commission standards.

The compatibility of the proposed surrounding development with the Airport Master Plan Update recommendations should be reviewed in accordance with the guidelines in the latest *California Airport Land Use Planning Handbook* prepared in 2002 by Caltrans. The 1996 Marina Municipal Airport Land Use Compatibility Plan will require updating by the Monterey County Airport Land Use Commission (ALUC) to reflect the Airport Master Plan Update recommendations and current Caltrans land use guidelines. The Airport Master Plan Update will be submitted to the ALUC for a consistency determination following consideration of adoption of the Airport Master Plan Update by the City.

It is recommended that the City continue to require aviation easements for any development within the Airport Influence Area defined in the Airport Land Use Compatibility Plan. The aircraft traffic patterns are to the north of Runway 11-29 to minimize aircraft overflights and noise impacts on surrounding development.

## **5.11 ENVIRONMENTAL EVALUATION**

Environmental review for the Marina Municipal Airport Master Plan, qualifies under Section 15262 of CEQA Guidelines for exemption from CEQA, as opined by the City's Special Counsel. The Plan appears simply as a planning study with no legally binding effect intended to guide later development; it does not appear that California Environmental Quality Act (CEQA) compliance is required in adopting the Plan.

The CEQA Guidelines create a statutory exemption from CEQA for feasibility or planning studies that will not have a legally binding effect on later activities. [14 Cal. Code Regs., § 15262 (“A project involving only feasibility or planning studies for possible future actions which the agency, board or commission has not approved, adopted, or funded does not require the preparation of an Environmental Impact Report (EIR) or negative declaration but does require consideration of environmental factors. This section does not apply to the adoption of a plan that will have a legally binding effect on later activities”).]

The Airport receives federal funding and therefore improvements planned for the Airport will require compliance with the *National Environmental Policy Act (NEPA) of 1969*, as amended. Many of the improvements will be categorically excluded and will not require further NEPA documentation; however, some improvements will require further NEPA analysis and documentation and are generally satisfied with the preparation of an Environmental Assessment (EA).

Several factors are considered in a formal environmental document such as an Environmental Assessment (EA). These factors include details regarding the project location, historical perspective, existing conditions at the Airport, and the purpose and need for the project. This information is available within the Master Plan document. A formal environmental document also includes the resolution of issues/impacts identified as significant during the environmental process.

This section is intended to present a preliminary review of environmental issues that would need to be analyzed in more detail within the CEQA, NEPA or permitting process. Consequently, this section only identifies the potential environmental process and does not address the mitigation or resolution of environmental impacts.

Chapter 6

**CAPITAL IMPROVEMENT PROGRAM**

**6.1 INTRODUCTION**

The phased Capital Improvement Program for the Marina Municipal Airport and the estimated costs of the Airport improvements recommended as part of the Airport Master Plan are presented in this chapter.

**6.2 CAPITAL IMPROVEMENT PROGRAM**

A three-phase prioritized Capital Improvement Program has been developed as a guide for future development to meet estimated short-range (Phase I, 2008 through 2012), intermediate-range (Phase II, 2013 through 2017), and long-range (Phase III, 2018 through 2025) Airport requirements. Phasing of the program reflects an assessment of the relative priorities of various proposed projects and the approximate timing of the anticipated requirements.

Phase I projects are considered to be the highest priority items and should be implemented as soon as practicable to meet the Phase I forecast requirements for facilities and to preserve the capability for future Airport development and help achieve financial stability and growth. Phase II and III projects should be implemented only as the actual needs are demonstrated by the demand for Airport facilities and services and as financing arrangements are made.

The phasing of the Capital Improvement Program is presented on Figure 6-1, Airport Phasing Plan. An approximate planning cost estimate for each improvement for the recommended three-phase Capital Improvement Program is presented in Table 6-1.

Total costs for all projects included in the three-phase Program are estimated in 2007 dollars. These costs would be incurred as follows:

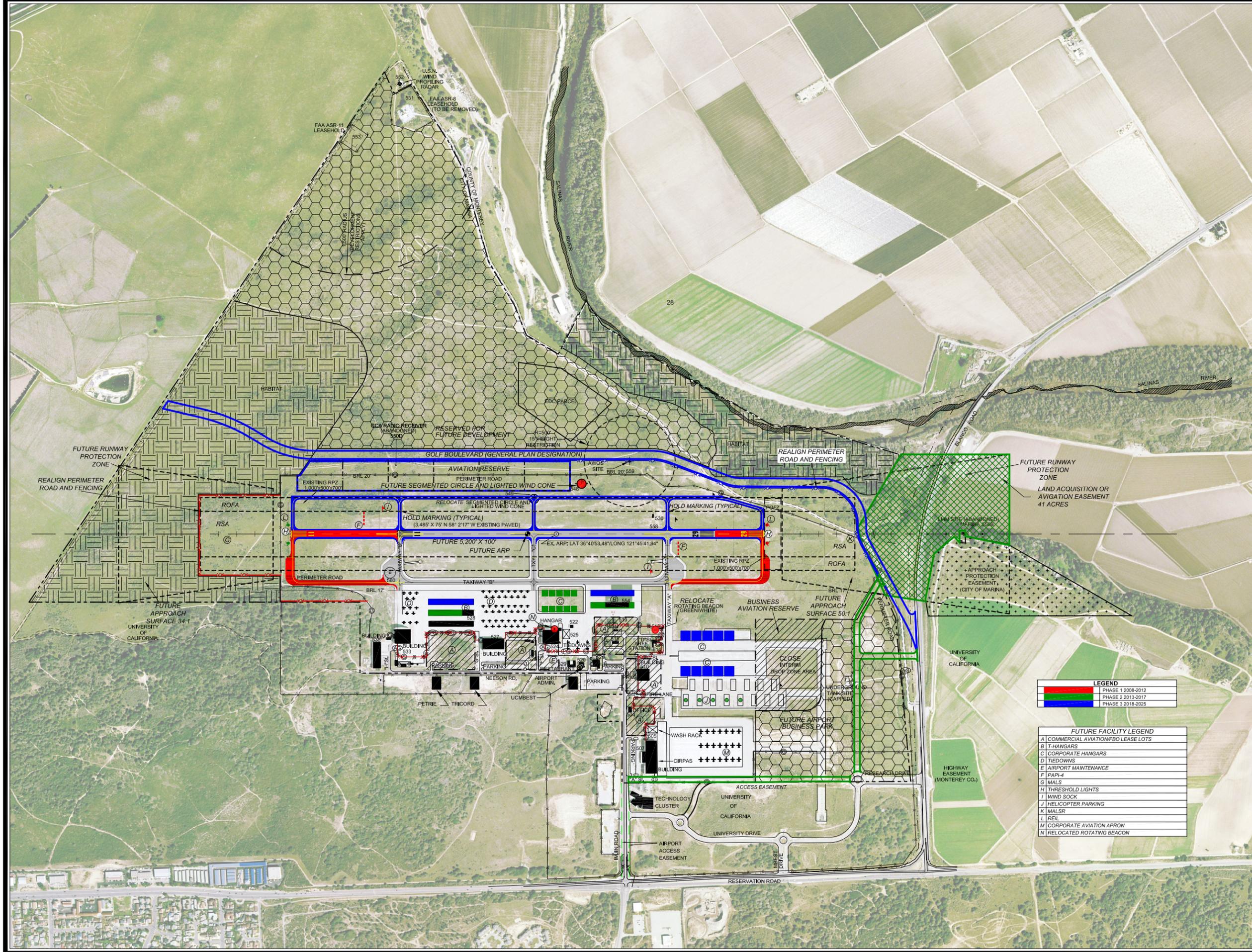
Phase I .....	\$ 7,583,000
Phase II .....	2,922,000
Phase III .....	<u>10,492,000</u>
Total .....	<u>\$ 20,997,000</u>

The estimated net project costs to the City for the three-phase Program are \$2.8 million after recognition of the receipt of Federal Aviation Administration (FAA) Airport Improvement Program grants and State of California, Department of Transportation (Caltrans), Division of Aeronautics grants.



# MARINA MUNICIPAL AIRPORT MASTER PLAN

## AIRPORT PHASING PLAN

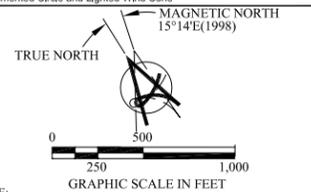


EXISTING	ULTIMATE	LEGEND
---	SAME	MUNICIPAL BOUNDARY
---	SAME	AIRPORT PROPERTY LINE
---	SAME	EASEMENT - HABITAT DEVELOPMENT
---	SAME	EASEMENT - APPROACH PROTECTION
---	SAME	BUILDINGS/REF. #
---	SAME	BUILDINGS - TEMPORARY
---	SAME	RUNWAY - TAXIWAY - APRON
---	SAME	AIRPORT REFERENCE POINT
---	SAME	7' FENCE WITH 3 STRAND BARB WIRE
---	SAME	3 1/2" FENCE
---	SAME	15' OR 20' WIDE MANUAL VEHICLE GATE
---	SAME	4' WIDE MANUAL PEDESTRIAN GATE
---	SAME	8' WIDE GATE
---	SAME	15' WIDE 3 1/2" HIGH AUTOMATIC VEHICLE GATE
---	SAME	AIRPORT BEACON
---	SAME	THRESHOLD LIGHTING
---	SAME	BUILDING RESTRICTION LINE-MAXIMUM HEIGHT
---	SAME	IMPROVED (PAVED) ROAD
---	SAME	UNIMPROVED ROAD
---	SAME	AVIATION/NON-AVIGATION USE LINE
---	SAME	LAND ACQUISITION OR AVIGATION EASEMENT

FACILITIES LIST	
REF.#	DESCRIPTION
504	Offices
505	Wash Rack
507	Building/Offices
510	Building/Shop
514	ARFF Facility
515	Control Tower (Closed) with Beacon
518	Offices
519	Lighting Equipment Vault
520	Airport Admin. Building
521	Offices and Shop
522	Fuel Island - 100LL and Jet A
524	Aircraft Hangar/Shops
525	Aircraft Washrack
526	Office
527	Building/Shops
528	T-Hangars
529	Airport Restaurant
530	Sanitary LTR Station
533	Building/Shops
535	Sculpture Center
548	Wind Indicator
549	Segmented Circle and Lighted Wind Cone
550B	Middle Marker Site (Abandoned)
550D	GCA Receiver (Abandoned)
551	FAA ASR 8 Radar Site
552	USN Wind Profiling Radar Site
553	FAA ASR 11 Radar Site
554	Aircraft Hangar
558	Runway Lighting Vault
559	AWOS Site
560	Compass Calibration Pad

LEGEND	
[Red Box]	PHASE 1 2008-2012
[Blue Box]	PHASE 2 2013-2017
[Green Box]	PHASE 3 2018-2025

FUTURE FACILITY LEGEND	
A	COMMERCIAL AVIATION/FBO LEASE LOTS
B	T-HANGARS
C	CORPORATE HANGARS
D	TIEDOWNS
E	AIRPORT MAINTENANCE
F	PAPI-4
G	MALS
H	THRESHOLD LIGHTS
I	WIND SOCK
J	HELICOPTER PARKING
K	MALS
L	REIL
M	CORPORATE AVIATION APRON
N	RELOCATED ROTATING BEACON



NOTE:  
THIS DRAWING IS FOR PLANNING PURPOSES ONLY AND IS NOT INTENDED FOR CONSTRUCTION OR REGULATORY PURPOSES.

