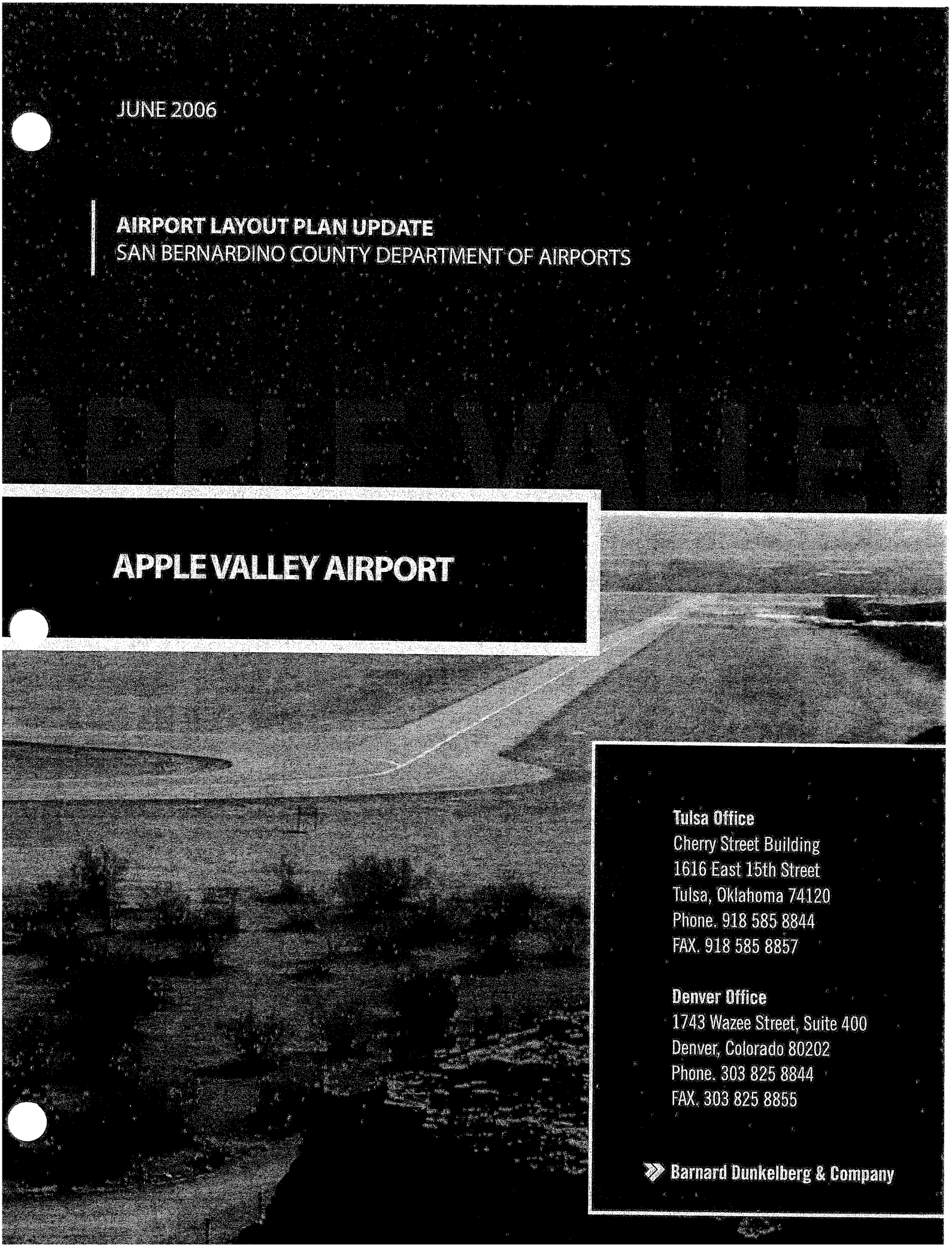

JUNE 2006

AIRPORT LAYOUT PLAN UPDATE
SAN BERNARDINO COUNTY DEPARTMENT OF AIRPORTS

APPLE VALLEY AIRPORT

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Contents

Noise Analysis

Airport Plans and Development Program

Tables

Illustrations

Inventory ■ INTRODUCTION.

Apple Valley Airport is a general aviation airport located in the Town of Apple Valley, California, providing aviation services to the High Desert Corridor of San Bernardino County (from the San Bernardino Mountain's Cajon Pass on the south to the City of Barstow on the north). The region has experienced tremendous growth during the past two decades, which will persist as the area continues to attract residents and businesses.

The region has a reputation of being the premier residential community with affluent executive housing. To some degree over the past few years, development emphasis has shifted to include commercial and industrial development, which has brought about a more balanced local economy. Current development plans include the creation of a new industrial park that will surround Apple Valley Airport, in addition to a heightened focus to recruit business to commercial locations in the region. The Airport and its associated aviation-related businesses and facilities represent a vital and significant regional economic asset.

The previous *Airport Master Plan* was completed in 1992. Since that time, several changes have occurred within the aviation industry on a local, regional, and national level that impact the aviation facilities and services provided at the Airport. These changes necessitate a re-evaluation of the airport's needs through an analysis of current and future operational characteristics and facilities.

The requirement for future facilities will be evaluated not only from the standpoint of aviation needs, but also from the relationship of airport facilities to the surrounding land uses and the community as a whole.

The process to update an Airport Layout Plan (ALP) begins with this *Inventory* Chapter that examines the existing airport facilities (i.e., runways, taxiways, hangars, ground access, etc.) and the airport environs. Airport forecasts are also developed detailing both the existing and anticipated aviation activity, along with an evaluation of the airport facilities' ability to meet the projected aviation demand in a safe and efficient manner. Development alternatives will be analyzed and presented, as will the airport plans and the estimated costs of development.
The communities within the High Desert Corridor have a total regional population of more than 200,000 residents. The Town of Apple Valley has a population of 56,369 residents (according to San Bernardino Associated Governments), while San Bernardino County has a population of 1,709,434 residents (according to the San Bernardino Associated Governments).

The Airport is located approximately 80 miles northeast of the Los Angeles metropolitan area, 150 miles north of San Diego, and 190 miles south of Las Vegas (see the following figure entitled *AIRPORT LOCATION MAP*). The County Seat (the City of San Bernardino), is located approximately 40 minutes from Apple Valley by automobile.

AIRPORT ROLE AND FACILITIES

The San Bernardino County Department of Airports provides for the management, maintenance, and operations of the six county-owned airports, including Apple Valley Airport. Apple Valley Airport is located in the northeast section of the town, approximately four miles east of Interstate 15 and three miles north of State Route 18 (see the following figure entitled *AIRPORT VICINITY MAP*).

- **Airport Reference Point (ARP): Latitude 34° 34' 31.200"N, Longitude 117° 11' 10.300"W** (Source: *Airport Master Record* effective date: 09/04/2003).
- **Federal Aviation Administration (FAA) Site number 01248.1*A.**
- **National Plan of Integrated Airport Systems (NPIAS) classification: general aviation.**
- **Acreage: 773 acres.**
- **Elevation: 3,061.7 feet above mean sea level (AMSL).**
- **Mean Maximum Temperature of the Hottest Month (Victorville): 97.9°F (July).**

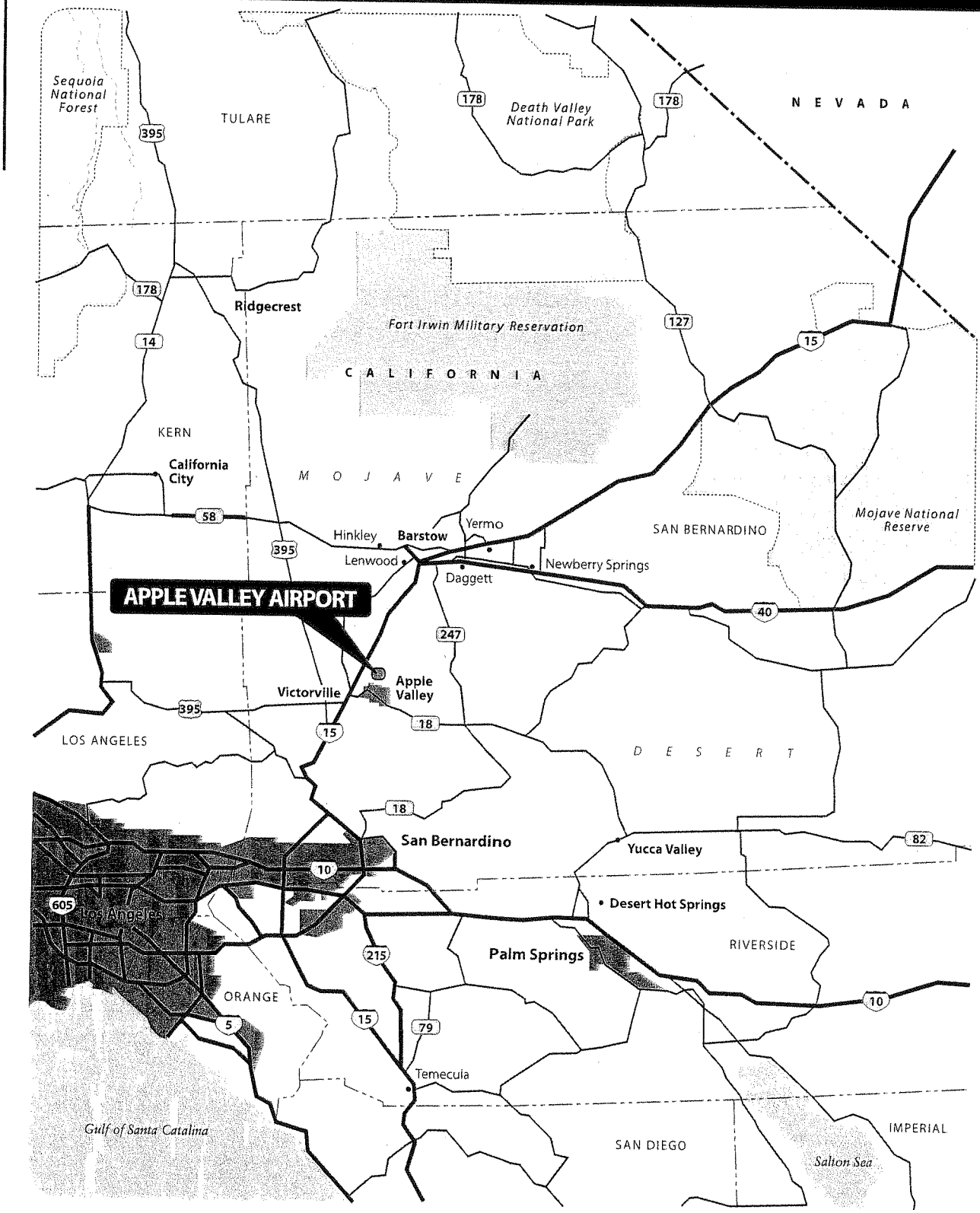


Figure A1 **Airport Location Map**

>> Approximate Scale 1" = 30 Miles

SOURCE: NATIONAL GEOGRAPHIC, THE AMERICAN ROAD ATLUS

APPLE VALLEY AIRPORT
AIRPORT LAYOUT PLAN UPDATE

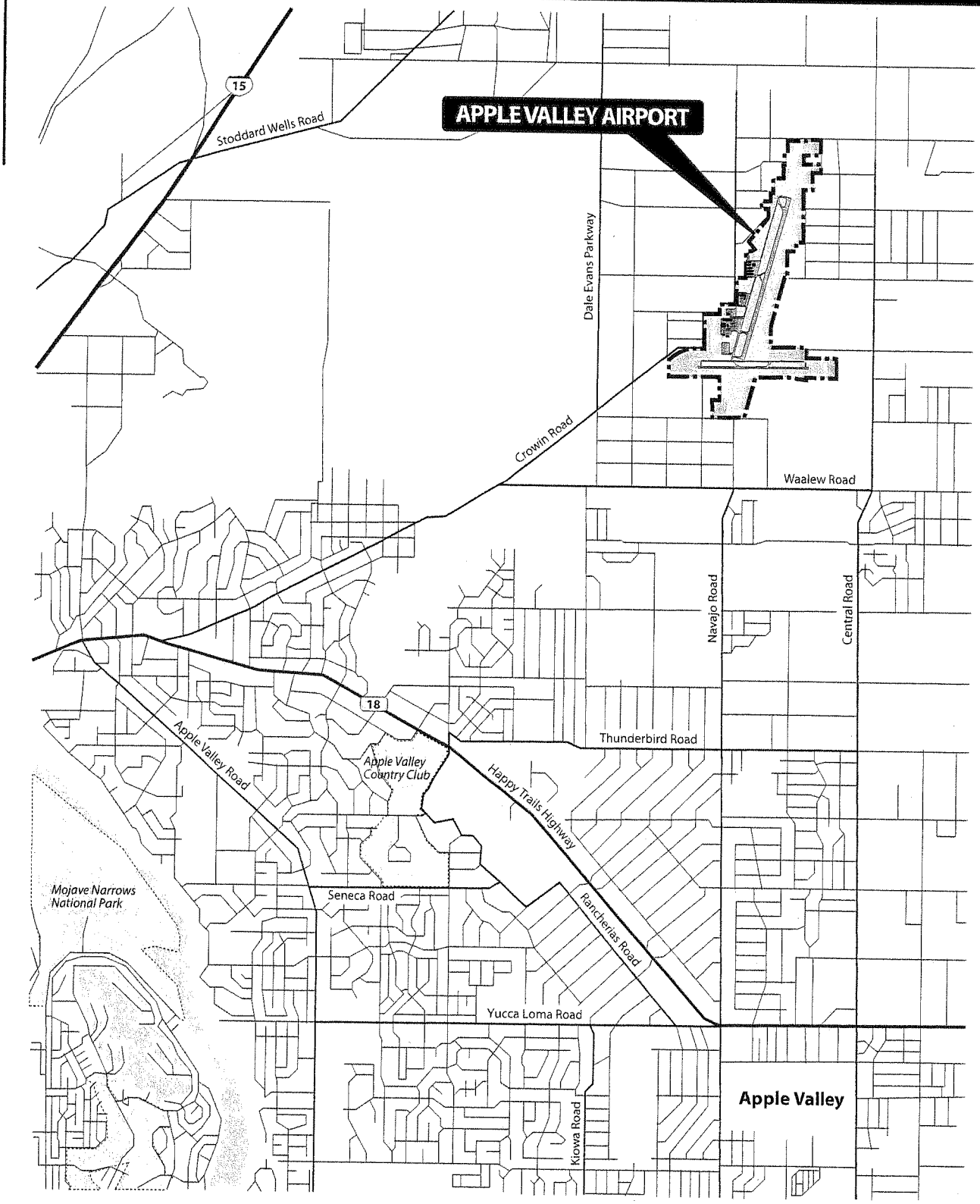


Figure A2 **Airport Vicinity Map**

>> Approximate Scale 1" = 1 Mile

SOURCE: MICROSOFT STREETS & TRIPS, 2004

APPLE VALLEY AIRPORT
AIRPORT LAYOUT PLAN UPDATE

Airside Facilities

Runway System. An illustration of airport facilities is included in the following figure entitled *EXISTING AIRPORT LAYOUT.*

The Airport has two runways:

- **Runway 18/36: 6,498 feet in length and 150 feet in width.**
- **Runway 8/26: 4,099 feet in length and 60 feet in width.**

Runway 18/36 is constructed of asphaltic concrete (AC) and has a gross weight bearing capacity of 70,000 pounds single wheel, 90,000 pounds dual wheel, and 150,000 pounds dual tandem wheel main landing gear configuration. Runway 36 has a displaced threshold of 600 feet. Runway 18/36 is equipped with Medium Intensity Runway Lights (MIRLs).

Runway 8/26 is constructed of asphaltic concrete (AC) and has a gross weight bearing capacity of 40,000 pounds single wheel, 60,000 pounds dual wheel, and 100,000 pounds dual tandem wheel main landing gear configuration. Runway 8/26 has an MIRL runway edge lighting system that is not utilized now.

Taxiway System. In addition to the runway, the airside facilities at Apple Valley Airport consist of a full-length parallel taxiway system that provides access between the runway surfaces and the landside aviation use areas.

The Taxiway A system is located on the west side of Runway 18/36 and connects to the terminal and general aviation aprons. It is constructed of asphalt, and has six exit taxiways. Taxiway A is 30 feet wide, except between Taxiways A6 and A7 where it is 60 feet in width. Connector Taxiways A1, A2, A6, and A7 are 60 feet in width, and Connector Taxiways A3, A4, and A5 are 30 feet wide.

The Taxiway B system is located on the north side of Runway 8/26 and provides access to the terminal and general aviation aprons. It is constructed of asphalt, and has four exit taxiways that connect to the runway. Taxiway B and its associated taxiway connectors are 35 feet wide.

