LEIGH FISHER ASSOCIATES
A Division of Jacobs Consultancy Inc.

Final Report

Byron Airport Master Plan

Prepared for

Contra Costa County
Public Works Department
Concord, California

Prepared by

Leigh Fisher Associates

in association with

The Hoyt Company
T.Y. Lin International/CCS

June 2005

LEIGH FISHER ASSOCIATES
A Division of Jacobs Consultancy Inc.

Final Report

Byron Airport Master Plan

Prepared for

Contra Costa County
Public Works Department
Concord, California

Prepared by

Leigh Fisher Associates

in association with

The Hoyt Company
T.Y. Lin International/CCS

June 2005

Main Office
555 Airport Blvd., Suite 300
Burlingame, CA 94010
Tel 650-579 7722
Fax 650-343 5220

Washington, D.C. Office
14900 Conference Center Drive, Suite 275
Chantilly, VA 20151
Tel 703-961 9000
Fax 703-961 9318

CONTENTS

Section		Page
1	INTRODUCTION	1-1
	Background	1-1
	The Byron Airport Master Plan Project	1-3
	Project Coordination and Public Involvement	1-3
2	INVENTORY OF EXISTING FACILITIES	2-1
	Overview of Byron Airport	2-1
	Airfield Facilities	2-2
	Runways	2-2
	Taxiways	2-5
	Aircraft Parking Apron	2-6
	Pavement Evaluation	2-6
	Avigation	2-6
	Runway Use	2-7
	Imaginary Surfaces and Obstructions	2-7
	Air Traffic Control	2-8
	Navigation Aids	2-8
	Existing Buildings	2-9
	Administration Building	2-9
	Maintenance Hangar	2-9
	Fire Fighting	2-9
	6900 Falcon Way Building	2-9
	Aircraft Hangars	2-10
	Wash Rack	2-10
	Roadways	2-10
	Access Roadways	2-10
	Service Roadways	2-10
	Utilities	2-11
	Land Use	2-11
	Off-Airport Land Use	2-12
	Environmental Conditions	2-14

CONTENTS *(continued)*

Section		Page
3	AVIATION ACTIVITY FORECASTS	3-1
	Introduction	3-1
	Regional Economic Trends	3-2
	General Aviation Demand Region	3-2
	Population	3-3
	Employment	3-5
	Projected Regional Population and Employment Growth	3-6
	Regional Growth Considerations	3-6
	Regional Aviation Activity	3-7
	Role of the Airport	3-7
	Regional General Aviation Trends	3-7
	Other Regional Aviation Activity	3-11
	Aviation Activity Forecasts	3-12
	Base Year (2003) Aircraft Operations	3-12
	Forecast Assumptions	3-13
	Annual Forecasts of Aviation Activity	3-14
	Comparative Forecasts	3-15
	Aircraft Fleet Mix	3-17
	Peaking Forecasts	3-18
4	RECOMMENDED DEVELOPMENT PLAN	4-1
	Facility Requirements	4-1
	Airfield	4-1
	Navigational Aid Requirements	4-2
	General Aviation Facility Requirements	4-2
	Airport Support Facility Requirements	4-3
	Ground Access Requirements	4-3
	Utilities	4-4
	Recommended Development Plan	4-6
	Recommended Airfield Facilities	4-8
	Recommended Landside, Access, and Circulation Facilities	4-8
	Recommended Land Uses	4-8
	Aircraft Noise Exposure	4-9
	Compatible Land use	4-12
	Financial Plan	4-16

CONTENTS *(continued)*

Section **Page**

5 BUSINESS PLAN 5-1

Potential Opportunities 5-2
Typical Airport Business Development Track 5-2
Comparative Airport Development Case Studies 5-3
Available Airport Property 5-5
Regional Airport Competition 5-7
Regional Development Conditions 5-8
Potential New Business Activities 5-12
Financial Pro Forma Analysis 5-13
Property Development Assumptions 5-13
High and Low Case Assumptions 5-14
Rationale Behind Assumptions 5-15
Financial Projections 5-16
Application of Revenues 5-17
Business Development Management and Implementation Plan 5-19
Representative Implementation Plan 5-19
Potential Developer Support 5-19
Management Issues 5-21
Off-Airport Development Issues 5-24
Implementation Action Plan 5-25

APPENDIX

A STAKEHOLDER AND PUBLIC INVOLVEMENT

B ENVIRONMENTAL CHECKLIST FORM

C AIRCRAFT NOISE EXPOSURE

D AIRPORT LAYOUT PLAN

FIGURES

		Page
2-1	Airport Location	2-1
2-2	Airport Environs Plan	2-3
2-3	Airport Land Uses Plan	2-4
2-4	Urban Limit Line	2-13
3-1	Regional Population Distribution	3-3
3-2	General Aviation Demand Region	3-4
3-3	Regional General Aviation Aircraft Operations 1980-2020	3-11
4-1	Potential Utility Connections	4-5
4-2	Recommended Development Plan	4-7
4-3	Master Plan—Noise Contours, Existing Conditions (2003)	4-10
4-4	Master Plan—Noise Contours, Future Conditions (2023)	4-11
4-5	ALUC Plan—Noise Contours, Future Conditions	4-13
4-6	Noise Contours Comparison, Future Conditions	4-15
5-1	Business Plan Concept	5-1
5-2	Business Development Track	5-2
5-3	Recommended Development Plan	5-6
5-4	Urban Limit Line	5-9
5-5	Regional Utilities	5-10
5-6	Regional Road Development	5-11
5-7	Historical Revenues and Projected Revenue Range	5-17
5-8	Low Case Application of Revenues	5-18
5-9	High Case Application of Revenues	5-18
5-10	Business Development Implementation Plan	5-20
5-11	Hypothetical 30-Space T-Hangar Development	5-23

TABLES

		Page
2-1	Runway Data	2-5
2-2	Taxiway Data	2-6
2-3	Land Use Data	2-12
3-1	Historical Population	3-4
3-2	Historical Nonagricultural Employment	3-5
3-3	Forecast Population and Employment	3-6
3-4	Historical General Aviation Operations	3-8
3-5	Historical Based Aircraft	3-9
3-6	Estimated and Projected Aviation Activity	3-14
3-7	Comparative Forecast Data	3-16
3-8	Estimated and Projected Aircraft Operations Fleet Mix	3-17
3-9	Estimated and Forecast Peak Hour Aircraft Operations	3-18
4-1	Annual Aircraft Operations	4-14
4-2	Capital Improvement Program	4-17
5-1	Land Use Data	5-5
5-2	Regional Airport Competition	5-7
5-3	Property Absorption Assumptions	5-14
5-4	Projected Revenue Range	5-16
5-5	Airport Development Approaches	5-22

Chapter 1

INTRODUCTION

Contra Costa County owns and operates two general aviation airports, Byron Airport in East County, and Buchanan Field in Central County.

This technical report presents a recommended Master Plan for Byron Airport (the Airport). The Byron Airport Master Plan was prepared with funding assistance from the Federal Aviation Administration (FAA) and Caltrans. Developed by Leigh Fisher Associates (LFA) in accordance with FAA Advisory Circular (AC) 150-5070-6A, *Airport Master Plans*, the information, findings, and recommendations contained in the chapters that follow represent an update to the 1986 East Contra Costa County Airport (now called Byron Airport) Master Plan. The purpose of this updated plan is to provide guidance for the continued improvement of Byron Airport to the year 2023 and beyond.

BACKGROUND

Contra Costa County airport studies carried out in the late 1970s/early 1980s identified the need for one or more airports in the County to relieve the aircraft parking and operational pressures on Buchanan Field in Concord. Continued urbanization in the western and central sections of the County made it impossible to develop a new airport in those areas. The County then focused its attention on finding a site for a new airport in the eastern part of the County. The East Contra Costa County Airport Master Plan (1986 Plan) completed in May 1986 was the third of three documents prepared as part of the East Contra Costa County Airport Site Study, the others being the *Phase 1: Site Identification and Evaluation* (October 1984) report, and the *Environmental Impact Report: East Contra Costa Airport* (Draft, September 1985; responses to comments, January 1986). Preparation of an Airport Layout Plan for the Byron site and assessment of the environmental impacts of airport development at Byron were presented in the Environmental Impact Report (EIR). The EIR was reviewed by governmental agencies as well as the general public, responses to comments were prepared, and the document was subsequently certified by the County Planning Commission.

The site evaluation culminated in the County Board of Supervisors selection of the Byron Airpark (a small privately owned airport located in the southeastern area of the County) to provide aviation facilities for the residents of East County. The Byron Airpark was purchased in 1986, and the new airfield constructed in the early 1990's. The new Byron Airport was opened to the public in 1994, replacing the Byron Airpark that occupied the northwest corner of the current airport property.

Prior to initiating the current master planning effort, the County carried out a number of analyses to determine the appropriate role of Byron Airport in serving regional aviation needs, particularly focused on the potential for Byron Airport to serve as a cargo airport. Some of the conclusions resulting from these analyses indicated that:

- *Cargo development at Byron Airport would be expected to follow a development cycle.* Large air cargo aircraft operations are unlikely in the next 10 to 15 years, and likely Airport activities in the short-term will result from trucking activity and the Airport's relationship to other airports. Feeder (or propeller) aircraft represent the most likely source of initial air cargo activity and incremental growth at the Airport, building on trucking activity.

- *Regional economic trends will likely support aviation growth.* The eastern section of Contra Costa County, in which the Airport is located, has experienced growth in residential and industrial development as population and business activity force new development outside more developed areas of the East Bay (specifically, Alameda County). This trend is expected to continue in the long-term. Diversified regional development, including office, light industrial, warehousing and logistical, and residential development would likely facilitate economic and aeronautical growth.

- *The Bay Area's general aviation market has a long-term need for facilities.* Corporate aviation has been and is expected to be one of the fastest growing general aviation market segments, and is expected to spur demand for aircraft hangar storage and for the fixed base operators that support such corporate activity.

- *The major factors that will affect the potential development of air cargo and general aviation are external to the Airport.* There is currently a low concentration of "cargo-generating" business and a low concentration of population and business relevant to general aviation, surrounding the Airport. Improvements of the regional road and highway network would also be needed.

- *Developments on-Airport could support and enhance regional development and the potential for air cargo and general aviation.* Incremental development of general aviation and specialty aviation activity at Byron Airport would attract and facilitate aviation support services useful to potential air cargo feeder operators. Incremental development of nonaeronautical property at Byron Airport would assist in generating sufficient local business activity that could support air cargo development, including office and light industrial parks and distribution centers.

THE BYRON AIRPORT MASTER PLAN PROJECT

In keeping with FAA guidelines, the updated Master Plan for Byron Airport involves a 20-year planning period with 2003 as the base year. Individual airport improvement recommendations are oriented to 5- (2008), 10- (2013) and 20-year (2023) planning horizons. The end product of the study includes this technical report and a companion set of ALP drawings. The intent of the Byron Airport Master Plan is to provide Contra Costa County with guidance concerning how the airport should develop over the 20-year planning period.

Project Coordination and Public Involvement

An extensive intergovernmental agency coordination and public involvement process was carried out as part of the Byron Airport Master Plan project. Key elements of the process included:

- A Working Group comprising Airport staff and staff from Public Works and Community Development served as the primary project coordination mechanism for the consultant team. This Working Group met regularly throughout the course of the project.

- A Steering Committee was convened at key times during the project and served as a "sounding board" for findings, conclusions, and recommendations pertaining to the development of the Master Plan. Steering Committee members included representatives of the aviation community, public agencies, and elected officials.

- Workshops were conducted at key points during the Project for the public-at-large. Organized to permit participation by citizens and organizations with an interest in the future of Byron Airport, these workshops involved a flexible drop-in format. The Consulting Team personnel and Airport staff were available to discuss the project with citizens on a one-to-one basis. Three public workshops were held during the project.

Appendix A to this report provides details of the project coordination and public involvement process, including dates and locations of meetings, workshops, and other project-related activities.

Chapter 2

INVENTORY OF EXISTING FACILITIES

This chapter provides a description of the existing facilities at Byron Airport (the Airport) as of November 2003, and includes pertinent data to be used in the development of the master plan.

OVERVIEW OF BYRON AIRPORT

As illustrated on Figure 2-1, Byron Airport is located in the southeast part of Contra Costa County, midway between the town of Byron and the Alameda County line. The site is in a rural area on the eastern edge of the Diablo Range, consisting of low rolling hills, leveling out into flat pastures and the San Joaquin River Delta.

Figure 2-1

AIRPORT LOCATION

Byron's climate is generally characterized as Mediterranean with a rainy season November through March. Mild thunderstorms occur mainly in the spring. Heavy fogs occur in the winter, and may last for several days. Light and moderate fogs are

more frequent, and usually occur in the early morning hours. Prevailing winds at Byron are from the northwest.

The area most directly affected by the presence and operation of the airport is referred to as the Airport environs. As illustrated on Figure 2-2, the Airport environs is generally bounded on the north by Armstrong Road, on the east by Byron Hot Springs Road and on the west by Vasco Road.

Byron Airport occupies approximately 1,307 acres at an airport reference elevation of 76 feet above Mean Sea Level (MSL). Figure 2-3 illustrates land uses within the Airport boundary and identifies key airfield facilities. The Airport has two non-intersecting runways each with a parallel taxiway and several connector taxiways. General aviation facilities are generally concentrated in "V" formed by the two runways with approximately 10 acres of aircraft storage area, 4 acres of apron, 125,000 square feet of hangars, and 2,400 square feet of office space. The majority of these facilities were constructed when the airport was built. Approximately 814 acres of Airport property to the south and west of the airfield are set aside as a wild life preserve.

AIRFIELD FACILITIES

Runways

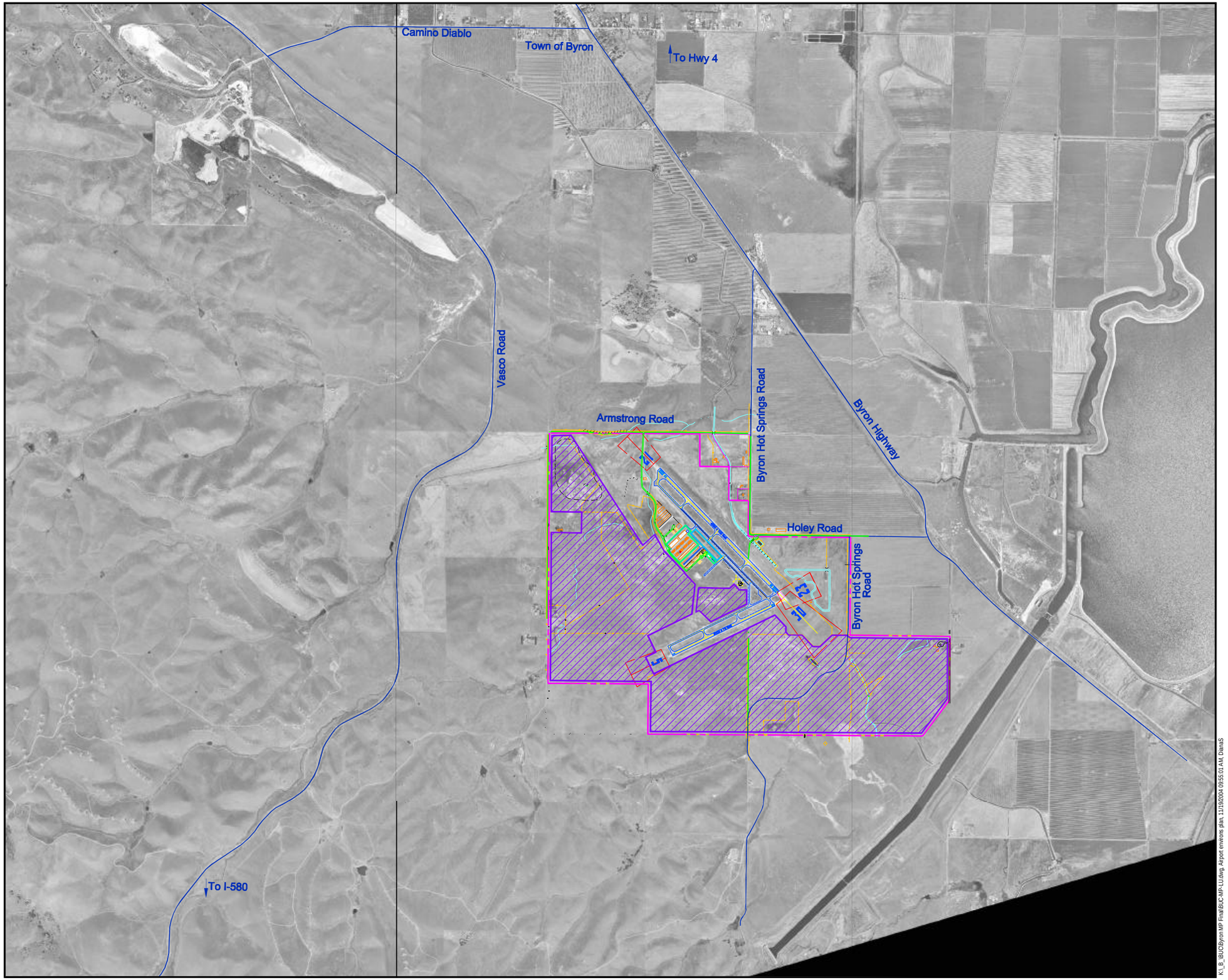
As shown on Figure 2-3, the airfield includes two runways. The primary runway, Runway 12-30 (northwest-southeast), is 4,500 feet long and 100 feet wide. The crosswind runway, Runway 5-23 is 3,000 feet long and 75 feet wide. Both runways have 20 feet unpaved shoulders. Table 2-1 summarizes runway data.

Byron Airport was planned and designed in the 1980s and constructed in the early 1990s in accordance with FAA design standards. Byron's airfield facilities meet FAA Airport Reference Code (ARC)* B-II** criteria and can accommodate aircraft with wingspans of up to (but not including) 79 feet and approach speeds of up to (but not including) 121 knots. Byron meets the ARC criteria for all aircraft currently using the Airport.

---

*The FAA uses a two-component coding system called Airport Reference Code (ARC) to classify airfield facilities according to the operational and physical characteristics of the aircraft intended to use them. The first component of the ARC, depicted by a letter, is the aircraft approach category and relates to approach speed; the second component, depicted by a Roman numeral, is the aircraft design group and relates to wingspan.

**In previous documents the ARC has been shown to be B-III however, the designation of B-III cannot be achieved only due to the fact that the taxiway width is 35 feet where 50 feet is required.



LEGEND

- Airport boundary
- Aircraft storage facilities
- Aircraft parking
- Biologically sensitive habitat
- Roads

N

1250 0 1250 2500

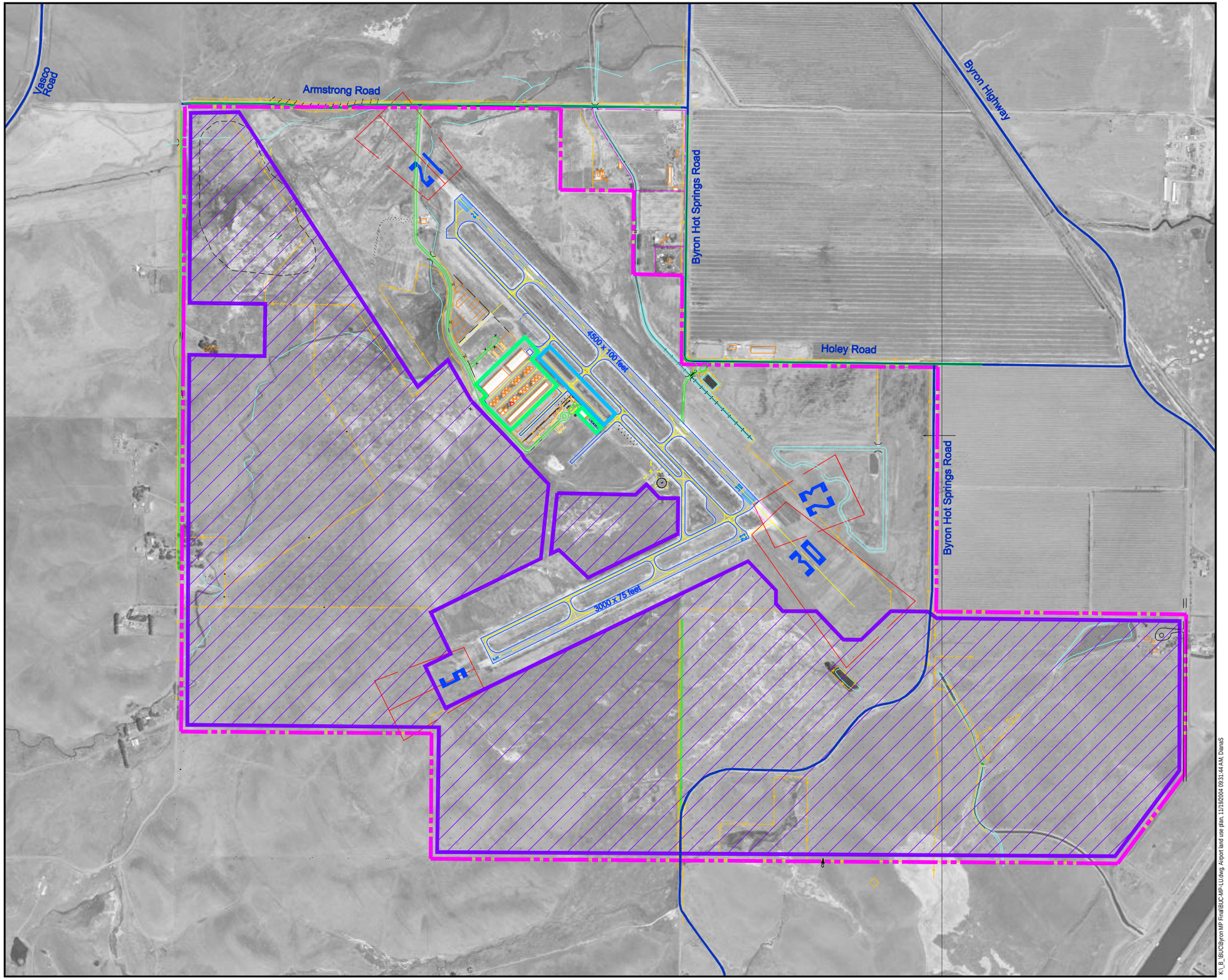
Graphic Scale in Feet

Figure 2-2

AIRPORT ENVIRONS PLAN

Byron Airport
November 2004

LEIGH FISHER ASSOCIATES



LEGEND

- Airport boundary
- Aircraft storage facilities
- Aircraft parking
- Biologically sensitive habitat
- Off-airport road
- On-airport road

N

500 0 500 1000

Graphic Scale in Feet

K:_B_IBUC\Byron MP Final\BUC-MP-LU.dwg, Airport land use plan, 11/19/2004 09:31:44 AM, DianaS

Figure 2-3

AIRPORT LAND USE PLAN

Byron Airport
November 2004

LEIGH FISHER ASSOCIATES

Table 2-1

RUNWAY DATA
Byron Airport

	Runway 12-30		Runway 5-23	
	12	30	5	23
Runway Length (ft)	4,500	4,500	3,000	3,000
Runway Width (ft)	100	100	75	75
Overrun Length (ft)	600	1,000	600	600
Runway Threshold Elevation (MSL)	62	46	76	46
Pavement Type	Asphalt concrete	Asphalt concrete	Asphalt concrete	Asphalt concrete
Pavement Strength (lbs) Single Wheel	29,500	29,500	29,500	29,500
Pavement Condition	Very Good	Very Good	Very Good	Very Good
Runway Lighting	MIRL	MIRL	MIRL	MIRL
Runway Marking	Nonprecision	Nonprecision	Visual	Visual
Visual Navigational Aid	--	REIL	--	--
Approach Aids	--	PAPI (P2L), GPS	--	PAPI (P2L)
Approach Slope	20:1	34:1	20:1	20:1

Abbreviations:
MIRL = Medium intensity runway lights
REIL = Runway end identifier lights
MSL = Mean sea level
PAPI = Precision Approach Path Indicator

Sources: Federal Aviation Administration (FAA) Airport Master Record (10/30/2003) and FAA Facilities Directory.