**V**ARIES CONSULTANTS LTD.

MARINA MUNICIPAL AIRPORT  
MONTEREY COUNTY, CALIFORNIA

FIGURE  
**6-1**

NAME: OAR-61-Phasing Plan-B.dwg NO: 4120-21  
DATE: 02-07-2008 PLOT SCALE: 1"=1,000'

Table 6-1

**CAPITAL IMPROVEMENT PROGRAM  
Marina Municipal Airport  
2008-2025**

	Total	City	FAA <sup>a</sup>	State <sup>b</sup>	Other <sup>c</sup>
<b>PHASE I IMPROVEMENTS (2008-2012)</b>					
<b>Electrical System Upgrades</b>					
-- Remove the old and install new electrical system. Project includes new electrical vault; power transfer panel; runway constant current regulator and pilot control panel; runway circuit home run conduit and conductor; pole-mounted apron area lighting; airfield emergency generator; and relocation of beacon.	1,000,000	26,250	950,000	23,750	0
<b>Environmental Assessment</b>					
-- Prepare an Environmental Assessment for initial five-year development projects.	250,000	6,563	237,500	5,938	0
<b>Runway Rehabilitation and Extensions</b>					
-- Design and construct Runway 11-29 rehabilitation and extensions (1,165 feet to the west and 550 feet to the east). Project includes overlaying the existing Runway 11-29; new pavement markings; installation of precision approach path indicators (PAPI-4) on Runways 11 and 29; medium intensity runway edge lights (MIRL); threshold lights; and guidance signs.	2,400,000	63,000	2,280,000	57,000	0
<b>Taxiway Rehabilitation and Extensions</b>					
-- Design and construction parallel Taxiway B extension and rehabilitation of Taxiways A, B, C and D. Project includes extension of Taxiway B to new ends of Runway 11-29; construction of new holding aprons at new Runway 11 and Runway 29 ends; overlaying Taxiways A, B, C and D; new pavement markings and medium intensity taxiway lights (MITL).	2,400,000	63,000	2,280,000	57,000	0
<b>Airport Security Upgrades</b>					
-- Install new terminal area perimeter fencing; three electric gates; and access control system.	1,200,000	31,500	1,140,000	28,500	0

	Total	City	FAA <sup>a</sup>	State <sup>b</sup>	Other <sup>c</sup>
<b>PHASE I IMPROVEMENTS (2008-2012) -- continued</b>					
<b>Other Phase I Projects</b>					
-- Develop Pavement Maintenance Plan	15,000	394	14,250	356	0
-- Conduct obstacle survey for GPS approaches	60,000	1,575	57,000	1,425	0
-- Install surveillance video cameras	15,000	15,000	0	0	0
-- Construct drainage improvements	100,000	2,625	95,000	2,375	0
-- Realign perimeter road west of extended runway	91,000	2,389	86,450	2,161	0
-- Realign perimeter fencing west of extended runway	52,000	1,365	49,400	1,235	0
<b>TOTAL PHASE I IMPROVEMENTS (2008-2012)</b>	<b>7,583,000</b>	<b>213,660</b>	<b>7,189,600</b>	<b>179,740</b>	<b>0</b>
<b>PHASE II IMPROVEMENTS (2013-2017)</b>					
<b>Land Acquisition</b>					
-- Acquire land or avigation easement to the east (41 acres)	Footnote <sup>d</sup>				
<b>Navigational Aids</b>					
-- Relocate and install new primary wind cone and segmented circle; install two secondary lighted wind cones; and install runway end identifier lights (REIL) on Runway 29.	250,000	6,563	237,500	5,938	0
<b>Terminal Area</b>					
-- Construct 22 new T-hangars	1,100,000	0	0	0	1,100,000
-- Construct 10 new corporate hangars	700,000	0	0	0	700,000
-- Upgrade pollution abatement facility	200,000	5,250	190,000	4,750	0
-- Construct City maintenance facility	300,000	300,000	0	0	0
<b>Access and Parking</b>					
-- Build access roads off Imjin Road and Blanco Road to the southeast of the Airport to provide access to the nonaviation-related development.	372,000	372,000	0	0	0
<b>TOTAL PHASE II IMPROVEMENTS (2013-2017)</b>	<b>2,922,000</b>	<b>683,813</b>	<b>427,500</b>	<b>10,688</b>	<b>1,800,000</b>

	Total	City	FAA <sup>a</sup>	State <sup>b</sup>	Other <sup>c</sup>
<b>PHASE III IMPROVEMENTS (2018-2025)</b>					
<b>Airfield</b>					
-- Widen Runway 11-29 to 100 feet. Project includes overlaying the existing Runway 11-29; new pavement markings; and relocating medium intensity runway lights (MIRL).	2,200,000	57,750	2,090,000	52,250	0
-- Construct northside parallel and entry/exit taxiways. Project includes new pavement markings and medium intensity taxiway lights (MITL).	2,700,000	70,875	2,565,000	64,125	0
<b>Navigational Aids</b>					
-- Install MALSR on Runway 29	600,000	0	600,000 <sup>e</sup>	0	0
-- Install MALS on Runway 11	500,000	0	500,000 <sup>e</sup>	0	0
-- Install runway end identifier lights (REIL) on Runway 11	12,000	315	11,400	285	0
-- Realign perimeter road east of extended runway	102,000	2,678	96,900	2,423	0
-- Realign perimeter fencing east of extended runway	78,000	2,048	74,100	1,853	0
<b>Terminal Area</b>					
-- Construct 34 new T-hangars	1,700,000	0	0	0	1,700,000
-- Construct 10 new corporate hangars	800,000	0	0	0	800,000
<b>Access and Parking</b>					
-- Construct Golf Boulevard northside access road	1,800,000	1,800,000	0	0	0
<b>TOTAL PHASE III IMPROVEMENTS (2018-2025)</b>	<b>10,492,000</b>	<b>1,933,665</b>	<b>5,937,400</b>	<b>120,935</b>	<b>2,500,000</b>
<b>TOTAL CAPITAL IMPROVEMENT PROGRAM</b>	<b>20,997,000</b>	<b>2,831,138</b>	<b>13,554,500</b>	<b>311,363</b>	<b>4,300,000</b>

a. Assumes Federal Aviation Administration (FAA) Airport Improvement Program grants for 95 percent of eligible project costs.

b. Assumes Caltrans grants will be available for 2.5 percent funding of all FAA Airport Improvement Program grants.

c. Other includes private funding.

d. Land acquisition is subject to future appraisals and negotiations.

e. Federal Aviation Administration Facilities and Equipment budget.

SOURCE: City of Marina and Aries Consultants Ltd.

The FAA Airport Improvement Program funds 95 percent of eligible projects. Caltrans funds 2.5 percent of the Federal 95 percent (2.4 percent of total project costs), and the City is responsible for the remaining 2.6 percent of the total project costs based on current FAA Airport Improvement Program and State of California legislation. Projects eligible for FAA Airport Improvement Program grants for Phase I total \$7.6 million. Of the total \$7.6 million, the City local match for these grant funds are estimated to total \$198,660 after recognition of the State's contribution of 2.5 percent of FAA Airport Improvement Program grants.

### **6.3 Federal Aviation Administration Airport Capital Improvement Plan**

Several of the projects included in the Phase I Capital Improvement Program presented in Table 6-1 were provided by the City of Marina and are representative of the City's prioritization for future development of the Airport. Removal and replacement of the Airport's electrical system is considered the highest priority to enhance the safety and utility of the Airport and is the initial project in the City's draft Airport Capital Improvement Plan to be submitted to the FAA.

The extension of Runway 11-29 by 1,165 feet to the west and 550 feet to the east, the extension of Taxiway B and the rehabilitation of Taxiways A, B, C and D are included in the City's initial phase of the Airport Capital Improvement Plan and are eligible for FAA Airport Improvement Program grant funding as presented in Table 6-1. The total cost for these projects is estimated to be about \$4.8 million including runway and taxiway lights, installation of the precision approach path indicators (PAPI-4), new pavement markings and guidance signs. An additional \$231,000 in FAA Airport Improvement Program grants will be required to construct drainage improvements and to realign the perimeter road and the perimeter fencing to the west in order to extend the runway to the west. The City will need strong justification for FAA Airport Improvement Program funding for the extension of Runway 11-29 in the initial phase of development. The Airport will be competing with many other airports for FAA funding for runway extensions.

The City's draft Airport Capital Improvement Plan through 2013 includes \$7.5 million in capital improvement projects for the Airport. The projects and cost estimates will require refinement and prioritizing as the FAA requests updated Airport Capital Improvement Plans in future years.

### **6.4 Security Requirements**

The President signed into law the Aviation and Transportation Security Act on November 19, 2001 establishing the Transportation Security Administration (TSA) within the U. S. Department of Transportation. While TSA activities have been

concentrated on the larger commercial service airports since its inception, the TSA is required to develop security requirements for general aviation airports. The TSA published *Security Guidelines for General Aviation Airports* in May 2004 and notes that the guidelines are not regulatory and the recommendations should not be considered mandatory. The guidelines provide options, ideas and suggestions for the airport sponsor, tenants and users in an attempt to provide consistency across the Nation with regard to security at general aviation facilities. The intent of the guidelines is to provide a living document that will continue to be refined with input from the various stakeholders Nationwide.

The Aircraft Owners and Pilots Association partnered with the TSA to develop a nationwide Airport Watch Program that uses the more than 650,000 pilots as eyes and ears for observing and reporting suspicious activity. The Airport Watch Program includes warning signs for airports, informational literature, and a training video to teach pilots and airport employees how to enhance security at their airports.

To date, there are no mandatory security requirements for general aviation airports. Security improvements are included in the Capital Improvement Program, including improved perimeter fencing, electric gates and an access control system, and surveillance video cameras. The new electrical infrastructure will provide lighting for the central aircraft tiedown apron that will contribute to both safety and security of this area. Future security recommendations and/or requirements for the Marina Municipal Airport could include additional fencing, lighting, access control systems, signs, law enforcement actions, and security procedures that could have a cost impact on the development of the Airport as the TSA continues to update and refine the recommendations for general aviation airports.

## Chapter 7

### **FINANCIAL PLAN**

#### **7.1 INTRODUCTION**

The purpose of the financial plan is to summarize the annual historical operating results of the Marina Municipal Airport enterprise fund to provide a basis for assessing the ability of the fund to meet the requirements for funding future capital improvement projects from operating sources. The fund is operated to account for Airport operations that are financed and operated in a manner similar to private business enterprises.

Because of the uncertainties involved in forecasting financial data and precise implementation dates of capital improvement projects, detailed financial planning is usually limited to three to five years. Therefore, only the initial phase of the recommended airport development plan is discussed in detail. The financial implications of proceeding with the development plan beyond Phase I are discussed in general terms at the end of this chapter.

#### **7.2 FINANCIAL ANALYSIS**

The financial analysis is initially presented as a statement of historical revenues and expenses from fiscal year ending 2005 through 2007 and the City's budget for fiscal year 2008. The historical financial data presented have been prepared on the basis of information and assumptions set forth in the text. These rely on information and assumptions from the sources indicated without further verification of such data. The historical operating revenues and expenses have been prepared based on information provided by the City of Marina's Finance Department.

Forecast revenues and expenses are presented later in this chapter. Although the information and assumptions used for the financial forecasts constitute reasonable bases for preparation of the forecasts, the achievement of any financial projection may be affected by fluctuating conditions and is dependent on the occurrence of future events that cannot be assured. Therefore, the actual results achieved may vary from the projects, and such variation could be material.