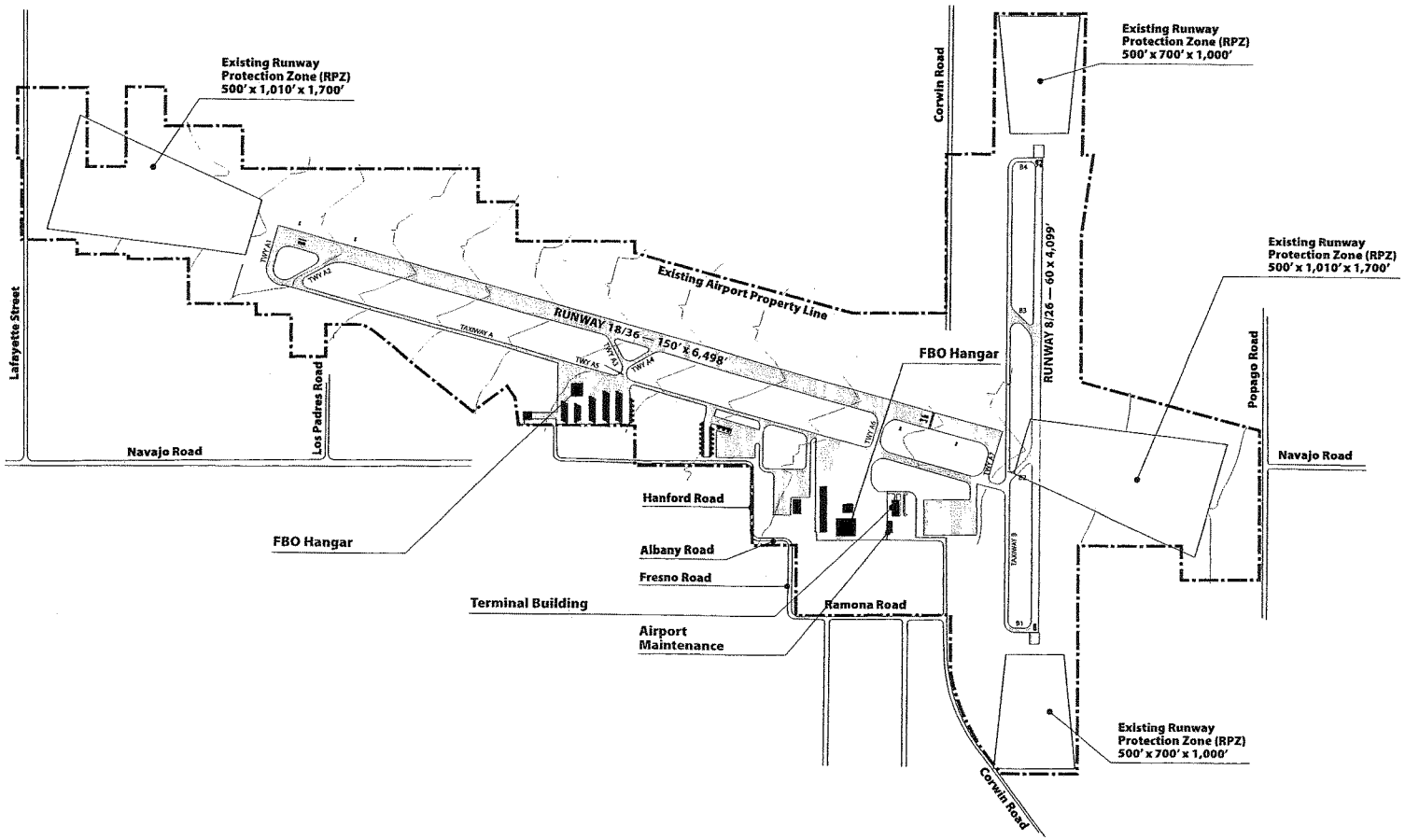


Figure A3 **Existing Airport Layout**

>> Approximate Scale 1" = 1,000'

SOURCE: 1992 AIRPORT LAYOUT PLAN (P&D AVIATION), AERIAL PHOTOGRAPHY.

APPLE VALLEY AIRPORT
AIRPORT LAYOUT PLAN UPDATE

Aprons. An aircraft apron, along with conventional hangars and T-hangars, is located north of the terminal building, adjacent to Runway 18/36. Additional aircraft parking aprons, along with storage hangars and Fixed Base Operator (FBO) facilities, are located further to the north, on the west side of Taxiway A.

Approaches. There is currently one published instrument approach procedure at the Airport, which is listed in the following table entitled *INSTRUMENT APPROACH PROCEDURES.*

Table A1
INSTRUMENT APPROACH PROCEDURES

Runway Designation	Runway Designation	Ceiling Minimums	Visibility Minimums
GPS	18	3,640 feet	1 mile

Source: *US Terminal Procedures Southwest (SW) Volume 3 of 4, March 20, 2003.*

■ Landside Facilities

Aviation Facilities. Aviation facilities at Apple Valley Airport include a terminal building (providing general office space for the San Bernardino County airports office and restaurant services), maintenance building, fuel facilities, and multiple aircraft storage facilities (hangars, T-hangars, and transient aircraft parking areas).

There are several aviation-related businesses, including Midfield Aviation, Apple Aviation, Aztec Aviation, and Flight Line Aviation, that operate on the Airport. FBO operators provide a large number of aircraft storage facilities, including T-hangars and conventional hangars, in addition to flight training, aircraft rental, and aircraft maintenance.

Support Facilities. The fuel storage facility contains one 12,000-gallon underground 100LL fuel tank, one 15,000-gallon underground Jet A storage tank, and one 12,000- gallon underground 80/87 fuel tank. All three storage tanks are owned by Aztek Aviation and are located north of the primary general aviation apron.

Vehicular Access and Parking. Airport access and parking facilities are located directly adjacent to Corwin Road, which provides the primary access between the Airport and the High Desert Corridor communities. Parking is supplied in a paved lot adjacent to the Terminal Building.

AIRPORT ENVIRONS

An understanding of the existing land uses, zoning patterns, and the various land use planning and control documents used to guide development of property surrounding the Airport is an important element in the airport planning process.

■ Existing Land Use

The Airport is located within the Apple Valley Town limits. The immediate area surrounding the Airport is used for a variety of purposes, primarily agriculture.

■ Existing Zoning

The Town of Apple Valley has implemented traditional land use zoning measures within its Town limits. A review of the Town Zoning Map (August 9, 2002) indicates that the majority of the Airport and its immediate vicinity is zoned Planned Industrial (I-P). The I-P district was established to provide for light industrial uses, research and development, and multi-tenant industrial buildings. The Airport also has several other adopted zoning designations:

- **Very low density residential (R-VLD)**
- **low density residential (R-LD)**
- **Estate residential (R-E)**
- **General Commercial District (C-G)**
- **Recreation Open Space (OS-R)**

The Airport has two Airport Overlay Districts (A-1 and A-2) and an Airport Master Plan-Safety Area district. Airport Overlay District A-1 includes the outer safety zone within the runway approach surface that conforms to the adopted Master Plan flight paths, which extend along the runway centerline from the ends of each of the runway surfaces. Airport Overlay District A-2 is based upon the traffic overflight zone that was described in the Apple Valley Airport Master Plan.

The basic shape of the zone is based on a 1,000-foot wide flight path, expanded from the centerline of the runway ends. The Town of Apple Valley Development Code 2000 states that "particularly hazardous land uses should be prohibited in all designated airport overlay zones." The Airport Master Plan-Safety Area defines the Runway Protection Zone, Runway Object Free Zone, Inner Safety Zone, and Emergency Touch Down Zone to be located within the final airport boundaries, and these areas should be clear of objects and structures in conformance with building restriction lines.

The Development Code 2000 states that all new nonresidential uses or significant expansions of nonresidential uses will be subject to the Land Use Compatibility Guidelines for Airport Overlay Zoning Districts:

- **Airport Maser Plan-Safety Area: Recommended Maximum Population. Density is zero (residential), ten persons per square acre (non-residential) with a maximum coverage by structures of 0%.**
- **Airport Overlay District A-1: Recommended Maximum Population Density is one dwelling unit per two acres (residential), 25 persons per acre (non-residential) with a maximum coverage by structures of 25% of net area.**
- **Airport Overlay District A-2: Recommended Maximum Population Density is four dwelling units per one acre (residential), 150 persons per acre (non-residential) with a maximum coverage that would comply with the underlying zoning district.**

Forecasts of Aviation Activity ■ INTRODUCTION.

Forecasting is a key element in the planning process. Forecasts are essential for analyzing existing airport facilities and identifying future needs and requirements for these facilities. Forecasting, by its very nature, is not exact, but it does identify some general parameters for development and, when soundly established, provides a defined rationale for various development activities as demands increase. The amount and kind of aviation activity occurring at an airport are dependent upon many factors, but are usually reflective of the services available to aircraft operators, the businesses located on the airport or within the community, and the general economic conditions prevalent within the surrounding area.

■ Regional Socioeconomic Conditions

Historically, the socioeconomic conditions of a particular region impact aviation activity within that region. The most often analyzed indicators are population, employment, and income.

Population. The San Bernardino Associated Governments (SANBAG) is the council of governments and transportation planning agency for San Bernardino County. SANBAG is responsible for cooperative regional planning and, as such, has published present and forecasted population data for the region. The Town of Apple Valley is the 12th largest metropolitan area in San Bernardino County (out of a total of 24 cities). Because demographic statistics are easily available for the Town of Apple Valley and San Bernardino County, data related to these two areas is provided below. These statistics are only provided to give a general understanding of economic and population trends in the area. Obviously, the Airport serves a regional role, impacting an area inclusive of, but well beyond the Town of Apple Valley. SANBAG predicts an average annual growth rate of 1.2% for the Town of Apple Valley, and an average annual growth

rate of 2.08% for San Bernardino County (through the year 2025). The following table, entitled *POPULATION INFORMATION 2000-2025*, provides a summary of the population information for the Town of Apple Valley and San Bernardino County.

Table B1
POPULATION INFORMATION, 2000-2025

Year	Town of Apple Valley	San Bernardino County
2000	56,369	1,704,035
2005	60,259	1,853,129
2010	63,314	2,042,914
2015	66,854	2,255,608
2020	71,406	2,509,417
2025	75,401	2,815,986

Source: *San Bernardino Associated Governments (SANBAG), October 2003.*

Employment. The Town of Apple Valley had a labor force of 12,680 in 2000, while San Bernardino County had a labor force of 582,070 in 2000. Employment is forecast to increase approximately 62% in the Town of Apple Valley by the year 2025 (an average of 2.48% annually), and San Bernardino County is forecast to increase approximately 89% by the year 2025 (an average of 3.58% annually).

Economy. Government, retail trade, and services are the three largest employment sectors in the Town of Apple Valley. Apple Valley had a per capita income in 2000 of $17,830. The median household income was $40,411 in 2000, while the mean household income was $49,411 (in 1994). The 1990 median home price was $120,000 in 1990.

The airspace in southern California is one of the most congested in the world. According to the Southern California Association of Government's Regional Aviation Plan for the 2001 Regional Transportation Plan, the region supports the world's largest regional aviation system in terms of airports and aircraft operations. The region is home to 65 airports, including 6 air carrier

airports, 3 commuter airports, 45 general aviation airports, and 11 existing or recently closed military installations.

HISTORIC AND EXISTING AIRPORT ACTIVITY

With no on-site air traffic control tower facilities, there are limited historical records that provide accurate information concerning the aviation activity present at Apple Valley Airport. A tabulation of the best available historical aviation activity since 1992 at Apple Valley Airport is presented in the following table entitled *HISTORICAL AVIATION ACTIVITY, 1992-2002.*

Table B2
HISTORICAL AVIATION ACTIVITY, 1992-2002

Year	Itinerant GA Operations	Itinerant Military Operations	Total Itinerant Operations	Local GA Operations	Total Operations
1992[1]	10,000	100	10,100	21,000	31,100
1993[1]	10,000	0	10,000	21,000	31,000
1994	---	---	---	---	---
1995[2]	10,000	0	10,000	21,000	31,500
1996[2]	12,500	0	12,500	25,000	37,000
1997[2]	12,500	0	12,500	25,000	37,000
1998[2]	12,500	0	12,500	25,000	37,000
1999[2]	12,500	0	12,500	25,000	37,000
2000[2]	12,500	0	12,500	25,000	37,000
2001[2]	12,500	0	12,500	25,000	37,000
2002[3]	12,500	1,500	14,000	25,000	39,000

Source: *FAA Terminal Area Forecasts Summary Report and FAA Airport Master Records (Form 5010). [2]FAA Terminal Area Forecasts Summary Report. [3] FAA Apple Valley airport personnel. --- Data not available.*

■ Existing Operations by Aircraft Type

According to Apple Valley Airport personnel, approximately 66 percent of all airport operations are single engine operations. The following table, entitled *EXISTING OPERATIONS BY AIRCRAFT TYPE, 2002,* indicates the percentage of operations for each aircraft type.

Table B3
EXISTING OPERATIONS BY AIRCRAFT TYPE

Aircraft Type	Operations	Percentage
Single Engine	25,740	66%
Multi-Engine Twin	3,900	10%
Multi-Engine Turboprop	1,950	5%
Business Jet	780	2%
Helicopter	5,850	15%
Ultra Light	780	2%
Total	**39,000**	**100%**

Source: *Apple Valley Airport Personnel.*

■ Based Aircraft

Historic based aircraft numbers were obtained from the FAA *Airport Master Record*, and are presented in the following table entitled *HISTORIC BASED AIRCRAFT, 1991-2002.* Discussions with the Airport Manager indicate that there are currently 169 aircraft and 2 ultralights based at Apple Valley Airport:

- **Single Engine: 158**
- **Multi-Engine Piston: 8**
- **Multi-Engine Turbo-prop: 2**
- **Helicopter: 1**
- **Ultralight: 2**

Table B4
HISTORIC BASED AIRCRAFT, 1991-2002

Year	Single Engine	Multi-Engine[1]	Helicopter	Ultralight	Total
1991	174	6	1	0	181
1992	154	6	1	0	161
1993	153	7	1	2	163
1994	---	---	---	---	---
1995	155	5	1	0	161
1996	---	---	---	---	---
1997[1]	135	6	0	0	141
1998	167	6	0	0	173
1999	135	8	0	0	143
2000[2]	---	---	---	---	141
2001[2]	---	---	---	---	141
2002[3]	158	10	1	2	171

Source: *BARNARD DUNKELBERG & COMPANY.*

[1] *Airport Master Record does not differentiate between multi-engine piston and multi-engine turbo-prop.*

[2] *Data obtained from historical APO Terminal Area Forecast Detail Report*

[3] *Apple Valley Airport personnel. Multi-Engine combines both multi-engine piston and multi-engine turboprop aircraft based at the Airport.*

--- Data not available.

AVIATION ACTIVITY FORECASTS

■ Factors and Conditions

Prior to the development of aviation activity forecasts, several factors that have an influence, either positive or negative, in the planning process should be considered.

There are some broad factors that can have a negative impact on the Airport, and the aviation industry, and these are considered in the planning process. The first issue is the overall condition of the general aviation industry in the United States. Beginning in 1978, many sectors of the general aviation industry have been in recession, and the FAA has identified several factors that precipitated this downturn, including economic recessions, fuel crises, the termination of the GI Bill, and the repeal of the Investment Tax Credit.

More obvious contributing factors include the rising expense of owning and operating an aircraft (i.e., costs of insurance, fuel, and maintenance), competition from discount air carriers since airline deregulation, changes in disposable discretionary income, increases in air space restrictions affecting fair-weather flying, reductions in personal leisure time, and shifts in personal preference as to how leisure time is spent. These factors have restricted the single-engine light aircraft segment of the industry in particular.

However, there are a number of bright spots having a positive impact in certain segments of the general aviation industry. They include the passage of the General Aviation Revitalization Act of 1994. This legislation has caused renewed interest and optimism among US aircraft manufacturers, who are either reentering the single engine aircraft market after several years' absence, or are increasing future production schedules to meet expected renewed demand. The growth in the amateur-built aircraft market, and the strength of the used aircraft market, indicate that demand for inexpensive personal aircraft is still relatively strong.

The FAA's efforts to aid general aviation revitalization include streamlining the certification process for new entry-level aircraft and implementing measures to provide regulatory relief and reduce user costs (i.e., reduced rules, improving the delivery of FAA services by decreasing excess layers of management, and the elimination of unneeded programs and processes). Groups such as the Aircraft Owners & Pilots Association (AOPA) are sponsoring programs that aggressively promote the benefits of general aviation and learning to fly.

On a more recent note, sine the 9/11 terrorist attacks, Temporary Flight Restrictions (TFRs) and the lingering concerns of some regarding the use of general aviation aircraft in potential future acts of terrorism, have had an added short-term negative impact on the industry. On the positive side for GA, heightened airport security has had a dramatic impact on the "nuisance factor" of commercial air travel, resulting in some travelers turning to general aviation as a more efficient means of air travel.

General Aviation Activity Forecasts

General information regarding expectations for the Airport is included in the FAA *Terminal Area Forecast (TAF) Detail Report.* The TAF's forecast for Year 2006 through year 2020 remained unchanged from 1996. In developing the general aviation activity forecasts, local, state and national trends were reviewed. Included in this assessment, and as presented in the following table, entitled *GENERAL AVIATION OPERATIONS FORECASTS, 2002-2023*, are the forecasts contained in the 1992 *Airport Master Plan* (MP), the FAA *Terminal Area Forecast Detail Report*, and two forecast scenarios developed for this study:

- **TAF:** FAA's *Terminal Area Forecast Detail Report* obtained 10/1/2003.
- **MP:** The *Airport Master Plan,* completed in 1992, projected forecasts for the following years (as relevant to this forecast): 2005 and 2010. Analysis indicates that the MP forecasted an approximate five and one-half percent (5.46%) average annual growth rate through the year 2010.
- **Scenario One:** Projects an average annual growth rate of 1.25%, which is equal to the national general aviation forecast contained in the *FAA Aviation Forecasts Fiscal Years 2002-2014.* This is the selected operations forecast for this study.
- **Scenario Two:** Illustrates an average annual growth rate of approximately two percent (2.08%), which is the estimated annual population growth rate for San Bernardino County through the year 2025.

Selecting Scenario One as the preferred forecast scenario recognizes that the conditions in Apple Valley and the region should mirror aviation related influences in the nation. It also recognizes an assumption that there are no identified significant local influences that are expected to negatively or positively impact the amount of aviation activity at the Airport.

Table B5
GENERAL AVIATION OPERATIONS FORECAST SCENARIOS, 2002-2023

Year	TAF	MP[1] 5.46%	Scenario One 1.25%	Scenario Two 2.08%
2002	37,500	---	37,500	37,500
2005	37,500	63,500	---	---
2008	37,500	---	40,400	41,077
2010	37,500	75,500	---	---
2013	37,500	---	42,989	44,336
2018	37,500	---	45,744	47,873
2023	37,500	---	48,676	51,711

Source: *BARNARD DUNKELBERG & COMPANY.*
[1] The MP did not provide detailed forecasts for general aviation and military operations.
--- Data not available.

■ Military Operations Forecasts

The following table, entitled *MILITARY OPERATIONS FORECAST SCENARIOS 2002-2023*, presents the military operations forecast for the planning period of this Airport Layout Plan Update. The amount of military activity at the Airport is expected to increase at a moderate rate, equivalent to the general aviation forecast scenario rate of 1.25%.

Table B6
MILITARY OPERATIONS FORECAST SCENARIOS, 2002-2023

Year	TAF[1]	MP[1] 2.94%	Scenario One 1.25%	Scenario Two 2.08%
2002	0	---	1,500	1,500
2005	0	37,000	---	---
2008	0	---	1,616	1,698
2010	0	41,200	---	---
2013	0	---	1,719	1,882
2018	0	---	1,829	2,087
2023	0	---	1,946	2,312

Source: *BARNARD DUNKELBERG & COMPANY.*
[1] The MP did not provide detailed forecasts for general aviation and military operations.
---Data not available.