Taxiways

As shown on Figure 2-3, there are three taxiways serving the airport. Taxiway A, which is southwest and parallel to Runway 12-30, extends the full length of the runway and provide access to the general aviation apron. There are five connectors between Runway 12-30 and Taxiway A. Taxiway C is located north and parallel to Runway 5-23. and extends the full length of the runway. There are four connectors between Taxiway C and Runway 5-23. Taxiway B, parallel to Taxiway A most of its way, angles to the south to connect to Taxiway C. This taxiway serves as the final connection to the apron and hangar area. All taxiways and connectors are 35 feet

wide, the dimensional standard for Airplane Design Group II. Additional taxiway data are provided in Table 2-2.

Table 2-2

TAXIWAY DATA
Byron Airport

Taxiway	Location/Purpose	Width (feet)	Type of construction	R/W to T/W separation	Condition
A	Full-length parallel taxiway South of Runway 12-30 (includes end connectors)	35	Asphalt Concrete	300′	Very good
B	Parallel to taxiway A and adjacent to the apron area, also connects apron area to Taxiway C	35	Asphalt Concrete	N/A	Very good
C	Full-length parallel taxiway North of Runway 5-23 (includes end connectors)	35	Asphalt Concrete	240′	Very good
A1, A2 & A3	Connects Runway 12-30 to Taxiway A	35	Asphalt Concrete	N/A	Very good
C1 & C2	Connects Runway 5-23 to Taxiway C	35	Asphalt Concrete	N/A	Very good

Aircraft Parking Apron

The general aviation apron accommodates 56 tiedowns, taxilanes and 12 other tiedowns alternated with each set of five portable hangars.

Pavement Evaluation

The airfield and roadway pavements were inspected on November 21, 2003. A review of the as-built drawings indicate the airfield pavement sections are within the guidelines identified in the FAA's pavement design Advisory Circular and are in accordance with FAA's recommended practices for the intended use of this airport. The airfield pavement, which was constructed in the early 1990's, was found to be performing well without any signs of structural or environmental failure.

AVIGATION

Avigation refers to facilities and operating procedures related to the navigation of aircraft. Procedures and conditions pertinent to aircraft operations at Byron are discussed in the following sections.

Runway Use

Approximately 80% of all aircraft operations at Byron occur on Runway 12-30. Runway 12-30 typically accommodates both multi-engine skydiving aircraft as well as general aviation touch-and-go training operations, except during the late spring and/or early summer when there are strong winds commonly from the southwest necessitating the use of Runway 5-23. According to prevailing wind patterns, the Airport typically operates in a west flow, i.e., arrivals and departures principally using Runways 30 and 23.

During visual meteorological conditions (VMC), aircraft operating under Visual Flight Rules operate on a right traffic pattern for Runway 5, a left traffic pattern for Runway 12, a left traffic pattern for Runway 23, and right traffic pattern for Runway 30. The traffic pattern altitude is 1,000 feet.

Imaginary Surfaces and Obstructions

The airspace and land in the Airport environs consist of imaginary or obstacle limitation surfaces described below:

Federal Aviation Regulations (FAR) Part 77. In order to determine whether an object is an obstruction to air navigation, several imaginary surfaces are established with relation to the Airport and to each runway. The size of the imaginary surfaces depends on the category of each runway and on the type of approach planned for that runway (e.g., visual, nonprecision, etc.). The approach surface slope for each runway end at Byron is listed in Table 2-1 (Runway Data). According to Byron's existing ALP and FAA information dated October 30, 2003, no obstructions to FAR Part 77 surfaces have been found. Even though they do not penetrate the 20:1 approach surface, some of the power generated wind mills to the west and southwest are equipped with obstruction lights.

Runway Protection Zones. A runway protection zone (RPZ) is a trapezoidal area centered about the extended runway centerline that enhances protection of people and property on the ground. RPZ dimensions vary with the type of aircraft and approach visibility minimums associated with that runway end. As shown on Figure 2-3, all land underlying the existing RPZs, is within the Airport boundary, except for very small triangle of pasture land beneath the approach to Runway 5 and a second small triangle beneath the approach to Runway 12. Portions of Armstrong Road and Falcon Way are in the RPZ area of Runway 12.

Safety and Approach-Departure Zones. The Byron Airport Land Use Compatibility Plan (ALUCP) designates safety zones to restrict incompatible land uses around the Airport. Safety zones have the same dimensions as RPZs. Approach and departure zones begin at the outer end of the safety zones, and

extend outward to a distance determined by the intersection between the approach surface and a horizontal surface located 150 feet above the established airport elevation. Existing land uses in the Airport environs are compatible with existing safety and approach-departure zones.

Obstructions. Obstruction data for each runway approach are shown on the Byron Airport Layout Plan

Air Traffic Control

The Airport is a non-towered airport lying within Class E airspace, which extends for a 5-mile radius around the Airport and from 700 feet above ground level up to 18,000 feet above mean sea level (MSL). Air traffic is controlled by the use of CTAF/UNICOM at a frequency of 123.05 MHz and an AWOS-3 system at a frequency of 123.775 MHz. Air traffic control (ATC) exercises no control over flights and no separation services are provided to aircraft operating under Visual Flight Rules (VFR) in Class E airspace. Radio communication and transponders are not required for VFR operation, however IFR flights must be capable of communicating with ATC, and must be equipped with a Mode C transponder. The Northern California Terminal Radar Approach Control (TRACON) provides radar approach and departure control and other air traffic control services at the Airport. The Airport lies outside the controlled airspace of Oakland and San Francisco international airports.

Navigation Aids

Navigational aids associated with each runway are listed in Table 2-1 and summarized below.

- **Non-Precision Approach.** Runway 30 has a GPS designated approach.
- **Precision Approach Path Indicator.** A precision approach path indicator (PAPI) is a visual slope indicator that provides, through a system of lights, the proper approach slope to a runway, similar to the glide slope of an instrument landing system (ILS). PAPI systems are intended for day and night use under visual flight conditions. Runways 30 and 23 are equipped with two-light PAPI on left (3.5 degrees glide path). Runways 5 and 12 currently do not have approach lighting systems.
- **Runway Lighting.** Runways 5, 12, 23 and 30 are equipped with medium intensity runway lighting (MIRL) and Runway 30 is also equipped with runway end identifier lights (REIL). All runway lighting is by pilot controlled by activating the local Airport radio frequency.

EXISTING BUILDINGS

As shown on Figure 2-3, most aviation facilities are centrally located southwest of Taxiway B. The Airport has approximately 125,000 square feet of indoor aircraft storage in a 4-acre area, allocated among conventional hangars, T-Hangars, portable hangars and a maintenance hangar.

Administration Building

The administration building, located at 500 Eagle Court and constructed in 1997/98, comprises approximately 2,400 square feet. It is located at the end of Falcon Way, adjacent to the general aviation apron. This 60-foot-by-40-foot double wide modular building contains an office, a storage room and basic pilot amenities including flight planning space, telephones, and a common area. There are currently no fixed base operators at the Airport. Contra Costa County Airports operates a self-serve fuel pump that dispenses 100 LL aviation fuel 24 hours a day—payment is by credit card only. There are 15 regular parking spaces and 3 handicapped spaces at the Administration Building. Tenants typically use their own leased areas to park their vehicles.

Maintenance Hangar

The 505 Eagle Court building, which was relocated from the Byron Airpark, is quite old and is zoned for maintenance. The 75-foot-by-100-foot two-bay hangar is leased by the County to Bay Area Skidiving (and sub-leased to Airshow America) for maintenance of their aircraft. The west corner of this building houses the airport's electrical vault and two bathrooms.

Fire Fighting

A pump house (a 15 by 20 ft building) located on the northeast side of Runway 12-30 (by Holey Road) together with a fire protection pond that serves as water supply for the Airport. There is also an emergency pump station located southeast of the runway intersection that provides water from an underground 96" diameter pipe to supplement the fire protection pond. A twin-agent unit is equipped with 450 pounds of Dry Chemical Agent and 50 gallons of AFFF foam. Airport personnel are available to assist from 8:00 a.m. to 6:00 p.m. The East Contra Costa County Fire District also provides protection.

6900 Falcon Way Building

This landside building is located along Falcon Way towards the north side of the Airport. It is one of the original buildings from Byron Airpark, making it one of the

oldest at the Airport. It is presently leased to Bay Area Sky Diving. Access to the airport is provided through a pedestrian gate.

Aircraft Hangars

The aircraft hangars are described by rows, starting north of the administration building. The first two rows, A and B, are vacant land reserved for future development. Existing buildings starts with Row C. Row C is a 28-unit T-Hangar constructed in 1996—presently all units are occupied. Rows D and E are portable T-Hangars that were relocated from the original Airpark in 1994. These hangars are individually owned and have ground leases with the Airport. Row F has two privately owned buildings on ground leases—a 12-unit Executive Hangar and a 10-unit Executive Hangar (which includes an owner maintenance hangar at the eastern end).

Wash Rack

The wash rack is located at the east side of the Row F buildings. Waste-water from the wash rack drains though an oil-water separator to a leach field located to the east, between the wash rack and Taxiway A.

ROADWAYS

Access Roadways

Access to the Airport is via the Byron Highway (County Route J4) and local roads that include Byron Hot Springs Road and Armstrong Road. Falcon Way is the entrance to the Airport and is accessible from Armstrong Road. The Byron Highway is a two-lane north-south county road extending from Delta Road in Knightsen to Tracy in the South.

Service Roadways

Service roads facilitate the movement of aircraft support and Airport vehicles inside the airfield. Vehicular movement within the airfield is through the utilization of taxiways and apron areas. Paved connectors to the primary Wind Cone and the Automated Weather Observing System (AWOS) are available from the taxiway. Unpaved roads (stabilized) are available to reach the detention pond and emergency pump station used for irrigation and water supply for Airport firefighting.

UTILITIES

Electrical power is supplied by Pacific Gas and Electric Company (PG&E). Service comes into the airport property at a location just north of the pump house from Holey Road. From this point it goes underground to a power transformer located near by the main entrance gate to the airfield at an island within the parking area. A 15 foot by 10 foot power room located at the west corner of the 505 Eagle Court hangar across the parking lot from the transformer then carries the distribution. The hangars have individual meters for electrical service. Apron, parking and hangar area is illuminated with ramp floodlights that are photocell-controlled.

There is currently no **gas service** serving the airport. However, there are three identified underground gas lines crossing within Airport property. One is a Pacific Gas Transmission (PGT)/PG&E High Pressure Gas Line bordering the airport boundary north-south along Byron Hot Springs Road and deviating to the southeast at a point more or less along the extended centerline of Runway 12-30 and continuing southeast past the airport property. There is no easement identified with this line. The second is a Chevron High-pressure Gas and Oil Pipeline with a 30′ easement that crosses Airport property south to north in a north-northwest direction. The Chevron line crosses the Runway 5-23 almost perpendicular at a point a few feet east of taxiway ‘C1′. PG&E also operates a high-pressure gas transmission line parallel to the Chevron line within the same easement.

The **water system** consists on a domestic well with a 4,000 gallon holding tank and a booster pump with a chlorinator. Water is for domestic purposes only. No drinking water is available from this system. Water is available at the hangar rest rooms.

The **sewer system** consists of a 3,000-gallon underground septic tank and lift station pumping to a leach field located southwest of the main aircraft ramp.

Telephone service for the airport is provided by SBC Communications through underground conduits and copper cables.

LAND USE

Land uses within the Byron Airport boundary are illustrated on Figure 2-3 (presented earlier), and summarized in Table 2-3. As shown, a total of 221 undeveloped areas are appropriate for development—96 acres west and 125 acres east of the airfield. The area to the west of the airfield would likely be available for a variety of aviation uses, including a fixed base operator (FBO), corporate hangars, and specialty aviation (e.g., avionics maintenance). The area to the east of the airfield would likely be available for nonaviation airport-related uses, including commercial, multimodal and industrial warehouse facilities.

Table 2-3

LAND USE DATA
Byron Airport

	Use	Size (acres)
Developed/unavailable	Aircraft storage	10
	Aircraft parking	4
	Biologically sensitive areas	814
	Airfield/other	258
	Subtotal	1,086
Undeveloped	Reserved for aviation use	96
	Reserved for airport-related use	125
	Subtotal	221
	Total	1,307

Source: Leigh Fisher Associates, 2004.

Off-Airport Land Use

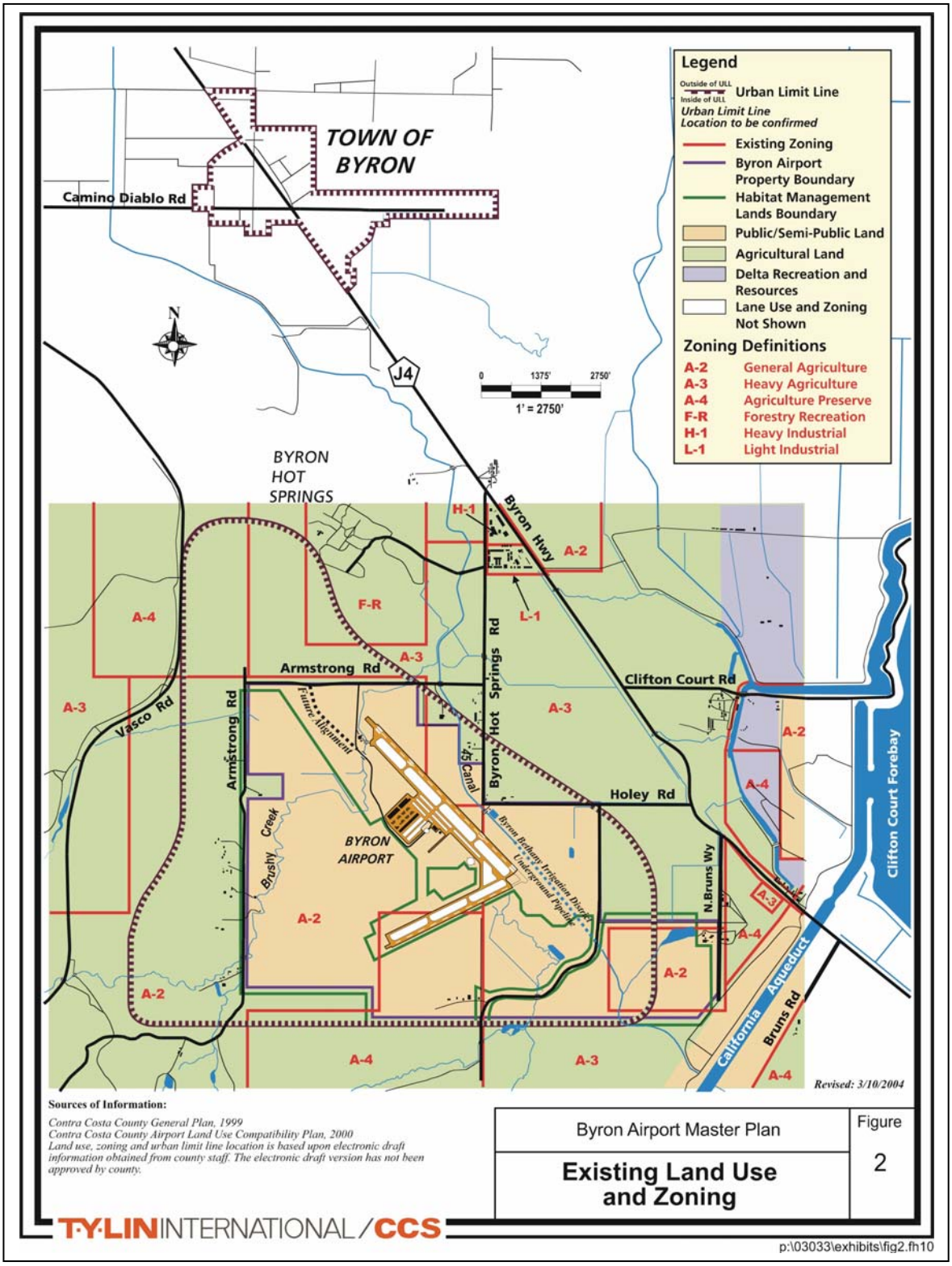
The Byron Airport is situated in a rural area, and except for the town of Byron, population around the airport is widely scattered. The area has numerous windmill towers to the west and up to within a mile of the Airport. Clifton Court Forebay and other elements of the State Water Project, plus the county's Los Vaqueros Reservoir, are both located nearby.

A substantial amount of new housing (in relatively close proximity to the Airport) is anticipated within the eastern portions of Contra Costa County, in northeastern Alameda County, and in San Joaquin County. The City of Brentwood (to the north), the recreational residential community of Discovery Bay (to the northeast) and the town of Mountain House (to the southeast in the San Joaquin County) are rapidly growing.

The generalized land uses in the Airport environs, as depicted on Figure 2-4, are based on existing land use patterns and 2005 planned land uses. The Contra Costa County Airport Land Use Compatibility (ALUC) Plan, adopted in December 2000, implements previous planning efforts in the environs by identifying a land use framework with specific requirements for private and public development; the location, intensity, and character of land uses; circulation patterns; and necessary infrastructure. As shown on Figure 2-4, the Airport lies within the County's Urban Limit Line (ULL), an ordinance which permits changes in designated land uses, subject to County growth management policies and a 4/5 vote by the County Board of Supervisors. If land is developed, a substantial portion shall be retained for open

Figure 2-4

URBAN LIMIT LINE



space, parks and recreational uses. This ordinance is effective through 2010 and could be extended further. Additionally, all the Airport property is designated Public and Semi-Public land, and all private lands surrounding the Airport are designated Agricultural Lands.

ENVIRONMENTAL CONDITIONS

The California Environmental Quality Act (CEQA) Mitigated Negative Declaration was prepared to disclose, analyze, and provide mitigation measures for potentially significant environmental effects associated with updating the Byron Airport Master Plan. The airport master plan is a policy document that will provide the Byron Airport with growth and development direction through the year 2024. It is anticipated that there will be little change from the 1985 Byron Airport Plan; much of the development that was previously proposed has yet to be completed. Additionally, the updated Plan will not have any environmental impacts that were not previously analyzed in the 1986 EIR for the Proposed East Contra Costa County Airport (1985 EIR), with the exception of the change of circumstances in biology (some species have been listed as Threatened or Endangered since the original plan).

The Contra Costa County Community Development Department determined that the Byron Airport Master Plan Update is a project; and that there is a possibility that the project may have a significant effect on the environment. The Environmental Checklist Form prepared by the Community Development Department is provided in Appendix B. The County prepared an initial study and determined that a Mitigated Negative Declaration should be prepared. The County then prepared a Mitigated Negative Declaration on July 29, 2004; and conducted a 30-day public review (August 31, 2004 through September 30, 2004) with a Notice of Public Review and Intent to Adopt a Proposed Mitigated Negative Declaration. The County received one comment on the adequacy of the Mitigated Negative Declaration, from the Department of Transportation, Division of Aeronautics, on October 5, 2004, and responded to that comment. The Contra Costa County Board of Supervisors approved the CEQA Notice of Determination on November 2, 2004.

Chapter 3

AVIATION ACTIVITY FORECASTS

INTRODUCTION

Aviation activity forecasts for Byron Airport (the Airport) were prepared in support of the updated Master Plan for the Airport. The Airport is located in eastern Contra Costa County, and is a candidate to accommodate growing aviation demand in the greater San Francisco Bay Area. Three scenarios were developed as follows:

- A high growth scenario, generally associated with assumptions that there would be significant business and economic development at the Airport, that is not present today;
- A low growth scenario, generally associated with a continuation of current economic and business conditions at the Airport; and
- A mid-point scenario, reflective of moderate economic and business growth at the Airport at levels approximately between those envisaged in the high and low growth scenarios.

The mid-point growth scenario can be characterized as the preferred forecast scenario.

This chapter presents a review of economic trends in the region served by the Airport, and forecasts of annual aircraft operations and based aircraft at the Airport through 2023. The forecasts of aviation activity are unconstrained and, therefore, do not include specific assumptions about the future capacity of the Airport. The forecasts were prepared for high, low and mid-point growth scenarios primarily for use in identifying requirements for general aviation and other facilities at the Airport. Peak hour aircraft operations forecasts are also presented.

The following analyses were undertaken in preparing the aviation demand forecasts:

1. Review of historical trends in economic growth in Contra Costa County and surrounding counties.
2. Compilation of data on projected economic growth in the region.
3. Review of historical aircraft operations at the Airport and other airports in the region.
4. Review of the FAA's forecast of aviation demand for airports in the region.

5. Review of relevant factors affecting growth in general aviation demand at regional airports, such as the availability of aircraft storage.

6. Evaluation of County policies (such as urban development policies) that would affect future growth in the region surrounding the Airport.

These analyses and the resulting assumptions regarding potential future growth in aviation demand at the Airport are described in the following sections.

All years are calendar years (CY) unless otherwise stated.

REGIONAL ECONOMIC TRENDS

Regional trends in population and employment are key factors determining aviation activity at airports. This section presents data on regional economic trends used as input to the development of the aviation activity forecast for the Airport.

Data on regional population distribution are illustrated on Figure 3-1, where each dot represents 500 people. As shown, population concentrations occur in the existing major urban areas and along freeways. Compared to Alameda and West Contra Costa County, East Contra Costa County is lightly populated. The Livermore Valley area, located just south of the Airport in Alameda County and which contains the cities of Livermore, Dublin, Pleasanton and Tracy, has historically been mostly suburban and rural in character but in more recent years is urbanizing at a rapid rate.