##### **7.2.1 Historical Revenues and Expenses**

The historical revenues and expenses of the Airport enterprise fund for fiscal years 2005 through 2007 are presented in Table 7-1. Historically, the major source of operating revenues from airport operations has been from the rental of City-owned

Table 7-1

**HISTORICAL AND FORECAST REVENUES AND EXPENSES**  
**Marina Municipal Airport**  
**2005-2011**

	Historical/Actual			Forecast				
	2005	2006	2007	2008	2009	2010	2011	2012
<b>OPERATING REVENUES</b>								
Licenses and Permits	27,695	34,957	25,038	25,500	26,000	26,500	27,000	27,500
Land Rents - Antennas	48,297	69,968	91,440	93,000	96,000	98,500	101,000	103,500
Building Rentals	521,465	448,720	509,814	510,000	515,000	520,000	525,000	530,000
Hangar Rentals	15,148	14,673	31,935	33,000	35,000	37,000	39,000	41,000
Tiedown Rentals	931	983	1,050	1,000	1,000	1,000	1,000	1,000
Land Rents	18,275	19,688	14,768	17,000	20,000	23,000	26,000	29,000
Fuel Sales	134,390	205,390	256,723	230,550	237,000	245,000	252,000	259,000
Less Cost of Fuel Sales	-109,644	-203,121	-228,621	-196,000	-201,500	-208,000	-214,000	-220,000
Revenues from Fuel Sales	24,746	2,269	28,102	34,550	35,500	37,000	38,000	39,000
Miscellaneous Reimbursements	0	29,431	0	5,000	5,000	5,000	5,000	5,000
Tenant Utility Fees	4,700	2,733	1,488	6,000	6,200	6,400	6,600	6,800
Miscellaneous Revenue	4,535	1,670	9,314	2,400	2,500	2,600	2,700	2,800
Investment Earnings	32,612	33,195	78,074	60,000	65,000	70,000	75,000	80,000
Annual Caltrans Grant	0	10,000	10,000	10,000	10,000	10,000	10,000	10,000
<b>OPERATING REVENUES</b>	698,404	658,287	791,023	787,450	807,200	827,000	846,300	865,600

Table 7-1

## HISTORICAL AND FORECAST REVENUES AND EXPENSES, Marina Municipal Airport (2005-2011) -- continued

Page 2 of 2

	Historical/Actual				Forecast			
	2005	2006	2007	2008	2009	2010	2011	2012
<b>OPERATING EXPENSES</b>								
Salaries and Wages	227,529	211,201	238,004	246,300	254,900	263,900	273,000	282,600
Office Expenses	5,743	2,744	3,989	5,100	5,200	5,300	5,400	5,500
Repair and Maintenance-Supplies	1,722	1,086	1,874	2,000	2,100	2,200	2,300	2,400
Gas/Diesel Fuel/Recycling	1,529	4,376	994	3,300	3,400	3,500	3,600	3,700
Fertilizer and Pesticides	525	0	0	200	200	200	200	200
Signs and Landscaping	0	88	0	100	100	100	100	100
Telephones	8,237	8,024	7,958	8,000	8,500	9,000	9,500	10,000
Miscellaneous Maintenance	8,316	2,107	4,095	5,400	5,500	5,600	5,700	5,800
Other Building Maintenance	33,196	35,459	34,740	35,000	36,000	37,000	38,000	39,000
Utilities	40,470	35,177	45,659	49,000	53,000	57,500	62,000	67,000
Legal and Accounting	14,016	4,238	9,798	12,000	12,000	12,000	12,000	12,000
Contract Services	58,771	104,921	75,162	86,000	90,000	92,000	94,000	96,000
Computer Network	0	0	3,422	5,000	5,500	6,000	6,500	7,000
Lighting Services	360	2,441	854	3,000	3,100	3,200	3,300	3,400
Memberships and Promotions	15,573	16,703	16,179	18,500	19,000	19,500	20,000	20,500
Insurance	9,894	42,016	43,763	62,500	65,000	65,000	65,000	65,000
Property Tax-Water District	8,162	8,298	8,488	8,700	8,800	8,800	8,800	8,800
Interest Expense	1,294	5,308	5,294	6,000	5,000	4,000	4,000	4,000
Capital Expense/Small Equipment	89	0	8,063	5,000	5,000	5,000	5,000	5,000
Miscellaneous Repairs	11,964	10,286	0	0	4,000	4,000	4,000	4,000
Inter/Intrafund Transfers	3,516	283,500	93,514	123,732	125,000	125,000	125,000	125,000
<b>OPERATING EXPENSES</b>	450,906	777,973	601,850	684,832	711,300	728,800	747,400	767,000
<b>OPERATING SURPLUS (DEFICIT)</b>	<b>247,498 0</b>	<b>-119,686 0</b>	<b>189,173 0</b>	<b>102,618 0</b>	<b>95,900 #</b>	<b>98,200</b>	<b>98,900</b>	<b>98,600</b>
Depreciation Expense	540,735	532,575	560,437	528,000	530,000	540,000	550,000	560,000
<b>TOTAL EXPENSES</b>	<b>991,641 0</b>	<b>1,310,548</b>	<b>1,162,287</b>	<b>1,212,832</b>	<b>1,241,300</b>	<b>1,268,800</b>	<b>1,297,400</b>	<b>1,327,000</b>

SOURCE: City of Marina and Aries Consultants Ltd.

facilities including land and building rents and licenses and permits, averaging close to 90 percent of total operating revenues. Other revenues included net revenues from fuel sales, reimbursements, interest earnings and miscellaneous. The annual State of California, Department of Transportation, Division of Aeronautics (Caltrans) grant of \$10,000 is included as Caltrans provides this annual grant for the maintenance and operation expenses of the Airport.

Historically, the major operating expenses for the Airport have been for salaries and wages that accounted for an average of close to 40 percent of total operating expenses; contract services, including legal and accounting services, accounted for an average of 15 percent of total operating expenses; building and miscellaneous maintenance expenses accounted for 8 percent of total operating expenses; utilities accounted for an average of 7 percent; and other expenses, including office expenses, telephones, and miscellaneous expenses accounted for the remaining 30 percent of total operating expenses over the three-year historical period.

Overall, the operating revenues and expenses resulted in a net operating surplus averaging \$106,000 annually from fiscal year 2005 through fiscal year 2007. A net operating deficit of over \$258,000 is expected in fiscal year 2008 based on the City's fiscal year 2008 annual operating budget as presented in Table 7-1.

The projected operating surplus beginning in fiscal year 2008 is forecast to be about \$100,000 annually. Depreciation expenses applied to the Airport enterprise fund have averaged \$545,000 annually for fiscal years 2005 through 2007. As the depreciation expenses are nonfunded expenses of the Airport enterprise fund, they are not included in the operating expenses.

The Airport has an outstanding 2001 commercial bank loan with a remaining balance of approximately \$50,000 that will be retired in January 2011. The City will be reviewing the terms and conditions of this loan for early retirement in 2008. Based on information provided by the Finance Department, the Airport enterprise fund covers a portion of a redevelopment bond issue for improvements made to Neeson Road at the time sponsorship of the Airport was assumed by the City. Other charges to the Airport enterprise fund include fees incurred for development of two parcels of property at the Airport. The City anticipates that there will be a new master development partner who will be responsible for the developer fees.

### **7.2.2 Forecast Revenues and Expenses**

The financial projections presented in Table 7-1 and discussed in this section have been prepared on the basis of information and assumptions set forth in the text. These rely on information and assumptions from the sources indicated without verification

of such data. Although the information and assumptions used constitute reasonable bases for preparation of the forecasts, the achievement of any financial projection may be affected by fluctuating conditions and is dependent on the occurrence of future events that cannot be assured. Therefore, the actual results achieved may vary from the projections, and such variation could be material.

The projected revenues and expenses of the Airport enterprise fund from the City's annual budget for fiscal year 2008 through fiscal year 2012 are presented in Table 7-1 and reflect a set of assumptions under which there would be no major changes or improvements in tenant/user rates and charges except as noted.

The financial analysis for the Marina Municipal Airport has been prepared based on the following data and assumptions:

- The financial information is based on the City's fiscal year beginning July 1 through June 30 unless otherwise noted.
- All sources of income derived from airport uses will be credited to the Airport enterprise fund and will be used only for maintaining, operating and improving the Airport as required by Federal Grant Assurances.
- The Aviation Activity Forecasts presented in Chapter 2 form a reasonable basis for this financial analysis.
- The development of facilities recommended in this report will be developed and managed to produce the maximum net revenue to the City consistent with providing reasonable levels of public facilities and services.
- All present leases and agreements will continue in force with no major changes in their financial provisions other than existing rental adjustments already provided for.
- Federal Aviation Administration (FAA) Airport Improvement Program grants are not considered as part of this financial analysis.
- The annual non-matching \$10,000 grant from State of California, Department of Transportation, Division of Aeronautics (Caltrans) has been included in the operating revenue. The annual \$10,000 grant is provided to general aviation airports for maintenance and operation of the Airport.
- Caltrans grants for matching FAA Airport Improvement Program grants are not considered as part of this financial analysis.

### **7.2.2.1 Operating Revenues**

- Rental revenues from licenses and permits and land, building and hangar rents are projected to increase commensurate with an increase in based aircraft and aircraft operations. New ground leases will be entered into for hangar construction.
- Fuel sales will continue to increase commensurate with Airport operations.
- Miscellaneous revenues and reimbursements and tenant utility fees are projected to be about the same as in the historical three-year period.
- Caltrans will continue to provide the annual non-matching \$10,000 grants that may be used for both capital improvements and maintenance and operations.

### **7.2.2.2 Operating Expenses**

- Salaries and wages are projected to increase about 3 percent annually.
- Office expenses and miscellaneous supplies and maintenance will continue to increase over the next five years.
- Utility expenses are projected to increase annually as new facilities are developed on the Airport, e.g., runway and taxiway lighting extensions, apron lighting, video surveillance cameras. The effects of upgrading the electrical system on the Airport will not be known for several years.
- Insurance expenses should decrease in the future as older buildings are razed and removed and facilities on the Airport are modernized.
- Depreciation expenses are non-cash expenses and have not been included in the operating expenses. It should be noted that Federal Aviation Regulations specifically exclude the computation of depreciation or use allowance on facilities and equipment funded either directly or indirectly by the Federal government, including the cost of land.

Based on the projected operating results of the Airport Enterprise Fund, the City will operate with about \$100,000 annual surplus beginning in fiscal year 2008. It will be necessary for the City to continue to explore new sources of operating revenues in order to retain sufficient funds in the Airport Enterprise Fund to finance the City's matching share of future FAA Airport Improvement Program grants and fund other City development projects included in the Capital Improvement Program. The City is promoting the Airport as a catalyst for economic development, and over 260 acres of Airport property are being considered for development and an Airport Business Park.

Potential future revenues from these sources will be added to the Airport Enterprise Fund as required by Federal Grant Assurances.

Based on the Phase I of the Capital Improvement Program, an estimated \$40,000 will be required on an annual basis from the Airport Enterprise Fund to implement the recommended projects over the initial five-year period. The \$40,000 annual requirement will be to fund the City's share of FAA Airport Improvement Program grants assuming Caltrans grants are available to fund a 2.5 percent share of the Federal grants.

### **7.3 SOURCES AND USES OF FUNDS**

The following identifies potential sources of funds that could be used for improvement projects at the Marina Municipal Airport. Several of these sources of funds are either being used, or have been used in the past, to fund projects at the Airport.

#### **7.3.1 Federal Aviation Administration Airport Improvement Program Grants**

The Airport and Airway Trust Fund, which was established by the Airport and Airway Revenue Act of 1970, provides the revenues used to fund Airport Improvement Program projects. Taxes or user fees are collected from the various segments of the aviation community and placed in the Trust Fund. The FAA Airport Improvement Program was established by the Airport and Airway Improvement Act of 1982 and provides funding for airport planning and development. The 1982 Act, as amended, authorizes the use of monies from the Airport and Airway Trust Fund to make grants under the Airport Improvement Program. The Airport Improvement Program assists the development of a nationwide system of airports by providing funding for airport planning and development projects at airports included in the *National Plan of Integrated Airport Systems*.