■ Operations Forecast by Aircraft Type

The types of aircraft expected to use the Airport assist in determining the amount and type of facilities needed to meet the aviation demand. The following table, entitled *SUMMARY OF OPERATIONS BY AIRCRAFT TYPE, 2002-2023*, depicts the approximate level of use by aircraft types that are projected to use Apple Valley Airport. As expected nationally, the use of larger general aviation aircraft (turbo-props and jets) is forecast to increase more rapidly than is the use of smaller general aviation aircraft (single engine piston) at the Airport.

Table B7
SUMMARY OF GENERAL AVIATION AND MILITARY OPERATIONS
BY AIRCRAFT TYPE, 2002-2023

Aircraft Type	2002	2008	2013	2018	2023
Single Engine	25,740 *(66.0%)*	27,100 *(64.5%)*	28,613 *(64.0%)*	30,256 *(63.6%)*	31,892 *(63.0%)*
Multi Engine Piston	3,900 *(10.0%)*	4,412 *(10.5%)*	4,918 *(11.0%)*	5,138 *(10.8%)*	5,518 *(10.9%)*
Turbo-prop	1,950 *(5.0%)*	2,311 *(5.5%)*	2,459 *(5.5%)*	2,807 *(5.9%)*	3,139 *(6.2%)*
Business Jet	780 *(2.0%)*	841 *(2.0%)*	894 *(2.0%)*	1,142 *(2.4%)*	1,214 *(2.4%)*
Helicopter	5,850 *(15.0%)*	6,302 *(15.0%)*	6,706 *(15.0%)*	7,041 *(14.8%)*	7,593 *(15.0%)*
Ultralight	780 *(2.0%)*	1,050 *(2.5%)*	1,118 *(2.5%)*	1,189 *(2.5%)*	1,266 *(2.5%)*
Total	**39,000** ***(100%)***	**42,016** ***(100%)***	**44,708** ***(100%)***	**47,573** ***(100%)***	**50,622** ***(100%)***

Source: *Apple Valley Airport personnel.*

■ Local and Itinerant Operations Forecast

As can be seen in the following table, entitled *SUMMARY OF LOCAL AND ITINERANT OPERATIONS FORECAST, 2002-2023*, itinerant operations at Apple Valley Airport are expected to increase slightly over local operations, as the area becomes increasingly important for business-related general aviation operations.

Table B8
SUMMARY OF LOCAL AND ITINERANT OPERATIONS
FORECAST, 2002-2023

Year	Local	Itinerant	Total
2002	25,000 *(64.0%)*	14,000 *(63.0%)*	39,000 *(100%)*
2008	26,513 *(63.0%)*	15,503 *(37.0%)*	42,216 *(100%)*
2013	27,765 *(62.0%)*	16,943 *(38.0%)*	44,708 *(100%)*
2018	29,068 *(61.0%)*	18,505 *(39.0%)*	47,573 *(100%)*
2023	30,425 *(60.0%)*	20,197 *(40.0%)*	50,622 *(100%)*

Source: *Apple Valley Airport personnel.*

BASED AIRCRAFT FORECAST

The number and type of aircraft anticipated to be based at an airport are vital components in developing a plan for that airport. Generally, there is a relationship between aviation activity and based aircraft, stated in terms of operations per based aircraft (OPBA). Sometimes a trend can be established from historical information of operations and based aircraft. The national trend has been changing with more aircraft being used for business purposes and less for pleasure flying. This impacts the OPBA in that business aircraft are usually flown more often than pleasure aircraft. It is expected that the number of operations per based aircraft will increase at the Airport, as more aircraft based there are used for business purposes.

Several based aircraft forecast scenarios are presented in the following table entitled *BASED AIRCRAFT FORECAST SCENARIOS, 2002-2023*. These include the forecasts contained in the 1992 *Airport Master Plan* (MP), FAA *Terminal Area Forecast Detail Report*, and two forecast scenarios developed for this study:

- **TAF:** FAA's *Terminal Area Forecast Detail Report* obtained 10/1/2003. As the following table illustrates, the TAF does not highlight any increase in based aircraft for the Airport.
- **MP:** The *Airport Master Plan* (1992) provided a Based Aircraft Forecast for select years relevant to the Airport Layout Plan Updates (2005 and 2010), as indicated on the following table.

- **Scenario One:** Projects an average annual growth rate of 0.7%, which is equal to the nationwide general aviation based aircraft forecast contained in the *FAA Aviation Forecasts Fiscal Years 2002-2014.*
- **Scenario Two:** Illustrates an average annual growth rate of approximately two percent (2.08%), which is the estimated annual population growth rate for San Bernardino County through the year 2025.
- **Scenario Three:** Due to the previously mentioned factors for the Apple Valley area, it is anticipated that growth in based aircraft will increase faster than that projected by the FAA, but not as fast as the projected population growth for the region. Therefore, this scenario postulates a growth factor of the two scenarios combined. Thus, the average annual growth rate of 1.39% is the selected forecast for this study.

Table B9
BASED AIRCRAFT FORECAST SCENARIOS, 2002-2023

Year	TAF	MP	Scenario One 0.7%	Scenario Two 2.08%	Scenario Three 1.39%
2002[1]	141	---	171	171	171
2005	141	310	---	---	---
2008	141	---	178	195	184
2010	141	368	---	---	---
2013	141	---	185	215	199
2018	141	---	191	239	214
2023	---	---	198	264	229

Source: *BARNARD DUNKELBERG & COMPANY.*
[1] Actual.
---Data Not available.

■ Based Aircraft Forecast by Aircraft Type

The mix of based aircraft is shown on the following table entitled *BASED AIRCRAFT FORECAST BY TYPE, 2002-2023.* It is expected that single engine aircraft will continue to be the dominant aircraft type based at the Airport, although a slight increase in multi-engine turbine and multi-engine piston aircraft is forecasted.

Table B10
BASED AIRCRAFT FORECAST BY TYPE, 2002-2023

Aircraft Type	2002[1]	2008	2013	2018	2023
Single Engine	158 *(92.4%)*	169 *(92.1%)*	183 *(92.0%)*	196 *(91.6%)*	209 *(91.3%)*
Multi-Engine Piston	8 *(4.7%)*	9 *(4.8%)*	10 *(3.0%)*	11 *(5.1%)*	12 *(5.2%)*
Turboprop	2 *(1.2%)*	3 *(1.6%)*	3 *(1.5%)*	3 *(1.4%)*	4 *(1.7%)*
Ultralight	2 *(1.2%)*	2 *(1.2%)*	2 *(1.0%)*	3 *(1.4%)*	3 *(1.3%)*
Helicopter	1 *(0.6%)*	1 *(0.6%)*	1 *(0.5%)*	1 *(0.5%)*	1 *(0.4%)*
TOTAL	**171** ***(100%)***	**184** ***(100%)***	**199** ***(100%)***	**214** ***(100%)***	**229** ***(100%)***

Source: *BARNARD DUNKELBERG & COMPANY.*
[1] Apple Valley Airport personnel.

SUMMARY

A summary of the aviation forecasts prepared for this study is presented in the following table entitled *SUMMARY OF AVIATION ACTIVITY FORECASTS, 2002-2023*. This information will be used in the following chapters to analyze facility requirements, to aid development of alternatives, and to guide the preparation of the plan and program of future airport facilities. In other words, the aviation activity forecasts are the foundation from which future plans will be developed and implementation decisions will be made.

Table B11
SUMMARY OF AVIATION ACTIVITY FORECASTS, 2002-2023

Operations	2002	2008	2013	2018	2023
General Aviation	*37,500*	*40,400*	*42,989*	*45,744*	*48,676*
Military	*1,500*	*1,616*	*1,719*	*1,829*	*1,946*
Total Operations	**39,000**	**42,016**	**44,708**	**47,573**	**50,622**
Local Operations	*25,000*	*26,513*	*27,765*	*29,068*	*30,425*
Itinerant Operations	*14,000*	*15,503*	*16,943*	*18,505*	*20,197*
Based Aircraft by Type					
Single Engine	*158*	*169*	*183*	*196*	*209*
Multi-Engine Piston	*8*	*9*	*10*	*11*	*12*
Multi-Engine Turboprop	*2*	*3*	*3*	*3*	*4*
Ultralight	*2*	*2*	*2*	*3*	*3*
Helicopter	*1*	*1*	*1*	*1*	*1*
Total	**171**	**184**	**199**	**214**	**229**

Source: *BARNARD DUNKELBERG & COMPANY.*
Note: *Aircraft operations by type include general aviation and military operations.*

Facilities Requirements ■ INTRODUCTION.

The ability of an airport to accommodate the existing and forecasted aviation activity is primarily a function of the major aircraft operating surfaces that compose the facility and the configuration of those surfaces (runways and taxiways). However, it is also related to and considered in conjunction with weather conditions, the surrounding airspace, the availability and type of navigational facilities, the type and arrangement of aircraft storage facilities, the supporting facilities, and the type and amount of landside access.

Knowledge of the types of aircraft currently using, and those that are expected to use, Apple Valley Airport provides information concerning the Airport Reference Code (ARC). FAA Advisory Circular 150/5300-13, *Airport Design*, provides guidelines for this determination. The ARC is based on the "Design Aircraft" that is judged the most critical aircraft using, or projected to use, the Airport. The ARC has two components that relate to the airport's "Design Aircraft". The first component, depicted by a letter (i.e., A, B, C, D, or E), is the aircraft approach category and relates to aircraft approach speed based upon operational characteristics. The second component, depicted by a Roman numeral (i.e., I, II, III, IV, or V), is the aircraft design group and relates to aircraft wingspan (physical characteristic). Generally speaking, aircraft approach speed applies to runways and runway-related facilities, while aircraft wingspan is primarily related to separation criteria associated with taxiways and taxilanes.

Currently, the majority of general aviation operations are single engine aircraft; however there are several larger aircraft operating at Apple Valley Airport, including various Lear Jets, Beech King Air's, Cessna 421's, Gulfstream G-III and experimental aircraft. As indicated in the previous chapter, exact records have not been kept on the number and type of aircraft operating at the Airport.

According to the existing Airport Layout Plan (ALP), Apple Valley Airport has an existing ARC designation of C-II for Runway 18/36 and 8/26. However, upon further examination of existing characteristics, it appears that Runway 8/26 exemplifies an ARC designation of B-I.

It is recommended that the C-II ARC for Runway 18/36 be maintained, which allows it to accommodate the majority of general aviation aircraft fleet, including business jets. The design aircraft for Runway 18/36 is a composite of the general aviation turbo-prop and business jet fleet. Example aircraft that are included in this "Design Aircraft" fleet are the Beech Super King Air B200 (ARC B-II) and the Learjet 35/36 (ARC C-I).

The B-I ARC designation for Runway 8/26 allows the runway to accommodate the majority of the prop-driven general aviation aircraft, including many of the turbo-prop airplanes (up to and including aircraft the size of the Swearingen Metro). The design aircraft for Runway 8/26 is the Cessna 421.

AIRSIDE REQUIREMENTS

The analysis of airside requirements focuses on determining needed facilities and the spatial considerations for these facilities that are related to the actual operation of aircraft on the Airport. This evaluation includes the delineation of airfield dimensional criteria, establishment of design parameters for the runway and taxiway systems, and an identification of airfield instrumentation and lighting needs.

■ Wind Coverage

All Weather. To determine wind velocity and direction at Apple Valley Airport, wind data were attained and an all weather wind rose was constructed, which is presented in the following illustration entitled *ALL WEATHER WIND ROSE: 10.5-, 13-, AND 16-KNOT CROSSWIND COMPONENTS.* The appropriate crosswind component is dependent upon the aircraft being accommodated (smaller aircraft require a smaller crosswind component for safe operation). The wind coverage analysis provided indicates that the runways provide adequate wind coverage (the desired wind coverage is 95%). This analysis indicates that, combined, the two runways provide adequate wind coverage for the 10.5-, 13-, and 16-knot crosswind components with Runway

18/36 providing the best coverage when only one runway is considered. Therefore, no additional runways are required from a wind coverage standpoint.

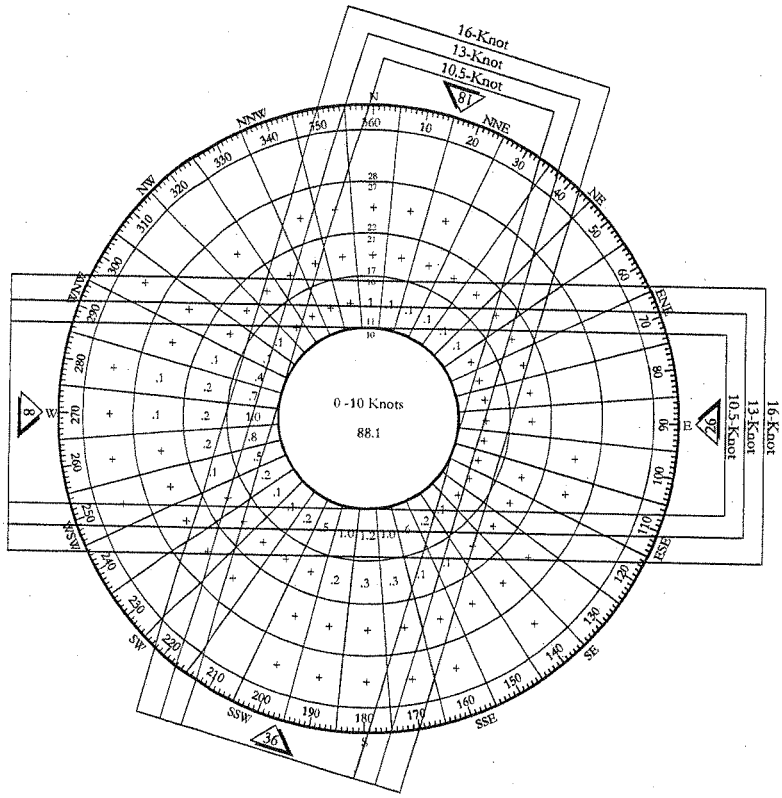
Table C1
All WEATHER WIND COVERAGE SUMMARY

	Wind Coverage Provided Under All Weather Conditions		
	10.5-Knot	13-Knot	16-Knot
Runway 18/36	94.99%	96.93%	98.87%
Runway 8/26	93.67%	95.89%	98.59%
Combined	99.91%	99.94%	99.96%

Source: *National Oceanic and Atmospheric Administration, National Climatic Data Center. Station 72382 George AFB, California, Period of Record 1982-1991 and Tailwind of 5-knots.*

Figure C1
ALL WEATHER WIND ROSE:
10.5-, 13-, AND 16-KNOT
CROSSWIND COMPONENTS

Source: *National Oceanic and Atmospheric Administration, National Climatic Data Center. Station 72382 George AFB, California, Period of Record 1982-1991.*



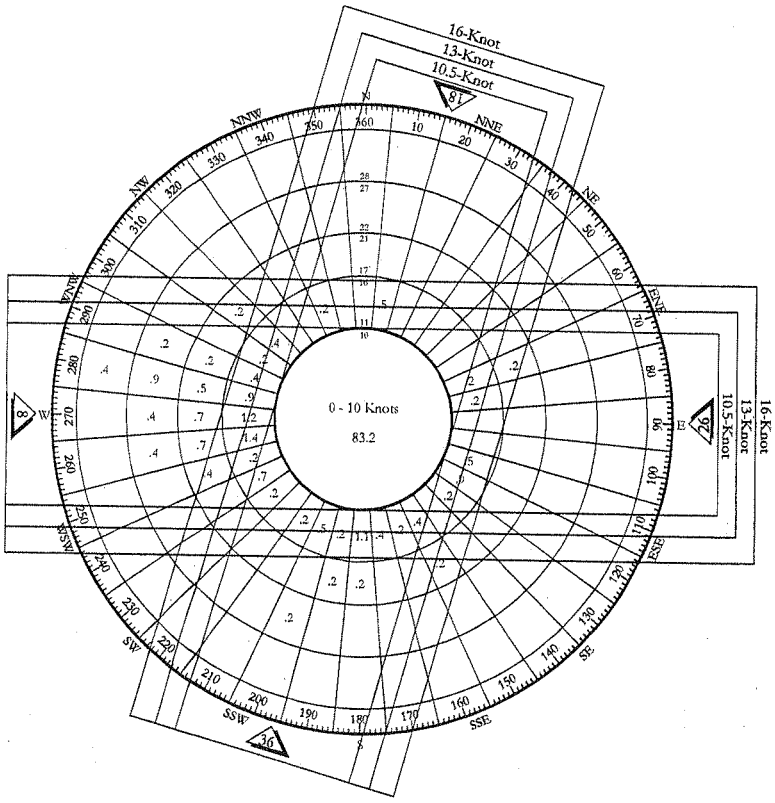
IFR Weather. In an effort to analyze the placement and effectiveness of instrument approach capabilities, Instrument Flight Rules (IFR) wind data has been gathered and an IFR wind rose was constructed, which is presented in the figure entitled *IFR WIND ROSE: 10.5-, 13-, and 16-KNOT CROSSWIND COMPONENTS.* This analysis indicates that Runway 26 provides the best wind coverage during Instrument Meteorological Conditions (IMC).

Table C2
IFR WIND COVERAGE SUMMARY

	Wind Coverage Provided Under All Weather Conditions		
	10.5-Knot	13-Knot	16-Knot
Runway 18	81.08%	83.88%	87.28%
Runway 36	78.51%	80.54%	83.02%
Runway 18/36	88.42%	91.48%	95.25%
Runway 8	75.55%	76.83%	78.41%
Runway 26	91.06%	92.46%	94.12%
Runway 8/26	95.56%	97.16%	99.03%
Combined	99.67%	99.77%	99.82%

Source: *National Oceanic and Atmospheric Administration, National Climatic Data Center. Station 72382 George AFB, California, Period of Record 1982-1991 and tailwind of 5-knots.*
[1] Ceiling of less than 1,000 feet, but equal to or greater than 200 feet and/or visibility less than three miles, but equal to or greater than one-half mile.

Figure C2
IFR[1] WIND ROSE: 10.5-, 13-, AND 16-KNOT CROSSWIND COMPONENTS



Source: *National Oceanic and Atmospheric Administration, National Climatic Data Center. Station 72382 George AFB, California, Period of Record 1982-1991.*

[1] Ceiling of less than 1,000 feet, but equal to or greater than 200 feet and/or visibility less than three miles, but equal to or greater than one-half mile.