General Aviation Demand Region

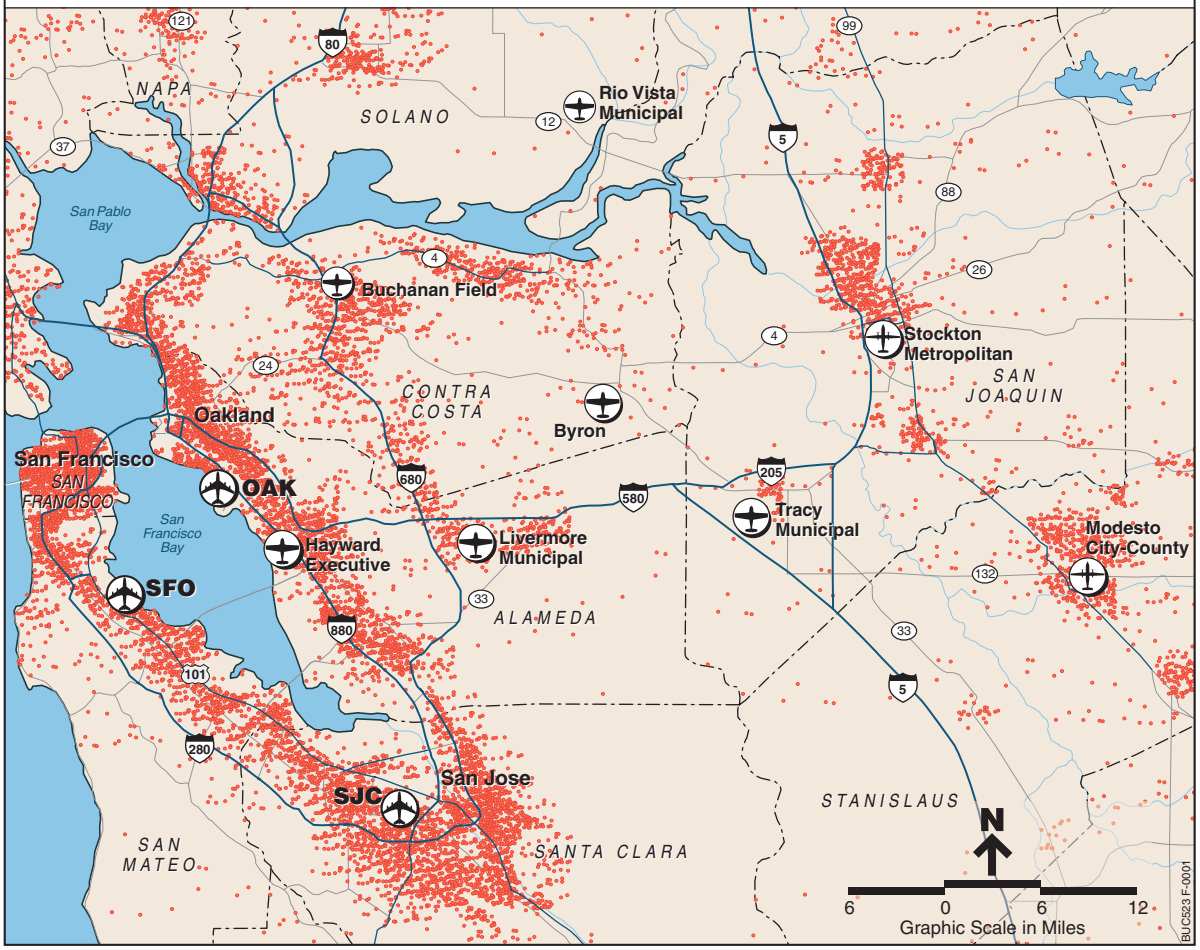
The Airport is located in the Oakland metropolitan statistical area (MSA), which comprises Alameda and Contra Costa counties. It was assumed, given the locations of other general aviation airports in the region, together with a need for airfield proximity by most general aviation users, that the main demand for general aviation facilities would come from users within a one-hour drive time from the Airport.

Figure 3-2 illustrates the geographic area within a one-hour drive of the Airport. This is considered to be the primary general aviation demand region, which includes significant portions of Alameda, Contra Costa, and San Joaquin counties.

This region is the primary focus of the analysis of economic growth factors. Economic data for the three counties included in the region are presented in the following sections.

Figure 3-1

REGIONAL POPULATION DISTRIBUTION



Population

Population growth is an important factor related to demand for general aviation airport facilities and services. The population of the San Francisco Bay Area, including Contra Costa County, has been growing faster than the nation as a whole, and this has contributed to increased demand for facilities and services at regional general aviation airports.

Table 3-1 summarizes historical population growth, which shows that those counties with a lower population concentration (Contra Costa and San Joaquin) have had higher historical growth rates than the more densely populated Alameda County, the State of California, and the United States as a whole.

Figure 3-2

GENERAL AVIATION DEMAND REGION

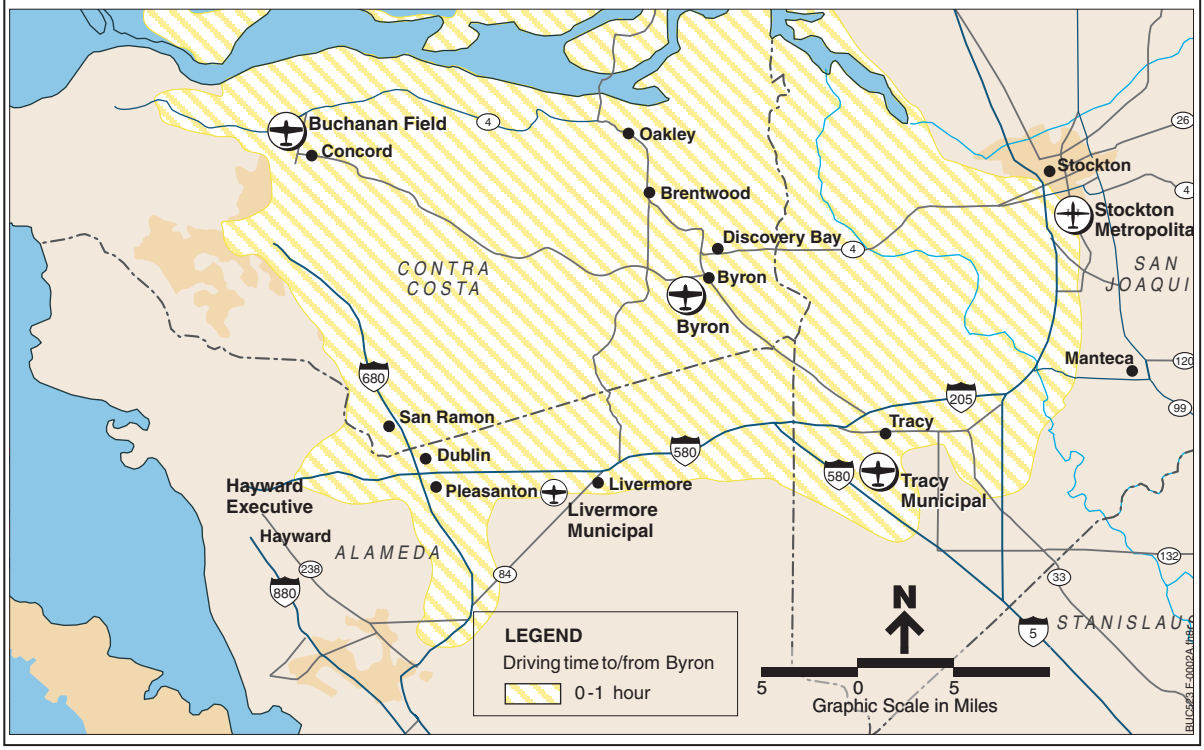


Table 3-1

HISTORICAL POPULATION

Byron Airport Region, California and the United States

Region	Population (thousands) 1990	Population (thousands) 2001	Average annual change 1990-2001
Alameda County	1,277	1,463	1.2%
Contra Costa County	804	965	1.7
San Joaquin County	481	579	1.7
Total	2,562	3,007	1.5%
California	29,758	34,385	1.3%
United States	248,791	298,867	1.2%

Source: California Department of Finance and U.S. Census Bureau.

Due to cost of living factors, much of the recent population growth in the San Francisco Bay Area has been migrating eastward, including into eastern Contra Costa County. Future growth in regional population, as discussed further below, is an important factor in assessing the potential growth in activity at the Airport.

Employment

Employment growth is also an important factor affecting demand for general aviation airport facilities and services. While population indicators may be more important in terms of private pilots and private aircraft basing, employment indicators are important in terms of corporate aviation activity and other business activity at general aviation airports.

As shown in Table 3-2, Contra Costa County experienced employment growth from 1990 to 2001 at a rate similar to the average for the region, and the nation as a whole.

Table 3-2

HISTORICAL NONAGRICULTURAL EMPLOYMENT
Byron Airport Region, California and the United States

Region	Non-agricultural employment 1990	Non-agricultural employment 2001	Average annual change 1990-2001
Alameda County	596,400	718,700	1.7%
Contra Costa County	282,900	340,000	1.7
San Joaquin County	152,700	191,700	2.1
Total	1,032,000	1,250,400	1.8%
California *(a)*	--	--	2.1%
United States	--	--	1.7%

(a) Data for the state of California available from 1993 to 2001 only.

Source: Department of Labor, Bureau of Labor Statistics, Employment and Earnings, Available online at http://www.bls.gov/sae/(state and local) and http://www.bls.gov/ces/(national).

It is important to note that historical population growth in Contra Costa County has outpaced the national average, while historical employment growth has been similar to the national average. This is believed to be because Contra Costa County has developed significant new housing at a rate exceeding the development of new businesses and industries. In the future, it is expected that there will be increased business activity in Contra Costa County consistent with the development of

housing and population. This is likely to be particularly true in the eastern areas of Contra Costa County, which are prime locations for new business development.

Projected Regional Population and Employment Growth

Table 3-3 shows projected population and employment growth for the regional counties through 2020. As shown, population and employment growth in Contra Costa County is expected to occur at rates at or above the regional average. It is expected that population and employment, historically concentrated in the western areas of Alameda and Contra Costa counties, will increasingly spread east into East Contra Costa County. This indicates potential for aviation demand at Byron Airport in East Contra Costa County.

Table 3-3

FORECAST POPULATION AND EMPLOYMENT
Byron Airport Region

Area	Forecast total increase 2002-2020	
	Population	Employment
Alameda County	17%	26%
Contra Costa County	27	41
San Joaquin County	33	30
Total	23%	32%

Source: National Planning Association, Data Services Inc., 2002 edition.

Regional Growth Considerations

The following regional growth considerations could affect forecast aviation activity:

- ***Urban limit line.*** As discussed in more detail in Chapter 5, the current Contra Costa County Urban Limit Line (ULL) affects development around the Airport. The ULL is scheduled to be reviewed in 2010. Depending on the outcome of this review, this is an important factor in the long-range development of business in the vicinity of the Airport.

- ***Utilities and infrastructure.*** As discussed in more detail in Chapter 4, the current level of utilities and infrastructure, while appropriate to support current and low case aviation activity, would likely need development to support high case aviation activity. In particular, the sewage, power and water requirements for high case aviation development do not exist at the

Airport at present. This is an important consideration in the development of the aviation demand forecast.

REGIONAL AVIATION ACTIVITY

This section presents data on regional aviation activity trends, which are important inputs to the forecast of aviation activity at the Airport.

Role of the Airport

The Airport currently serves general aviation demand, primarily recreational, but also some business. In the future, the Airport could also serve commercial activity. The regional aviation activity data presented in this section are input to the consideration of the potential future role of the Airport and the likely demand at the Airport.

Regional General Aviation Trends

Because the role of the Airport is expected to continue to be focused on general aviation activity, the analysis of aviation activity trends is primarily focused on regional general aviation activity. Regional airports relevant to the analysis of general aviation trends are: Byron, Concord Buchanan Field, Hayward Executive, Livermore Municipal, Modesto City-County, Oakland International, Rio Vista Municipal, Stockton Metropolitan, and Tracy Municipal airports—as shown on the earlier Figure 3-1.

The data used to analyze regional aviation activity trends include FAA data on regional pilot distribution, historical annual aircraft operations and based aircraft by airport, and forecast aircraft operations and based aircraft.

Regional Pilot Distribution. FAA data on regional pilot distribution by zip code area were reviewed. These data indicated, consistent with population concentrations, that pilots are more heavily concentrated west of the Airport, including in western Contra Costa and Alameda counties.

Historical Growth in General Aviation Activity. Table 3-4 shows the historical growth in general aviation aircraft operations at the regional airports. Between 1990 and 2000, the area airports experienced a slight (1.1%) average annual decline in general aviation aircraft operations, consistent with generally flat national general aviation activity, as reported by the FAA.

The FAA forecasts that there will be an increase in nationwide general aviation activity in the future, and it is expected that this will also include the regional airports shown in Table 3-4.

Table 3-4

HISTORICAL GENERAL AVIATION OPERATIONS
Selected Area Airports

Airport	GA operations 1990	GA operations 2000	Average annual change 1990-2000
Byron Airport	--	26,000	--%
Concord Buchanan Field	291,297	213,656	(3.1)
Hayward Executive	259,474	170,240	(4.1)
Livermore Municipal	219,329	235,265	0.7
Modesto Sham Field	84,925	71,546	(1.7)
Oakland International	247,941	283,324	1.3
Rio Vista Municipal	17,150	35,000	7.4
Stockton Metropolitan	103,536	73,258	(3.4)
Tracy Municipal	56,750	55,382	(0.2)
Total	1,280,402	1,163,671	(1.1%)

Note: General aviation operations only (excludes air taxi, commuter, and military operations).

Source: FAA, Office of Aviation Policy and Plans (APO), Terminal Area Forecast (TAF), 2001.

Based aircraft data for the Area airports are displayed in Table 3-5. The number of based aircraft at Area airports has remained essentially unchanged from 1990 to 2000.

Table 3-5

HISTORICAL BASED AIRCRAFT
Selected Area Airports

Airport	Based aircraft 1990	Based aircraft 2000	Average annual change 1990-2000
Byron Airport	--	105	--%
Concord Buchanan Field	635	579	(0.9)
Hayward Executive	560	456	(2.0)
Livermore Municipal	578	547	(0.5)
Modesto Sham Field	182	176	(0.3)
Oakland International	409	370	(1.0)
Rio Vista Municipal	54	57	0.5
Stockton Metropolitan	246	229	(0.7)
Tracy Municipal	0	120	--
Subtotal	2,664	2,639	(0.1%)

Source: FAA, Office of Aviation Policy and Plans (APO), Terminal Area Forecast (TAF), 2001.

Regional General Aviation Demand Factors. Interviews with airport management in the area indicated that the following trends were relevant:

- Corporate aviation has been one of the fastest growing general aviation market segments, and this trend is expected to continue in the long term. Local industry commentators have indicated that corporate activity has increased significantly in the last 10 years, as a result of companies using in-house aviation departments, increased chartering of corporate aircraft by local corporations, and growth in fractional ownership programs. In addition, the events of September 11, 2001, have increased demand for corporate flights due to the perceived increase in safety and the avoidance of security-related delays at larger airports. In particular, demand for hangars appropriate for corporate aviation has been very strong. The high growth in the corporate aviation will likely cause some displacement of corporate flight activity from San Francisco, San Jose and Oakland international airports to other regional general aviation airports.

- There has been, and will continue to be, interest in FBO development at regional airports, particularly if this is associated with growth in corporate

aircraft storage. The recent economic downturn has reportedly reduced this interest somewhat, but the long-term strength of the corporate aviation market is likely to encourage growth. Also, specialty aviation (e.g., aircraft avionics) services are likely to continue to grow, providing niche services that complement FBOs.

- Air taxi activity, while generally a small percentage of regional aircraft operations, has grown steadily, partly as a result of increased demand for aviation service that would avoid traffic congestion and security-related inconveniences associated with travel at San Francisco, San Jose and Oakland international airports, which is expected to continue to grow.

- Population increases in the demand region and security concerns have assisted growth in corporate aviation and commercial passenger service at smaller airports. There has been significant population growth in the Byron area, and this would likely increase aviation activity growth in the long term.

- Flight school activity has not grown significantly, as a result of the economic downturn, recent increases in aviation fuel prices, difficulties in the airline industry, and security concerns.

- Recreational flying has been similarly affected by the regional economic downturn and increased fuel prices, and the growth outlook is tied to the local economy. Demand for T-hangars is generally strong, although there is a significant amount of tie-down space available.

General Aviation Activity Outlook. Research that was conducted, including interviews with airport operators and reference materials such as reports from the Metropolitan Transportation commission, indicates that continued demand for general aviation facilities at the Airport may be expected for the following reasons:

- At many of the airports in the general aviation demand region, there is constrained supply and restrictions on use of aircraft storage facilities.

- At many of the airports in the general aviation demand region, there are airspace operating restrictions related to proximity to Oakland International Airport and San Francisco International Airport.

- The Airport is located in what is considered to be a relatively high economic growth region of the general aviation demand region.

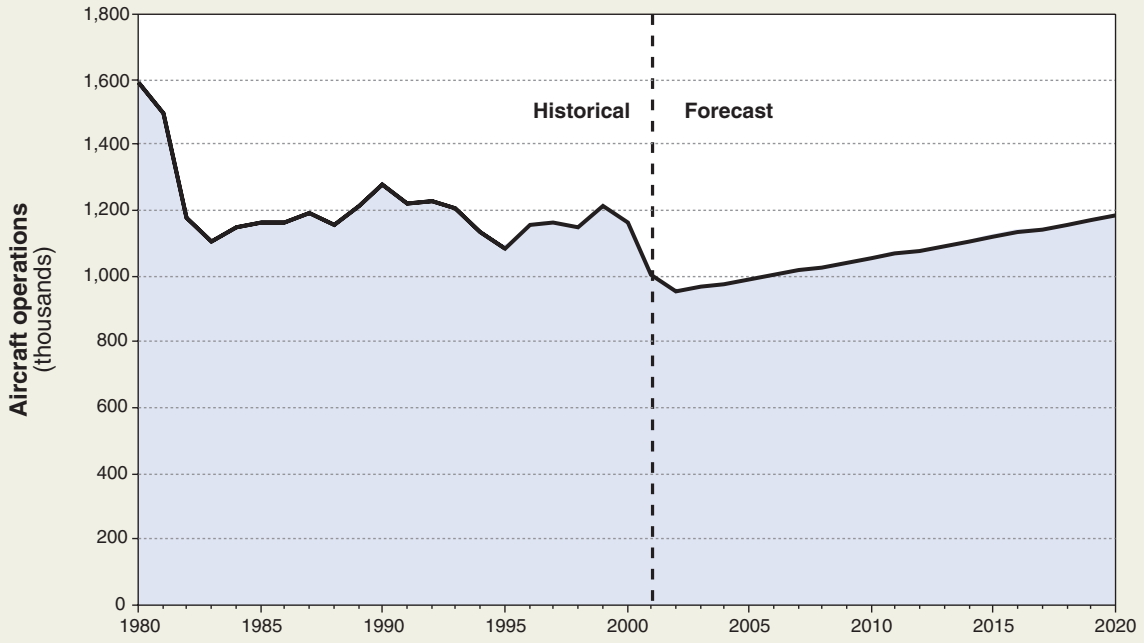
- There is an outlook of continued demand for aviation facilities, given strong socioeconomic, business and real estate demand drivers in the East Bay.

Forecast Regional Growth. Figure 3-3 shows the historical and forecast growth in regional general aviation aircraft operations, based on the FAA's Terminal Area Forecast (TAF). The FAA TAF is prepared each year, and is considered an industry standard for the growth outlook of airports.

Figure 3-3

REGIONAL GENERAL AVIATION AIRCRAFT OPERATIONS 1980-2020

Byron Airport



Source: Federal Aviation Administration, Terminal Area Forecasts, 2003.

BUC523 F-0004.fh8

As shown, general aviation aircraft operations in the region are forecast by FAA to increase from about 78,000 in 2003 to about 105,000 in 2020, at an average annual rate of about 1.1%. This is an indication that there is expected to be growth in regional general aviation activity in the future. The regional growth outlook indicated by the FAA TAF was used in developing the specific forecast for the Airport.

Other Regional Aviation Activity

As mentioned above, this forecast analysis is focused on general aviation activity, which is expected to continue to be the primary role for the Airport. However, there is a significant amount of other commercial aviation activity in the region, and the region's airports are increasingly facing capacity constraints in meeting future growth in this commercial activity. Recent studies prepared for commercial service

airports in the region indicate that capacity constraints will result in the need to either significantly increase airport capacity or "shed" commercial activity to other airports in the region. This raises the possibility that other airports, such as Byron Airport, could be used to meet regional commercial airline demand.

AVIATION ACTIVITY FORECASTS

The aviation activity forecasts were prepared on the basis of the analyses of recent trends in aviation activity and the key factors influencing aviation activity, as described above.

Base Year (2003) Aircraft Operations

There are no historical data series on aircraft operations maintained at the Airport, and no tower counts available from FAA. Various estimates from the past few years range from 25,000 to 60,000 annual aircraft operations at the Airport.

We prepared an independent estimate of the most recent full year (2003) as follows:

1. The most recent analysis of annual aviation activity, the Contra Costa County Airport Land Use Compatibility Plan, December 2000 (the 2000 ALUC Plan), estimated, based upon interviews with Airport staff and sample data, that there were approximately 61,000 annual aircraft operations.

2. Interviews with Airport staff conducted in November 2003 indicated that the approximately 10,000 helicopter operations stated in the 2000 ALUC Plan had ceased.

3. Additionally, it was estimated that daily operations ranged between as much as approximately 200 on a weekend day in the busy season (principally the summer months), to as low as approximately 60 on a weekday in the less busy months.

4. An on-site survey of two weekend days was conducted in January 2004, where approximately 200 operations occurred on each day. This was considered consistent with a busy day, given that good weather occurred.

Based upon the above information, an estimate of 40,000 aircraft operations was generated for 2003, to serve as the base year for the forecasts.

Forecast Assumptions

To reflect the range of potential scenarios for future economic growth and aviation activity development at the Airport, high and low case forecast scenarios were developed. Key assumptions used in developing each scenario are described below.

High Case

- There would be a loosening of restrictions on economic development around the airport (as discussed earlier in "Regional Growth Considerations"), together with restrictions on activity or constrained capacity at other regional airports.
- The regional employment and population growth shown in the NPA Data Services forecasts, as summarized in Table 3-3, would result in significant economic growth in East Contra Costa County that would lead to increased aviation activity at the Airport.
- Single and multi-engine aircraft operations would grow at rates faster than the regional historical average annual growth rates, reflective of a continuation of incremental growth in flight training and recreational flying, and transfers from more congested regional airports.
- Corporate aircraft operations would grow at average annual growth rates significantly higher than overall aircraft operations, reflective of business aviation growth drivers;

Low Case

- There would be continued restrictions on economic development in the East County region around the airport (as discussed earlier in "Regional Growth Considerations), together with reasonable availability of facilities at other regional airports, and therefore no significant development of new services at the Airport.
- The regional employment and population growth shown in the NPA Data Services forecasts, as summarized in Table 3-3, would not materialize as shown, and there would be lower economic growth in the region.
- Single and multi-engine aircraft operations would grow at rates similar to historical average annual growth rates.
- Corporate aircraft operations would grow at average annual growth rates somewhat higher than overall aircraft operations, reflective of business aviation growth drivers.