The most recent reauthorization legislation for use of Airport Improvement Program funds is entitled Vision 100—The Century of Aviation Reauthorization Act (Vision 100) that was signed into law in December 2003. Vision 100 provided a multi-year program for funding under the Airport Improvement Program with increases in funding through fiscal year 2007 and provided Federal funding for 95 percent of an eligible project with a requirement for a 5 percent local (City and/or Caltrans) match. Vision 100 expired on September 30, 2007, the end of the Federal fiscal year, and the programs and budgets of the Airport Improvement Program is currently being considered for reauthorization. Although it is unknown at this time what programs will be reauthorized and at what funding levels, it is generally agreed by the aviation industry that many of the programs from Vision 100 will be carried through into the new Reauthorization of the Airport Improvement Program.

The Vision 100 legislation provides for general aviation airport entitlement grants with a maximum of \$150,000 annually for fiscal years in which the total amount of FAA Airport Improvement Program funding is \$3.2 billion or more. The Vision 100 legislation provided \$3.4 billion, \$3.5 billion, \$3.6 billion, and \$3.7 billion for fiscal years 2004, 2005, 2006, and 2007, respectively. The Marina Municipal Airport is eligible for these annual entitlement funds. General aviation airport entitlement funds provide the City the ability to prioritize use of these funds with a greater focus on the needs of the Airport and the Community and eliminate the need to compete for general aviation airport discretionary funds for projects that may not have a high priority for FAA Airport Improvement Program funding.

The Airport has received \$927,030 in FAA grant awards beginning in 1992 with the most recent grant award of \$200,000 received in 2005. Historically, FAA Airport Improvement Program grants have been awarded for the projects at the Airport as follows:

1992	FAA Grant 01 – Airport Master Plan Study	\$ 88,200
1994	FAA Grant 02 – Airport Master Plan Study	67,500
1998	FAA Grant 03 – Installation of Miscellaneous Navigational Aids	25,300
2002	FAA Grant 04 – Runway Reclamation	359,530
2003	FAA Grant 05 – Update Airport Master Plan	186,500
2005	FAA Grant 06 – Installation of AWOS II	200,000

---

Source: Federal Aviation Administration

Historically, the Airport has received about \$150,000 annually from FAA Airport Improvement Program funds over the most recent five-year period since 2002. The City’s Airport Capital Improvement Plan anticipates receiving \$7.2 million in FAA Airport Improvement Program funds over the next five-year period from 2008 through 2013.

### **7.3.2 State of California**

The State of California provides four financial assistance programs including the State of California, Department of Transportation, Division of Aeronautics annual grant of \$10,000; the California Transportation Commission (CTC) allocation of funds to match FAA Airport Improvement Program grants for airport and aviation purposes; the acquisition and development grants administered by the State Transportation Improvement Program (STIP); and the Airport Loan Program.

The State provides annual non-matching \$10,000 grants to airports that have not been designated as a “reliever” or “commercial service” airport by the FAA that may be used for both capital improvements and maintenance and operations. The annual grant may be accumulated for up to five years, or a maximum of \$50,000, and used as matching funds for an FAA Airport Improvement Program grant.

State funds can be allocated by the CTC to match an FAA Airport Improvement Program grant once an airport sponsor has accepted the grant from the FAA. The State match is available to airports that have been designated as a general aviation or reliever airport by the FAA. Only those projects that are included in the State’s Capital Improvement Program are eligible to receive matching grants. The State match will be an amount equal to 2.5 percent of the FAA Airport Improvement Program grant.

Any publicly-owned, public-use airport may apply for a State acquisition and development grant through a structured approval process. Grant projects are evaluated and prioritized by an evaluation matrix and an airport rating form with runway maintenance projects receiving the highest priority for funding. An Airport’s request may range from a minimum of \$10,000 to a maximum of \$500,000 per fiscal year.

The State Airport Loan Program provides financial assistance in the form of loans, repayable over a period not-to-exceed 17 years. The interest rate is based on the most recent issue of State of California bonds sold prior to the issuance of a loan agreement. Loans can be obtained for matching funds (i.e., a FAA Airport Improvement Program grant) and for revenue-generating facilities (i.e., hangars and fuel facilities).

The funds available to the Caltrans Division of Aeronautics for their financial assistance programs have been reduced in recent years to help reduce the statewide budget deficit. It is not known at this time when, and to what extent, monies will be available to fund the Caltrans Division of Aeronautics Programs.

### **7.3.3 City of Marina General Fund**

Financing airport improvements through a short-term loan from the City’s general fund may be the most realistic method of financing development not eligible for FAA Airport Improvement Program grants or for matching the City requirement for grants. Loans from the general fund can be justified by the City on the basis that the Airport provides certain direct economic and social benefits to the Community.

#### **7.3.4 Private Financing**

The importance of the Airport to local economic development is enhanced with active involvement on the part of both public officials and the private business community. The City may require that all exclusive-use facilities such as hangars, fueling facilities, tiedowns, fixed base operations, and other commercial aviation facilities be provided and financed by the tenant. The City would receive ground rental while the leaseholder would receive the gross revenues and be responsible for the operational expenses and debt service obligation. Private financing could place the burden of financing on the tenant while increasing the value of the Airport, which will, in turn, add to its economic attractiveness.

The City is preparing an economic development-oriented Airport Business Plan that will explore the various alternatives for financing development projects on the Airport that will include an analysis of the return on City investments for hangar renovations and explore opportunities to contract with a private fixed-base operator able to maximize investment opportunities.

#### **7.3.5 Other Sources of Funds**

There are other potential sources of grants and loans that the City could consider for financing airport development projects, including grants from the Federal Public Works Program of the Economic Development Administration. There are several grant and loan programs under the U.S. Department of Agriculture Rural Development Programs including Community Facilities Direct Loans, Rural Business Enterprise Grants and Rural Business Opportunity Grant Programs. The use of funds from these programs range from infrastructure improvements, e.g., water and sewer systems, to financing a public terminal building and/or hangars and equipment needed for public safety.

The State of California, Economic Development Administration provides grants and loans through the Department of Housing and Community Development and the Trade and Commerce Agency. The use of funds from these programs also range from infrastructure improvements to public-use terminal buildings.

The eligibility criteria to receive grants and loans under these various programs differ, and the application processes are also different. The requirement for the City's local matching share for certain grants could be as high as 75 percent of the total project costs. In addition, there are special conditions attached to certain grants and loans that the City will be obligated to meet, e.g., the creation of jobs and environmental compliance. As the availability of funds to support these programs on both the Federal and State level constantly change, the City should coordinate with the various program managers prior to considering an application for assistance.

#### **7.4 FINANCIAL CONSIDERATIONS OF THE PHASE II AND PHASE III CAPITAL IMPROVEMENT PROGRAM**

Beyond Phase I, it is assumed that development of the Airport will proceed according to the priorities proposed in the recommended phased development plan. It is also assumed that the implementation of the Phase II and Phase III projects will be arranged to be compatible with the financing sources and capability of the Airport as identified at the time of implementation without regard to the technical requirements that may be demonstrated.

It should be recognized that the financial feasibility of projects in the later stage will be linked to the overall management of the Airport in the short-term, the provisions of existing leases and agreements in effect, funding levels and participation rates of Federal grant programs and periodic review by the City of its lease policies and rates and charges policies.

## **APPENDIX A**

---

# **ALTERNATIVE AIRPORT DEVELOPMENT CONCEPTS**

## Appendix A

### **ALTERNATIVE AIRPORT DEVELOPMENT CONCEPTS**

#### **INTRODUCTION**

This appendix describes the alternative airport development concepts considered for the long-range development of the Marina Municipal Airport. Four alternative concepts have been prepared and will be reviewed at a public meeting of the Airport Master Plan Advisory Committee.

The inclusion of individual projects in the alternatives does not necessarily imply that the projects are recommended or that they should be implemented in the near future. The primary purpose is to facilitate the selection of a long-term development concept for the Airport.

The airport master planning process is essentially a decision-making process, and each alternative involves tradeoffs among the various factors. The selected airport master plan concept may well involve features from different alternative development concepts described in this appendix. The alternatives are also intended to illustrate the range of requirements needed to meet current FAA airport design standards for different aircraft design groups.

This appendix presents four alternatives for the possible future development of the Airport and a do nothing alternative is also included. The alternatives represent a broad range of development concepts. The range of concepts varies from do nothing (existing airport) to:

- Alternative 1 that represents the existing Airport
- Alternative 2 that represents moderate development
- Alternative 3 that represents maximum development
- Alternative 4 that represents the development shown on the existing 1996 airport layout plan (ALP).

All the alternatives can handle some large aircraft over 12,500 pounds. Runway length in the following alternatives is the primary determinant of what aircraft can be accommodated.

## **ALTERNATIVE AIRPORT DEVELOPMENT CONCEPT 1 – EXISTING AIRPORT**

This alternative is the existing airport facilities and can accommodate 100 percent of the small aircraft fleet (12,500 pounds or less) with less than 10 passenger seats including aircraft in airport reference codes (ARC) A-I to B-II (e.g., Cessna 172 to Beech King Air C-90). Some large aircraft (more than 12,500 pounds) in ARC B-II (e.g., Cessna 560 Citation and Dassault Falcon 20) and ARC C-I (e.g., Learjet 35/36) can be accommodated. This alternative is illustrated on Figure A-1.



## **ALTERNATIVE AIRPORT DEVELOPMENT CONCEPT 2**

This alternative is designed to accommodate small and large aircraft including some business jets and is illustrated on Figure A-2. This alternative could accommodate 100 percent of the small aircraft (12,500 pounds or less) fleet in ARC A-I to B-II (e.g., Cessna 172 to Beech King Air C-90), including aircraft with 10 or more passenger seats (e.g., Cessna 208 Caravan and Beech King B200), approximately 75 percent of the large aircraft (60,000 pounds or less) fleet at 60 percent useful load in ARC B-II (e.g., Cessna 560 and Dassault Falcon 20) and, on an occasional basis, some business jets in ARC C-I and C-II (e.g., Gates Learjet 35/36 and Cessna Citation III/VII). This alternative accommodates a precision instrument approach to Runway 29 and a nonprecision instrument approach to Runway 11.

This alternative requires some additional land acquisition or avigation easements to the east of the runway to provide for a precision RPZ for Runway 29 that will extend beyond the existing airport boundary. This alternative:

- Plans for ARC B-II for large aircraft as the design aircraft.
- Accommodates 100 percent of the small aircraft (12,500 pounds or less) fleet in ARC A-I to B-II including aircraft with 10 or more seats and approximately 75 percent of the large aircraft (60,000 pounds or less) fleet in ARC B-II at 60 percent useful load and on an occasional basis some business jets in ARC C-I and C-II.
- Provides a precision IFR approach to Runway 29 with visibility minimums lower than 3/4 mile and a nonprecision IFR approach to Runway 11 with visibility minimums not lower than 3/4 mile.
- Provides a precision approach RPZ for Runway 29 with lower than 3/4 mile visibility and a nonprecision RPZ for Runway 11 with not lower than 3/4 mile visibility.

### **Land Acquisition and/or Avigation Easement**

- Acquires land, or obtains avigation easements, over about 41 acres to the east for Runway 29 RPZ on both sides of Blanco Road.