Dimensional Standards. Dimensional standards applicable to Apple Valley Airport are contained in the following tables entitled *DIMENSIONAL STANDARDS FOR RUNWAY 18/36, IN FEET* and *DIMENSIONAL STANDARDS FOR RUNWAY 8/26, IN FEET.* As can be seen, both Runway 18/36 and

Runway 8/26 meet the dimensional standards associated with their respective ARC, with the exception of the runway centerline to the holdline.

Table C3
DIMENSIONAL STANDARDS FOR RUNWAYS 18/36, IN FEET

Item	Existing Dimension	ARC C-II Existing Approach Minimums[1]
Runway 18/36:		
Width	150	100
Safety Area Width	500	500
Safety Area Length (beyond runway end)		
Runway 18	1,000	1,000
Runway 36	1,000	1,000
Object Free Area Width	800	800
Object Free Area Length (beyond runway end)		
Runway 18	1,000	1,000
Runway 36	1,000	1,000
Taxiway Width	35	35
Runway Centerline to:		
Holdline	**200**	250
Parallel Taxiway Centerline	400	300
Aircraft Parking Area	500+	400

Source: *BARNARD DUNKELBERG & COMPANY.*
Bold indicates a deficiency in the dimensional standard for the ARC.
[1] FAA Advisory Circular 150/5300-13, Airport Design, not lower than 3/4 mile approach visibility minimums.

Table C4
DIMENSIONAL STANDARDS FOR RUNWAYS 8/26, IN FEET

Item	Existing Dimension	ARC B-I Existing Approach Minimums[1]
Runway 8/26:		
Width	60	60
Safety Area Width	120	120
Safety Area Length (beyond runway end)		
Runway 8	240	240
Runway 26	240	240
Object Free Area Width	500	250
Object Free Area Length (beyond runway end)		
Runway 8	240	240
Runway 26	240	240
Taxiway Width	35	25
Runway Centerline to:		
Holdline	**125**	200
Parallel Taxiway Centerline	400	150
Aircraft Parking Area	500+	125

Source: *BARNARD DUNKELBERG & COMPANY.*
Bold indicates a deficiency in the dimensional standard for the ARC.
[1] *FAA Advisory Circular 150/5300-13, Airport Design, not lower than 3/4 mile approach visibility minimums.*

Runway Line-of-Sight. Criteria met.

Runway Protection Zones (RPZs). The following table, entitled *RUNWAY PROTECTION ZONE DIMENSIONS*, lists the existing RPZ dimensions and the requirements for improved approach capabilities. As the table indicates, the existing ALP shows significant deficiencies related to the size of the respective runway protection zone. According to FAA design criteria, Runway 18/36 should follow the C and D category standards and Runway 8/26 should follow the A and B category standards. Recommendations for land or easement acquisitions are made in the following chapters in consideration of ultimate approach capabilities.

Table C5
REQUIRED RUNWAY PROTECTION ZONE DIMENSIONS

Item	Width at Runway End (feet)	Length (feet)	Width at Outer End (feet)
Visual and not lower than 1-mile, small aircraft exclusively	250	1,000	450
Visual and not lower than 1-mile, Approach Categories A & B (Runway 18/26)[1]	**500**	**1,000**	**700**
Visual and not lower than 1-mile, Approach Categories C & D (Runway 18/36)[1]	**500**	**1,700**	**1,010**
Not lower than 3/4-mile, all aircraft	1,000	1,700	1,510
Lower than 3/4-mile, all aircraft	1,000	2,500	1,750

Source: *FAA Advisory Circular 150/5300-13, Airport Design.*
[1] *Required size in consideration of ARC and existing approach minimums.*

Threshold Siting. Recent changes to the FAA's Airport Design Advisory Circular (Change 7 - Dated 10/1/02) have significantly revised the criteria used to determine threshold siting location for runways that support nighttime straight-in and circling instrument operations. Initial examination indicates that both runways' thresholds are appropriately located in consideration of these criteria; however, the threshold locations will be reviewed more closely in conjunction with programming runway length and instrument approach capability improvements. The following table, entitled *THRESHOLD SITING CRITERIA, IN FEET*, lists the existing threshold siting criteria applicable to each runway end, as well as the requirements for improved approach capabilities.

Table C6
THRESHOLD SITING CRITERIA, IN FEET

Item	Distance From Threshold	Width at Threshold	Width at Outer End	Length of First Segment	Length of Second Segment	Slope
Existing Threshold Siting Criteria:						
Runway 18	200	400	3,400	10,000	0	20:1
Runway 66	200	800	3,800	10,800	0	20:1
Runway 8	0	400	1,000	1,500	8,500	20:1
Runway 26	0	400	1,000	1,500	8,500	20:1
Required Threshold Siting Criteria for Various Aircraft Types and Visibility Minimums						
Small aircraft with approach speeds less than 50-knots	0	120	250	500	2,500	15:1
Small aircraft with approach speeds greater than 50-knots	0	250	700	2,250	2,750	20:1
Visual and not lower than 1-mile, large aircraft	0	400	1,000	1,500	8,500	20:1
Instrument night circling, all aircraft	200	400	3,400	10,000	---	20:1
Instrument straight-in night operations, all aircraft	200	400	3,800	10,000	---	20:1
Not lower than 3/4-mile, all aircraft	200	1,000	4,000	10,000	0	20:1
Lower than 3/4-mile, all aircraft	200	1,000	4,000	10,000	0	34:1

Source: *FAA Advisory Circular 150/5300-13, Airport Design.*
---Data not available.

■ Runway System

Runway Length. The runway length requirements at Apple Valley Airport are provided in the following table entitled *RUNWAY LENGTH REQUIREMENTS*. The data, along with indications from aircraft operators at the Airport, indicate the existing runway lengths provided at the Airport are adequate to accommodate the future forecasted aviation activity.

Table C7
RUNWAY LENGTH REQUIREMENTS

Aircraft Category	Length (Feet) Dry	Wet
RUNWAY 18/36		
Airplanes less than 12,500 lbs. with less than 10 seats		
75% of Small Aircraft Fleet	3,730	3,730
95% of Small Aircraft Fleet	4,630	4,630
100% of Small Aircraft Fleet	5,090	5,090
Airplanes less than 12,500 lbs. with 10 or more seats	5,100	5,100
Airplanes greater than 12,500 lbs. and less than 60,000 pounds		
75% of fleet at 60% useful load	6,780	6,780
75% of fleet at 90% useful load	9,560	9,560
100% of fleet at 60% useful load	8,740	8,740
100% of fleet at 90% useful load	11,210	11,210
Airplanes greater than 60,000 pounds (500 mile stage length)	6,090	6,090
RUNWAY 8/26		
Airplanes less than 12,500 lbs. with less than 10 seats		
75% of Small Aircraft Fleet	3,730	3,730
95% of Small Aircraft Fleet	4,630	4,630
100% of Small Aircraft Fleet	5,090	5,090
Airplanes less than 12,500 lbs. with 10 or more seats	5,100	5,100
Airplanes greater than 12,500 lbs. and less than 60,000 pounds		
75% of fleet at 60% useful load	5,980	5,980
75% of fleet at 90% useful load	8,760	8,760
100% of fleet at 60% useful load	7,940	7,940
100% of fleet at 90% useful load	10,410	10,410
Airplanes greater than 60,000 pounds (500 mile stage length)	6,090	6,090

Source: *FAA Advisory Circular 150/5300-13, Airport Design.*
Lengths based on 3061.7 feet AMSL, 97.9° F NMT and a maximum difference in runway centerline elevation of 96 feet (Runway 18/36) and 16 feet (Runway 8/26).

Runway Pavement Strength. Runway 18/36 has a gross weight bearing capacity of 70,000 pounds single wheel, 90,000 pounds dual wheel, and 150,000 pounds dual tandem wheel main landing gear configuration. Runway 8/26 has a gross weight bearing capacity of 40,000 pounds single wheel, 60,000 pounds dual wheel, and 100,000 pounds dual tandem wheel main landing gear configuration. The existing pavement strength for both runways will be adequate for the 20-year planning period, assuming routine pavement maintenance is performed.

Runway Approach Instrumentation. In consideration of wind direction only, Runway 26 provides the best coverage during IFR wind conditions; however, surrounding terrain also must be considered. The ability and need to implement improved instrument approaches will be analyzed in the next chapter.

Airport Lighting. The existing MIRL lighting system that serves Runway 18/36 will be maintained. Runway 18/36 has a four-light Vertical Approach Slope Indicator (VASI) lighting system on the left side and Runway 8/26 has a four-light Precision Approach Path Indicator (PAPI) lighting system on the left side.

■ Taxiway System

The existing taxiway system is adequate to meet the future needs of the Airport, through the 20-year planning period.

LANDSIDE REQUIREMENTS

Landside requirements are those facilities that support the airside facilities, but are not actually part of the aircraft operating surfaces. These consist of such facilities as terminal buildings, aprons, access roads, hangars, and support facilities. From an analysis of the existing facilities, the Airport is slightly deficient in terms of accommodating future hangar needs and has more than ample space for apron accommodations.

- **Vehicular Access:** Corwin Road connects with Dale Evans Parkway and Highway 18 east of the Airport. This system provides excellent access to Interstate 15 and to communities in the region. Local roadway improvement considerations may influence the route of the airport's access road, but will likely not change its front door.
- **Aircraft Storage:** Aircraft storage hangar facilities are in high demand, and the Airport has a waiting list for available hangars. Potential development sites will be identified in the Development Plan. The actual number, size, and location of FBO/large storage hangars will depend on use needs and financial feasibility, and will also be evaluated as part of this planning effort.
- **Tiedown Storage/Based Aircraft:** The Airport currently has ample storage area for based aircraft to **accommodate existing and forecast demands.**
- **Tiedown Storage/Itinerant Aircraft:** The Airport has enough apron space to accommodate itinerant aircraft parking. Additional apron area will be proposed as required for future hangar development.

■ Support Facilities

- **Aircraft Rescue and Fire Fighting (ARFF) Facility:** There is no requirement for ARFF facilities to be located at the Airport; therefore, any proposal for fire protection facilities will be tied to community needs as well as airport needs.
- **Fuel Storage Facilities:** While the existing airport fuel storage facility is adequate to meet current demand, additional capacity will be programmed to meet the increasing aviation demand as it occurs.

SUMMARY

Although many of the existing airport facilities are adequate to meet the expected aviation demand, others will need improvement, replacement, or upgrading to provide a safe and efficient aircraft operating environment. The facilities requirements detailed in this chapter will be used to evaluate several important decisions concerning the future design and development of the airfield. Each of these decisions will be utilized to formulate the overall future Development Plan for the Airport. As indicated in this chapter, some of the critical development issues and recommendations for the Airport include:

- Acquire adequate control/ownership of runway protection zones.
- Identification/correction of any FAA design standard deficiencies.
- Program for future general aviation hangar development.
- Reconfiguration of terminal apron taxilanes/aircraft parking aprons to maximize usable area and promote efficient aircraft access routes.
- Program for special use aviation use areas (i.e., California Highway Patrol).
- Understand sport flying users' needs and program appropriate improvements.
- Understand potential local roadway improvement proposals and any effects on access.
- Program for continued improvement of on-airport service road system.
- Provide recommendations for improvements to minimize effects of surrounding terrain-related airspace obstructions.

Development Concepts and Recommendations ■ INTRODUCTION.

This chapter provides a description of the various factors and influences that form the basis of the ultimate plan and program for the development of Apple Valley Airport in Apple Valley, California. In concert with the status of the Airport, some basic goals have been established that are intended to direct future airport development.

These goals account for several considerations relating to both short-term and long-term needs of the Airport, including safety, capital improvements, land use compatibility, financial conditions, public interest and investment, community awareness.

- Provide effective direction for the future development of Apple Valley Airport through the preparation of a rational plan and program.
- Accommodate the aviation forecasts in a safe and efficient manner by providing the necessary airport facilities and services.
- Enhance the self-sustaining capability of the Airport and insure the financial feasibility of airport development.
- Plan and develop the Airport to be capable of accommodating the future needs and requirements of the local and regional aviation communities.
- Plan and develop the Airport to be compatible with the surrounding land uses and minimize the environmental impacts.
- Encourage and protect the public and private investment in land and facilities.
- Design the Airport to the appropriate Airport Reference Code (ARC) criteria, which for Apple Valley Airport has been determined to be C-II for Runway 18/36 and B-I for Runway 8/26.

- Plan for property acquisition as necessary to provide space for aviation activities, maximize safety, and protect from incompatible surrounding land uses.
- Program taxiway improvements to resolve dimensional concerns (width) and safety area/object free area inconsistencies.
- Program for future general aviation hangar development.
- Reconfiguration of terminal apron taxilanes/aircraft parking aprons to maximize usable area and promote efficient aircraft access routes.

RECOMMENDED AIRSIDE DEVELOPMENT

Because all other airport functions relate to and revolve around the basic runway/taxiway layout, airside development recommendations must first be carefully examined and evaluated. It is essential that the initial development of the Airport be commensurate with the anticipated needs and requirements of the airport users; however, the long-term expansion capabilities of the facility must also be considered and planned for to ensure the future success of the project. The main objective of the planning recommendations presented herein is to identify future development that will result in a runway/taxiway system capable of accommodating the forecast aviation activity.

The recommended development plan is illustrated in the figure at the end of this chapter entitled *CONCEPTUAL DEVELOPMENT PLAN.*

Runway System: Runway 18/36 and Runway 8/26 are expected to remain at their existing length and width (150 feet by 6,498 feet and 60 feet by 4,099 feet, respectively).

Taxiway System: Taxiway A will be widened from its existing width of 30 feet to 35 feet in order to meet the recommended dimensional criteria for an ARC C-II classification.

Runway Protection Zones (RPZs): With the exception of a small parcel associated with the Runway 18 RPZ, all of the runway protection zone areas are controlled in fee simple ownership by San Bernardino County as part of airport property. The small parcel of land within the Runway 18 RPZ, which is not presently owned, is recommended for acquisition.

Property Acquisition Recommendations:

1. **For Runway 18 RPZ – approximately 5 acres.**
2. **For extension of perimeter road, fence and regrading (on the east side of the Airport, east of the Runway 18 RPZ) – approximately 1.5 acres.**
3. **For future aviation facilities – approximately 170 acres, west of existing airport property, on the east side of Navajo Road.**

RECOMMENDED LANDSIDE DEVELOPMENT

With the framework of the airport's ultimate airside development identified, the placement of landside facilities can now be analyzed. In general, landside facilities consist of terminal area development, aircraft parking aprons, hangar development areas, support facility development, and airport access. The overall objective of landside development planning at the Airport is the provision of facilities that are conveniently located and accessible to the community, and that accommodate the specific requirements of airport users.

The airport's aviation facility development area is located on the west side of Runway 18/36 and on the north side of Runway 8/26. Recommendations for future development in this area include:

- **On the south side of the terminal building, a future law enforcement hangar/office structure is proposed.**
- **The undeveloped areas on existing airport property (west and north of the terminal) are specified for future aviation use. These areas are likely to be developed with various types of aircraft storage units; however, the focus will be on T-hangars and small conventional hangars. If there is demand for larger hangars (corporate, FBO, maintenance, etc.), these will likely be constructed in the area west of the terminal apron.**
- **South of the terminal, to the west of the future law enforcement hangar, the construction of an additional aircraft parking apron and a group of small conventional hangars (intended for the storage of one or two business jet type aircraft) is proposed.**

It should be noted that the hangar layout shown on the *CONCEPTUAL DEVELOPMENT PLAN* is only a "concept" as to how the space can efficiently be used. Almost certainly, the actual size and positioning of future facilities will differ from that which is shown on the plans associated with the Airport Layout Plan Update (ALPU). It will be critical to accommodate automobile access and parking as new hangar facilities are constructed. As improvements to the airport's automobile access are implemented, the restriction of vehicles from accessing the aircraft operation areas (aprons, taxiways, and runways) will be important.