Mid-Point Case

- This case assumes that the assumptions outcome would be more favorable than the Low Case, but less favorable than the High Case, resulting in aviation activity that would be at an approximate mid-point between the High and Low Cases.

Annual Forecasts of Aviation Activity

Annual forecasts of aviation activity (aircraft operations and based aircraft) are presented for the high, mid-point and low cases in Table 3-6.

Table 3-6

ESTIMATED AND PROJECTED AVIATION ACTIVITY
Byron Airport
2003-2023

	Estimated 2003	Projected 2008	2013	2018	2023	Average annual change 2003-2023
Aircraft operations						
High	40,000	46,500	53,800	61,500	64,200	2.4%
Mid-point	40,000	43,500	47,700	52,300	53,500	1.5
Low	40,000	40,500	41,500	43,000	43,000	0.4
Based aircraft						
High	147	182	216	251	256	2.8%
Mid-point	147	165	187	210	212	1.8
Low	147	147	157	167	167	0.6

Source: Leigh Fisher Associates, June 2004.

As shown, in the High Case it is forecast that annual aircraft operations will increase from about 40,000 in 2003 to 64,200 by 2023. In the Low and Mid-point Cases, it is forecast that annual aircraft operations will only increase to 43,000 and 53,500, respectively, by 2023.

The High Case, Mid-point Case and Low Case forecasts of based aircraft are generally consistent with the High Case, Mid-point Case and Low Case forecasts of aircraft operations. Specific assumptions were developed regarding new hangar development for each case, which in turn was used as a primary factor in preparing the forecast of based aircraft.

An additional result not displayed on Table 3-6 is the anticipated development of aviation-related services. In the High Case, it is expected that there would be development of new aviation support services such as FBOs and specialty maintenance.

Comparative Forecasts

As summarized in Table 3-7, the following comparison can be made:

- The growth outlook in the Low Case is similar to the growth outlook in the FAA TAF—almost no growth in activity at Byron Airport.
- The absolute numbers of operations in the Low Case are higher than in the FAA TAF, due to the different estimates of "current" operations. We believe our recent survey of daily operations is the most current exercise conducted to estimate the level of annual operations at the airport.
- The High Case, with potential new future activities, is significantly higher than the FAA TAF, which is to be expected.
- The Mid-point case is higher than the FAA TAF for Byron Airport, but similar to the FAA's growth outlook for the region. The aggregate FAA TAF projection for growth in regional general aviation activity is about 1.2% per year when all airports in the region are combined.

Table 3-7

COMPARATIVE FORECAST DATA
Byron Airport
2001-2005

	2003 *(a)*	2008	2018 *(b)*	Average annual growth rates 2003-2018
Aircraft operations				
LFA High Case	40,000	46,500	61,500	2.9%
LFA Mid-point Case	40,000	43,500	52,300	1.8
LFA Low Case	40,000	40,500	43,000	0.5
FAA TAF	25,480	25,480	25,480	0.0
Based aircraft				
LFA High Case	147	182	251	3.6%
LFA Mid-point Case	147	165	210	2.4
LFA Low Case	147	147	167	0.9
FAA TAF	105	105	105	0.0

(a) 2003 is estimated airport data for LFA data, and a projection for FAA data.
(b) FAA forecast for 2023 unavailable.

Sources: Aircraft operations: LFA: Leigh Fisher Associates, June 2004.
FAA: FAA, APO Terminal Area Forecasts, 2003.
Based aircraft: LFA: Leigh Fisher Associates, June 2004.
FAA: FAA, APO TAF, 2003.

Aircraft Fleet Mix

Table 3-8 shows the forecast aircraft fleet mix.

Table 3-8

ESTIMATED AND PROJECTED AIRCRAFT OPERATIONS FLEET MIX
Byron Airport
2003-2023

	Estimated	Projected				Average annual change	
	2003	2008	2013	2018	2023	2003-2013	2003-2023
Aircraft Operations							
High Case							
Single engine							
Fixed	19,200	22,350	25,600	28,800	29,700	2.9%	2.2%
Variable pitch	8,800	10,100	11,450	12,800	13,500	2.6	2.2
Subtotal	28,000	32,450	37,050	41,600	43,200	2.8%	2.2%
Multi engine piston	1,200	1,500	1,820	2,100	2,100	4.1%	2.8%
Turboprop	4,400	5,600	7,410	9,100	10,100	5.4	4.2
Business jet	400	950	1,520	2,700	2,800	14.3	10.2
Historic/ military jet	400	400	400	400	400	0.0	0.0
Glider	5,600	5,600	5,600	5,600	5,600	0.0	0.0
Total	40,000	46,500	53,800	61,500	64,200	3.1%	2.4%
Mid-Point Case							
Single engine							
Fixed	19,200	20,800	22,600	24,500	24,900	1.6%	1.3%
Variable pitch	8,800	9,600	10,300	11,200	11,600	1.6	1.4
Subtotal	28,000	30,400	32,900	35,700	36,500	1.6%	1.3%
Multi engine piston	1,200	1,300	1,500	1,700	1,700	2.3%	1.8%
Turboprop	4,400	5,100	6,100	7,000	7,600	3.3	2.8
Business jet	400	700	1,100	1,700	1,800	6.5	7.8
Historic/ military jet	400	400	400	400	400	0.0	0.0
Glider	5,600	5,600	5,700	5,700	5,700	0.2	0.0
Total	40,000	43,500	47,700	52,200	53,700	1.8%	1.5%
Low Case							
Single engine							
Fixed	19,200	19,200	19,600	20,300	20,200	0.2%	0.3%
Variable pitch	8,800	9,000	9,200	9,500	9,600	0.4	0.4
Subtotal	28,000	28,200	28,800	29,800	29,800	0.3%	0.3%
Multi engine piston	1,200	1,200	1,300	1,300	1,300	0.8%	0.4%
Turboprop	4,400	4,500	4,700	5,000	5,000	0.7	0.6
Business jet	400	500	600	800	800	4.1	3.5
Historic/ military jet	400	400	400	400	400	0.0	0.0
Glider	5,600	5,700	5,700	5,700	5,700	0.0	0.0
Total	40,000	40,500	41,500	43,000	43,000	0.4%	0.4%

Source: Leigh Fisher Associates, June 2004.

Key assumptions include:

- Consistent with projections of annual operations, the business jet and turboprop aircraft operations segments would grow faster than average.
- Single-engine aircraft operations, consistent with expected slower growth trends in recreational and training activity, would grow slower than average.
- Historic/military jet aircraft and glider operations would not increase from the 2003 levels.

Peaking Forecasts

While the level and type of annual aviation activity at an airport can provide an indication of general facility requirements, a level of activity of shorter duration, typically a day or hour, provides a better measure for assessing specific needs. At the Airport, given that most operations comprise flight school training and recreational activity, operations are spread throughout the day. There is no discernible daily peak hour at Byron Airport, as is usual at airports with scheduled commercial passenger service. Records of landings and takeoffs are not routinely maintained. Accordingly, an on-site survey of two weekend days was conducted in January 2004, and aircraft operations during the peak hour of the average day of the peak month (ADPM) were estimated using a rolling peak hour, i.e., 60 minutes of accumulated aircraft operations.

In developing peak hour forecasts, it was assumed that: Peak hour operations would grow at approximately the same rate as daytime annual operations, for each operations category, given that the peak occurs during daytime hours.

Forecast peak hour aircraft operations are summarized in Table 3-9.

Table 3-9

ESTIMATED AND FORECAST PEAK HOUR AIRCRAFT OPERATIONS
Byron Airport
CY 2002-CY 2023

Operations category	Estimated 2003	Forecast 2008	2013	2023
Total peak hour operations				
High case	49	57	66	78
Mid-point	49	53	58	65
Low case	49	49	50	52

Sources: Leigh Fisher Associates, June 2004.

The high case represents an approximately 60% cumulative increase in total peak hour operations by 2023, and the low case represents an approximately 6% cumulative increase in total peak hour operations by 2023.

Chapter 4

RECOMMENDED DEVELOPMENT PLAN

This chapter presents estimates of facility requirements for Byron to accommodate the forecast aviation demand presented in Chapter 3, and a recommended development plan to accommodate these facility requirements. The results of an environmental review of the recommended development plan are also included. Any development on the premises of the Byron Airport, including aviation and non-aviation development, shall comply with the Contra Costa County Airport Land Use Commission's *Airport Land Use Compatibility Plan* for the Byron Airport that is in effect at the time the development is proposed, and shall be subject to the applicable *Airport Land Use Compatibility Plan* land use compatibility zones in which the development occurs.

FACILITY REQUIREMENTS

Airport requirements were derived from an assessment of existing conditions and demand/capacity evaluations for major Airport components. The following summarizes requirements for the airfield, navigational aids, general aviation (including increased corporate activity), airport support, ground access, and utilities. Recognizing uncertainties associated with forecasts of long-range aviation demand, two planning scenarios were identified to represent future levels of activity at which key airside and landside improvements would be triggered. For this Master Plan, the "near-term" planning scenario corresponds to the 2008-2010 time frame, and the "long-term" planning scenario corresponds to the 2023-2025 time frame.

Airfield

Runway capacity is defined as the maximum number of aircraft operations that can take place on a runway system in an hour given weather conditions, fleet mix, and air traffic control procedures. Runway capacity can also be expressed in terms of annual service volume (ASV) using the methodologies outlined in FAA Advisory Circular (AC) 150/5060-5, Airport Capacity and Delay. ASV provides a reasonable estimate of annual capacity that accounts for differences in aircraft mix, runway use, and weather conditions that would be encountered during the year. Byron's ASV is estimated at 270,000 aircraft operations.

Annual operations at Byron are forecast to increase from approximately 40,000 in 2003 to 64,200 under the long-term planning scenario. Thus, Byron has sufficient airfield capacity to accommodate forecast aviation activity, including flight training, throughout the planning period.

Byron's current taxiway system, including full-length parallel taxiways to Runway 12-30 and Runway 5-23, provides access to all runway ends. No additional parallel taxiways are necessary in the planning period.

Navigational Aid Requirements

As discussed in Chapter 2, there is a GPS approach to Runway 12-30, which allows straight-in landing approaches down to a decision height (DH)* not lower than 740 feet and visibility not less than 1 mile. At Byron, the occurrence of IFR weather conditions (ceiling less than 1,000 feet and visibility less than 3 miles) is particularly high during December and January. To reduce the frequency of diverted flights during inclement weather and better accommodate potential Airport users, (e.g., increased corporate jet activity), it would be prudent to ultimately provide an instrument landing system at the Airport with lower decision height and visibility requirements.

General Aviation Facility Requirements

General aviation facility requirements were based on a review of existing facilities, market requirements, field observations, discussions with Airport tenants, and forecast data provided in Chapter 3, as well as Byron's intended future role. Analysis of the range of general aviation activity generated the following facility requirements.

Fixed Base Operators (FBOs). There are currently no FBOs at Byron Airport. Requirements for FBOs are normally demand-driven, and/or based on the range (or lack) of services offered by aviation service providers. For instance, some small general aviation airports accommodate multiple FBOs, each providing a limited number of services; on the other hand, many airports with more general aviation activity than Byron have only one full-service FBO. In general, it can be assumed that 50,000 annual general aviation operations can support one FBO—consequently current demand is close to supporting the need for a full-service FBO. Three acres is considered a sufficient surface area to support a medium-sized fixed base operator, including itinerant apron, hangar, office and car parking space. Space should be reserved for at least one FBO development.

Base Aircraft Storage Facilities. As discussed in Chapter 3, the number of based aircraft at Byron is expected to increase throughout the planning period. Based on the mid-point demand forecast, it is estimated that there would be a requirement for two additional 30-aircraft row hangar or T-hangar developments,

---

*DH is the lowest height above the runway end at which a pilot must decide whether to continue the approach or execute a missed approach.

each of about 1.3 acres (110,000 square feet). With higher demand conditions, more hangars could be required.

In addition to hangar space for aircraft storage, hangar space for general aviation-related activities and business enterprises should also be provided. These activities include, but are not limited to, aircraft maintenance and repair, aircraft sales and leasing, avionics maintenance and sales, fueling for jet aircraft, and aviation-related office space. Requirements for aviation support hangars are market driven, and will be constructed by the County or third-party service providers based on market demand.

Airport Support Facility Requirements

Support facilities include fuel storage and airport administration and operations. Requirements are based on field observations, discussions with Airport staff, and facilities at similarly sized airports.

Fuel Storage Facilities. It is anticipated that AvGas fuel storage required for general aviation piston aircraft operations can be accommodated by the existing airport fuel storage system. There are currently no public fueling facilities for jet aircraft.

Airport Administration and Operations. Airport administration and operations functions are accommodated in the 2,400 square-foot Administration Building. Requirements for administrative facilities depend on the number of administrative functions provided at Byron, rather than activity levels, while requirements for operations facilities are dependent on the number of employees. Based on the forecast level of aviation activity, it is anticipated that the existing facility will accommodate Airport administration through the end of the 20-year planning period.

Ground Access Requirements

Roadway requirements to serve planned Airport facilities include a roadway system that accommodates anticipated growth in general aviation activity and addresses current access issues. Recommended roadway improvements include (1) direct access to the general aviation areas, and (2) a continuous roadway along the landside of proposed facilities.

Utilities

It is estimated that the various Airport utility systems can accommodate existing development with the **current** utilization of facilities. However, a significant increase in utilization of existing facilities or even limited expansion of facilities (e.g., an additional 30-aircraft hangar or a small FBO) may require additional utilities development. The potential sources of additional utilities, and the general infrastructure required to make them available at the Airport, are summarized in this section. Figure 4-1 summarizes potential utilities connections and outlines necessary infrastructure requirements.

It should be noted that the following requirements are preliminary in nature, based on informal discussions and other information obtained from the various utility providers in the area. As implementation of the Development Plan proceeds, formal discussions should be held with the utility providers so that the needed improvements can be engineered and cost estimates generated. Both the water supply and sewer discharge issues will likely require discussion and approval by LAFCO to define and/or confirm the boundary of any water and sanitation district.

Upgrading the current connection at Holey Road can provide additional **electrical power** to the Airport. As it has not been determined whether the current utility joint trench has additional conduits to accommodate the upgrade, PG&E should be consulted once additional power requirement are determined to be necessary.

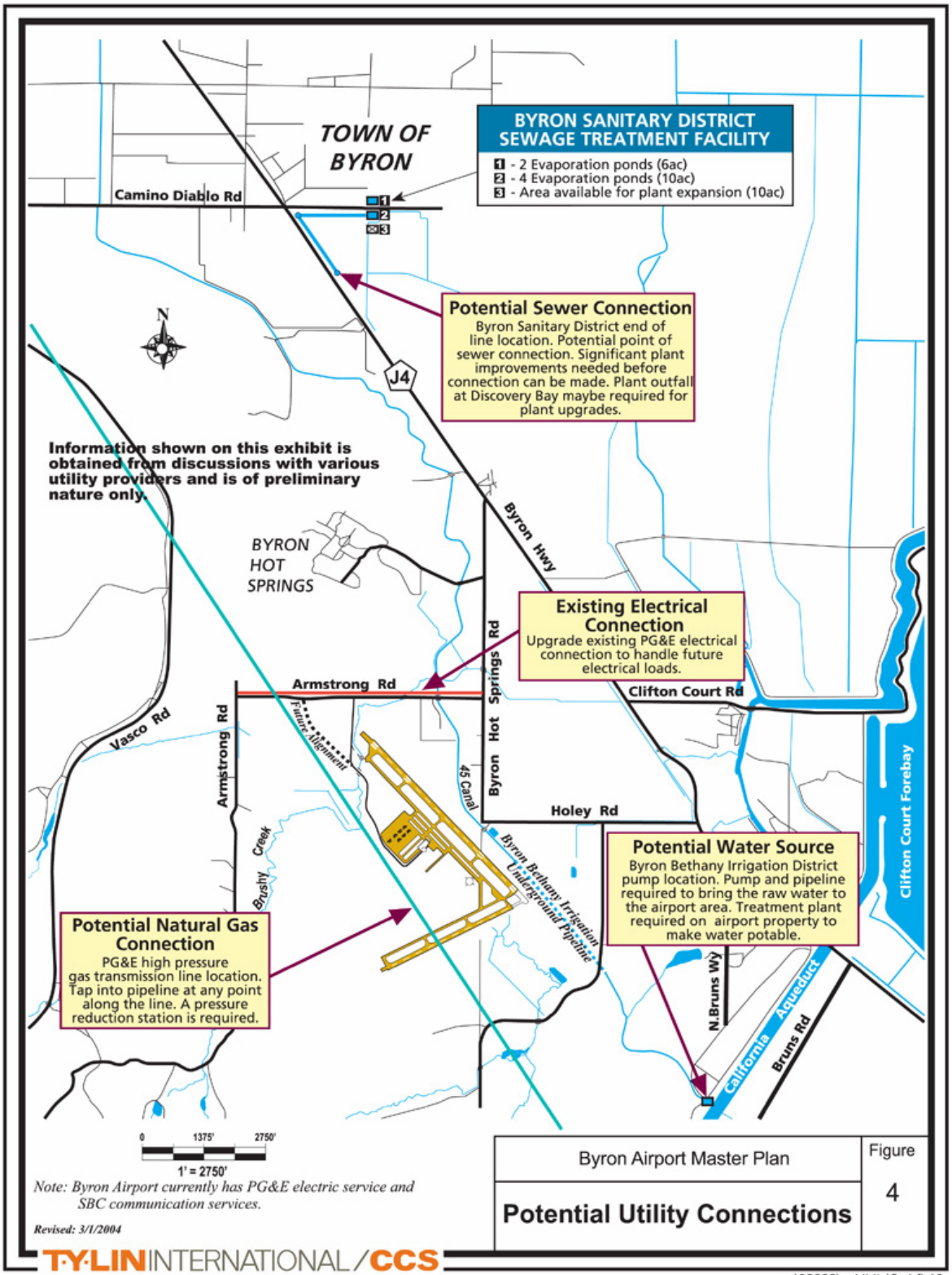
Any significant development will likely require the provision of **natural gas** to the airport area. PG&E indicated that they would be able to provide natural gas service by tapping into their high-pressure transmission line that crosses Runway 5-23. A pressure reduction station will have to be constructed within the airport area.

The current **water** system provides limited fire protection to major structures. Any significant development will likely require both potable water and additional fire flow capacity to provide a minimum level of fire protection for major structures. The nearest water provider is the Byron-Bethany Irrigation District, which currently provides untreated raw water in the months of March through October to the Byron area. The District has indicated that it has the ability to provide year-round raw water to the Airport. However, there will be a need to construct a pump station at the California Aqueduct and a system of pipelines to convey the water to the Airport. There will also be a need to provide a water treatment plant, booster pumps and separate water tanks for potable and fire water at significant cost. Additional land may be needed to construct these facilities.

Given the limited available information on Airport utilities, and the uncertainty regarding the timing of future development (such as facilities for an FBO), it is recommended that a utilities/infrastructure master plan be prepared.

Figure 4-1

POTENTIAL UTILITY CONNECTIONS



As the water supply is upgraded, it will be necessary to provide a reliable **sewer** connection, rather than rely on the existing sewer leach fields. The nearest sanitation district is the Byron Sanitary District, which operates a zero-discharge sewer treatment facility on Camino Diablo. A connection can be made to the District's existing sewer line on Byron Highway. As the facility has limited capacity, the additional sewer discharge will require the District to upgrade their facility at significant cost.

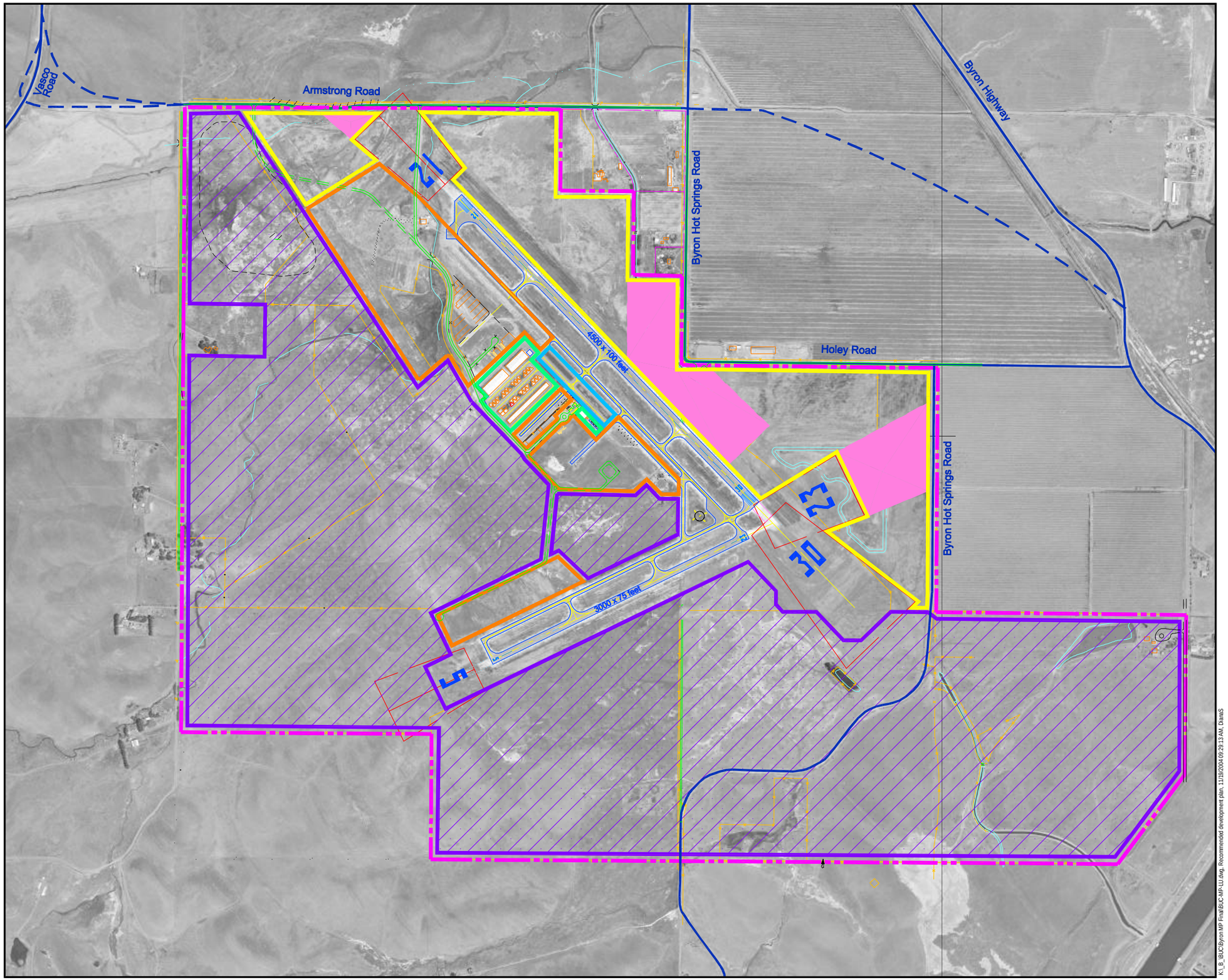
Additional **communications** cables can be provided along the same route as the electrical cables. SBC Communications should be consulted once the need for additional communications equipment is established, as there may be a need to install a switch, depending upon the needs of the future tenants.