### **Airfield**

- Extends Runway 11-29 by 665 feet to the west and 550 feet to the east for a total length of 4,700 feet.
- Widens runway from 75 feet to 100 feet.
- Provides a RSA 300-foot wide, centered on the runway, and extending 600 feet beyond the runway ends.
- Provides a ROFA 800-foot wide centered on the runway and extending 600 feet beyond the runway ends.



- Provides a ROFZ 400 feet wide extending 200 feet beyond the ends of and centered on the runway, with vertical sides up to approximately 50 feet then with an inclined 6:1 transitional surface extending up to 150 feet above the Airport elevation.
- Provides an inner approach OFZ 400 feet wide starting 200 feet beyond the end of Runway 29 and extending 2,400 feet further outward beyond the end of Runway 29 at a slope of 50:1 and with vertical sides up to approximately 50 feet and then with an inclined 6:1 transitional surface on both sides of the OFZ extending up to 150 feet above the Airport elevation.
- Provides an inner approach OFZ 400 feet wide starting 200 feet beyond the end of Runway 11 and extending 1,400 feet further outward beyond the end of Runway 11 at a slope of 50:1 and with vertical sides up to 150 feet above the Airport elevation.
- Provides a precision obstacle free zone (POFZ) 200 feet long by 800 feet wide centered on the runway centerline beginning at the Runway 29 threshold and at the threshold elevation.
- Retains runway centerline to taxiway centerline separation of 525 feet south of Runway 11-29. Provides new run-up areas at ends of extended Taxiway B.
- Provides for new full-length parallel taxiway, with runway centerline to taxiway centerline separation of 300 feet and entry/exit taxiways on the north side of Runway 11-29.

## **Avigation**

- Provides for a precision instrument approach to Runway 29 with visibility minimums lower than 3/4 mile and a nonprecision instrument approach to Runway 11 with visibility minimums not less than 3/4 mile.
- Provides RPZ for Runway 29 end at 2,500 feet long by 1,000 feet inner width and 1,750 feet outer width and provides RPZ for Runway 11 end at 1,700 feet long by 1,000 feet inner width and 1,510 feet outer width.
- Provides a 50:1 approach surface to Runway 29 for a precision approach and a 34:1 approach surface to Runway 11 for a nonprecision approach.
- Provides for a medium intensity approach lighting system with runway alignment indicator lights (MALSR) for the new Runway 29 end to allow reduced visibility minimums from 3/4 mile to 1/2 mile.
- Provides for a MALS for the new Runway 11 end to allow a visibility reduction from 1 mile to 3/4 mile.
- Provides for PAPI-4 and REIL at each runway end.
- Extends medium intensity runway lighting system for the runway extensions.
- Replaces existing medium intensity taxiway lights on existing taxiways and provides new medium intensity taxiway lights for taxiway extensions on the south side and on the new parallel taxiway on the north side including entry/exit taxiways.

- Retains the existing building restriction lines (BRL) at 619 feet from the runway centerline to the south for a 17-foot high building and 640 feet from the runway centerline to the north for a 20-foot high building.

### **General Aviation**

- Provides for additional 34 T-hangars near the existing T-hangars by extending Building 528 and provides a new row of T-hangars parallel to and toward Taxiway B.
- Provides for additional 68 T-hangars in the vicinity of existing T-hangars by extending Building 554 and providing 3 new rows of T-hangars parallel to and toward Taxiway B.
- Provides for 4 rows of larger (corporate/executive) hangars east of the old Airport traffic control tower.
- Provides space for 39 tiedowns north of Building 527 and 8 tiedowns north of Building 533.
- Provides space for 5 helicopter parking positions east of Taxiway A on old helicopter pads.
- Provides space for 4 additional fixed-base operator/commercial lease lots west of the old airport traffic control tower, east of Building 527, north of Building 507 and east of Building 533.
- Relocates the interim parachute drop zone to another area on the Airport near Building 533. Need to relocate fence in area.
- Reserves about 23 acres north of Runway 11-29 as an Aviation Reserve for future aviation uses for fixed base operator/commercial aviation lease lots.
- Relocates perimeter fencing on north side to edge of future Golf Boulevard (General Plan designation).

### **Airport Access and Parking**

- Retains existing Imjin Road access to road and vehicular parking facilities.
- Provides for future east-west Golf Boulevard north of the airfield. Golf Boulevard will clear the 50:1 approach surface to Runway 29 on the runway centerline with some moderate grading. On the north side of approach surface Golf Boulevard will require some minor cut to clear the 50:1 approach surface and some fill in a swale for the road bed. The road would clear the 7:1 transitional surface to the north. (Consideration will be given in the design of Golf Boulevard to meet the requirements of the RSA and ROFA.)
- Provides for future road improvements in southeast corner of Airport and west of Blanco Road.

## **Other Areas**

- Retains 130 acres and 43 acres to the northwest and northeast, respectively, for habitat conservation areas.
- Reserves about 203 acres north of Runway 11-29 and about 52 acres in the southeast corner of the Airport for nonaviation industrial/commercial uses.
- Retains 125,000 square feet of office/shop/storage space in existing hangars and other buildings.
- Reserves area for airport maintenance facility and baseyard south of Building 533.

## **ALTERNATIVE AIRPORT DEVELOPMENT CONCEPT 3**

This alternative is designed to accommodate small and large aircraft including business jets and is illustrated on Figure A-3. This alternative could accommodate 100 percent of the small aircraft (12,500 pounds or less) fleet in ARC A-I to B-II (e.g., Cessna 172 to Beech King Air C-90), including aircraft with 10 or more passenger seats (e.g., Cessna 208 Caravan and Beech King Air B200), 100 percent of the large aircraft (60,000 pounds or less) fleet at 60 percent useful load in ARC C-I and C-II (e.g., Gates Learjet 35/36 and Cessna Citation 650). This alternative accommodates a precision instrument approach to Runway 29 and a nonprecision instrument approach to Runway 11.

This alternative requires some additional land acquisition, or avigation easements, to the east of the runway to provide for a precision RPZ for Runway 29 that will extend beyond the existing airport boundary. This alternative:

- Plans for ARC C-II for large aircraft as the design aircraft.
- Accommodates 100 percent of the small aircraft (12,500 pounds or less) fleet in ARC A-I to B-II including aircraft with 10 or more seats and 100 percent of the large aircraft (60,000 pounds or less) fleet at 60 percent useful load in ARC C-II.
- Provides a precision IFR approach to Runway 29 with visibility minimums lower than 3/4 mile and a nonprecision IFR approach to Runway 11 with visibility minimums not lower than 3/4 mile.
- Provides a precision approach RPZ for Runway 29 with visibility minimums lower than 3/4 mile and a nonprecision RPZ for Runway 11 with visibility minimums not lower than 3/4 mile.

### **Land Acquisition and/or Avigation Easement**

- Acquires land, or obtains avigation easements, over about 41 acres to the east for Runway 29 RPZ on both sides of Blanco Road.

### **Airfield**

- Extends Runway 11-29 by 1,165 feet to the west and 550 feet to the east for a total length of 5,200 feet.
- Widens runway from 75 feet to 100 feet.
- Provides a RSA 500 feet wide, centered on the runway, and extending 1,000 feet beyond the runway ends.



- Provides a ROFA 800 feet wide, centered on the runway, and extending 1,000 feet beyond the runway ends.
- Provides a ROFZ 400 feet wide extending 200 feet beyond the ends of, and centered on the runway, with vertical sides up to approximately 50 feet then with an inclined 6:1 transitional surface extending up to 150 feet above the Airport elevation.
- Provides an inner approach OFZ 400 feet wide starting 200 feet beyond the end of Runway 29 and extending 2,400 feet further outward beyond the end of Runway 29 at a slope of 50:1 and with vertical sides up to approximately 50 feet and then with an inclined 6:1 transitional surface on both sides of the OFZ extending up to 150 feet above the Airport elevation.
- Provides an inner approach OFZ 400 feet wide starting 200 feet beyond the end of Runway 11 and extending 1,400 feet further outward beyond the end of runway 11 at a slope of 50:1 and with vertical sides up to 150 feet above the Airport elevation.
- Provides a POFZ 200 feet long by 800 feet wide centered on the runway centerline beginning at the Runway 29 threshold and at the threshold elevation.
- Retains runway centerline to taxiway centerline separation of 525 feet south of the Runway 11-29. Provides new run-up areas at ends of extended Taxiway B.
- Provides for new full-length parallel taxiway with runway centerline to taxiway centerline separation of 400 feet and entry/exit taxiways on the north side of Runway 11-29.

## **Avigation**

- Provides for a precision instrument approach to Runway 29 with visibility minimums lower than 3/4 of a mile and a nonprecision instrument approach to Runway 11 with visibility minimums not less than 3/4 of a mile.
- Provides RPZ for Runway 29 end at 2,500 feet long by 1,000 feet inner width and 1,750 feet outer width and provides RPZ for Runway 11 end at 1,700 feet long by 1,000 feet inner width and 1,510 feet outer width.
- Provides a 50:1 approach surface to Runway 29 for a precision approach and a 34:1 approach surface to Runway 11 for a nonprecision approach.
- Replaces existing medium intensity runway lighting with high intensity runway lighting to better accommodate precision approaches to Runway 29.
- Provides for a MALSR for the new Runway 29 end to allow reduced visibility minimums from 3/4 mile to 1/2 mile.
- Provides for a MALS for the new Runway 11 end to allow a visibility minimums reduction from 1 mile to 3/4 mile.
- Provides for PAPI-4 and REIL at each runway end.
- Extends MIRL for the runway extensions.

- Replaces existing MITL on existing taxiways and provides new medium intensity taxiway lights for taxiway extensions on the south side and on the new parallel taxiway on the north side including entry/exit taxiways.
- Requires relocating segmented circle and lighted wind cone.
- Provides building restriction lines (BRL) at 640 feet from the runway centerline on both sides of the runway to allow for a 20-foot high building.

### **General Aviation**

- Provides for additional 34 T-hangars near the existing T-hangars by extending Building 528 and provides a new row of T-hangars parallel to and toward Taxiway B.
- Provides for additional 28 T-hangars in the vicinity of existing T-hangars by extending Building 554 and provides for one new row of T-hangars parallel to and toward Taxiway B.
- Provides for 2 rows of larger (corporate/executive) hangars to the north of Building 524.
- Provides for another 6 rows of larger (corporate/executive) hangars to the east of Taxiway A across from the old aircraft rescue and firefighting.
- Provides for 39 tiedowns north of Building 527 and another 39 tiedowns east of Building 507.
- Provides space for 6 helicopter parking positions north of Building 533.
- Provides space for 5 additional fixed-base operator/commercial lease lots west of the old control tower, east of Building 527, north of Building 507, east of Building 533 and in the vicinity of Building 510.
- Relocates interim parachute drop zone area to another area off the Airport.
- Reserves about 28 acres north of Runway 11-29 as an Aviation Reserve for future aviation uses for fixed base operator/commercial aviation lease lots.
- Relocates perimeter fencing on north side to edge of future Golf Boulevard.

### **Airport Access and Parking**

- Retains existing Imjin Road access road and vehicular parking facilities.
- Provides for future east-west Golf Boulevard north of the airfield.
- Golf Boulevard will clear the 50:1 approach surface on runway centerline with some moderate grading. On north side, Golf Boulevard will require some minor cut, to clear the 50:1 approach surface, and some fill in a swale for the roadbed. Golf Boulevard would clear the 7:1 transitional surface to the north.
- Golf Boulevard will penetrate a triangular area 100 feet by 200 feet in the northeast corner of the RSA and a triangular area of 150 feet by 200 feet in the northeast

corner of the ROFA. This may require requesting a modification to airport design standards from the FAA to demonstrate that the modification will provide an acceptable level of safety. Alternatively, the proposed Golf Boulevard would have to be realigned or put in a tunnel across the RSA and ROFA. (Consideration will be given in the design of the proposed Golf Boulevard to meet the requirements of the RSA and ROFA.)