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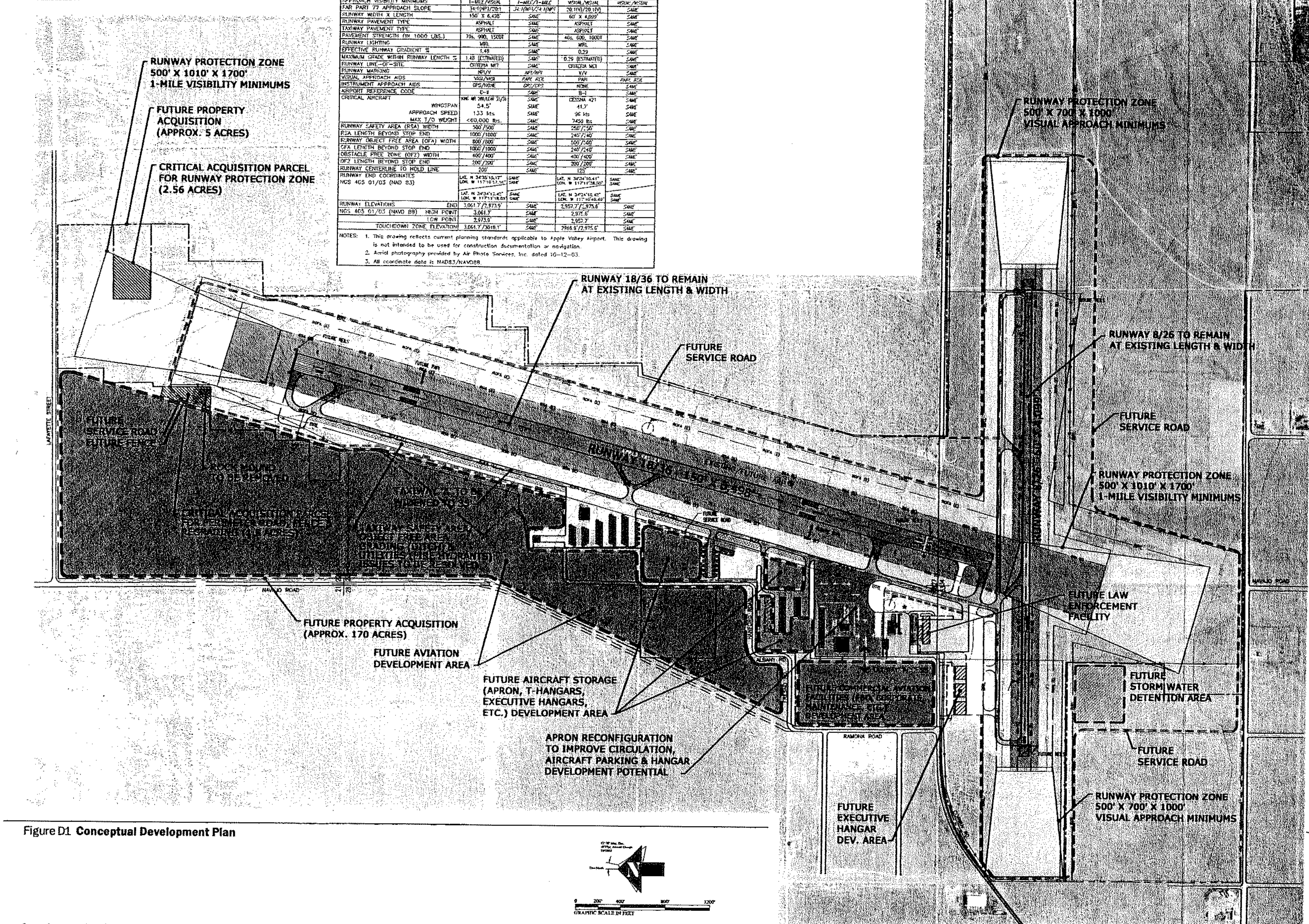
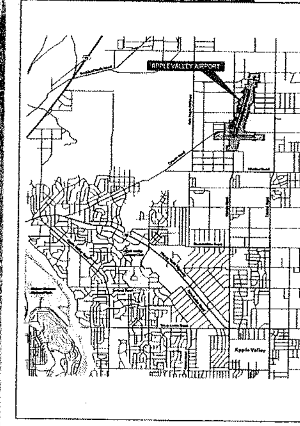
RUNWAY DATA

	RUNWAY 18/36 EXISTING	RUNWAY 18/36 FUTURE	RUNWAY 8/26 EXISTING	RUNWAY 8/26 FUTURE
APPROACH VISIBILITY MINIMUMS	1-MILE/VISUAL	1-MILE/1-MILE	VISUAL/VISUAL	VISUAL/VISUAL
FAR PART 77 APPROACH SLOPE	34:1(NP)/20:1	34:1(NP)/34:1(NP)	20:1(V)/20:1(V)	SAME
RUNWAY WIDTH X LENGTH	150' X 6,498'	SAME	60' X 4,099'	SAME
RUNWAY PAVEMENT TYPE	ASPHALT	SAME	ASPHALT	SAME
TAXIWAY PAVEMENT TYPE	ASPHALT	SAME	ASPHALT	SAME
PAVEMENT STRENGTH (IN 1000 LBS.)	70s, 900, 1500T	SAME	40s, 600, 1000T	SAME
RUNWAY LIGHTING	MIRL	SAME	MIRL	SAME
EFFECTIVE RUNWAY GRADIENT %	1.48	SAME	0.29	SAME
MAXIMUM GRADE WITHIN RUNWAY LENGTH %	1.48 (ESTIMATED)	SAME	0.29 (ESTIMATED)	SAME
RUNWAY LINE-OF-SITE	CRITERIA MET	SAME	CRITERIA MET	SAME
RUNWAY MARKING	NPI/V	NPI/NPI	V/V	SAME
VISUAL APPROACH AIDS	VASI/VASI	PAPI, REIL	PAPI	PAPI, REIL
INSTRUMENT APPROACH AIDS	GPS/NONE	GPS/GPS	NONE	SAME
AIRPORT REFERENCE CODE	C-II	SAME	B-I	SAME
CRITICAL AIRCRAFT	KING AIR 200/LEAR 35/36	SAME	CESSNA 421	SAME
WINGSPAN	54.5'	SAME	41.7'	SAME
APPROACH SPEED	133 kts	SAME	96 kts	SAME
MAX T/O WEIGHT	<60,000 lbs.	SAME	7450 lbs	SAME
RUNWAY SAFETY AREA (RSA) WIDTH	500'/500'	SAME	250'/250'	SAME
RSA LENGTH BEYOND STOP END	1000'/1000'	SAME	240'/240'	SAME
RUNWAY OBJECT FREE AREA (OFA) WIDTH	800'/800'	SAME	500'/500'	SAME
OFA LENGTH BEYOND STOP END	1000'/1000'	SAME	240'/240'	SAME
OBSTACLE FREE ZONE (OFZ) WIDTH	400'/400'	SAME	400'/400'	SAME
OFZ LENGTH BEYOND STOP END	200'/200'	SAME	200'/200'	SAME
RUNWAY CENTERLINE TO HOLD LINE	200'	SAME	125'	SAME
RUNWAY END COORDINATES NGS 405 01/03 (NAD 83)	LAT. N 34°35'15.17" LON. W 117°10'57.16"	SAME SAME	LAT. N 34°34'10.41" LON. W 117°11'38.50"	SAME SAME
	LAT. N 34°34'12.40" LON. W 117°11'18.69"	SAME SAME	LAT. N 34°34'10.42" LON. W 117°10'49.40"	SAME SAME
RUNWAY ELEVATIONS END	3,061.7'/2,973.9'	SAME	2,957.7'/2,975.6'	SAME
NGS 405 01/03 (NAVD 88) HIGH POINT	3,061.7'	SAME	2,975.6'	SAME
LOW POINT	2,973.9'	SAME	2,957.7'	SAME
TOUCHDOWN ZONE ELEVATION	3,061.7'/3018.1'	SAME	2966.9'/2,975.6'	SAME

NOTES:
1. This drawing reflects current planning standards applicable to Apple Valley Airport. This drawing is not intended to be used for construction documentation or navigation.
2. Aerial photography provided by Air Photo Services, Inc. dated 10-12-03.
3. All coordinate data is NAD83/NAVD88.



VICINITY MAP



BUILDING LEGEND

NO.	DESCRIPTION	TOP ELEVATION
1	TERMINAL	
2	AIRPORT MAINTENANCE BUILDING	
3	FBO HANGAR	
3A	HANGAR	
4	T-HANGAR	
5	T-HANGAR	
6	T-HANGAR	
7	FBO HANGAR	
8	HANGAR	

AIRPORT DATA

	EXISTING	FUTURE
AIRPORT ELEVATION (AMSL) NGS 405 (NAVD 88)	3,061.7'	SAME
AIRPORT REFERENCE POINT (ARP) NGS 405 (NAD 83)	[illegible]	SAME
AIRPORT REFERENCE CODE	C-II	SAME
NPIAS CATEGORY	GA	SAME
MEAN MAX. TEMPERATURE (HOTTEST MONTH)	97.9° JULY	SAME
TAXIWAY LIGHTING	MITL	SAME
TAXIWAY MARKING	NONE	SAME
AIRPORT & TERMINAL NAVAIDS	GPS	SAME

LAYOUT PLAN LEGEND

	EXISTING	FUTURE
AIRPORT PROPERTY LINE		
AIRPORT SECURITY FENCE		
AIRPORT BUILDINGS		
AIRFIELD PAVEMENT		
PAVED ROADS		
RUNWAY PROTECTION ZONE		
BUILDING RESTRICTION LINE	BRL	
OBSTACLE FREE ZONE	OFZ	
RUNWAY SAFETY AREA	RSA (E)	
RUNWAY OBJECT FREE AREA	ROFA (E)	
FUEL STORAGE AREA		
AIRPORT BEACON		
LIGHTED WIND CONE & SEGMENTED CIRCLE		
WIND CONE		
PRECISION APPROACH PATH INDICATOR (PAPI)		
RUNWAY END IDENTIFIER LIGHTS (REIL)		

Conceptual Development Plan

Apple Valley Airport

APPLE VALLEY CALIFORNIA

San Bernardino County
Department of Airports

August, 2004

Figure D1 Conceptual Development Plan

Source: Original Airport Layout Plan by P & D Aviation, Orange, CA 12/92.

Noise Analysis ■ INTRODUCTION.

Noise is generally defined as unwanted sound and, as such, the judgment of acceptable levels is subjective. The day-night sound level (DNL) methodology is used to determine both the noise levels resulting from existing conditions and the potential noise levels that could be expected to occur in the future. The commonly used metric in California is the Community Noise Equivalent Level (CNEL), which is very similar to DNL in methodology. CNEL noise levels usually are depicted as grid cells or noise contours. Grid cells are squares of land of a specific size that are entirely characterized by a noise level. Noise contours are interpolations of noise levels based on the centroid of a grid cell and drawn to connect all points of similar level. Noise contours appear similar to topographical contours and form concentric "footprints" about a noise source. These footprints of CNEL noise contours drawn around an airport are used to predict community response to the noise from aircraft using that airport.

Both DNL and CNEL are cumulative noise metrics that compensate for the widely assumed increase in people's sensitivity to noise during nighttime hours. Each aircraft operation occurring between 10:00 p.m. and 7:00 a.m. is treated as if it were ten operations. Similarly, CNEL (but not DNL) includes a penalty weighting for operations taking place between 7:00 and 10:00 p.m. in the evening. Each aircraft operation during these hours is counted as if it were three operations. Logarithmically, these multipliers are the equivalent of adding ten decibels (dB) to the noise levels of each nighttime operation and 4.77 dB to the noise level of each evening operation.

The main advantage of DNL and CNEL is that they provide a common measure for a variety of different noise environments. The same CNEL level can describe both an area with very few high

level noise events and an area with many low level noise events. CNEL noise contours are thus constructed because it has been found that the total noise energy in an area predicts community response. It must be remembered that CNEL noise contours do not delineate areas that are either free from excessive noise or areas that will be subjected to excessive noise. In other words, it cannot be expected that a person living on one side of a CNEL noise contour will have a markedly different reaction than a person living nearby, but on the other side of the noise contour. What can be expected is that the general aggregate community response to noise within the 65 CNEL noise contour, for example, will be less than the public response from the 70 CNEL noise contour, and even less still than the response from within the 75 CNEL noise contour.

CNEL noise contours are generated using the Integrated Noise Model (INM) Version 6.1, which is a computer program developed by the Federal Aviation Administration specifically for modeling the noise environment at airports. The original version of the INM was released in 1977 and Version 6.1 was released in March 2003. The program provides standard aircraft noise and performance data for over 200 aircraft, and can be tailored to the specifics of individual airports.

NOISE IMPACTS

Using the existing aircraft operations presented earlier, existing noise contours have been generated and are presented in the following figure entitled *EXISTING NOISE CONTOURS (2003) WITH AERIAL PHOTO BASE (2003)*. The existing aircraft operations were sufficient to generate the 75, 70, 65, and 60 CNEL noise contours; however, there was an insufficient number of operations on Runway 8/26 to generate even a 60 CNEL contour. The 75 CNEL noise contour encompasses approximately one acre, the 70 CNEL noise contour encompasses eight acres, the 65 CNEL noise contour encompasses roughly 73 acres, and the 60 CNEL noise contour encompasses some 151 acres. None of these noise contours extend beyond airport property.

The previously presented future aircraft operations were used to generate future noise contours and are presented in the following figure entitled *FUTURE NOISE CONTOURS (2023) WITH AERIAL PHOTO BASE (2003)*. Future aircraft operations were sufficient to generate the 75, 70, 65, and 60 CNEL noise contours. As with the existing noise contours, there is an insufficient number of operations on Runway 8/26 to generate even a 60 CNEL noise contour.

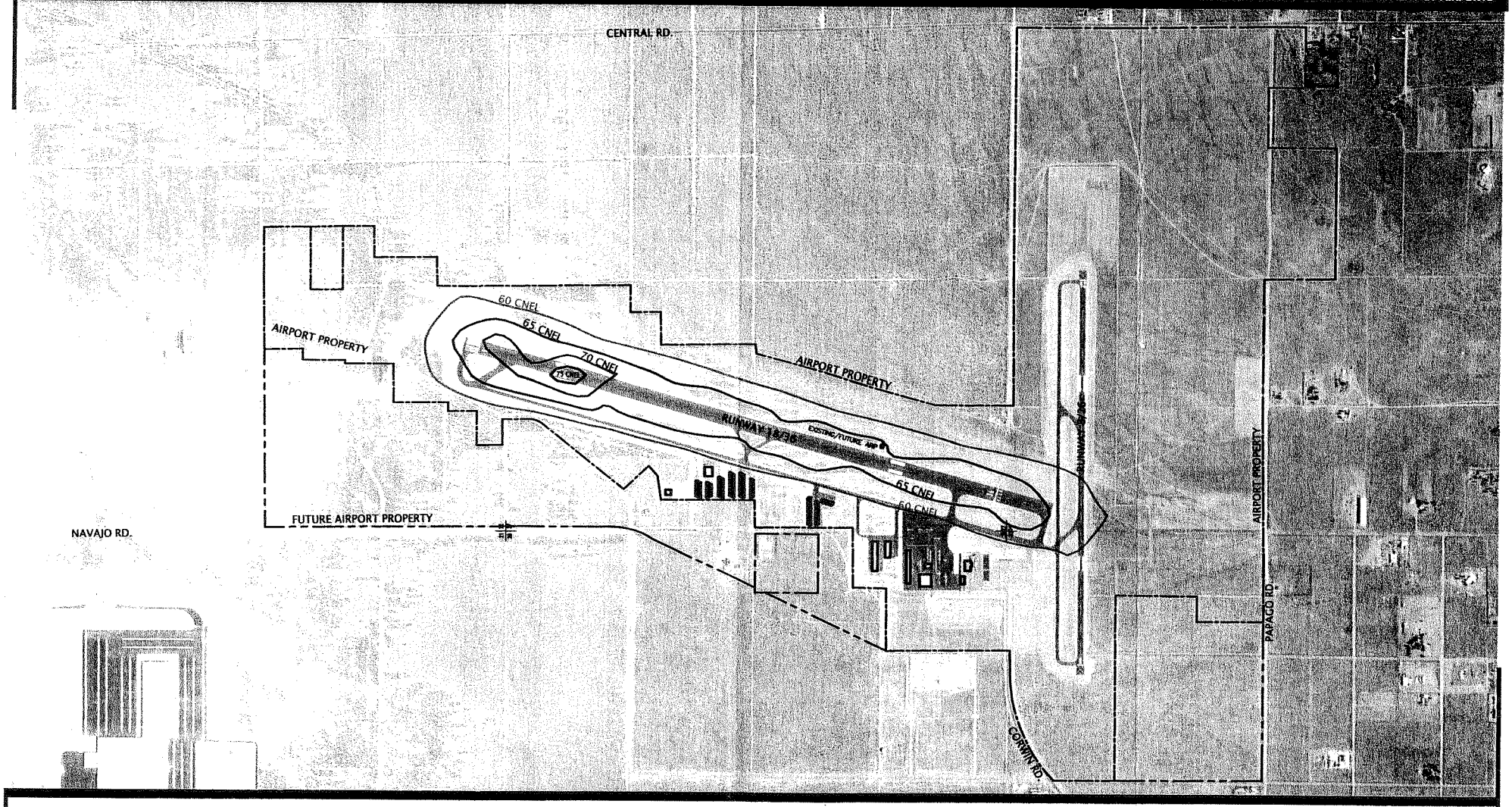


Figure E1 **Existing Noise Contours (2003) with Aerial Photo Base (2003)**

>> Approximate Scale 1" = 1000'

SOURCE: AERIAL PHOTOGRAPHY BY AIR PHOTO SERVICES, INC., SANTA ANA, CA.

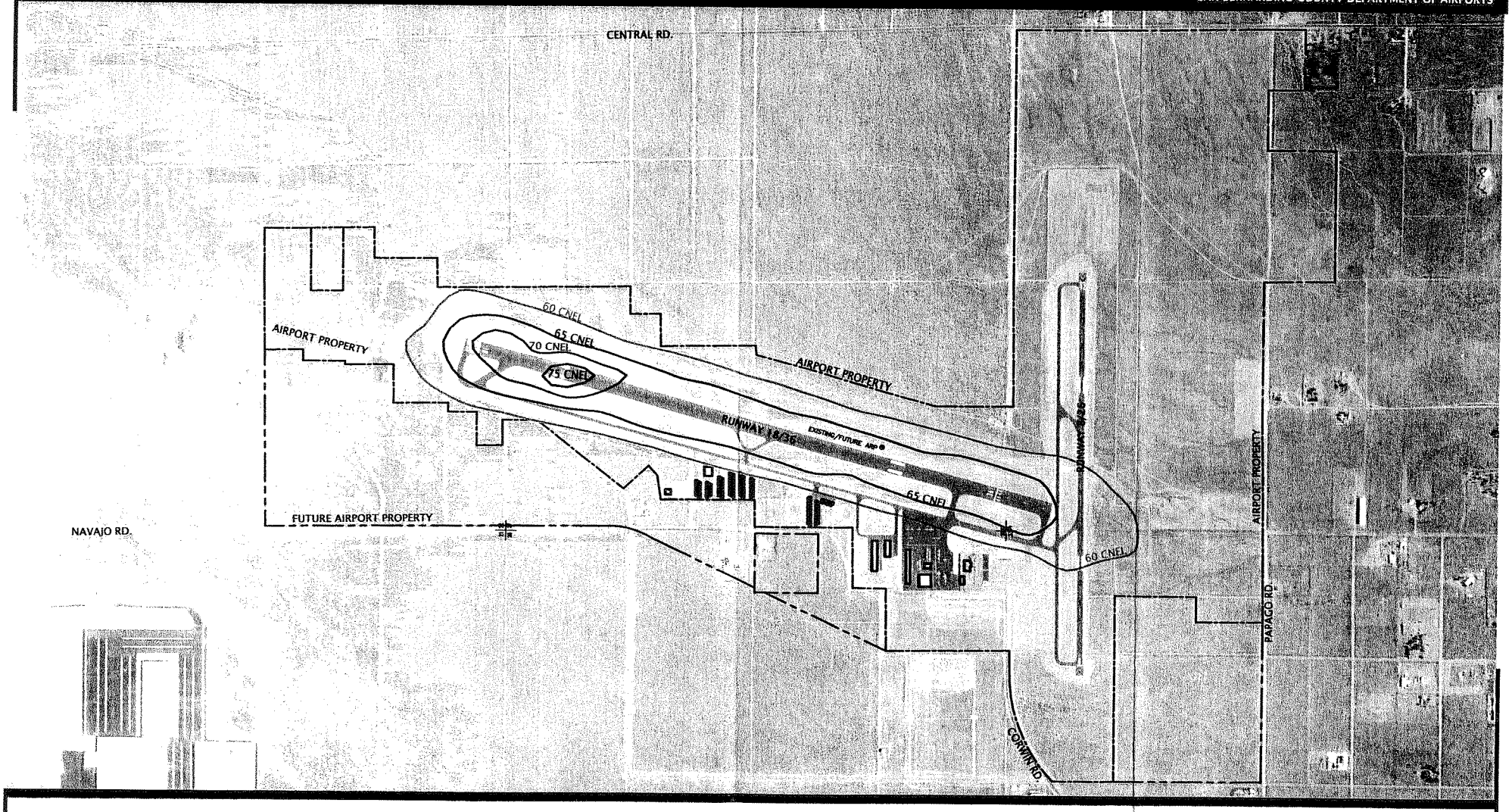


Figure E2 **Future Noise Contours (2023) with Aerial Photo Base (2003)**

>>Approximate Scale 1" = 1000'

SOURCE: AERIAL PHOTOGRAPHY BY AIR PHOTO SERVICES, INC., SANTA ANA, CA.