RECOMMENDED DEVELOPMENT PLAN

Long-term land uses for Byron Airport, reflecting the Recommended Development Concept, are depicted on Figure 4-2. The major findings and conclusions of the master planning process include:

- General aviation facilities should generally remain in their current locations to maximize previous investments and capitalize on existing development patterns.
- Airport support functions (e.g., administration, operations and maintenance) should continue to be centralized and located contiguous to the Air Operations Area (AOA).
- Parcels that include infrastructure (utilities, roads, etc.) but are not located adjacent to the AOA should be reserved for land uses that may provide revenue-generating opportunities for Contra Costa County.
- Existing airport access via Falcon Way should be improved/upgraded to satisfy runway approach and safety area requirements. In the long term, improved ingress/egress should be provided via the Armstrong Road connection to Vasco Road.
- No land acquisition is necessary to support the Recommended Development Concept. However, the County should acquire property to ensure protection of approach and safety areas.

Recommended airfield facilities, landside facilities, and land uses are discussed in the following sections.



LEGEND

- Airport boundary
- Aircraft storage facilities
- Aircraft parking
- Reserved for aviation-related uses
- Reserved for airport related uses (secondary area)
- Biologically sensitive habitat
- Reserved for airport-related uses
- Off-airport road
- Potential off-airport road development
- Proposed on-airport road
- On-airport road

N

500 0 500 1000

Graphic Scale in Feet

K:_B_IBUC\Byron MP Final\BUC-MP-LU.dwg, Recommended development plan, 11/19/2004 09:29:13 AM, DianaS

Figure 4-2

RECOMMENDED DEVELOPMENT PLAN

Byron Airport
November 2004

LEIGH FISHER ASSOCIATES

Recommended Airfield Facilities

No changes to the runways are anticipated in the 20-year planning period. Taxilanes and additional apron to support general aviation hangar development may be required to enhance the long-term operational flexibility of the Airport.

Strategic Recommendation. The strategic recommendation to ultimately extend Runway 12-30 to 6,000 feet and Runway 05-23 to 3,900 feet is based on the premise that, for the Airport to be better accommodate corporate jet activity, the runway system should provide an even greater degree of operational flexibility than the current runway lengths provide. By extending the length of Runway 12-30 to 6,000 feet, and the length of Runway 5-23 to 3,900 feet, the runway protections zones would essentially remain within the current Airport boundary.

Recommended Landside, Access, and Circulation Facilities

With regard to landside, access, and circulation facilities, the Recommended Development Concept includes the following improvements to accommodate future demand.

- Construct roadway turnoffs and on-site parking facilities to support fixed base operator and aircraft storage hangar developments discussed earlier
- Upgrade and extend Falcon Way

Recommended Land Uses

A primary goal of the Master Plan was to determine appropriate land use "envelopes" for accommodating the major Airport functions for the foreseeable future, including general aviation, Airport support, other aviation-related land uses, and nonaviation land uses.

Near-Term Aviation-Related Land Uses. As presented on Figure 4-2, an area is reserved for general aviation, and Airport support adjacent to, and west of the intersection of the two runways. The total area reserved for these uses is 96 acres. To facilitate the movement of ground vehicles, and satisfy runway approach and safety area requirements, it is recommended that Falcon Way be improved/upgraded.

Long-Term Aviation-Related Land Uses. As presented on Figure 4-2, approximately 125 acres to the north and east of Runway 12-30 are reserved for long-term airport-related development. It is intended that these areas be reserved for future taxiways, aircraft parking aprons, and airport-related facilities (additional general aviation, aviation maintenance, etc.) if demand conditions warrant such development beyond the 20-year planning period.

However, if market conditions warrant, portions of the area could potentially be used for commercial/industrial development to enhance revenue generation. Those areas shown in pink on Figure 4-2 are considered as secondary areas for development due to limitations caused by (a) underlying drainage canals and (b) the runway approach area.

Other Land Uses. Approximately 814 acres to the south and west of the runways are designated as biologically sensitive habitat.

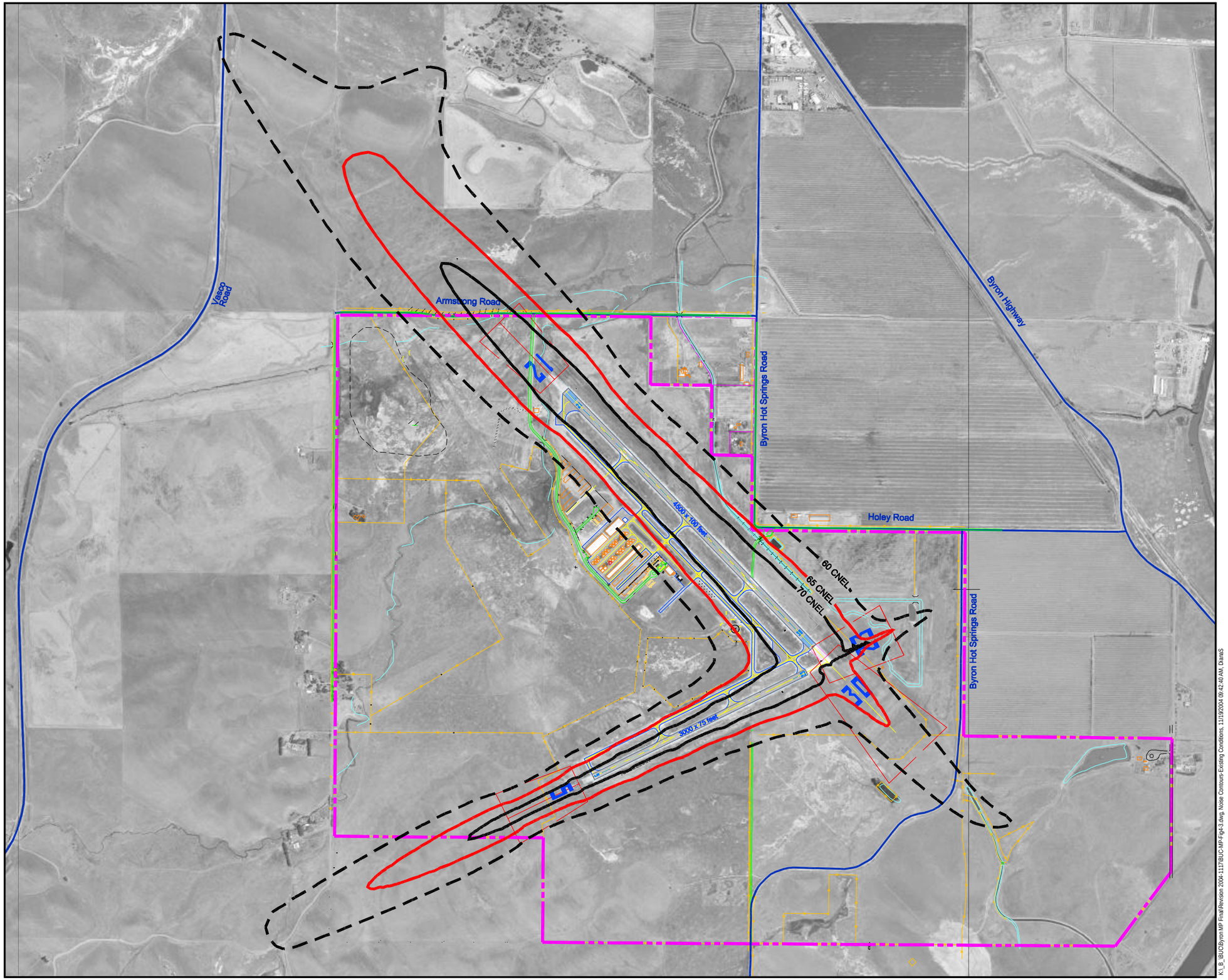
Aircraft Noise Exposure

The following discussion focuses on the general characteristics of aircraft noise and the methodologies used to analyze aircraft noise for Byron Airport. Aircraft noise in the Byron Airport environs area was analyzed using the FAA's Integrated Noise model (INM) in accordance with the methodology for preparing aircraft noise exposure maps (noise contours) contained in FAA Order 5050.4A. Noise contours were prepared for the base year—2003, and the 20-year planning horizon—2023. A discussion of the general characteristics of aircraft noise and the methodologies used to analyze aircraft noise in the Byron Airport environs is presented in Appendix C.

Existing (2003) Noise Exposure. Aircraft noise contours for the average day in 2003 at Byron Airport are illustrated on Figure 4-3. The mix of aircraft and the number of operations by aircraft type and time of day are presented in Appendix C. Based on FAA criteria for noise exposure, aircraft operations at Byron Airport are compatible with surrounding land uses, i.e., the 2003 CNEL 65 (Community Noise Equivalent Level—expressed in decibels) and higher noise exposure contours are generally located within the boundaries of the Airport, or on largely undeveloped land to the northwest and southwest of the Airport.

Future Noise Exposure. Effects of noise exposure associated with Master Plan development were addressed in the future contours. Noise contours for the average day at Byron Airport under the long-term planning scenario are presented on Figure 4-4. The mix of aircraft and the number of operations by aircraft type and time of day are presented in Appendix C. It was assumed for the purposes of determining aircraft noise exposure that no additional runway improvements would be constructed prior to the end of the 20-year planning period. The future CNEL 65 and higher noise exposure contours are generally located within the boundaries of the Airport, or on largely undeveloped land to the northwest and southwest of the Airport and as such Airport operations are compatible with surrounding land use based on FAA criteria.

The 2003 and the future Master Plan noise contours are essentially the same size. Inspection of the inputs to the INM and detailed analysis of the outputs show



LEGEND

- Airport boundary
- Off-airport road
- On-airport road

NOISE CONTOURS

- 60 CNEL — 60 CNEL
- 65 CNEL — 65 CNEL
- 70 CNEL — 70 CNEL

N

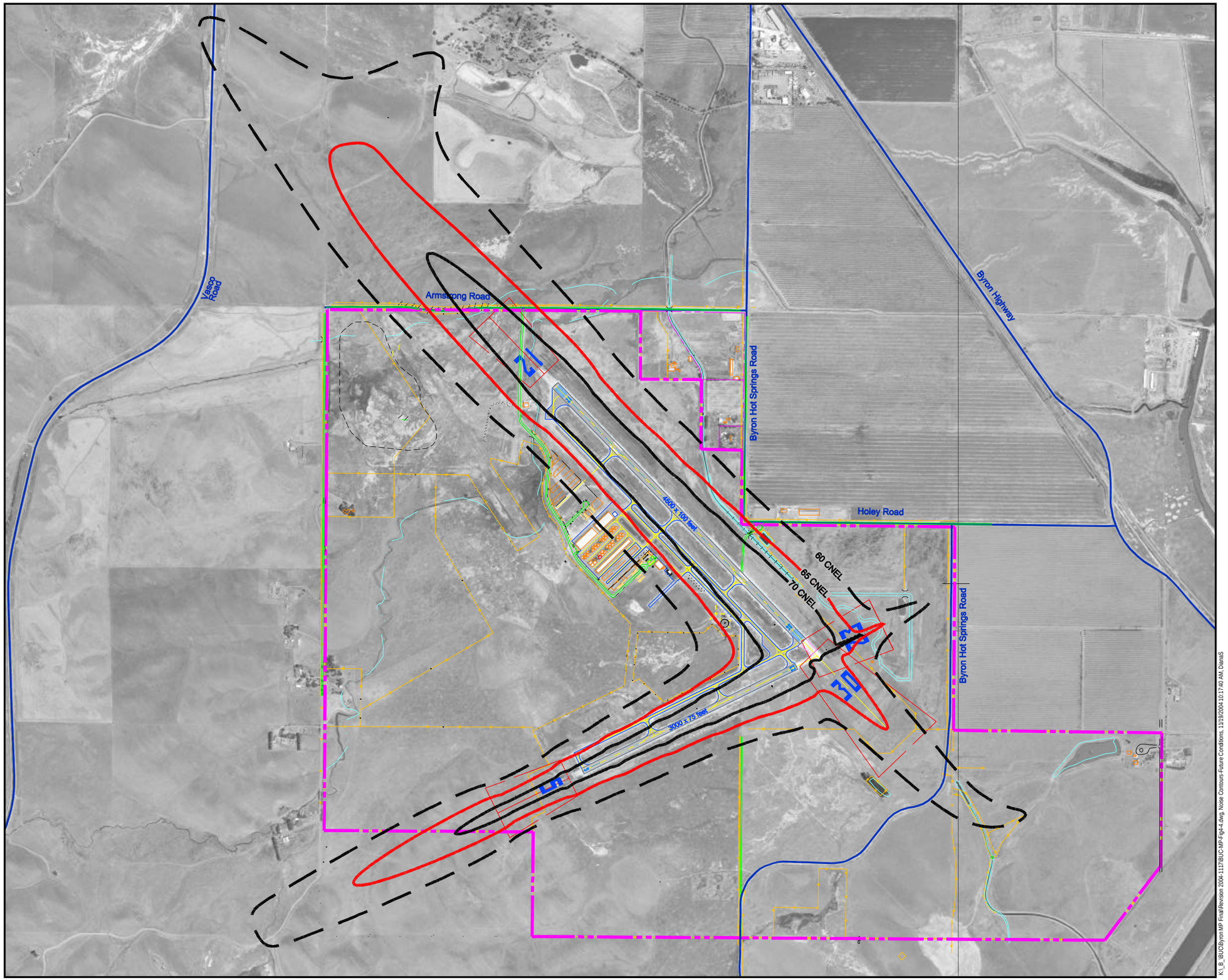
600 0 600 1200
Graphic Scale in Feet

Figure 4-3

MASTER PLAN - NOISE CONTOURS
EXISTING CONDITIONS (2003)

Byron Airport
November 2004

LEIGH FISHER ASSOCIATES



LEGEND

- Airport boundary
- Off-airport road
- On-airport road

NOISE CONTOURS

- 60 CNEL — 60 CNEL
- 65 CNEL — 65 CNEL
- 70 CNEL — 70 CNEL

N

600 0 600 1200
Graphic Scale in Feet

Figure 4-4

MASTER PLAN - NOISE CONTOURS
FUTURE CONDITIONS (2023)

Byron Airport
November 2004

LEIGH FISHER ASSOCIATES

K:_B_IBUC\Byron MP Final\Revision 2004-1117\BUC-MP-Fig4-4.dwg, Noise Contours-Future Conditions, 11/19/2004 10:17:40 AM, DianaS

that the size of the noise contours are largely determined by the number of military jets aircraft in the fleet mix. These aircraft contribute over 90% of the noise exposure at any particular location in the airport environs. The number and type of these aircraft in the fleet mix are expected to remain relatively constant from 2003 to 2023 and hence there is little difference in the noise contours.

Compatible Land use

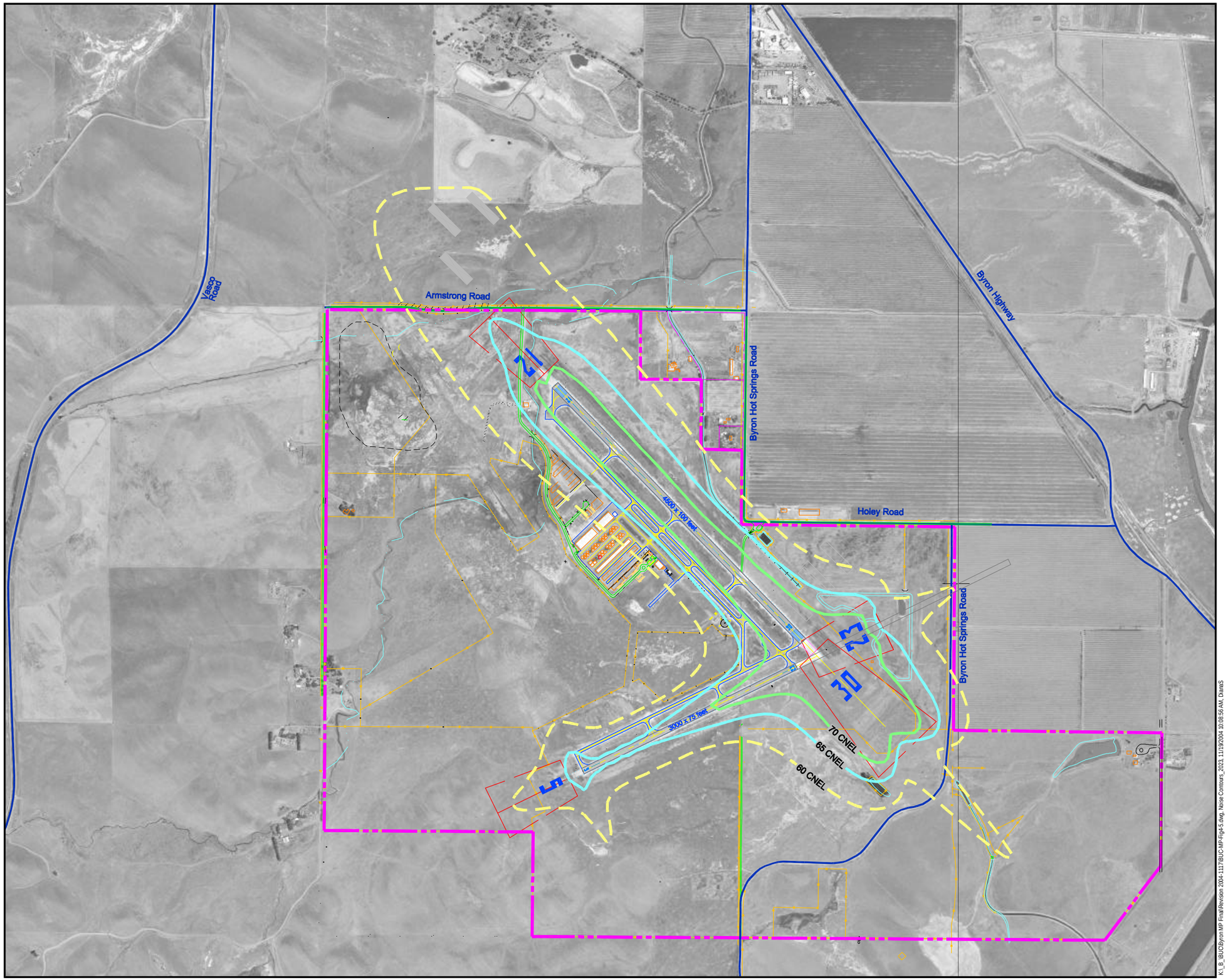
In accordance with the California State Aeronautics Act of 1967 (Public Utility Code Sections 21670 et seq), the Contra Costa County Airport Land Use Commission (ALUC) adopted an Airport Land Use Compatibility Plan (the ALUC Plan) and associated negative declaration in December 2000. The aircraft noise exposure contours for Byron Airport included in the ALUC Plan were prepared for two conditions—current activity (year 2000) and an ultimate level of activity that approximated the capacity of the airfield (with and without historic military jets). The contours contained in the ALUC Plan for the ultimate level of activity (with historic military jets)*, and which are shown on Figures 4-5, are smaller than the contours prepared as part of the Master Plan, even though the overall level of aircraft activity used in the ALUC contours was significantly greater than that of the Master Plan. The contribution of propeller-driven aircraft to the noise contours, even though they account for more than 90% of the overall landings and takeoffs, is relatively insignificant. Table 4-1 shows the levels of aircraft operations inherent in the Master Plan and the ALUC Plan noise contours, and Figure 4-6 compares the 65 CNEL contour from the ALUC Plan with the 65 CNEL contour from the Master Plan.

The primary reason for the Master Plan contours being greater than the ALUC contours is related to two assumptions made concerning the historic military jet activity. This is significant because of the noise emission characteristics of these aircraft—as noted earlier, they account for more than 90% of the noise exposure in the airport environs.

1. When the ALUC contours were prepared, the INM data base at that time contained a limited number of military aircraft, and the Lear 25 aircraft was chosen to represent the historic military jets. The INM data base has since been expanded to include additional military aircraft and the Master Plan noise contours were prepared using the A4 aircraft as a surrogate for the historic military jets. While the noise emission characteristics of the Lear 25 and the A4 are similar, the departure profile of the A4 is much lower than that of the Lear 25; hence the A4 will typically appear louder than the Lear 25.

---

*The ALUC Plan contours were developed assuming extension of Runway 12-30 to 6,000 feet and Runway 5-23 to 3,900 feet. The Master Plan assumes that these extensions would not be required until after the 20-year planning period.