- Provides for future road improvements in southeast corner of Airport and west of Blanco Road.

**Other Areas:**

- Retains 130 acres and 43 acres to the northwest and northeast, respectively, for habitat conservation areas.
- Reserves about 203 acres north of Runway 11-29 and about 52 acres in the southeast corner of the Airport for nonaviation industrial/commercial uses.
- Reserves area for future airport maintenance facility and baseyard south of Building 524.

## **ALTERNATIVE AIRPORT DEVELOPMENT CONCEPT 4**

This alternative is designed to accommodate small and large aircraft including business jets and is illustrated on Figure A-4. This alternative is the same development concept as shown on the current 1996 FAA approved Airport Layout Plan. This alternative could accommodate 100 percent of the small aircraft (12,500 pounds or less) fleet in ARC A-I to B-II (e.g., Cessna 172 to Beech King Air C-90), including aircraft with 10 or more passenger seats (e.g., Cessna 208 Caravan and Beech King Air B200), 100 percent of large aircraft (60,000 pounds or less) fleet at 60 percent useful load in ARC B-II (e.g., Cessna 560 and Dassault Falcon 20). This alternative accommodates a precision instrument approach to Runway 29 and a nonprecision instrument approach to Runway 11.

This alternative requires some additional land acquisition or avigation easements to the east of the runway to provide for a precision RPZ that will extend beyond the existing airport boundary. This alternative:

- Plans for ARC B-II for large aircraft as the design aircraft.
- Accommodates 100 percent of the small aircraft (12,500 pounds or less) fleet in ARC A-I to B-II including aircraft with 10 or more seats and 100 percent of the large aircraft (60,000 pounds or less) at 60 percent useful load in ARC B-II.
- Provides a precision IFR approach to Runway 29 with visibility minimums lower than 3/4 mile and a nonprecision IFR approach to Runway 11 with visibility minimums not lower than 3/4 mile.
- Provides a precision approach RPZ for Runway 29 with visibility minimums lower than 3/4 mile and a nonprecision RPZ for Runway 11 with visibility minimums not lower than 3/4 mile.

### **Land Acquisition and/or Avigation Easement**

- Acquires land or obtains avigation easement, over about 42 acres to the east for Runway 29 RPZ on both sides of Blanco Road.

### **Airfield**

- Extends Runway 11-29 by 1,100 feet to the west and 655 feet to the east for a total length of 5,240 feet.
- Widens runway from 75 feet to 100 feet.



- Provides an RSA 300 feet wide, centered on the runway, and extending 600 feet beyond the runway ends.
- Provides a ROFA 800 feet wide, centered on the runway, and extending 600 feet beyond the runway ends.
- Provides a ROFZ 400 feet wide extending 200 feet beyond the ends of and centered on the runway, with vertical sides up to approximately 50 feet then with an inclined 6:1 transitional surface extending up to 150 feet above the Airport elevation.
- Provides an inner approach OFZ 400 feet wide starting 200 feet beyond the end of Runway 29 and extending 2,400 feet further outward beyond the end of Runway 29 at a slope of 50:1 and with vertical sides up to approximately 50 feet and then with a inclined 6:1 transitional surface on both sides of the OFZ extending up to 150 feet above the Airport elevation.
- Provides an inner approach OFZ 400 feet wide starting 200 feet beyond the end of Runway 11 and extending 1,400 feet further outward beyond the end of Runway 11 at a slope of 50:1 and with vertical sides up to 150 feet above the Airport elevation.
- Does not provide a POFZ 200 feet long by 800 feet wide centered on the runway centerline beginning at the Runway 29 threshold and at the threshold elevation which is now required by FAA.
- Retains runway centerline to taxiway centerline separation of 525 feet south side of Runway 11-29.
- Provides for a new parallel taxiway with runway centerline to taxiway centerline separation of 420 feet and entry/exit taxiways on the north side of Runway 11-29.

## **Avigation**

- Provides for a precision instrument approach to Runway 29 with visibility minimums lower than 3/4 of a mile and a nonprecision instrument approach to Runway 11 with visibility minimums not less than 3/4 of a mile.
- Provides RPZ for Runway 29 end at 2,500 feet long by 1,000 feet inner width and 1,750 feet outer width and provides RPZ for Runway 11 end at 1,700 feet long by 1,000 feet inner width and 1,510 feet outer width.
- Provides a 50:1 approach surface to Runway 29 for a precision approach and a 34:1 approach surface to Runway 11 for a nonprecision approach.
- Replaces existing medium intensity runway lighting with high intensity runway lighting to better accommodate precision approaches to Runway 29.
- Provides for a MALSR for the new Runway 29 end to allow reduced visibility minimums from 3/4 mile to 1/2 mile.
- Does not provide for a MALS for the new Runway 11 end to allow a visibility minimums deduction from 1 mile to 3/4 mile.
- Provides for PAPI-4 at both runway ends but no REILs.
- Extends MIRL for the runway extensions.

- Replaces existing MITL on existing taxiways and provides new medium intensity taxiway lights for taxiway extensions on the south side and on the new parallel taxiway on the north side including entry/exit taxiways.
- Retains existing building restriction lines (BRL) at 619 feet from the runway centerline to the south for a 17-foot high building and 640 feet from the runway centerline to the north for a 20-foot high building.

### **General Aviation**

- Provides for additional 34 T-hangars near the existing T-hangars by extending Building 528 and provides a new row of T-hangars parallel to and toward Taxiway B.
- Provides for additional 28 T-hangars in the vicinity of existing T-hangars by extending Building 554 and providing for one new row of T-hangars parallel to and toward Taxiway B and the other a larger hangar (aviation business) further south from Taxiway B.
- Provides one row of T-hangars and one row of larger hangars (aviation businesses) east of Taxiway A.
- Proposes interim parachute drop zone area in southeast part of Airport at existing location.
- Reserves about 24 acres north of Runway 11-29 as an Aviation Reserve for future aviation uses for fixed base operator/commercial aviation lease lots.

### **Airport Access and Parking**

- Retains existing Imjin Road access road and vehicular parking facilities.
- Provides for future east-west Golf Boulevard north of the airfield. Golf Boulevard will clear the 50:1 approach surface to the south side and on the runway centerline. On the north side of the approach surface, Golf Boulevard will require moderate grading to clear the 50:1 approach surface to the north at the curve in the roadway. Also, north of the Runway 29 threshold, Golf Boulevard will require some fill-in a swale for the roadbed.
- Provides for future road improvements in southeast corner of Airport and west of Blanco Road.

### **Other Areas:**

- Retains 130 acres and 43 acres to the northwest and northeast, respectively, for habitat conservation areas.
- Reserves about 203 acres north of Runway 11-29 and about 52 acres in the southeast corner of the Airport for nonaviation industrial/commercial uses.
- Reserves area for future airport corporation yard south of Building 533.

**COMPARISON OF ALTERNATIVES**

A summary matrix comparison of key features of the alternative airport development concepts is presented in Table A-1. These will be discussed at a public meeting of the Airport Master Plan Advisory Committee.

Table A-1

**COMPARATIVE EVALUATION OF ALTERNATIVES**  
**Marina Municipal Airport**

Factor	Alternative Concept			
	1	2	3	4
Runway Length (feet)	3,485	4,700	5,200	5,214
Runway Width (feet)	75	100	100	100
Runway 29 Precision Approach GPS or ILS	No	GPS	GPS	ILS
Runway 29 Approach Minimums	1 Mile	1/2 Mile	1/2 Mile	1/2 Mile
Runway 11 Approach Minimums	1 Mile	3/4 Mile	3/4 Mile	3/4 Mile
Runway 11-29 Approach Slopes	34:1 / 34:1	34:1 / 50:1	34:1 / 50:1	34:1 / 50:1
Runway Approach Lights	None	11 and 29	11 and 29	29
Parallel Taxiway Runway Separation on on North Side (feet)	0	300	400	420
Runway 11-29 Building Restriction Line (South/North) 619 for 17-foot Building/640 for 20-foot Building (feet)	619/640	619/640	619/640	619/640
Land to be Acquired or Avigation Easement to East (acres)	0	41	41	42
New T-hangar Spaces	0	68	62	102
New Corporate/Executive Hangars	0	32	90	22
Tiedown Spaces	70	52	78	39
Helicopter Parking Positions	0	5	6	4
Parachute Drop Zone	On-Airport	On-Airport	Off-Airport	On-Airport
Aviation Reserve to North (Acres)	0	23	28	24
Additional Commercial Aviation Lease Areas	0	4	5	3

SOURCE: Aries Consultants Ltd.

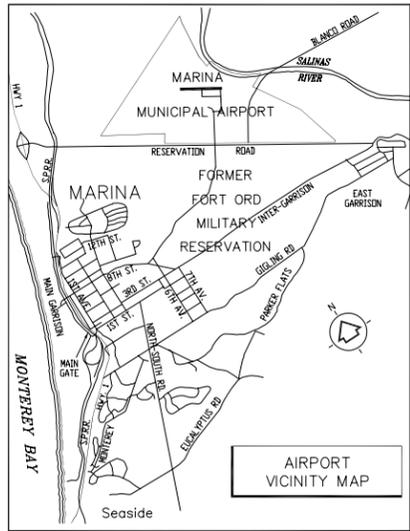
## **APPENDIX B**

---

# **AIRPORT LAYOUT PLAN**



AIRPORT DATA		
	EXISTING	ULTIMATE
AIRPORT ELEVATION (MSL) FEET (NAVD 88)	137'	SAME
AIRPORT REFERENCE	LATITUDE 36° 40' 53.48" N	36° 40' 53.75" N
POINT (ARP) COORDINATES (NAD 83)	LONGITUDE 121° 45' 41.94" W	121° 45' 45.12" W
NORMAL MAX. TEMP. HOTTEST MONTH	69° F	SAME
AIRPORT AND TERMINAL NAVAIDS	ASR-II, AWOS	SAME
AIRPORT SERVICE LEVEL AND ROLE	GA	SAME
ROTATING BEACON	YES	SAME
TAXIWAY LIGHTING	NO	MITL
TAXIWAY SIGN SYSTEM	NO	YES
AIR TRAFFIC CONTROL TOWER	NO	SAME
RADAR APPROACH/DEPARTURE CONTROL	NORCAL	SAME
LIGHTED TETRAHEDRON	NO	SAME
SEGMENTED CIRCLE AND LIGHTED WIND CONE	YES	SAME
AIRPORT REFERENCE CODE	B-I	C-II
GPS AT AIRPORT	YES	SAME
AIRPORT ACREAGE	833	874