The future 75 CNEL noise contour encompasses approximately two acres, the future 70 CNEL noise contour encompasses 14 acres, the future 65 CNEL noise contour encompasses about 93 acres, and the future 60 CNEL noise contour encompasses approximately 187 acres. None of these noise contours extend beyond airport property.

RECOMMENDED LAND USE PLAN

Noise impacts are significant components in establishing sensible land use planning practices within the environs of an airport. Establishing land use compatibility within airport environs is the responsibility of local authorities, but should be based on a recognized standard. The Federal Aviation Regulations (FAR) Part 150 guidelines are the acknowledged standards by the federal government regarding aircraft generated noise at airports. The following figure, entitled *FAR PART 150 LAND USE COMPATIBILITY GUIDELINES*, indicates those land uses that are compatible within certain DNL noise contours. It identifies land uses as being compatible, incompatible, or compatible if sound attenuated. As can be seen, the guidelines indicate that the 65 DNL/CNEL noise contour is the threshold noise level for defining incompatible land uses.

Although the Airport is currently surrounded primarily by compatible land uses, there is some potential for future land use incompatibilities in the areas surrounding Apple Valley Airport. The primary thrust of the recommendations contained in this study will be the prevention of additional land uses that may result in incompatibility and the reduction of incompatible land uses that would occur in the future if no action were taken. Recommendations include:

- Acquisition of approximately five acres of land within and adjacent to the Runway 18 Protection Zone. This acquisition will protect aircraft operating in the surrounding airspace by giving the Airport control over land development. It will also enhance the protection of people by limiting development within the RPZ, where a higher risk of aircraft accidents exists and noise impacts are most intrusive.
- Work with San Bernardino County and the Town of Apple Valley to limit residential development in the areas directly adjacent to the Airport, particularly in the approach and departure flight paths along the extended runway centerlines.

LAND USE	YEARLY DAY-NIGHT NOISE LEVEL (DNL) IN DECIBELS					
	BELOW 65	65-70	70-75	75-80	80-85	OVER 85
RESIDENTIAL						
Residential, other than mobile homes and transient lodgings	Y	N(1)	N(1)	N	N	N
Mobile home parks	Y	N	N	N	N	N
Transient lodgings	Y	N(1)	N(1)	N(1)	N	N
PUBLIC USE						
Schools	Y	N(1)	N(1)	N	N	N
Hospitals and nursing homes	Y	25	30	N	N	N
Churches, auditoriums and concert halls	Y	25	30	N	N	N
Governmental services	Y	Y	25	30	N	N
Transportation	Y	Y	Y(2)	Y(3)	Y(4)	Y(4)
Parking	Y	Y	Y(2)	Y(3)	Y(4)	N
COMMERCIAL USE						
Offices, business and professional	Y	Y	25	30	N	N
Wholesale and retail-building materials, hardware and farm equipment	Y	Y	Y(2)	Y(3)	Y(4)	N
Retail trade-general	Y	Y	25	30	N	N
Utilities	Y	Y	Y(2)	Y(3)	Y(4)	N
Communication	Y	Y	25	30	N	N
MANUFACTURING AND PRODUCTION						
Manufacturing, general	Y	Y	Y(2)	Y(3)	Y(4)	N
Photographic and optical	Y	Y	25	30	N	N
Agriculture (except livestock) and forestry	Y	Y(6)	Y(7)	Y(8)	Y(8)	Y(8)
Livestock farming and breeding	Y	Y(6)	Y(7)	N	N	N
Mining and fishing resource production and extraction	Y	Y	Y	Y	Y	Y
RECREATIONAL						
Outdoor sports arenas and spectator sports	Y	Y(5)	Y(5)	N	N	N
Outdoor music shells, amphitheaters	Y	N	N	N	N	N
Nature exhibits and zoos	Y	Y	N	N	N	N
Amusements, parks, resorts and camps	Y	Y	Y	N	N	N
Golf courses, riding stables and water recreation	Y	Y	25	30	N	N

Numbers in parentheses refer to NOTES.

The designations contained in this table do not constitute a Federal determination that any use of land covered by the program is acceptable or unacceptable under Federal, State or local law. The responsibility for determining the acceptable and permissible land uses and the relationship between specific properties and specific noise contours rests with the local authorities. FAA determinations under Part 150 are not intended to substitute federally determined land uses for those determined to be appropriate by local authorities in response to locally determined needs and values in achieving noise compatible land uses.

TABLE KEY

SLUCM	Standard Land Use Coding Manual.
Y(Yes)	Land Use and related structures compatible without restrictions.
N(No)	Land Use and related structures are not compatible and should be prohibited.
NLR	Noise Level Reduction (outdoor to indoor) to be achieved through incorporation of noise attenuation into the design and construction of the structure.
25, 30 or 35	Land Use and related structures generally compatible; measures to achieve NLR of 25, 30 or 35 dB must be incorporated into design and construction of structure.

NOTES

(1) Where the community determines that residential or school uses must be allowed, measures to achieve outdoor to indoor Noise Level Reduction (NLR) of at least 25 dB to 30 dB should be incorporated into building codes and be considered in individual approvals. Normal residential construction can be expected to provide a NLR of 20 dB, thus, the reduction requirements are often stated as 5, 10 or 15 dB over standard construction and normally assume mechanical ventilation and closed windows year round. However, the use of NLR criteria will not eliminate outdoor noise problems.

(2) Measures to achieve NLR of 25 dB must be incorporated into the design and construction of portions of these buildings where the public is received, office areas, noise sensitive areas or where the normal noise level is low.

(3) Measures to achieve NLR of 30 dB must be incorporated into the design and construction of portions of these buildings where the public is received, office areas, noise sensitive areas or where the normal noise level is low.

(4) Measures to achieve NLR of 35 dB must be incorporated into the design and construction of portions of these buildings where the public is received, office areas, noise sensitive areas or where the normal noise level is low.

(5) Land use compatible provided that special sound reinforcement systems are installed.

(6) Residential buildings require an NLR of 25.

(7) Residential buildings require an NLR of 30.

(8) Residential buildings not permitted.

Figure E3 **FAR Part 150 Land Use Compatibility Guidelines**

Airport Plans and Development Program ■ INTRODUCTION.

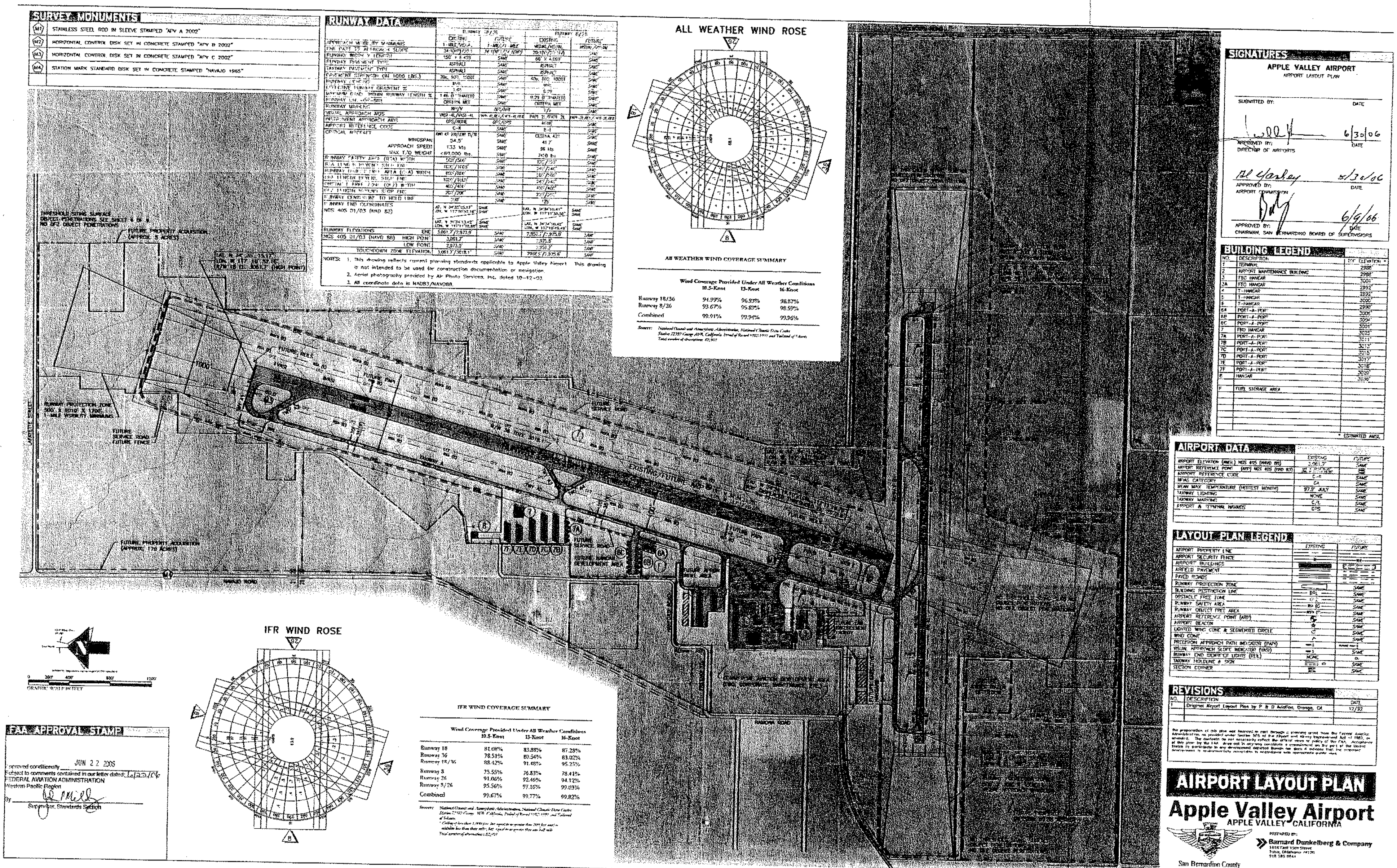
The Development Plan is portrayed as a unified development scheme, representing the long-range, ultimate development of the Airport. However, it is recognized that future demand for facilities cannot be accurately predicted, particularly during the latter stages of the planning period. Therefore, emphasis is placed on the initial portion of the planning period where the projections are more definable and the magnitude of program accomplishment is more pronounced.

AIRPORT PLANS

Because previous chapters have established and quantified the future development needs of the Airport, the various elements of the selected plan are categorically reviewed here in a graphic format. A brief written description of the individual drawings, represented in the set of *Airport Plans* for Apple Valley Airport, is accompanied by a graphic description presented in the form of the *Airport Layout Plan*, the *Airport Airspace Plan and Profile Drawings*, the *Inner Portion of the Approach Surface Drawings*, the *Terminal Area Plan*, the *Land Use Plan*, and the *Airport Property Map*.

■ Airport Layout Drawing

The following illustration, entitled *AIRPORT LAYOUT PLAN*, is a graphic depiction of the ultimate airport facilities required to enable the Airport to accommodate the forecast future demand. Additionally, the drawing provides detailed information on airport and runway design criteria in relationship to applicable standards, and presents the major components of future airport development.



All WEATHER WIND COVERAGE SUMMARY

	Wind Coverage Provided Under All Weather Conditions 10.5-Knot	13-Knot	16-Knot
Runway 18/36	94.99%	96.93%	98.87%
Runway 8/26	93.67%	95.89%	98.59%
Combined	99.91%	99.94%	99.96%

IFR WIND COVERAGE SUMMARY

	Wind Coverage Provided Under All Weather Conditions 10.5-Knot	13-Knot	16-Knot
Runway 18	81.08%	83.88%	87.28%
Runway 36	78.51%	80.54%	83.02%
Runway 18/36	88.42%	91.46%	95.25%
Runway 8	75.55%	76.83%	78.41%
Runway 26	91.06%	92.46%	94.12%
Runway 8/26	95.56%	97.16%	99.03%
Combined	99.67%	99.77%	99.82%

■ Airport Airspace Drawings

The *AIRPORT AIRSPACE DRAWINGS*, illustrated in the following figures, are based on Federal Aviation Regulations (FAR) Part 77, *Objects Affecting Navigable Airspace.* In order to protect airspace and approaches from hazards that could affect the safe and efficient operation of aircraft, federal criteria contained in FAR Part 77 criteria specify a set of imaginary surfaces that, when penetrated by an object (structure, tree, or terrain), designate the object as being an obstruction.

■ Inner Portion of Approach Surface Drawings

The Inner Portion of the Approach Surface Drawings provides a more detailed view of the inner portions of the Part 77 imaginary approach surfaces. They are intended to facilitate identification of roadways, utility lines, railroads, structures, and other possible obstructions that may lie within the confines of, or near, the approach surfaces. As with the *AIRPORT AIRSPACE DRAWINGS*, these drawings are based upon the ultimate planned runway configuration and length, the ultimate planned approaches to each runway end, and the ultimate runway end elevation.

■ Terminal Area Plan

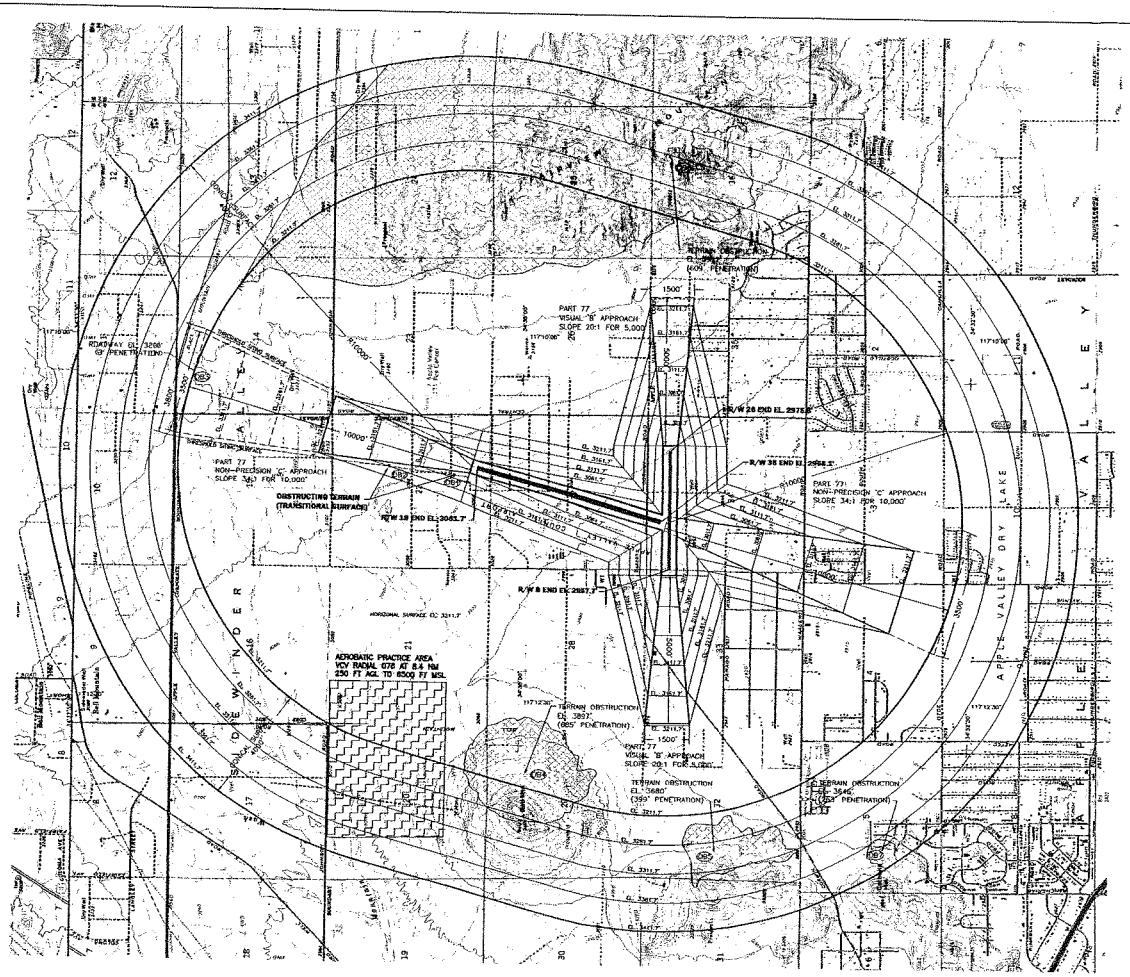
The *TERMINAL AREA PLAN* provides a detailed drawing of the more intensely developed portions of the Airport. This development area has previously been depicted on the *AIRPORT LAYOUT PLAN.*

■ Land Use Plan

The *LAND USE PLAN*, presented in a following figure, depicts existing and recommended use of all land within the ultimate airport property line and vicinity of the Airport. The purpose of this drawing is to provide airport management a plan for leasing revenue-producing areas on the Airport. It also provides guidance to local authorities for establishing appropriate land use zoning within the vicinity of the Airport.

■ Airport Property Map

The *AIRPORT PROPERTY MAP (Exhibit A)*, which is presented in a following illustration, indicates how various tracts of land within the airport boundaries were acquired (e.g., federal funds, surplus property, local funds, etc.). The purpose of the Airport Property Map is to provide information for analyzing the current and future aeronautical use of land acquired with federal funds.



OBSTRUCTIONS					
NO.	DESCRIPTION	ELEVATION*	SURFACE	PENETRATION	DISPOSITION
OB1	GROUND	3100'	TRANS.	11'	NONE
OB2	GROUND	3161'	TRANS.	7'	NONE
OB3	ROADWAY	3200'	HORIZ.	3'	NONE
OB4	GROUND	3987'	HORIZ.	685'	NONE
OB5	GROUND	3690'	CONICAL	399'	NONE
OB6	GROUND	3912'	CONICAL	609'	NONE
OB7	GROUND	3645'	CONICAL	263'	NONE

* 15' ADDED TO ROAD ELEVATIONS, 17' ADDED TO HIGHWAY ELEVATIONS AND 23' ADDED TO RAILROAD ELEVATIONS TO DETERMINE PENETRATION.