LEGEND

- Airport boundary
- Off-airport road
- On-airport road

NOISE CONTOURS - SHUTT MOEN ASSOCIATES (APRIL 2000)

- 60 CNEL — 60 CNEL
- 65 CNEL — 65 CNEL
- 70 CNEL — 70 CNEL

N

600 0 600 1200
Graphic Scale in Feet

Figure 4-7

ALUC PLAN - NOISE CONTOURS FUTURE CONDITIONS

Byron Airport
November 2004

LEIGH FISHER ASSOCIATES

K:_B_IBUC\Byron MP Final\Revision 2004-1117\BUC-MP-Fig4-5.dwg, Noise Contours_2023, 11/19/2004 10:08:56 AM, DianaS

Table 4-1

ANNUAL AIRCRAFT OPERATIONS
Byron Airport

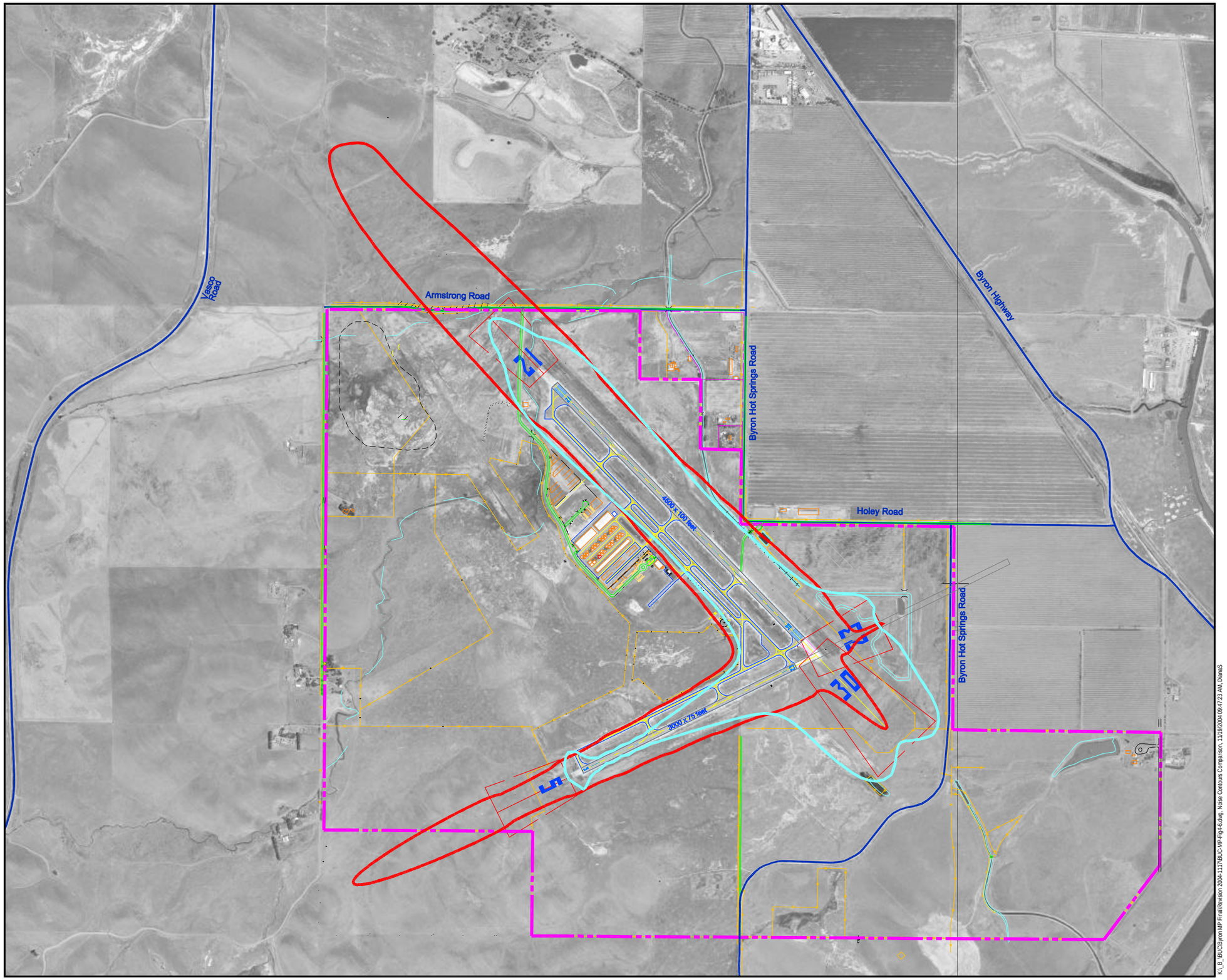
Aircraft type	Master Plan 2003	Master Plan Future*	ALUC Plan 2000	ALUC Plan Ultimate
Single engine-fixed	19,200	29,700	32,900	103,600
Single engine-variable pitch	8,800	13,500	14,000	44,400
Multiengine piston	1,200	2,100	3,600	12,000
Turboprop	4,400	10,100	200	3,000
Business jet	400	2,800	500	2,000
Historic/military jet	400	400	200	200
Glider	5,600	5,600	0	0
Helicopter	0	0	9,100	25,000
Total aircraft operations	40,000	64,200	60,500	190,200

*Long-term planning scenario.

Source: Leigh Fisher Associates, 2004.

2. The ALUC Plan contours assumed that there would be 200 annual operations (landings and takeoffs) by the historic military jets both for the year 2000 and in a future scenario. Based on a limited survey conducted in 2004, it was concluded that the activity level of the military jets was closer to 400 operations annually. Hence the Master Plan contours reflect the noise exposure resulting from twice as many historic military jets.

The combination of these two factors accounts for the differences between the ALUC Plan contours and the Master Plan contours.



LEGEND

- Airport boundary
- Off-airport road
- On-airport road

NOISE CONTOURS - MASTER PLAN (2023)

- 65 CNEL — 65 CNEL - HIGH FORECAST

NOISE CONTOURS - ALUC PLAN

- 65 CNEL — 65 CNEL

N

600 0 600 1200

Graphic Scale in Feet

Figure 4-6

NOISE CONTOURS COMPARISON
FUTURE CONDITIONS

Byron Airport
November 2004

LEIGH FISHER ASSOCIATES

K:_B_IBUC\Byron MP Final\Revision 2004-1117\BUC-MP-Fig4-6.dwg, Noise Contours Comparison, 11/19/2004 09:47:23 AM, DianaS

FINANCIAL PLAN

The primary objective of the financial plan is to identify potential funding sources for the recommended capital improvement projects. Historically, capital improvements at Byron Airport have been funded with a combination of grants (federal and state) and County matching funds.

The capital expenditure plan summarizes capital improvements that would be required to support continued growth in "basic" activity at the Airport. Additional investments or property development may be warranted under a high end scenario; these potential additional investments are discussed in more detail in Chapter 5, Business Plan.

The capital expenditure plan summarizes projects that:

- Are consistent with the facilities requirements and recommended developments described earlier in this chapter,
- Would be required under any scenario to continue to support Airport activities,
- Represent mostly renovation or enhancement and extension of existing facilities,
- Would be largely federally funded and within County resources to develop, and
- Include longer-term potential utility development that would not necessarily be the exclusive responsibility of the Airport System

Table 4-2 summarizes the recommended capital improvement program for the near-term and long-term planning scenarios. In terms of generating new Airport development, priority should be given to projects that (a) "open up" access to Airport property (e.g., Falcon Way extension for a broader range of aircraft (e.g., widening taxiways). This comment notwithstanding, the other projects listed are important for various other reasons such as safety.

Table 4-2

CAPITAL IMPROVEMENT PROGRAM
Byron Airport

Project	Estimated project cost	Funding AIP	Funding County
Near-term			
Utilities master plan	$ 100,000	$ 95,000	$ 5,000
Pave pump station road	265,000	251,750	13,250
Falcon Way extension - Phase 1	616,000	585,200	30,800
Falcon Way extension - Phase 2	4,160,000	3,952,000	208,000
Falcon Way realignment	1,247,000	1,184,650	62,350
Land acquisition *(a)*	n.a.	n.a.	n.a.
Long-term			
Widen Taxiway A to 50 ft *(b)*	2,277,000	2,163,150	113,850
Widen Taxiway B to 50 ft *(b)*	942,000	894,900	47,100
Extend Taxiway B	1,186,000	1,126,700	59,300
Fire-fighting truck and storage shed	1,500,000	1,425,000	75,000
Utility extensions *(c)*	n.a.	n.a.	n.a.
Renovate Taxiway A	444,000	421,800	22,200
Renovate Taxiway B	246,000	233,700	12,300
Renovate Taxiway C	508,000	482,600	25,400
Renovate Runway 12-30	631,000	599,450	31,550
Renovate Runway 05-23	421,000	399,950	21,050
Total	$14,543,000	$13,815,850	$727,150

(a) Land acquisition costs are not known at this time, but would be expected to be largely federally funded due to the purpose and need.
(b) To FAA ARC B-III criteria.
(c) Utility extensions are anticipated to be desirable during the 20-year planning period. However, it is not possible to estimate the cost, or the potential cost-sharing responsibility.

Source: Leigh Fisher Associates, June 2004.

As shown, 95% of the funding (about $13.7 million) is anticipated to be provided by the federal Airport Improvement Program (AIP) and/or state funding, and the County would be expected to contribute the remaining 5% (about $720,000) over the 20-year period. It is reasonable to expect that the County would have the funds, in combination with other sources such as CALTRANS grants, to provide for the matching contributions shown on Table 4-2.

There are two elements of the recommended capital program on Table 4-2 which do not have estimated costs or funding sources:

- Land Acquisition—Certain land acquisition would be desirable in order to include runway safety areas within the Airport boundaries, and prepare for a potential future runway extension. While it is not certain when this would be required, it is a priority in terms of making the Airport more attractive to potential users. It is not possible to estimate the cost of this land acquisition at this time. However, it is believed that FAA would support such land acquisition, and would therefore provide grant funding up to 95% of the cost.

- Utility Improvements—As the Airport is developed, it is likely that utility improvements would be required (electrical, water, sewer, etc.). With general economic development in the eastern portion of Contra Costa County, such improvements may be undertaken which would make it easier for the Airport to "tie into" the existing utility systems. It is not possible to anticipate at this time what improvements may be undertaken for general County growth, and what cost-sharing arrangements will be developed. However, this is included on the capital improvement program as an item that needs to be considered by the County in the longer-term development of the Airport.

The capital improvements identified in Table 4-2 would provide for continued Airport development, and enhance the potential for new revenue-generating activities at the Airport. The Business Plan presented in Chapter 5 evaluates the impact on Airport financial operations of investing in improvements in connection with other potential business development opportunities.

Chapter 5

BUSINESS PLAN

Chapter 4 identified Airport capital improvements required to accommodate the forecast growth in aviation activity. Any development on the premises of the Byron Airport, including aviation and non-aviation development, shall comply with the Contra Costa County Airport Land Use Commission's *Airport Land Use Compatibility Plan* for the Byron Airport that is in effect at the time the development is proposed, and shall be subject to the applicable *Airport Land Use Compatibility Plan* land use compatibility zones in which the development occurs.

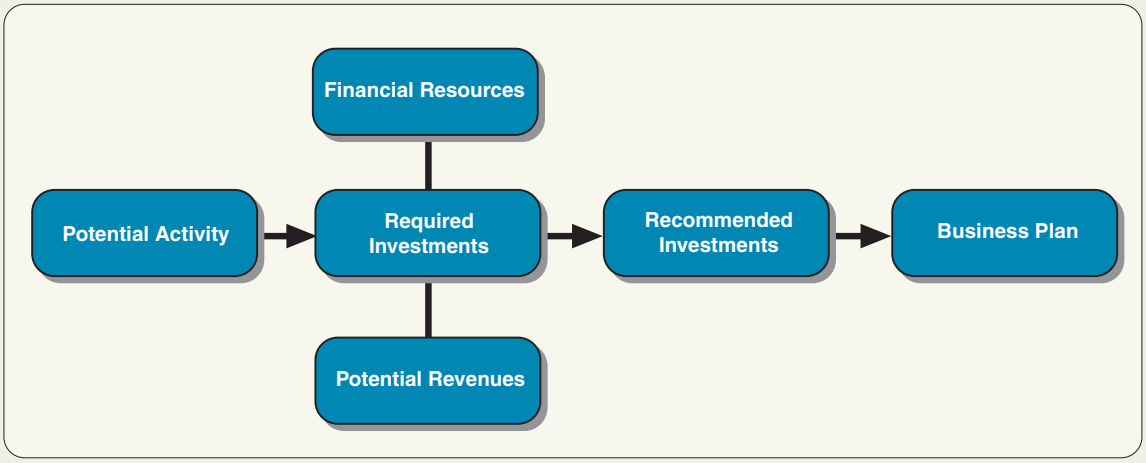
The primary objectives of the business plan presented in this chapter are to:

1. Identify potential business opportunities that could enhance the financial performance of the Airport enterprise (specifically by providing revenue generation in excess of investment requirement) and contribute to economic development in the region,
2. Evaluate alternative approaches to the business development process,
3. Provide a financial pro forma analysis identifying net financial implications of both (a) minimum required investments and (b) potential "high side" investments, and
4. Provide guidelines for business plan implementation.

Figure 5-1 illustrates the business plan concept—comprising identification of opportunities, evaluation of financial resources and tradeoffs, and guidelines for future investments.

Figure 5-1

BUSINESS PLAN CONCEPT



The following sections present information related to the development of a business plan for Byron Airport.

POTENTIAL OPPORTUNITIES

The potential opportunities for business development at the Airport relate first of all to the forecast aviation activity presented in Chapter 3, but also to other property development opportunities not necessarily directly related to forecast aviation activity. This section presents background information on business development at other comparable airports, as well as information related specifically to the potential at Byron Airport.

Typical Airport Business Development Track

In most cases, general aviation airports that have successfully developed business activities have followed an airport development "track" characterized by successive development of activities over time. While the pace and magnitude of development varies, it is generally the case that there is an incremental development of new activities and developments, each building on the success of the last.

Figure 5-2 illustrates a typical general aviation airport business development track, including examples of airports currently in the various stages of development.

Figure 5-2

BUSINESS DEVELOPMENT TRACK

Airport Development Track		
Basic general aviation - Recreational - Training	**Enhanced general aviation** - Corporate - FBO - Maintenance - Aircraft sales	**Non-aeronautical commercial** - Light industrial / warehouse - Retail / office - Hotel
Airport Status		
Byron Rio Vista Tracy	Livermore Morristown	Buchanan Field Hayward Scottsdale Stockton Van Nuys

The typical business development track is further described as follows:

1. The initial development comprises recreational and training operations using single-engine and multiengine aircraft, with basic hangar and tie-down facilities.

2. As aircraft operations and based aircraft increase, there is a requirement for support facilities, including fuel, fixed-base operators and specialty aviation companies.

3. As the airport develops significant aviation infrastructure, this supports more sophisticated types of general aviation, including air taxi and corporate activity, as well as limited regional passenger and air cargo activity.

4. Growth in aeronautical activity, often in conjunction with off-airport land development, gives rise to non-aeronautical commercial activity at the Airport.

This development track profile is important to keep in mind in developing the business plan for Byron Airport. In particular, there needs to be prioritization of realistic near-term opportunities that can lead to future developments.

In addition, the likely incremental development of opportunities over time needs to be related to the overall strategic objectives of the County with regard to Airport development. Certain actions may not produce significant Airport revenue in the near-term, but could contribute to future developments that would generate economic impact for the region surrounding the Airport. For example, investing in site preparation for warehousing or industrial park activity may not have an immediate payoff in terms of Airport revenue, but could enhance the possibility of developing more regional economic activity and cargo feeder services in the future.

Comparative Airport Development Case Studies

This section summarizes comparative airport developments, for airports that are at more advanced stages of their development track.

1. **Double Eagle II, NM.** Albuquerque International Sunport, the airport operator, has developed this 4,261-acre airport, including obtaining grant funding (in 2002) for $5.5 million of water and sewer infrastructure. In 2000, Eclipse Aviation selected the airport as their manufacturing site. The Airport is currently undertaking a commercial development plan to add additional non-aeronautical tenants and is reviewing marketing and land management options.

2. **Scottsdale, AZ.** Scottsdale Municipal Airport hosts the Scottsdale Airpark, which opened in 1984 and initially comprised 400 acres, expanded to 2,300 acres by 1997 and currently occupies a 2,700-acre site employing 44,000 people at 2,200 companies. In 2002, there were approximately 640 based aircraft at the airport, of which it was estimated that over 100 are business jets. Of these 640 based aircraft, approximately 120 are aircraft based in airpark lots with taxiway access. Key factors associated with Scottsdale's growth include:

   - The significant economic growth of the Phoenix MSA in the 1980s and 1990s;
   - Use of mixed commercial and light industrial development; and
   - The strong GA environment present in Arizona.

3. **Airpark Business Center, Hollister, CA.** This 90-acre private development (with a further 150 acres being added by other developers in the near future) offers land for sale and has just started marketing, and expects to charge a premium of between $2 and $4 per acre sold for lots with airport access.

4. **McClellan Business Park, CA**. McClellan Park LLC, comprising parties including Morgan Stanley and Industrial Realty Group, has developed.

5. **Morristown, NJ.** Morristown Municipal Airport, located west of New York City focuses on serving corporate jet aircraft. The airport has contracted with a private company to lease out hangar, office and fuel facilities, where tenants are able to purchase wholesale fuel.

6. **DuPage, IL.** DuPage Airport is a general aviation reliever for Chicago O'Hare International airport and the third busiest airport, in terms of operations, in Illinois. The Airport has 450 based aircraft, of which 90 are turboprops and corporate jets. DuPage is an example of a general avation airport that serves a large metropolitan area, that relies principally on aeronautical activity. There is an on-airport Flight Center that accommodates mainly aviation businesses and a proposed County Technology Park.

While the conditions at these case study airports are each unique, they provide useful examples of the types of development activities that could be pursued at Byron Airport.

Available Airport Property

In considering potential business development, it is important to understand the property that is available for development. A certain amount of airport property must be reserved for long-term aviation needs. Other property will be available for airport-related development that can contribute to airport enterprise financial performance.

The Airport has significant land available for development, as summarized in Table 5-1.

Table 5-1

LAND USE DATA
Byron Airport

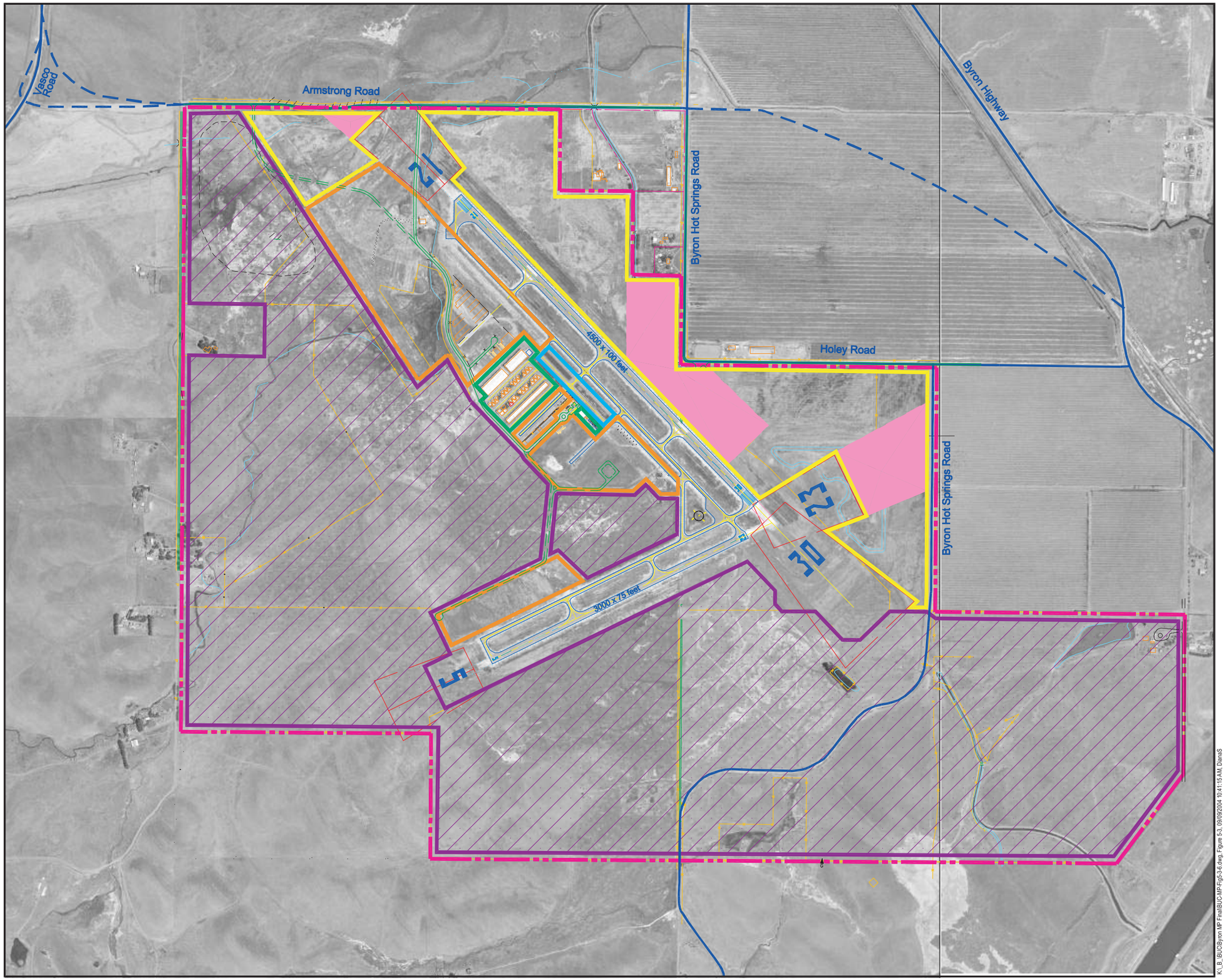
	Use	Size (acres)
Developed/unavailable	Aircraft storage	10
	Aircraft parking	4
	Biologically sensitive areas	814
	Airfield/other	258
	Subtotal	1,086
Undeveloped	Reserved for aviation use	96
	Reserved for airport-related use	125
	Subtotal	221
	Total	1,307

Source: Leigh Fisher Associates, 2004.

As shown, the amount of property reserved for future aviation use (96 acres) is substantially greater than the amount currently dedicated to aviation use (14 acres for aircraft parking and storage). Also as shown, the amount of property available for airport-related use (125 acres) is significant.

There will be no shortage of Airport property available for either aviation-related or other development opportunities. As a result, the County should aggressively market the property for the types of potential activities described below in the section "Potential New Business Activities."

Figure 5-3 summarizes the land use data shown in Table 5-1.



LEGEND

- Airport boundary
- Aircraft storage facilities
- Aircraft parking
- Reserved for aviation uses
- Reserved for airport related uses (secondary area)
- Biologically sensitive habitat
- Reserved for airport related uses
- Off-airport road
- Potential off-airport road development
- Proposed on-airport road
- On-airport road

N

500 0 500 1000
Graphic Scale in Feet

K:_B_IBUC\Byron MP Final\BUC-MP-Fig5-3-6.dwg, Figure 5-3, 09/09/2004 10:41:15 AM, DianaS

Figure 5-3

RECOMMENDED DEVELOPMENT PLAN

Byron Airport
November 2004

LEIGH FISHER ASSOCIATES

Regional Airport Competition

In developing the Airport business plan, management needs to consider the expected impacts of other regional airport development. Table 5-2 summarizes key regional competition parameters. As shown, certain competing airports are in superior economic growth environments and have closer proximity to freeways and other road access. In contrast, the Airport, while not currently in a significant economic growth environment and with limited ground access, does have significant available space.

Table 5-2

REGIONAL AIRPORT COMPETITION

Airport	Longest runway	Key parameters
Byron Airport	4,500 x 100	Available space
Concord Buchanan Field	5,010 x 150	Economic growth Freeway proximity
Hayward Executive	5,024 x 150	Economic growth Freeway proximity
Livermore Municipal	5,253 x 100	Economic growth Freeway proximity
Modesto City-County Airport	5,911 x 150	Economic growth Freeway proximity
Oakland International	10,000 x 150	Economic growth Scheduled airline service Freeway proximity
Stockton Metropolitan	9,650 x 150	Economic growth Freeway proximity
Tracy Municipal	3,680 x 100	Available space

Source: Leigh Fisher Associates, 2004.

Regional Development Conditions

As discussed in the earlier Chapter 3 (Aviation Activity Forecasts), the development of activity at Byron Airport is related substantially to conditions in the broader region surrounding the Airport. County decisions regarding regional growth and development will influence the demand for and interest in development of both aviation and non-aviation activities at the Airport.

Certain key regional development conditions are important to consider in relation to the likelihood of business development at the Airport:

1. Urban Development—The current Urban Limit Line, shown on Figure 5-4, restricts potential economic growth in the region around the Airport. However, it is expected that in the near-term there will continue to be opportunities for development within the Urban Limit Line. The current Urban Limit Line is due to be re-evaluated in 2010. An extension of the Urban Limit Line would permit additional development in the proximity of the Airport, which in turn would contribute to new business activities on the Airport.