RUNWAY DATA		
	RUNWAY 11-29	
	EXISTING	ULTIMATE
EFFECTIVE GRADIENT (%)	0.01%	SAME
WIND COVERAGE 10.5 KNOTS (12 MPH) ALL WEATHER(%)	98.93%	SAME
APPROACH VISIBILITY MINIMUMS	11 1 MILE	3/4 MILE
	29 1 MILE	1/2 MILE
AIRPORT REFERENCE CODE/CRITICAL AIRCRAFT	B-I/BEECH KING AIR F-90	C-II/CESSNA CITATION 650
RUNWAY MARKING	11 NP	SAME
	29 NP	P
APPROACH SURFACES (FAR PART 77)	11 V 34:1	NP 34:1
	29 V 34:1	P 520:1
SEPARATION - RUNWAY CENTERLINE TO PARALLEL TAXIWAY CENTERLINE	530'	SAME
TAXIWAY OBJECT FREE AREA WIDTH	89'	131'
TAXIWAY SAFETY AREA WIDTH	49'	79'
ELEVATIONS (NAVD 88) OF RUNWAYS ENDS	11 137'	SAME
	29 137'	SAME
ELEVATION (NAVD 88) OF RUNWAY HIGH POINT	137'	SAME
ELEVATION (NAVD 88) OF RUNWAY LOW POINT	137'	SAME
LINE OF SIGHT REQUIREMENT MET	YES	SAME
RUNWAY DIMENSIONS (FEET)	3,485' X 75'	5,200' X 100'
RUNWAY SURFACE TYPE	ASPHALT	SAME
TAXIWAY SURFACE TYPE	ASPHALT	SAME
APPROACH SLOPE	11 34:1	SAME
	29 34:1	50:1
PAVEMENT STRENGTH (LBS)	SINGLE 20,000	30,000
	DUAL 50,000	60,000
RUNWAY LIGHTING	MIRL	SAME
IFR NAVIGATIONAL AIDS	11 GPS	MALS, LPV, DH
	29 GPS	MALSR, LPV, DH
VISUAL AIDS	11 NONE	PAPI-4, REIL
	29 NONE	PAPI-4, REIL
RUNWAY PROTECTION ZONE DIMENSIONS	11 1,000' X 500' X 700'	1,700, X 1,000' X 1,510'
	29 1,000' X 500' X 700'	2,500' X 1,000' X 1,750'
RUNWAY SAFETY AREA DIMENSIONS	240' X 120'	1,000' X 500'
RUNWAY OBJECT FREE AREA DIMENSIONS	240' X 400'	1,000' X 800'
PRECISION OBSTACLE FREE ZONE (POFZ)	N/A	200' X 800'
OBSTACLE FREE ZONE LENGTH BEYOND STOP END OF RUNWAY	11 200'	200' BEYOND ALS
	29 200'	200' BEYOND ALS
OBSTACLE FREE ZONE WIDTH	250'	400'
DISTANCE FROM RUNWAY CENTERLINE TO HOLD LINE BARS AND SIGNS	200'	250'



## MARINA MUNICIPAL AIRPORT

### DATA TABLES

NOTE:  
THIS DRAWING IS FOR PLANNING PURPOSES ONLY AND IS NOT INTENDED FOR CONSTRUCTION OR NAVIGATIONAL PURPOSES.  
THE PREPARATION OF THIS DOCUMENT WAS FINANCED IN PART THROUGH AN AIRPORT IMPROVEMENT PROGRAM GRANT FROM THE FEDERAL AVIATION ADMINISTRATION UNDER THE PROVISIONS OF 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 DOCUMENT 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.

1	ALP APPROVED	08/19/98
NO.	REVISIONS	DATE

1	ALP APPROVED	08/19/98
NO.	REVISIONS	DATE

FAA APPROVAL

BY \_\_\_\_\_  
CITY OF MARINA DATE \_\_\_\_\_

**VARIES CONSULTANTS LTD.**

MARINA MUNICIPAL AIRPORT  
MONTEREY COUNTY, CALIFORNIA

SHEET  
2 OF 6

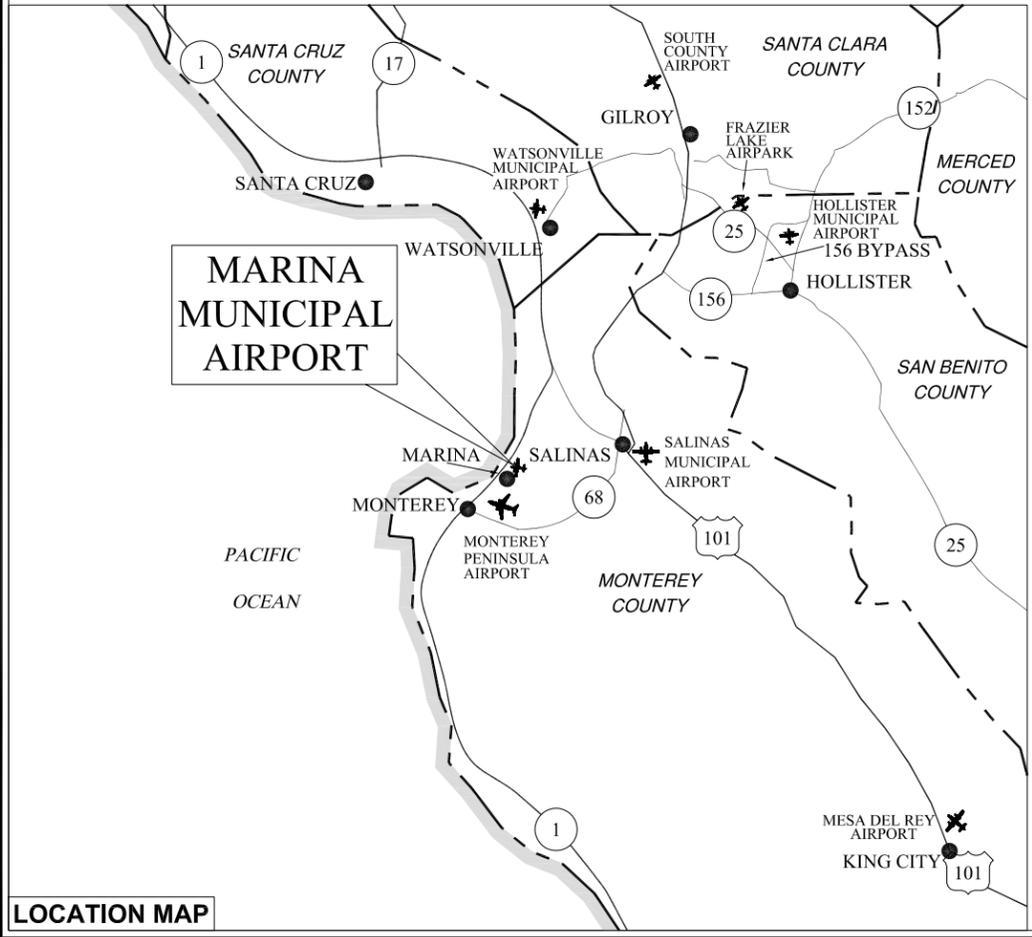
NAME: OAR-02-Data Tables.dwg NO: 4350-03  
DATE: Feb 07, 2008 PLOT SCALE: 1"= 1,000'

RUNWAY END COORDINATES (NAD 83)		
	EXISTING	ULTIMATE
RUNWAY 11	36° 41' 02.78" N 121° 45' 59.94" W	36° 41' 09.00" N 121° 46' 11.97" W
RUNWAY 29	36° 40' 44.18" N 121° 45' 23.95" W	36° 40' 38.50" N 121° 45' 18.27" W

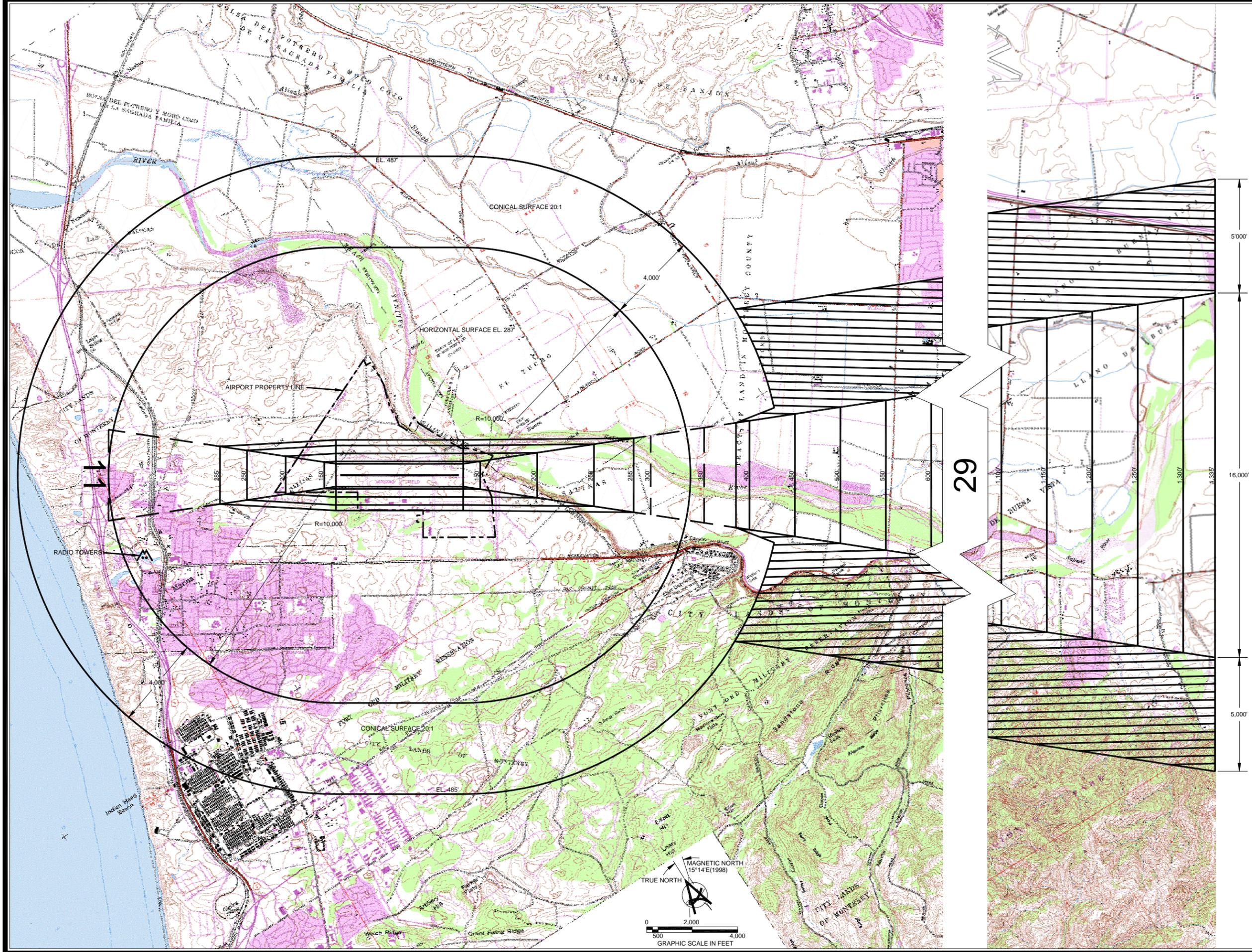
NOTE: OBSTACLE FREE ZONE (OFZ) 250 FEET WIDE FOR SMALL AIRCRAFT. THERE ARE NO OFZ OBJECT PENETRATIONS. THERE ARE NO THRESHOLD SITING SURFACE OBJECT PENETRATIONS.

THE FIVE FOOT CONTOURS SHOWN ON THIS DRAWING WERE LOCATED FROM A SURVEY OF A PORTION OF THE AIRPORT. WHERE SURVEY INFORMATION WAS NOT AVAILABLE THE CONTOUR INFORMATION FROM THE USGS MAP WAS USED.

RUNWAY 11-29 MEETS THE 40 TO 1 DEPARTURE SURFACE IN ACCORDANCE WITH FAA AC 150/5300-13 APPENDIX 2.



LOCATION MAP



**MARINA  
MUNICIPAL AIRPORT**

**AIRSPACE PLAN**

**NOTE:**  
THIS DRAWING IS FOR PLANNING PURPOSES ONLY AND IS NOT INTENDED FOR CONSTRUCTION OR NAVIGATIONAL PURPOSES.  
THE PREPARATION OF THIS DOCUMENT WAS FINANCED IN PART THROUGH AN AIRPORT IMPROVEMENT PROGRAM GRANT FROM THE FEDERAL AVIATION ADMINISTRATION UNDER THE PROVISIONS OF 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 DOCUMENT 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.