NOTE: CURRENT OBSTRUCTION CHART NOT AVAILABLE.

TERRAIN OBSTRUCTION

Source: USGS 7.5 Minute Quadrangle maps: Apple Valley North & Turtle Valley, California

GRAPHIC SCALE IN FEET

AIRSPACE PLAN VIEW

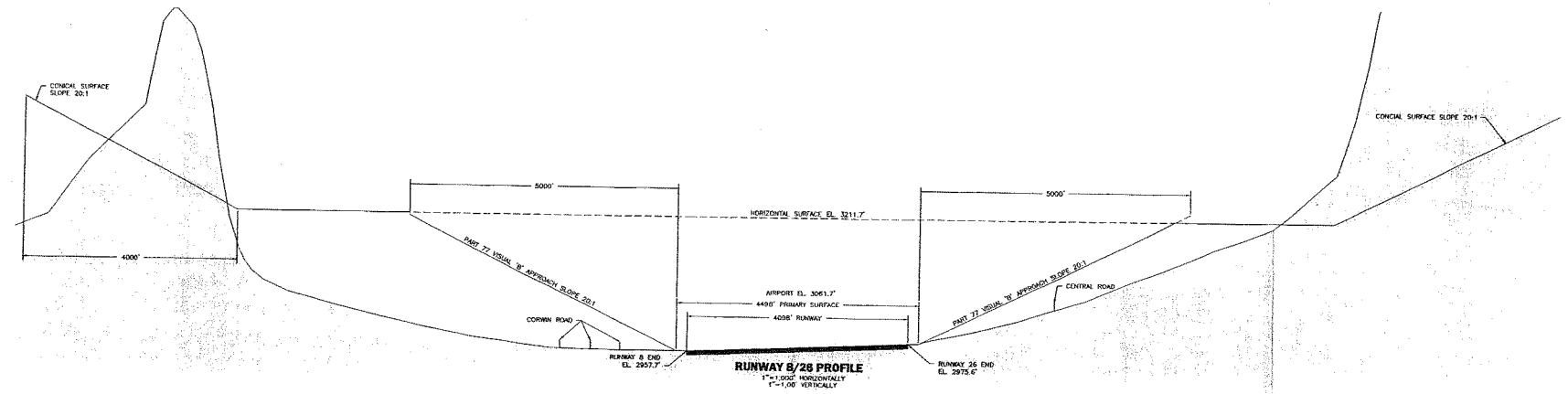
Apple Valley Airport

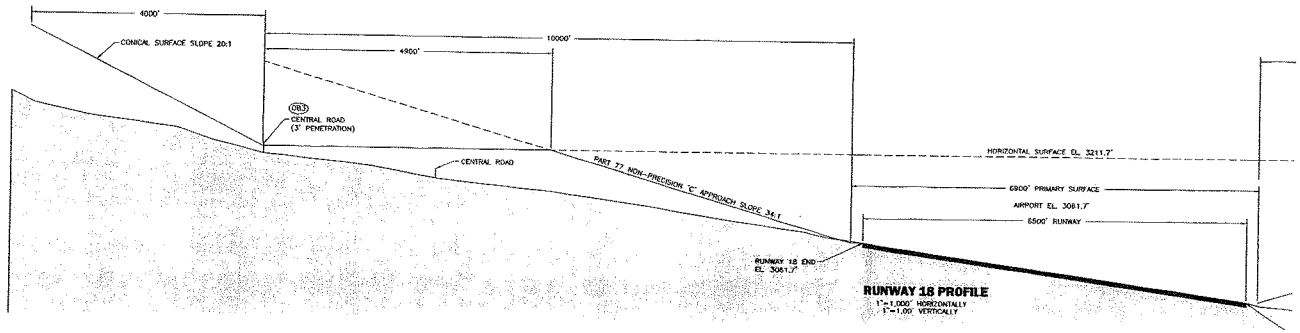
APPLE VALLEY • CALIFORNIA

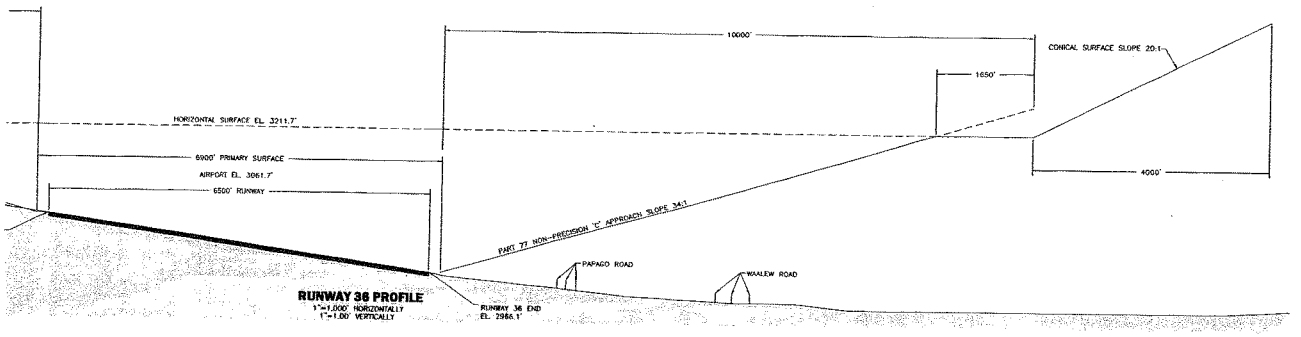
Barnard Dunkelberg & Company
1610 East 15th Street
Tulsa, Oklahoma 74120
918.585.8644

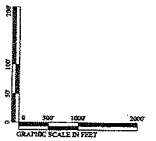
San Bernardino County
Department of Airports

Figure F2 **Airport Airspace - Plan View**









Terrain profile represents the highest point across the width and along the length of the extended approach surface.

OBSTRUCTIONS

NO.	DESCRIPTION	ELEVATION*	SURFACE	PENETRATION	DISPOSITION
OBJ	ROADWAY	3200'	HORIZ.	3'	NONE

* 15' ADDED TO ROAD ELEVATIONS, 17' ADDED TO HIGHWAY ELEVATIONS AND 23' ADDED TO RAILROAD ELEVATIONS TO DETERMINE PENETRATION.

NOTE: CURRENT OBSTRUCTION CHART NOT AVAILABLE.

AIRSPACE PROFILE VIEW

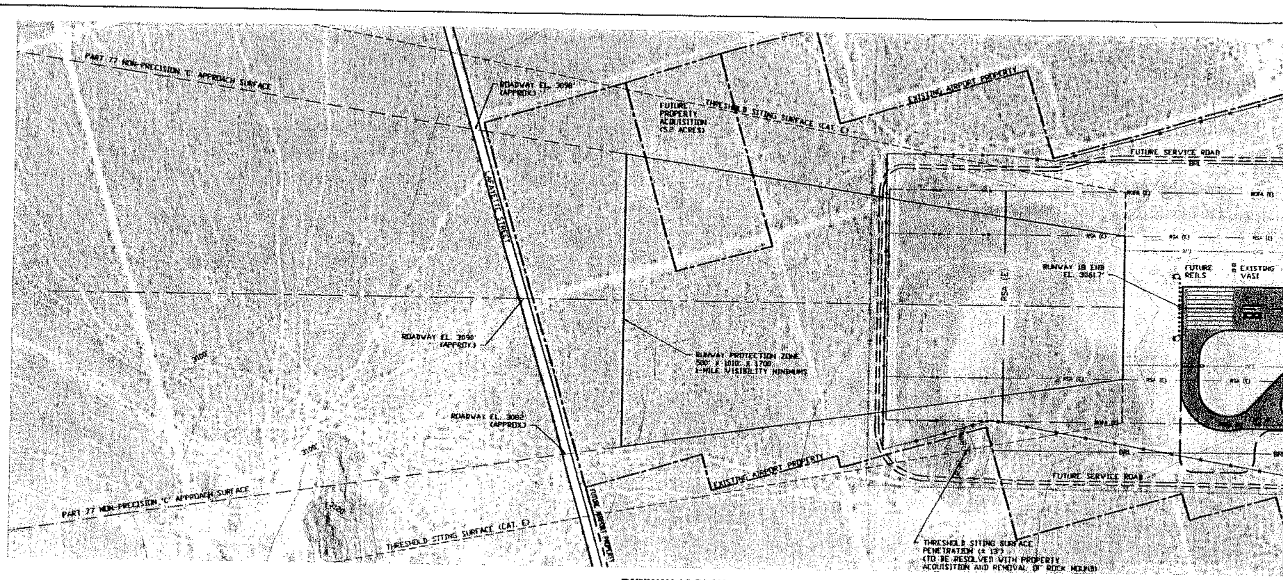
Apple Valley Airport

APPLE VALLEY • CALIFORNIA

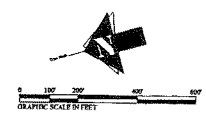
Barnard Dunkelberg & Company
1616 East 15th Street
Tulsa, Oklahoma 74120
918.585.8844

San Bernardino County
Department of Airports

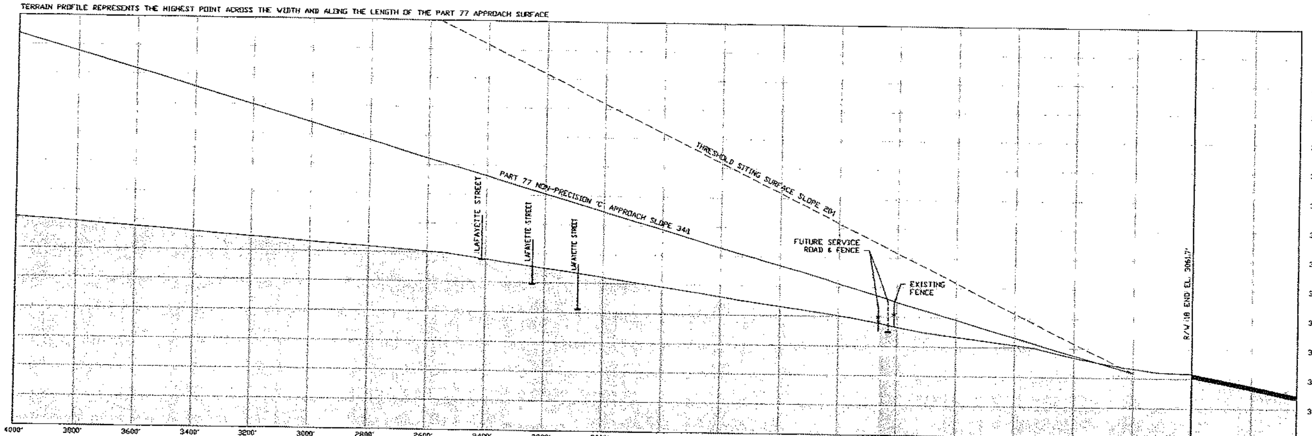
Figure F3 **Airport Airspace - Profile View**



RUNWAY 18 PLAN
1" = 200' HORIZONTALLY



TERRAIN PROFILE REPRESENTS THE HIGHEST POINT ACROSS THE WIDTH AND ALONG THE LENGTH OF THE PART 77 APPROACH SURFACE



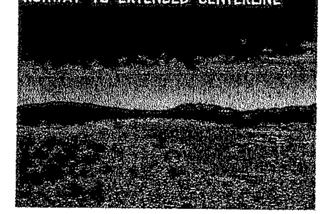
RUNWAY 18 PROFILE
1" = 200' HORIZONTALLY
1" = 20' VERTICALLY

RUNWAY DATA

	RUNWAY 18/36 EXISTING	RUNWAY 18/36 FUTURE
APPROACH VISIBILITY MINIMUMS	1-MILE/VISUAL	1-MILE/1-MILE
FAR PART 77 APPROACH SLOPE	34:1(NP)/20:1	34:1(NP)/34:1(NP)
RUNWAY WIDTH X LENGTH	150' X 6,498'	SAME
RUNWAY PAVEMENT TYPE	ASPHALT	SAME
TAXIWAY PAVEMENT TYPE	ASPHALT	SAME
PAVEMENT STRENGTH (IN 1000 LBS.)	70S, 90D, 150DT	SAME
RUNWAY LIGHTING	MIRL	SAME
EFFECTIVE RUNWAY GRADIENT %	1.48	SAME
MAXIMUM GRADE WITHIN RUNWAY LENGTH		
RUNWAY LINE-OF-SITE	CRITERIA MET	SAME
RUNWAY MARKING	NPI/V	NPI/NPI
VISUAL APPROACH AIDS	VASI-4L/VASI-4L	PAPI-4L,REIL/PAPI-4L,REIL
INSTRUMENT APPROACH AIDS	GPS/NONE	GPS/GPS
AIRPORT REFERENCE CODE	C-II	SAME
CRITICAL AIRCRAFT	[illegible]	SAME
WINGSPAN	54.5'	SAME
APPROACH SPEED	133 kts	SAME
MAX T/O WEIGHT	<60,000 lbs.	SAME
RUNWAY SAFETY AREA (RSA) WIDTH	500'/500'	SAME
RSA LENGTH BEYOND STOP END	1000'/1000'	SAME
RUNWAY OBJECT FREE AREA (OFA) WIDTH	800'/800'	SAME
OFA LENGTH BEYOND STOP END	1000'/1000'	SAME
OBSTACLE FREE ZONE (OFZ) WIDTH	400'/400'	SAME
OFZ LENGTH BEYOND STOP END	200'/200'	SAME
RUNWAY CENTERLINE TO HOLD LINE	200'	SAME
RUNWAY END COORDINATES NGS 405 01/03 (NAD 83)	LAT. N 34°35'16.17" LON. W 117°10'57.16"	SAME SAME
	LAT. N 34°34'13.40" LON. W 117°11'18.66"	SAME SAME
RUNWAY ELEVATIONS END	3,061.7'/2,973.9'	SAME
NGS 405 01/03 (NAVD 88) HIGH POINT	3,061.7'	SAME
LOW POINT	2,973.9'	SAME
TOUCHDOWN ZONE ELEVATION	3,061.7'/3016.1'	SAME

NOTES:
1. This drawing reflects current planning standards applicable to Apple Valley Airport. This drawing is not intended to be used for construction documentation or navigation.
2. Aerial photography provided by Air Photo Services, Inc. dated 10-12-03.
3. All coordinate data is NAD83/NAVD88.

RUNWAY 18 EXTENDED CENTERLINE



AIRPORT DATA

	EXISTING	FUTURE
AIRPORT ELEVATION (AMSL) NGS 405 (NAVD 88)	3,061.7'	SAME
AIRPORT REFERENCE POINT (ARP) NGS 405 (NAD 83)	[illegible]	SAME SAME
AIRPORT REFERENCE CODE	C-II	SAME
NPIAS CATEGORY	GA	SAME
MEAN MAX. TEMPERATURE (HOTTEST MONTH)	97.9° JULY	SAME
TAXIWAY LIGHTING	NONE	SAME
TAXIWAY MARKING	C/L	SAME
AIRPORT & TERMINAL NAVAIDS	GPS	SAME

LAYOUT PLAN LEGEND

	EXISTING	FUTURE
AIRPORT PROPERTY LINE		
AIRPORT SECURITY FENCE		
AIRPORT BUILDINGS		
AIRFIELD PAVEMENT		
PAVED ROADS		
RUNWAY PROTECTION ZONE		SAME
BUILDING RESTRICTION LINE	BRL	SAME
OBSTACLE FREE ZONE		SAME
RUNWAY SAFETY AREA	RSA (E)	SAME
RUNWAY OBJECT FREE AREA	ROFA (E)	SAME
AIRPORT REFERENCE POINT (ARP)		SAME
AIRPORT BEACON		SAME
LIGHTED WIND CONE & SEGMENTED CIRCLE		SAME
WIND CONE		SAME
PRECISION APPROACH PATH INDICATOR (PAPI)		
VISUAL APPROACH SLOPE INDICATOR (VASI)		SAME
RUNWAY END IDENTIFIER LIGHTS (REIL)	NONE	
TAXIWAY HOLDLINE & SIGN		SAME
SECTION CORNER		SAME

R/W 18 APPROACH

Apple Valley Airport
APPLE VALLEY CALIFORNIA

Barnard Dunkelberg & Company
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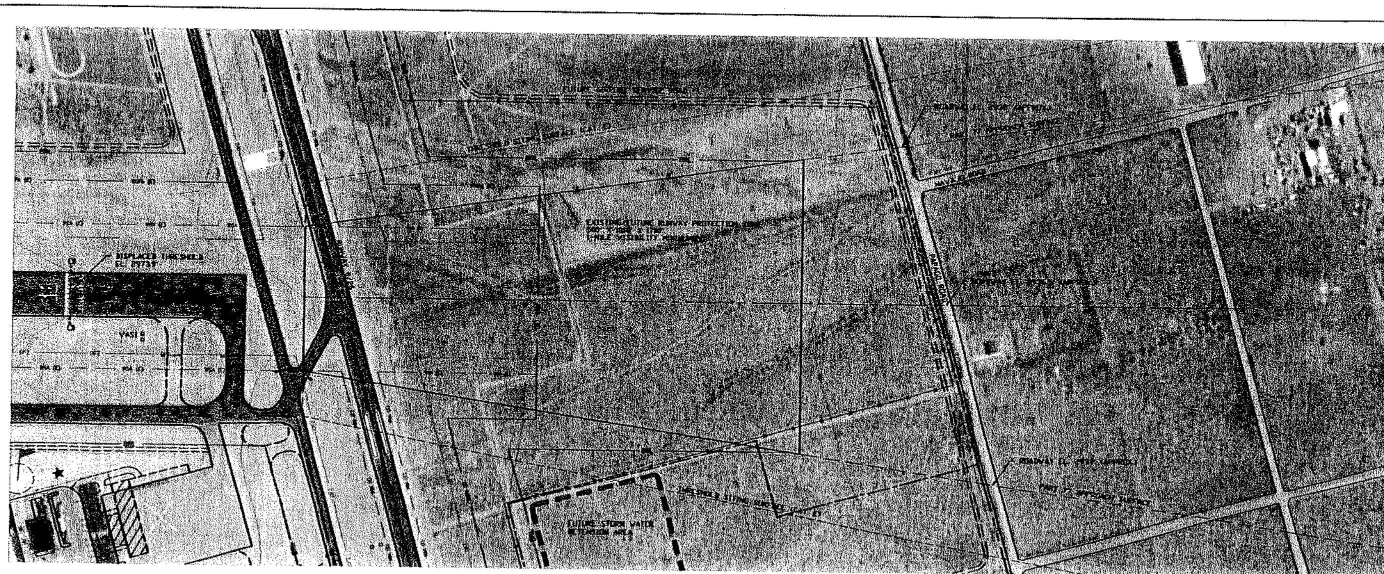
Tulsa, Oklahoma 74120
918.585.8844