2. Regional Utilities—The existing regional utilities (e.g., water and power) are sufficient to support basic growth in aviation activity at the Airport, but would not be sufficient to support significant new business development at the Airport. Airport development alone would not be sufficient to support the costs of regional utility upgrades. Broader regional development would make regional utility upgrades financially feasible, and would also support development of activities at the Airport. Figure 5-5 summarizes the required regional utility development.

3. Regional Road Network—The existing regional road network imposes constraints on development of activities at the Airport. As with utilities, broader regional development would be required to both (a) provide the impetus for road network improvements and (b) thereby support development of business activities at the Airport. Figure 5-6 summarizes the required regional road development.

Figure 5-4

URBAN LIMIT LINE

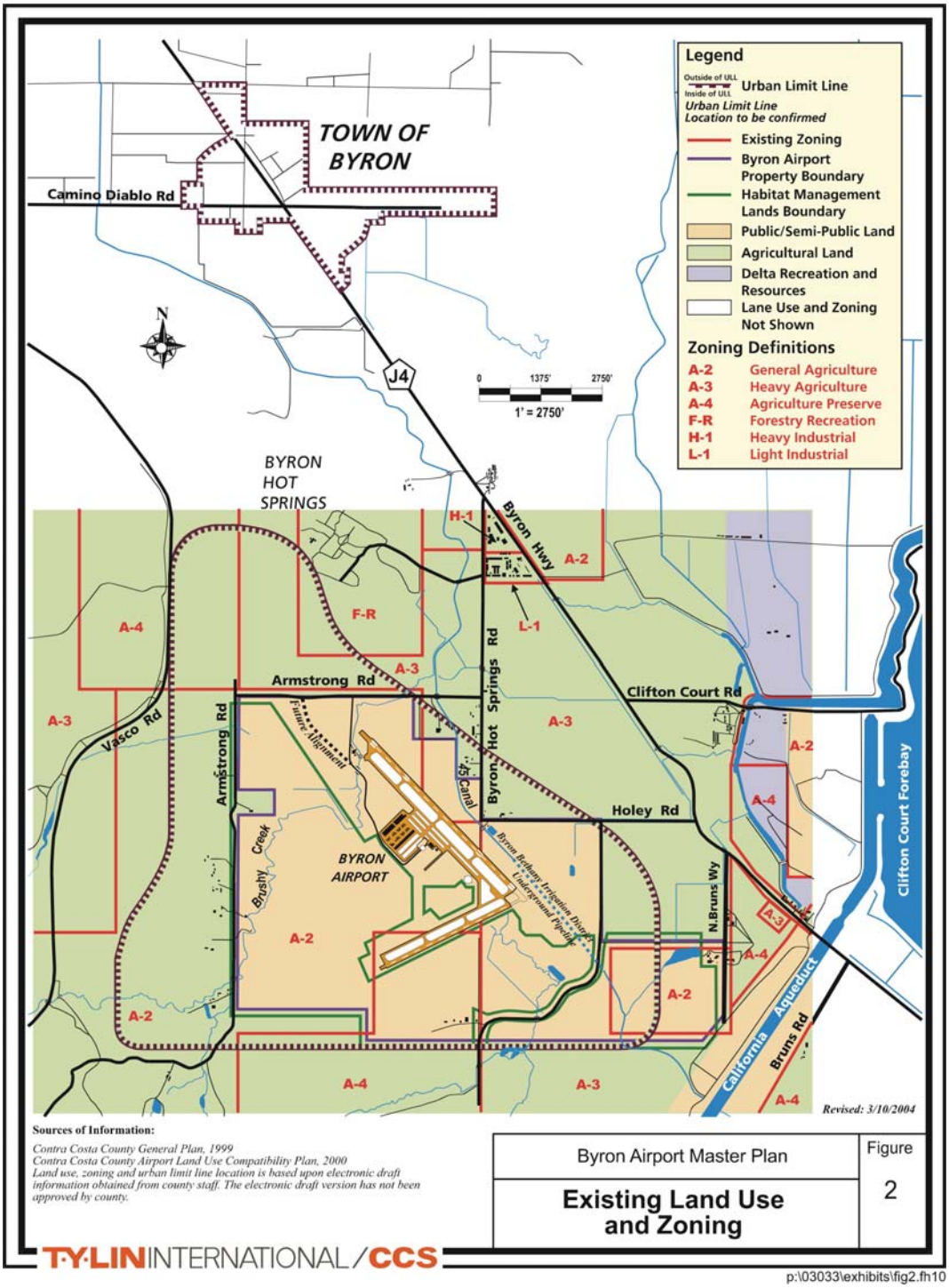
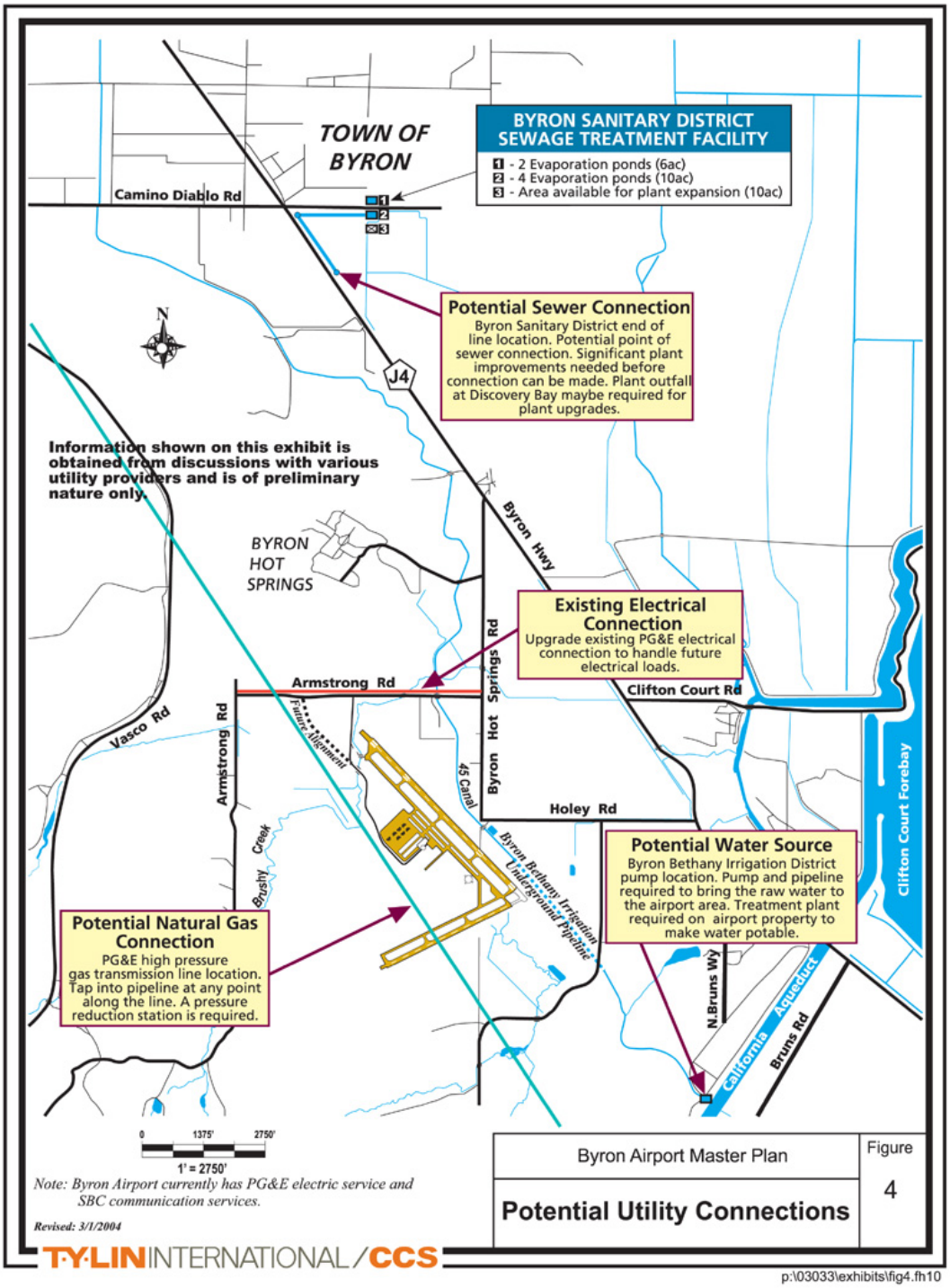
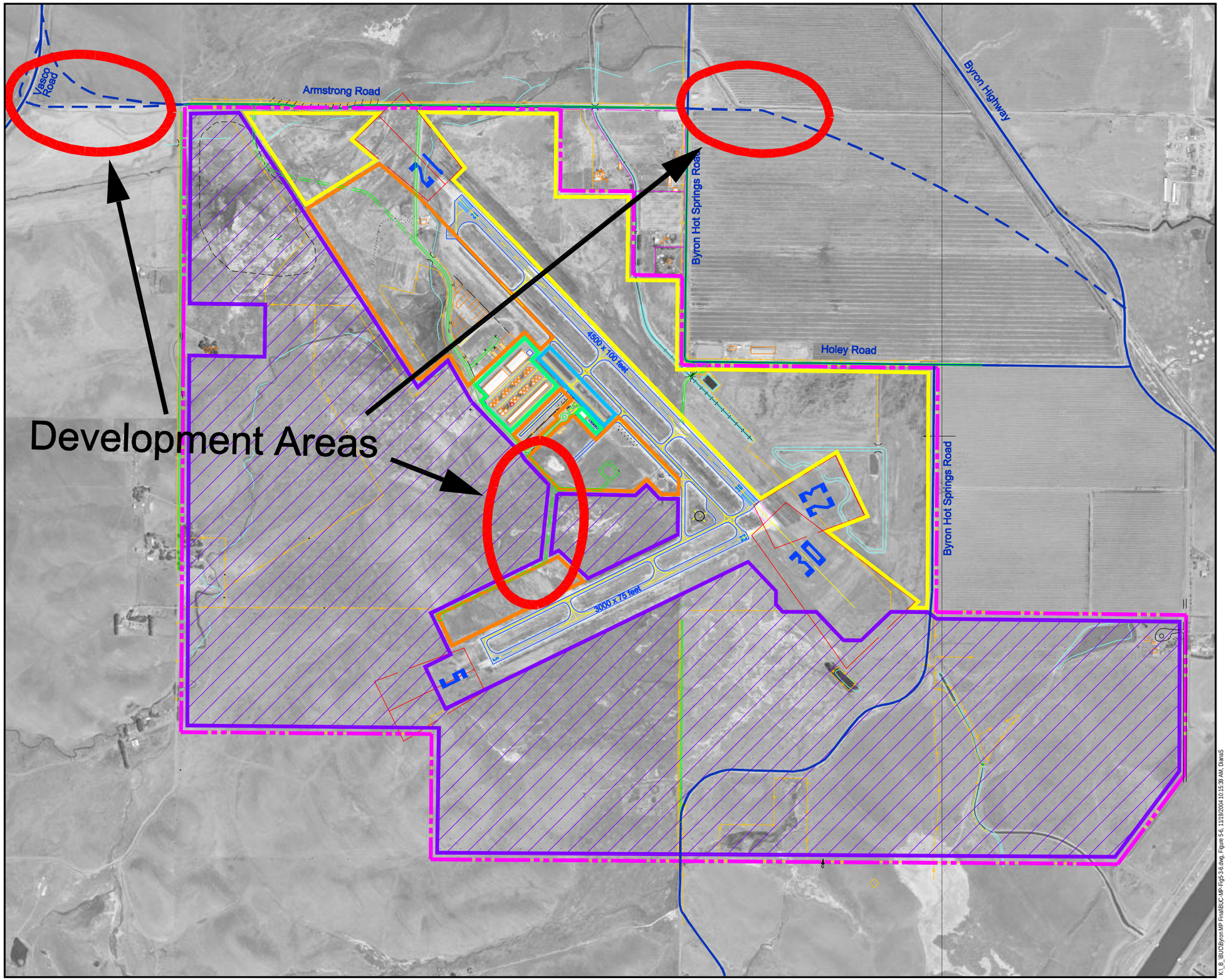


Figure 5-5

REGIONAL UTILITIES





LEGEND

- Airport boundary
- Aircraft storage facilities
- Aircraft parking
- Reserved for aviation uses
- Biologically sensitive habitat
- Reserved for airport related uses
- Off-airport road
- Potential off-airport road development
- Proposed on-airport road
- On-airport road

N

500 0 500 1000

Graphic Scale in Feet

Figure 5-6

REGIONAL ROAD DEVELOPMENT

Byron Airport
November 2004

LEIGH FISHER ASSOCIATES

K:_B_I\BJC\Byron MP Final\BJC-MP-Fig5-3-6.dwg, Figure 5-6, 11/19/2004 10:15:39 AM, DianaS

Potential New Business Activities

While there are certain challenges identified above (e.g., regional airport competition and local infrastructure), the Airport has the opportunity to benefit from new business activities that would contribute to both financial self-sufficiency and regional economic growth. There is considerable population growth occurring in the vicinity of the Airport, as well as a general "eastward migration" of San Francisco Bay Area business activities. In this respect, the Airport is well-situated geographically to benefit from potential new activities.

Potential new activities that should be targeted as part of an Airport business plan can be broadly categorized as either (1) aviation, or (2) nonaeronautical. These are discussed further below.

Aviation. Aviation-related opportunities include continued support for the existing general aviation activity at the Airport and potential new aviation services. Examples of particular business development targets are as follows:

1. Hangar Development—Hangar development for general aviation aircraft storage is a means of generating additional Airport revenue in response to growing demand. Many airports in the greater Bay Area are constrained in their ability to accommodate additional general aviation aircraft storage, and Byron Airport could capitalize on this condition. A later section of this business plan addresses alternatives for financing hangar development.

2. Fixed Base Operators—The development of full-service fixed-base operator (FBO) operations at the Airport is a means of both generating Airport revenue and attracting additional general aviation activity. This is particularly important for attracting the higher-end corporate aviation, as FBOs provide valuable service and maintenance functions desired by these users. FBO development could also be an advantage in attracting new commercial service such as cargo feeder service—an established FBO at the Airport could provide a "base of operations" for a cargo operator until such time as the cargo operator had enough business to warrant development of a stand-alone cargo facility.

3. Specialty Aviation Services—Basic aviation services such as aircraft fueling and maintenance are typically provided by FBOs. However, there are more specialty aviation services that could be attracted to the Airport. Examples include aircraft sales and specialized maintenance. With the potential for the development of higher-end corporate aviation activity at the Airport, there is also the potential for development of specialty aviation services that would cater to these higher-end users.

4. Air Cargo—It is not expected that there would be demand for significant air carrier cargo service at the Airport during the master plan horizon, but there could be development of cargo feeder service using turboprop or regional jet aircraft. In contrast to general aviation developments, the development of air cargo activity would likely be more important to regional economic growth objectives than to Airport revenue development. That is, new cargo activity would not necessarily result in significant new leasing of Airport property, but could result in additional jobs in the surrounding area and enhanced ability to attract new companies that rely on air shipping.

Nonaeronautical. Nonaeronautical opportunities are not directly related to aviation—that is, not involving the operation or service or aircraft—but may be indirectly related in terms of the attraction to an airport location. The earlier section of this chapter identified general aviation airports that have been successful in attracting nonaeronautical activity, such as industrial parks, warehousing, etc. This type of activity can contribute to both Airport revenue generation—the leasing of property not otherwise needed for aviation uses—and regional economic development—the attraction of new businesses. The development of nonaeronautical businesses on the Airport could also enhance the potential to realize additional aviation activity—for example, corporate aviation (conducting business at an Airport industrial park) or cargo (taking advantage of the co-location of business at the Airport).

The financial pro forma analysis presented in the next section identifies specific assumptions and financial implications of these potential developments.

FINANCIAL PRO FORMA ANALYSIS

This section presents a pro forma analysis of the potential revenue development from new activities at the Airport that could contribute to (a) greater financial self-sufficiency and (b) support for broader regional economic development initiatives.

Property Development Assumptions

Nonaeronautical property development analysis, particularly where there is no existing development track record, requires development of assumptions to support a financial pro forma analysis. Table 5-3 shows high and low case property absorption assumptions.

Table 5-3

PROPERTY ABSORPTION ASSUMPTIONS
Byron Airport

Development type	Year	Approach	Surface area (square feet) High case	Surface area (square feet) Low case
FBO and specialty aviation lease	2008	Third party	150,000	--
	2013	Third party	150,000	150,000
	2018	Third party	150,000	--
Hangar lease	2008	Third party or airport operator	110,000	--
	2013	Third party or airport operator	110,000	110,000
	2018	Third party or airport operator	110,000	--
Air cargo facility	2013	Third party	110,000	--
	2018	Third party	110,000	--
Nonaeronautical	2023	Third party	598,000	78,000

Source: Assumed by Leigh Fisher Associates, July 2004.

High and Low Case Assumptions

The assumptions for each case comprise:

Low End (Status Quo)

- No change in regional development conditions
- No change in regional utilities and road infrastructure
- Modest growth in Airport aviation activity
- Limited interest in nonaeronautical development

High End

- Regional policy changes permitting and enabling development in the Airport environs
- Development of regional utilities and road infrastructure
- Higher growth in Airport aviation activity
- Significantly more developer/investor interest in nonaeronautical activities

Rationale Behind Assumptions

The following section describes the rationale behind the key assumptions.

Aeronautical Absorption Rates. The aeronautical absorption rates are assumed based on what could be considered a reasonable time interval for the development of each type of aeronautical facility. The size of each facility is assumed on the following:

- Fixed base operator and specialty aviation lease. It was considered reasonable that each lease should be about 3 acres (about 150,000 square feet), a typical area for a medium-sized facility of this type.
- Hangar lease. 110,000 square feet was estimated to be reasonable for an approximately 30-space row hangar or T-hangar development.
- Air cargo facility. 110,000 square feet was estimated to be reasonable for an air cargo feeder facility lease, which would comprise apron space for two regional/commuter aircraft (e.g., Cessna C-208), a sort shed, office and parking space.

Nonaeronautical Absorption Rates. It is assumed in the high case that there would be significant economic development in eastern Contra Costa County, whereas in the low case it is assumed that the economy of this area would not grow significantly beyond its current level, i.e., principally agricultural activity with little commercial activity. The assumed absorption rate was 5 acres and one acre annually in the high and low cases, respectively. The evolution of county-wide economic and urban development policies will impact the potential for or likelihood of realizing either the high case or the low case.

Ground Rental Rates. Typical ground rental rates for general aviation airports were used in developing the financial projection of Airport revenues.

Financial Projections

Based upon the above assumptions, together with the high and low projections of aircraft operations shown in Chapter 3, Table 5-4 and Figure 5-7 summarize projected high and low revenue.

Table 5-4

PROJECTED REVENUE RANGE
Byron Airport
(2003 dollars)

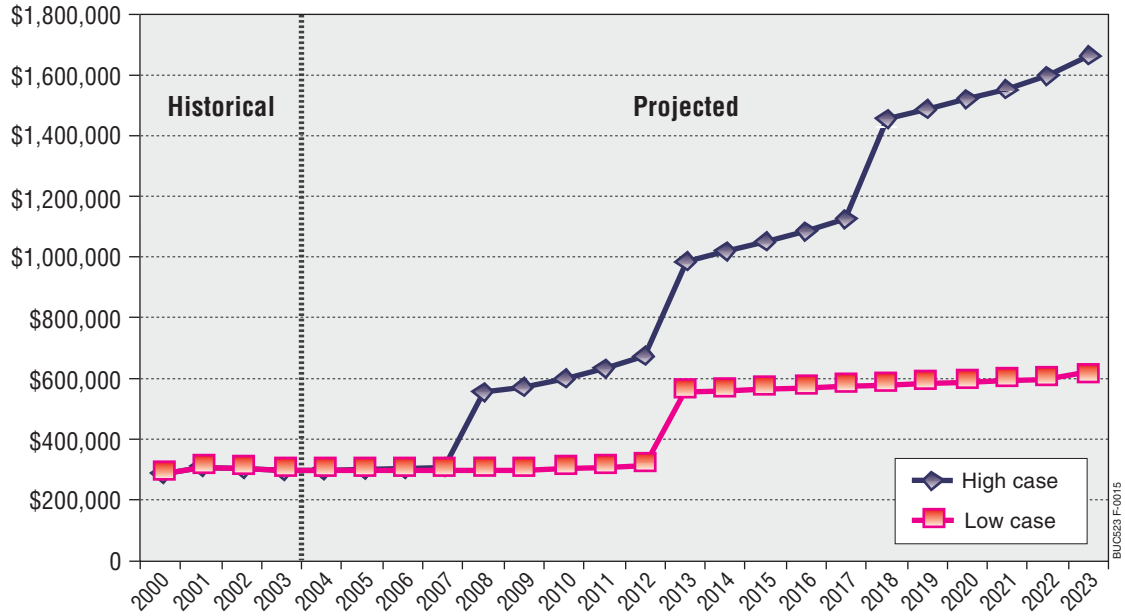
Revenue category	Historical 2003	Projected 2008	Projected 2013	Projected 2023
HIGH CASE				
Aeronautical				
Landing fees	$ --	$ --	$ 2,600	$ 27,000
Fuel flowage	95,054	110,600	127,800	152,500
Aircraft storage	124,439	285,500	446,600	608,100
FBO/specialty rental	--	75,000	150,000	225,000
Air cargo facility	--	--	33,000	66,000
Other aeronautical	59,470	62,400	65,600	69,700
Subtotal	$278,963	$533,500	$ 825,600	$1,148,300
Nonaeronautical	18,980	39,600	197,100	522,800
Total	$297,942	$573,100	$1,022,700	$1,671,100
LOW CASE				
Aeronautical				
Landing fees	$ --	$ --	$ --	$ --
Fuel flowage	95,054	96,200	98,600	102,200
Aircraft storage	124,439	124,500	284,400	284,800
FBO/specialty rental	--	--	75,000	75,000
Air cargo facility	--	--	--	--
Other aeronautical	59,470	59,700	60,200	60,600
Subtotal	$278,963	$280,400	$ 518,200	$ 522,600
Nonaeronautical	18,980	21,100	42,800	87,400
Total	$297,942	$301,500	$ 561,000	$610,000

Source: Historical: Contra Costa County Airports, 2004.
Projected: Leigh Fisher Associates, June 2004.

Figure 5-7

HISTORICAL REVENUES AND PROJECTED REVENUE RANGE

Byron Airport



Application of Revenues

Figure 5-8 summarizes low case projected revenues compared to the current level (2003) of O&M expenses, and Figure 5-9 summarizes high case projected revenues compared to the current level of O&M expenses. As shown, the low case, which assumes no significant revenue development at the airport, would not support a significant amount of new investment. The high case revenue assumptions, however, would support the potential to finance new developments.

Although we need to consider the entire Airport System financial enterprise, an objective should be to develop revenue-generating activities at Byron to support required investments there.