1	ALP APPROVED	08/19/98
NO.	REVISIONS	DATE

FAA APPROVAL

BY \_\_\_\_\_  
CITY OF MARINA DATE

**VARIES CONSULTANTS LTD.**

MARINA MUNICIPAL AIRPORT  
MONTEREY COUNTY, CALIFORNIA

SHEET  
3  
OF  
6

NAME: OAR-03 04-Airspace Plan.dwg NO: 4350-02  
DATE: Feb 07, 2008 PLOT SCALE: 1"=4,000'



**MARINA  
MUNICIPAL AIRPORT**

**INNER PORTION OF THE  
APPROACH SURFACES  
PLAN**

NOTE:  
THIS DRAWING IS FOR PLANNING PURPOSES ONLY AND IS NOT INTENDED FOR CONSTRUCTION OR NAVIGATIONAL PURPOSES.  
THE PREPARATION OF THIS DOCUMENT WAS FINANCED IN PART THROUGH AN AIRPORT IMPROVEMENT PROGRAM GRANT FROM THE FEDERAL AVIATION ADMINISTRATION UNDER THE PROVISIONS OF 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 DOCUMENT 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.

1	ALP APPROVED	08/19/98
NO.	REVISIONS	DATE

FAA APPROVAL

BY \_\_\_\_\_  
CITY OF MARINA DATE \_\_\_\_\_

**VARIES CONSULTANTS LTD.**

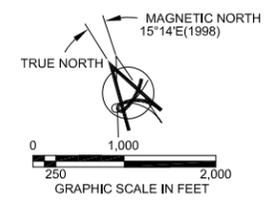
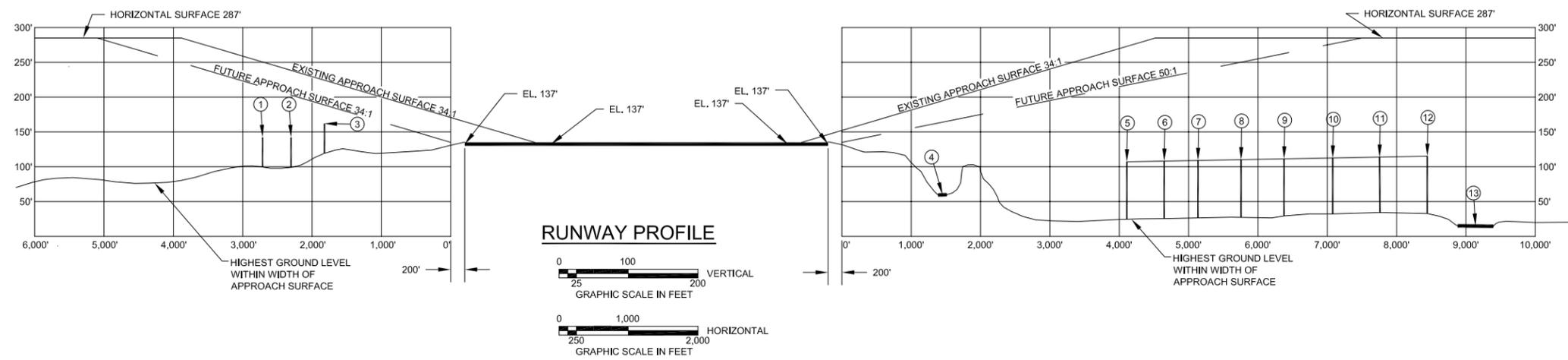
MARINA MUNICIPAL AIRPORT  
MONTEREY COUNTY, CALIFORNIA

SHEET  
4 OF 6

NAME: OAR-03 04-AltSpace Plan.dwg NO: 4350-02  
DATE: Feb 07, 2008 PLOT SCALE: 1"=2,000'

RUNWAY 11-29  
OBSTRUCTION DATA

NO.	DESCRIPTION	TOP ELEV.	APPROACH SURFACE PENETRATION	DISPOSITION OF OBSTRUCTION
1	-	-	-	-
2	-	-	-	-
3	-	-	-	-
4	-	-	-	-





**MARINA  
MUNICIPAL AIRPORT**

**TERMINAL AREA  
AND ACCESS PLAN**

NOTE:

THIS DRAWING IS FOR PLANNING PURPOSES ONLY AND IS NOT INTENDED FOR CONSTRUCTION OR NAVIGATIONAL PURPOSES.

THE PREPARATION OF THIS DOCUMENT WAS FINANCED IN PART THROUGH AN AIRPORT IMPROVEMENT PROGRAM GRANT FROM THE FEDERAL AVIATION ADMINISTRATION UNDER THE PROVISIONS OF 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 DOCUMENT 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.

1	ALP APPROVED	08/19/98
NO.	REVISIONS	DATE

FAA APPROVAL

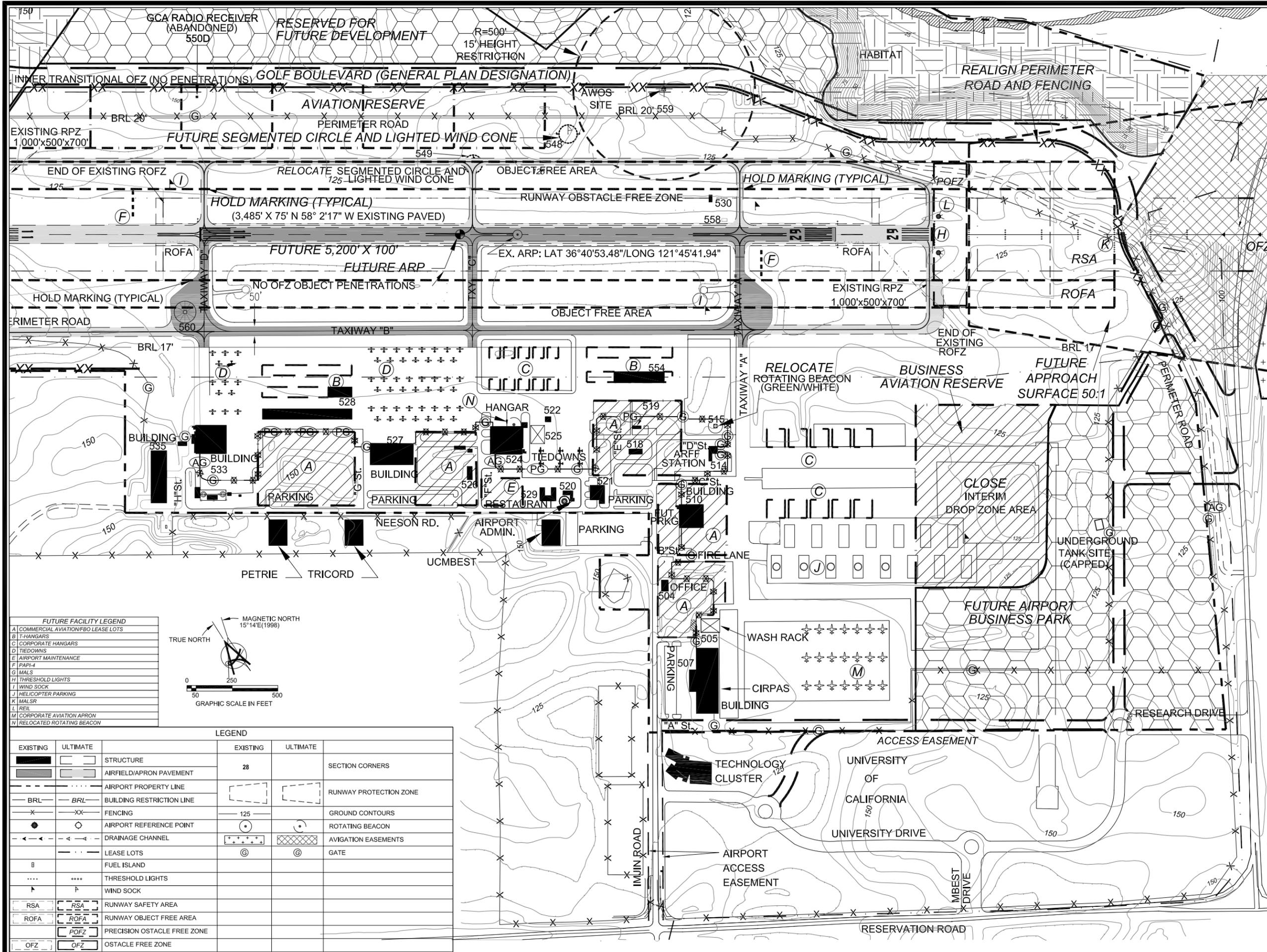
BY \_\_\_\_\_  
CITY OF MARINA DATE

**ARIES CONSULTANTS LTD.**

MARINA MUNICIPAL AIRPORT  
MONTEREY COUNTY, CALIFORNIA

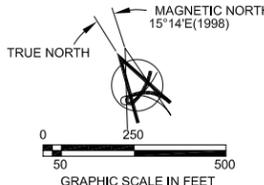
SHEET  
5  
OF  
6

NAME: OAR-01 05-ALP.dwg NO: 4080-02  
DATE: Feb 07, 2008 PLOT SCALE: 1"=500'



**FUTURE FACILITY LEGEND**

A	COMMERCIAL AVIATION/FBO LEASE LOTS
B	T-HANGARS
C	CORPORATE HANGARS
D	TIEDOWNS
E	AIRPORT MAINTENANCE
F	PAPI-4
G	MALS
H	THRESHOLD LIGHTS
I	WIND SOCK
J	HELICOPTER PARKING
K	MALSR
L	REIL
M	CORPORATE AVIATION APRON
N	RELOCATED ROTATING BEACON



**LEGEND**

EXISTING	ULTIMATE	DESCRIPTION	EXISTING	ULTIMATE	DESCRIPTION
[Symbol]	[Symbol]	STRUCTURE	[Symbol]	[Symbol]	SECTION CORNERS
[Symbol]	[Symbol]	AIRFIELD/APRON PAVEMENT	[Symbol]	[Symbol]	RUNWAY PROTECTION ZONE
[Symbol]	[Symbol]	AIRPORT PROPERTY LINE	[Symbol]	[Symbol]	GROUND CONTOURS
[Symbol]	[Symbol]	BUILDING RESTRICTION LINE	[Symbol]	[Symbol]	ROTATING BEACON
[Symbol]	[Symbol]	FENCING	[Symbol]	[Symbol]	AVIGATION EASEMENTS
[Symbol]	[Symbol]	AIRPORT REFERENCE POINT	[Symbol]	[Symbol]	GATE
[Symbol]	[Symbol]	DRAINAGE CHANNEL	[Symbol]	[Symbol]	
[Symbol]	[Symbol]	LEASE LOTS	[Symbol]	[Symbol]	
[Symbol]	[Symbol]	FUEL ISLAND	[Symbol]	[Symbol]	
[Symbol]	[Symbol]	THRESHOLD LIGHTS	[Symbol]	[Symbol]	
[Symbol]	[Symbol]	WIND SOCK	[Symbol]	[Symbol]	
[Symbol]	[Symbol]	RSA	[Symbol]	[Symbol]	
[Symbol]	[Symbol]	ROFA	[Symbol]	[Symbol]	
[Symbol]	[Symbol]	PRECISION OBTACLE FREE ZONE	[Symbol]	[Symbol]	
[Symbol]	[Symbol]	OBTACLE FREE ZONE	[Symbol]	[Symbol]	