The next section discusses strategies to plans to implement possible business development.

Figure 5-8

LOW CASE APPLICATION OF REVENUES

Byron Airport

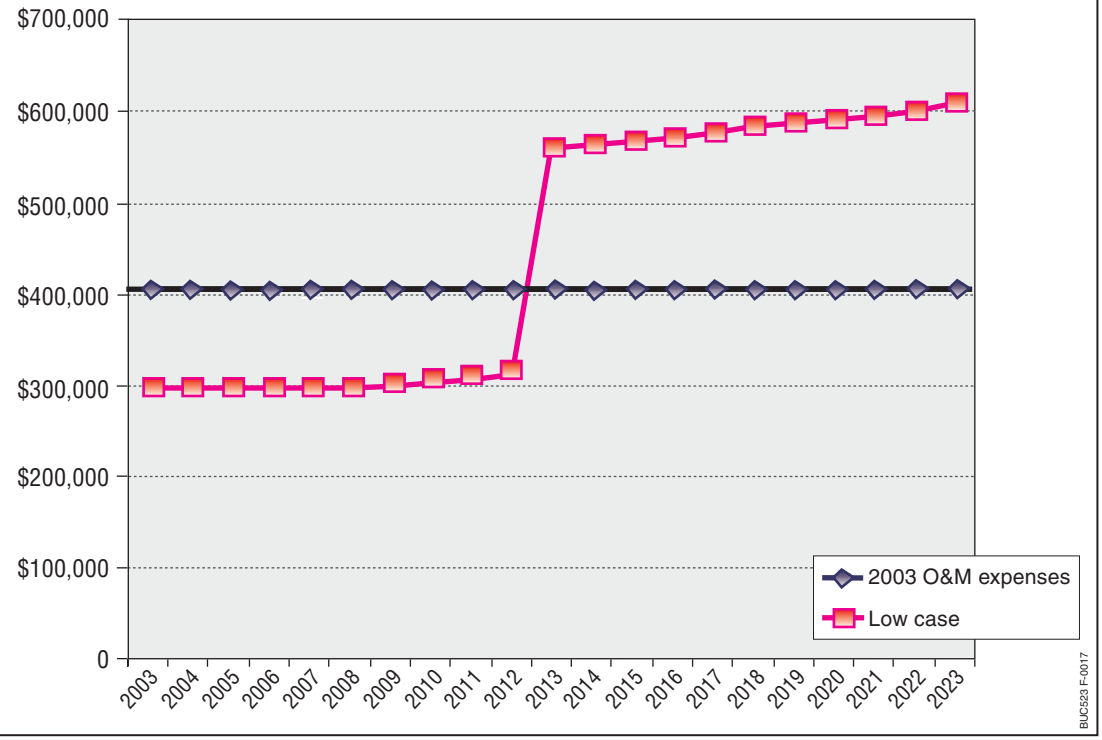
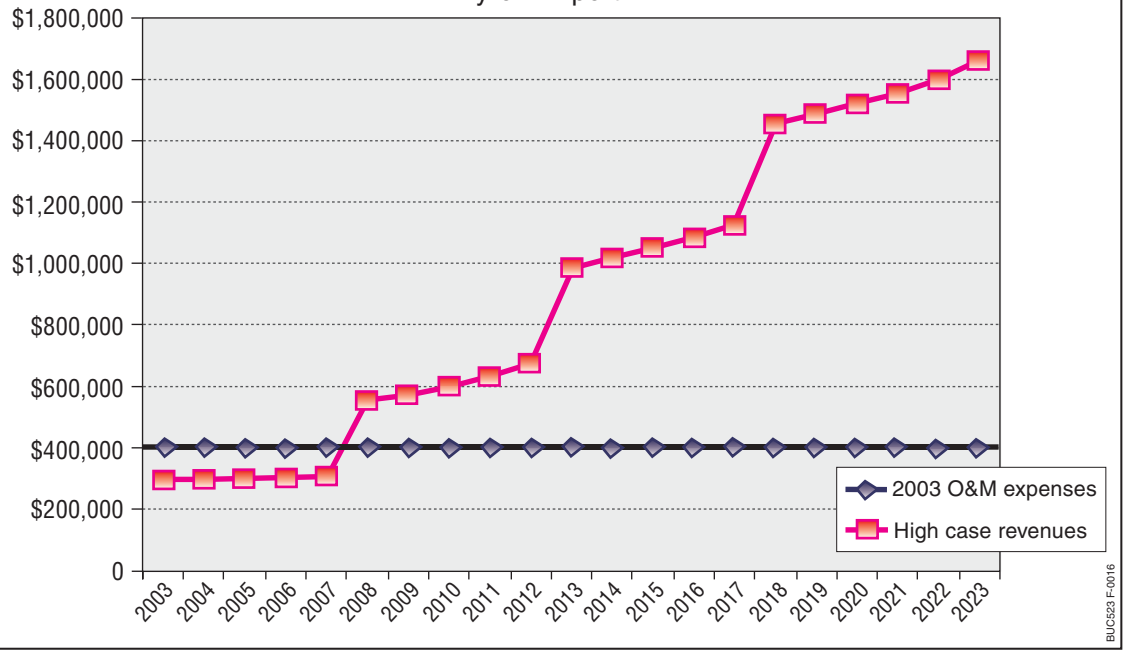


Figure 5-9

HIGH CASE APPLICATION OF REVENUES

Byron Airport



BUSINESS DEVELOPMENT MANAGEMENT AND IMPLEMENTATION PLAN

Representative Implementation Plan

Figure 5-10 summarizes a typical business development implementation plan. As discussed earlier, given the uncertainty associated with regional economic development, it is important to have a flexible implementation plan that allows the County to respond to business development opportunities as they arise. Key components of the implementation plan include:

1. Initial market research
2. Site analysis, including assessment of inventory, land use, utilities issues
3. Financial analysis, including the pro forma analysis; and
4. Lease analysis.

It is recommended that the County develop a proactive approach to business development, which includes identifying investments and approaches that could generate new revenue and activity that would otherwise not occur. The first implementation task of the Byron Airport Master Plan should be the rezoning of the Airport to *Planned Unit Development* to provide a zoning code that supports the goals and strategies of the Master Plan.

Potential Developer Support

There are potential developers who would likely have an interest in conducting aeronautical and nonaeronautical development. Examples of such developers, many of who have significant on-Airport experience, are listed below.

1. **AFCO.** AFCO focus on air cargo facility developments, a recent example being a new facility at Baton Rouge Metropolitan Airport, with the objective of encouraging service through facility improvements.
2. **Aeroterm.** Aeroterm provide development, leasing, property management and construction for air cargo, fixed base operator, hangar, flight kitchen, office and ground service equipment facilities. They also provide equity investment, lending and hybrid capitalization for transactions. Aeroterm have grown their business from acquiring and refurbishing smaller buildings, at smaller airports, to more significant developments such as the recent acquisition of a 1.2 million square foot development at Ontario International Airport, and also operate facilities at airports serving Austin, Fort Myers, New Orleans, Norfolk, amongst others.

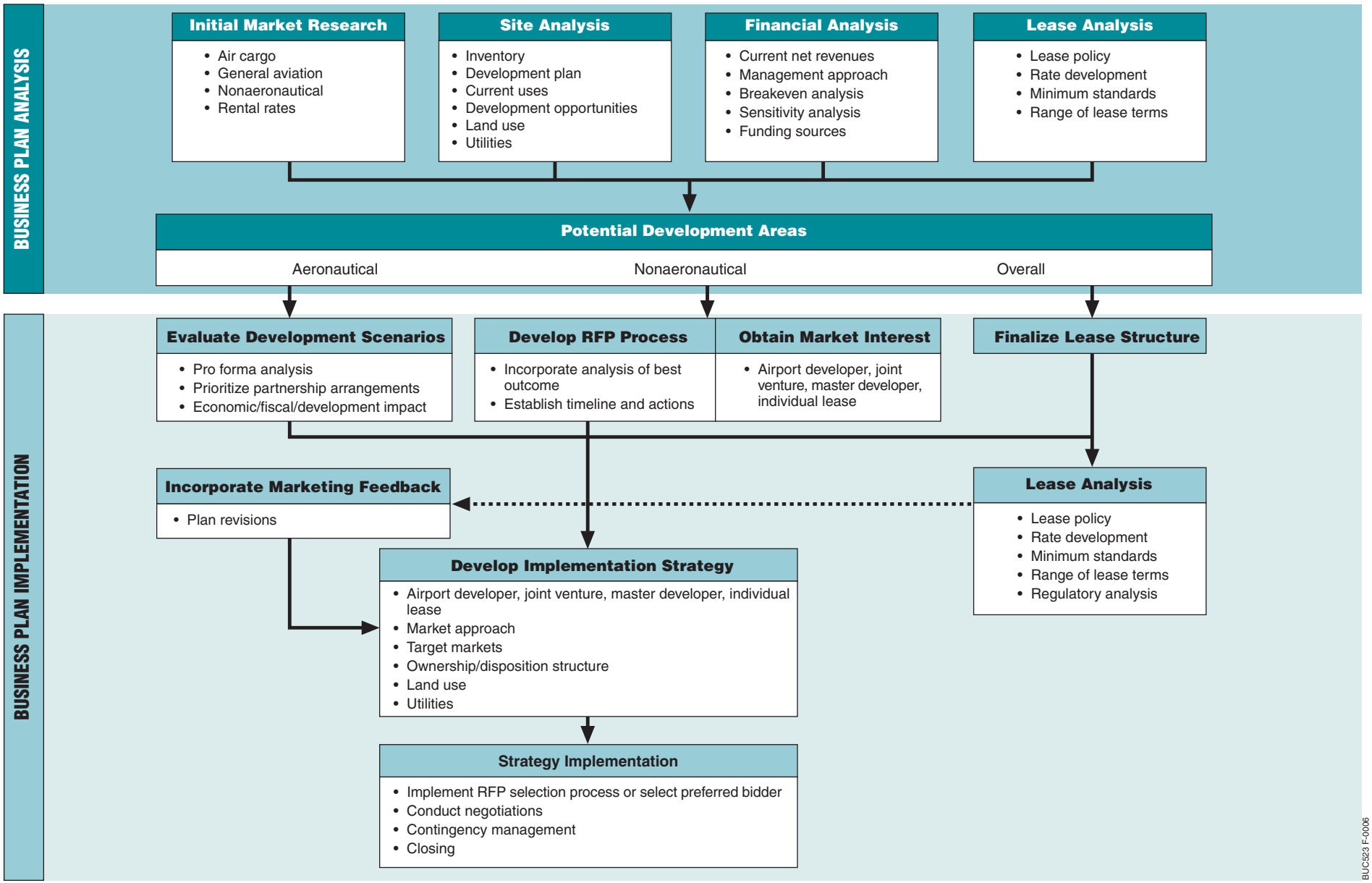


Figure 5-10

BUSINESS DEVELOPMENT IMPLEMENTATION PLAN

Byron Airport

September 2004

LEIGH FISHER ASSOCIATES

3. **The Lynxs Group**. The Lynxs Group is developer of distribution space emphasizing in on airport facilities, including services and management related to these facilities. Lynxs operate at airports including Anchorage, Austin, Sacramento Mather, March GlobalPort, Stewart. Lynxs' approach at the former March Air Force Base was to form a public/private partnership with the municipality, undertaking marketing and regulatory work and attempting to develop the manufacturing base, to which end Phillips Electronics were attracted as a tenant. No air service has yet been developed at the Airport.

4. **Colliers International Property Consultants, Inc.** Colliers are a commercial real estate consulting firm, providing property representation/agency, development, project management and consulting services, amongst others. Colliers work with the Scottsdale Airpark and were recently engaged by Eagle Mountain Properties to develop airpark properties and nonaeronautical land surrounding the Jake Garn Airport near Provo, Utah.

5. **Trammell Crow Company.** Trammell Crow is a real estate services firm providing services including building management, brokerage, and development and project management. Their Airport group has developed facilities including office buildings, air cargo facilities, industrial build-to-suit facilities, foreign trade zone developments, air freight forwarder complexes and maintenance hangars. They have developed air cargo facilities at airports serving Dallas, Houston and Portland.

6. **Airport Property Specialists.** Airport Property Specialists, based at Scottsdale Airport, specialize in airport and airport real estate, ranging from services in sales and leasing of office, industrial, and hangar space, tenant representation, property management, development and construction, and consulting. Many of their clients include general aviation airports and fixed based operators and specialty aviation companies.

7. **McCuen Properties.** McCuen Properties is the marketing firm for Mather Airport, purchasing and developing principally business park properties at that airport. A recent development is a 36-acre business park, where the developer purchased land and the County of Sacramento will make utilities and frontage improvements, including concrete curbs, gutters, sidewalks and street lighting.

Management Issues

Business Development Approaches. There is a range of approaches that can be used to support airport business development. The main choice is whether to continue direct management of Airport properties or to employ a master developer or real estate agent for nonaeronautical commercial properties.

Table 5-5 summarizes the main airport development approaches, which comprise either an airport management approach, where Airport management would develop, lease and supervise land parcels, or a private developer approach, where the Airport would lease out or contract out the management of the land to a private developer.

Table 5-5

AIRPORT DEVELOPMENT APPROACHES

	Task complexity	Risk/reward ratio	Airport control	Examples
Airport develops, leases and supervises parcels	High	High	High	Buchanan DuPage Provo
Private developer	Low	Low	Low	Brown Field *(a)* Morristown Scottsdale

(a) Privatization, not implemented.

The primary advantages to the airport management approach are:

- Direct County Airport management control over projects.
- Increases potential returns to County (but with some risk).

The primary advantages to the developer approach are:

- Reduces task complexity through delegation of certain tasks to the developer.
- Reduces risk to County.
- Reduces or eliminates requirement for up-front capital investment by the County.

Management Issue Example: Hangar Development. As part of the business plan analysis, a breakeven analysis was conducted for a potential hangar development to assess different management approaches. A hangar development was selected given that:

- In general, there is a shortage of hangar space in the Bay Area, and therefore it would be more likely that demand would occur for such a facility;

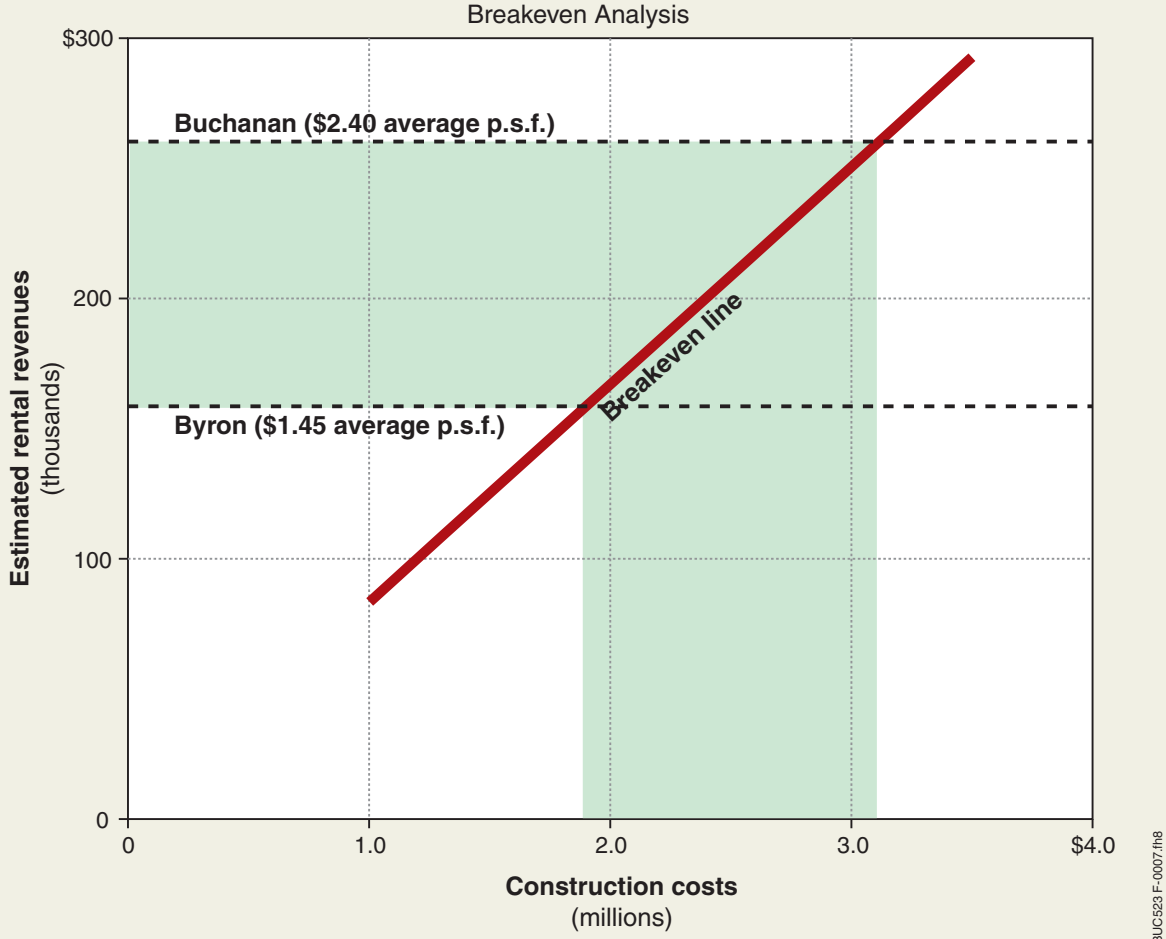
- Hangar development is a common initial step along the airport business development track, generating additional based aircraft that may in the future require further support facilities.

Figure 5-11 summarizes the results of a breakeven analysis for a hypothetical 30-space row or T-hangar development. As shown, assuming that the County could lease the development at an improved ground rental rate of between $1.45 and $2.40 per square foot (the improved ground rental rates for FBO facilities at the Airport and Buchanan Field, respectively), then construction costs of between approximately $1.9 million (at the $1.45 per square foot rate) and $3.1 million (at the $2.40 per square foot rate) would result in a breakeven for the County.

Figure 5-11

HYPOTHETICAL 30-SPACE T-HANGAR DEVELOPMENT

Breakeven Analysis



Potential Incentives. To increase the likelihood of new business development, the County could consider incentives for business interests that may wish to develop activity at the Airport. There is precedent for these types of incentives at both commercial-service and general aviation airports in the United States. Incentives can take various forms, and can be broadly categorized as either (a) "direct" financial incentives, or (b) "indirect" incentives. Direct incentives involve providing a financial payment or benefit, such as: assisting with marketing, tax breaks, or reduced rent. Indirect incentives are less tangible financially, and examples include: favorable lease terms (e.g., first right on option to develop additional property), and exclusivity of business opportunities. Any potential incentives need to be considered in the following context:

1. Do the incentives produce activity that would not otherwise occur? It is obviously not advisable to provide incentives that simply lower the cost for businesses that would otherwise have chosen to develop activity at the Airport.

2. Do the incentives "pay their way"? That is, is the value of the incentives more than offset by the value of new business activity?

3. What is the impact on timing of activity? That is, if incentives simply accelerate the timing of developments that would otherwise occur later, is it worthwhile economically to invest in this acceleration?

There is no "single answer" to the question of using incentives to attract new business activity. Each potential development needs to be evaluated in relation to the considerations listed above. However, the County's objectives will influence the evaluation of potential use of incentives. Greater emphasis on regional economic development objectives will translate into a desire to be more liberal in the use of incentives to attract new businesses. The use of direct or indirect incentives should be assessed for improving the marketability of the Byron Airport.

Off-Airport Development Issues

As discussed earlier in the section "Regional Development Preconditions," other key off-Airport development issues that could affect the business plan include:

- Development of off-Airport utilities; specifically, these utilities developments would comprise:

    1. Electrical: upgrade existing connection

    2. Communications: install cable and switch

    3. Natural gas: tap pipeline and construct pressure reduction station

4. Water: pipeline extension and treatment plant

5. Sewer: pipeline extension and plant upgrade

- Development of the regional road structure, specifically (1) Vasco Road, which provides connection to the south of the Airport (which would include the Armstrong Road connection to Vasco Road) and (2) Highway 4, which provides connection to the north of the Airport.

- Potential changes to the Urban Limit Line (ULL), which could permit more rapid economic development in eastern Contra Costa County.

While these issues are not exclusively the responsibility of the Airport, they are integral to potential Airport development, and therefore to the broader objective of regional economic development. Therefore, these issues must be considered as an important component of the Airport business plan.

Recommendations related to off-Airport development include:

1. Coordinate with County agencies to determine ways to bring improved utilities to the Airport in a manner that would be consistent with overall County growth objectives. For example, if electrical upgrades are necessary for general growth in population and business activity in the eastern region of the County, work with the appropriate County agencies to ensure that there is an efficient and cost-effective way to further extend electrical utilities to key Airport sites to support potential new development. Also, develop cost-sharing proposals that would be reasonable for both off-Airport and on-Airport beneficiaries.

2. Participate in discussions of regional road improvements in order to advance the interests of the Airport in developing improved access.

3. Continue collaboration with relevant parties relative to potential modifications to the Urban Limit Line in 2010. The key objective would be to identify modifications that would permit additional commercial development in the vicinity of the Airport and therefore enhance the potential for the Airport to attract new businesses to support such commercial development.

Implementation Action Plan

This section summarizes the transition from analysis to an action plan. As shown earlier on Figure 5-10, the County has completed the Business Plan Analysis phase of the implementation plan and is ready to start the Business Plan Implementation

phase. Key initial actions at this stage would build on the analysis described earlier in this chapter and include:

- Evaluate development scenarios, including the financial impacts to the County of the various business development approaches and categories of aeronautical and non-aeronautical development. This would include confirming the preferred approach in terms of either (a) County development, (b) third-party development, or (c) a blended approach.
- Determine appropriate development parameters, considering factors such as utility/infrastructure constraints.
- Determine preferred developments in relation to: (a) activities that would support aviation development at the Airport and (b) activities that would contribute to general regional economic development.
- Obtain market interest and/or develop an RFP process. This would include an ongoing development marketing effort, whether through active solicitation or development of longer-term relationships with interested parties. Ways to maintain an effective ongoing marketing process adjustable to the business environment at the time could include:
    a. Develop a market attraction program, designed to produce information required to inform and generate interest.
    b. Issue periodic RFPs for the best prospect developments in the short-term. The County could issue RFPs semi-annually for developments that at the time are considered to have the highest likely demand and economic value to the Airport. At present, these developments would be hangars, followed by FBOs.
    c. As an alternative to an RFP process, the County could contact or advertise to known airport businesses that may have an interest in either moving to the Airport or establishing an additional business there. The County may make use of its existing network of aeronautical and non-aeronautical business relationships through its ownership of Buchanan Field.
- Consider possible incentives to developers for initiation of new on-Airport activities. This would include evaluating the returns in relation to the value of incentives.
- Incorporate marketing feedback to refine the assessment of market interest and/or RFP development process.
- Complete the lease analysis and finalize the lease structure for expected developments.
- Develop the implementation strategy.