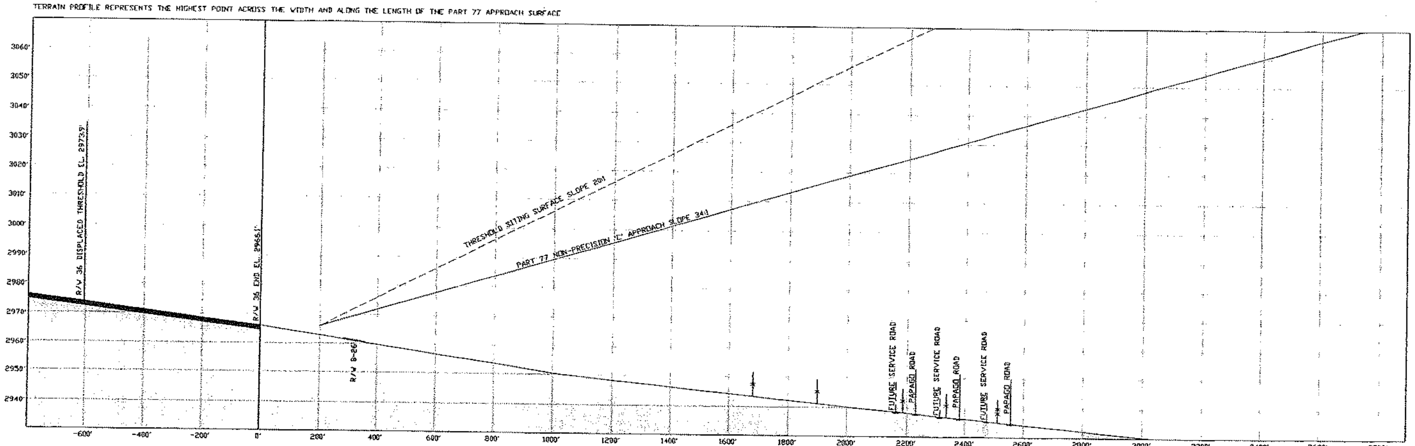
San Bernardino County
Department of Airports

Figure F4 **Inner Portion of Approach Surface Drawing - Runway 18**



RUNWAY 36 PLAN
1" = 200' HORIZONTALLY

TERRAIN PROFILE REPRESENTS THE HIGHEST POINT ACROSS THE WIDTH AND ALONG THE LENGTH OF THE PART 77 APPROACH SURFACE



RUNWAY 36 PROFILE
1" = 200' HORIZONTALLY
1" = 20' VERTICALLY

GRAPHIC SCALE IN FEET: 0 100' 200' 400' 600'

RUNWAY DATA

	RUNWAY 18/36 EXISTING	RUNWAY 18/36 FUTURE
APPROACH VISIBILITY MINIMUMS	1-MILE/VISUAL	1-MILE/1-MILE
FAR PART 77 APPROACH SLOPE	34:1(NP)/20:1	34:1(NP)/34:1(NP)
RUNWAY WIDTH X LENGTH	150' X 6,498'	SAME
RUNWAY PAVEMENT TYPE	ASPHALT	SAME
TAXIWAY PAVEMENT TYPE	ASPHALT	SAME
PAVEMENT STRENGTH (IN 1000 LBS.)	70s, 90D, 150DT	SAME
RUNWAY LIGHTING	MIRL	SAME
EFFECTIVE RUNWAY GRADIENT %	1.42	SAME
MAXIMUM GRADE WITHIN RUNWAY LENGTH	-	-
RUNWAY LINE-OF-SITE	CRITERIA MET	SAME
RUNWAY MARKING	NPI/V	NPI/NPI
VISUAL APPROACH AIDS	VASI-4L/VASI-4L	PAPI-4L,REIL/PAPI-4L,REIL
INSTRUMENT APPROACH AIDS	GPS/NONE	GPS/GPS
AIRPORT REFERENCE CODE	C-II	SAME
CRITICAL AIRCRAFT	[illegible]	SAME
WINGSPAN	54.5'	SAME
APPROACH SPEED	133 kts	SAME
MAX T/O WEIGHT	<60,000 lbs.	SAME
RUNWAY SAFETY AREA (RSA) WIDTH	500'/500'	SAME
RSA LENGTH BEYOND STOP END	1000'/1000'	SAME
RUNWAY OBJECT FREE AREA (OFA) WIDTH	800'/800'	SAME
OFA LENGTH BEYOND STOP END	1000'/1000'	SAME
OBSTACLE FREE ZONE (OFZ) WIDTH	400'/400'	SAME
OFZ LENGTH BEYOND STOP END	200'/200'	SAME
RUNWAY CENTERLINE TO HOLD LINE	200'	SAME
RUNWAY END COORDINATES NGS 405 01/03 (NAD 83)	LAT. N 34°35'15.17" LON. W 117°10'57.15"	SAME SAME
	LAT. N 34°34'13.42" LON. W 117°11'18.68"	SAME SAME
RUNWAY ELEVATIONS END	3,061.7'/2,973.9'	SAME
NGS 405 01/03 (NAVD 88) HIGH POINT	3,061.7'	SAME
LOW POINT	2,973.9'	SAME
TOUCHDOWN ZONE ELEVATION	3,061.7'/3018.1'	SAME

NOTES:
1. This drawing reflects current planning standards applicable to Apple Valley Airport. This drawing is not intended to be used for construction documentation or navigation.
2. Aerial photography provided by Air Photo Services, Inc. dated 10-12-03.
3. All coordinate data is NAD83/NAVD88.

RUNWAY 36 EXTENDED CENTERLINE

AIRPORT DATA

	EXISTING	FUTURE
AIRPORT ELEVATION (AMSL) NGS 405 (NAVD 88)	3,061.7'	SAME
AIRPORT REFERENCE POINT (ARP) NGS 405 (NAD 83)	[illegible]	SAME SAME
AIRPORT REFERENCE CODE	C-II	SAME
NPIAS CATEGORY	GA	SAME
MEAN MAX. TEMPERATURE (HOTTEST MONTH)	97.9° JULY	SAME
TAXIWAY LIGHTING	NONE	SAME
TAXIWAY MARKING	C/L	SAME
AIRPORT & TERMINAL NAVAIDS	GPS	SAME

LAYOUT PLAN LEGEND

	EXISTING	FUTURE
AIRPORT PROPERTY LINE		
AIRPORT SECURITY FENCE		
AIRPORT BUILDINGS		
AIRFIELD PAVEMENT		
PAVED ROADS		
RUNWAY PROTECTION ZONE		SAME
BUILDING RESTRICTION LINE	BRL	SAME
OBSTACLE FREE ZONE	OFZ	SAME
RUNWAY SAFETY AREA	RSA	SAME
RUNWAY OBJECT FREE AREA	ROFA	SAME
AIRPORT REFERENCE POINT (ARP)		SAME
AIRPORT BEACON		SAME
LIGHTED WIND CONE & SEGMENTED CIRCLE		SAME
WIND CONE		SAME
PRECISION APPROACH PATH INDICATOR (PAPI)	PAPI	FUTURE PAPI
VISUAL APPROACH SLOPE INDICATOR (VASI)	VASI	SAME
RUNWAY END IDENTIFIER LIGHTS (REIL)	NONE	[illegible]
TAXIWAY HOLDLINE & SIGN		SAME
SECTION CORNER		SAME

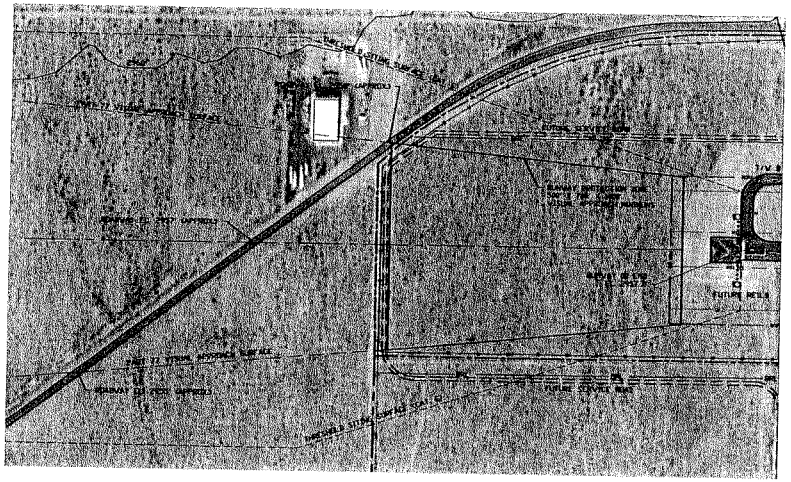
R/W 36 APPROACH

Apple Valley Airport
APPLE VALLEY CALIFORNIA

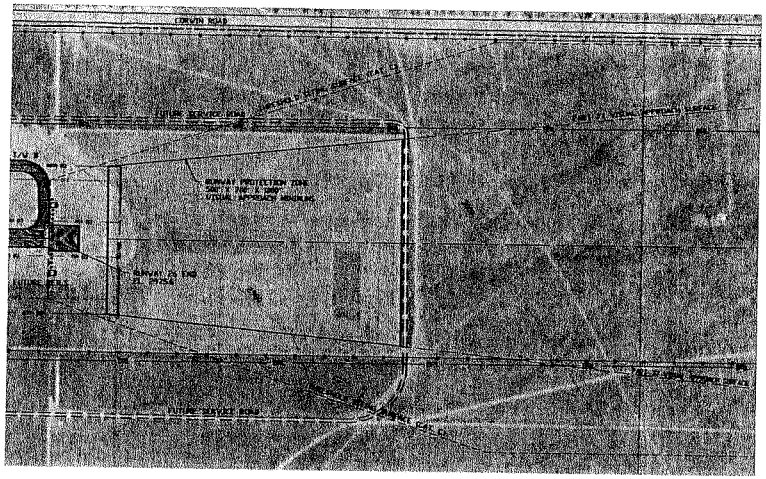
Barnard Dunkelberg & Company
1616 East 15th Street
Tulsa, Oklahoma 74120
918.585.8844

San Bernardino County
Department of Airports

Figure F5 **Inner Portion of Approach Surface Drawing - Runway 36**



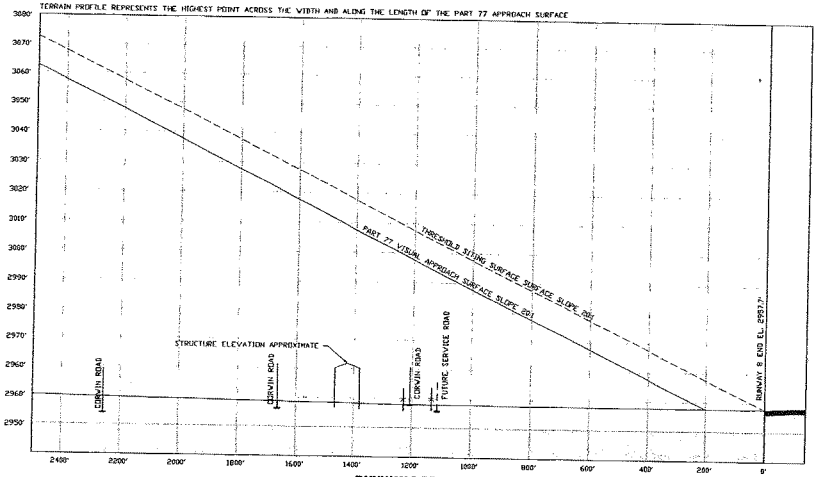
RUNWAY 8 PLAN
1" = 200' HORIZONTALLY



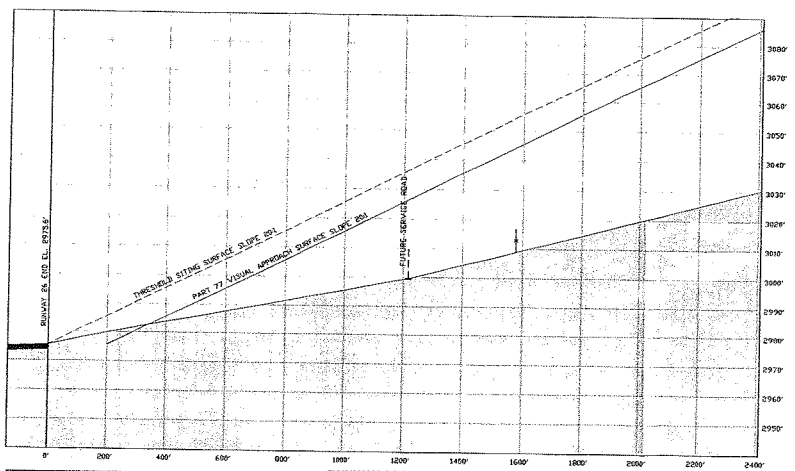
RUNWAY 26 PLAN
1" = 200' HORIZONTALLY

RUNWAY DATA	RUNWAY 8/26	
	EXISTING	FUTURE
APPROACH VISIBILITY MINIMUMS	VISUAL/VISUAL	VISUAL/VISUAL
FAR PART 77 APPROACH SLOPE	20:1/20:1	SAME
RUNWAY WIDTH X LENGTH	60' X 4,099'	SAME
RUNWAY PAVEMENT TYPE	ASPHALT	SAME
TAXIWAY PAVEMENT TYPE	ASPHALT	SAME
PAVEMENT STRENGTH (IN 1000 LBS.)	40k, 90D, 100D	SAME
RUNWAY LIGHTING	MIRL	SAME
EFFECTIVE RUNWAY GRADIENT S	0.59	SAME
MAXIMUM GRADE WITHIN RUNWAY LENGTH		SAME
RUNWAY LINE-OF-SITE	CRITERIA MET	SAME
RUNWAY MARKING	N/N	SAME
VISUAL APPROACH AIDS	PAPI-2L/PAPI-2L	PAPI-2L(8)/PAPI-2L(26)
INSTRUMENT APPROACH AIDS	NONE	SAME
AIRPORT REFERENCE CODE	B-I	SAME
CRITICAL AIRCRAFT	CESSNA 421	SAME
WINGSPAN	41.7'	SAME
APPROACH SPEED	95 kts	SAME
MAX T/O WEIGHT	7450 lbs	SAME
RUNWAY SAFETY AREA (RSA) WIDTH	120'/120'	SAME
RSA LENGTH BEYOND STOP END	240'/240'	SAME
RUNWAY OBJECT FREE AREA (OFA) WIDTH	500'/500'	SAME
OFA LENGTH BEYOND STOP END	240'/240'	SAME
OBSTACLE FREE ZONE (OFZ) WIDTH	400'/400'	SAME
OFZ LENGTH BEYOND STOP END	200'/200'	SAME
RUNWAY CENTERLINE TO HOLD LINE	125'	SAME
RUNWAY END COORDINATES NGS 405 01/03 (NAD 83)	LAT. N 34°34'19.41" LON. W 117°11'38.56"	SAME SAME
	LAT. N 34°34'30.42" LON. W 117°10'19.99"	SAME SAME
RUNWAY ELEVATIONS END	2,993.7'/3,075.6'	SAME
NGS 405 01/03 (NAVD 88) HIGH POINT	3,075.8'	SAME
LOW POINT	2,957.7'	SAME
TOUCHDOWN ZONE ELEVATION	3066.9'/3,075.6'	SAME

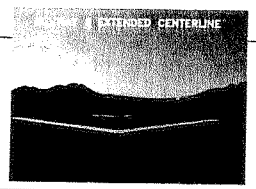
NOTES:
1. This drawing reflects current planning standards applicable to Apple Valley Airport. This drawing is not intended to be used for construction documentation or navigation.
2. Aerial photography provided by Air Photo Services, Inc. dated 10-12-03.
3. All coordinate data in NAD83/NAVD88.

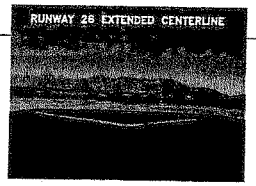


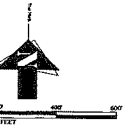
RUNWAY 8 PROFILE
1" = 200' HORIZONTALLY
1" = 20' VERTICALLY



RUNWAY 26 PROFILE
1" = 200' HORIZONTALLY
1" = 20' VERTICALLY







AIRPORT DATA		
	EXISTING	FUTURE
AIRPORT ELEVATION (AMSL) NGS 405 (NAVD 88)	3,084.3'	SAME
AIRPORT REFERENCE POINT (ARP) NGS 405 (NAD 83)		SAME
AIRPORT REFERENCE CODE	C-II	SAME
NPIAS CATEGORY	GA	SAME
MEAN MAX. TEMPERATURE (HOTTEST MONTH)	97.9° JULY	SAME
TAXIWAY LIGHTING	NONE	SAME
TAXIWAY MARKING	C/L	SAME
AIRPORT & TERMINAL BEACONS	B/S	SAME

LAYOUT PLAN LEGEND		
	EXISTING	FUTURE
AIRPORT PROPERTY LINE		
AIRPORT SECURITY FENCE		
AIRPORT BUILDINGS		
AIRFIELD PAVEMENT		
PAVED ROADS		
RUNWAY PROTECTION ZONE		SAME
BUILDING RESTRICTION LINE	BRL	SAME
OBSTACLE FREE ZONE		SAME
RUNWAY SAFETY AREA	RSA (S)	SAME
RUNWAY OBJECT FREE AREA	ROFA (S)	SAME
AIRPORT REFERENCE POINT (ARP)		SAME
AIRPORT BEACON		SAME
LIGHTED WIND CONE & SEGMENTED CIRCLE		SAME
WIND CONE		SAME
PRECISION APPROACH PATH INDICATOR (PAPI)	PAPI-2	PAPI-2
VISUAL APPROACH SLOPE INDICATOR (VASI)	VASI	SAME
RUNWAY END IDENTIFIER LIGHTS (REIL)	NONE	
TAXIWAY HOLDLINE & SIGN		SAME
SECTION CORNER	SEC	SAME

R/W 8-26 APPROACH

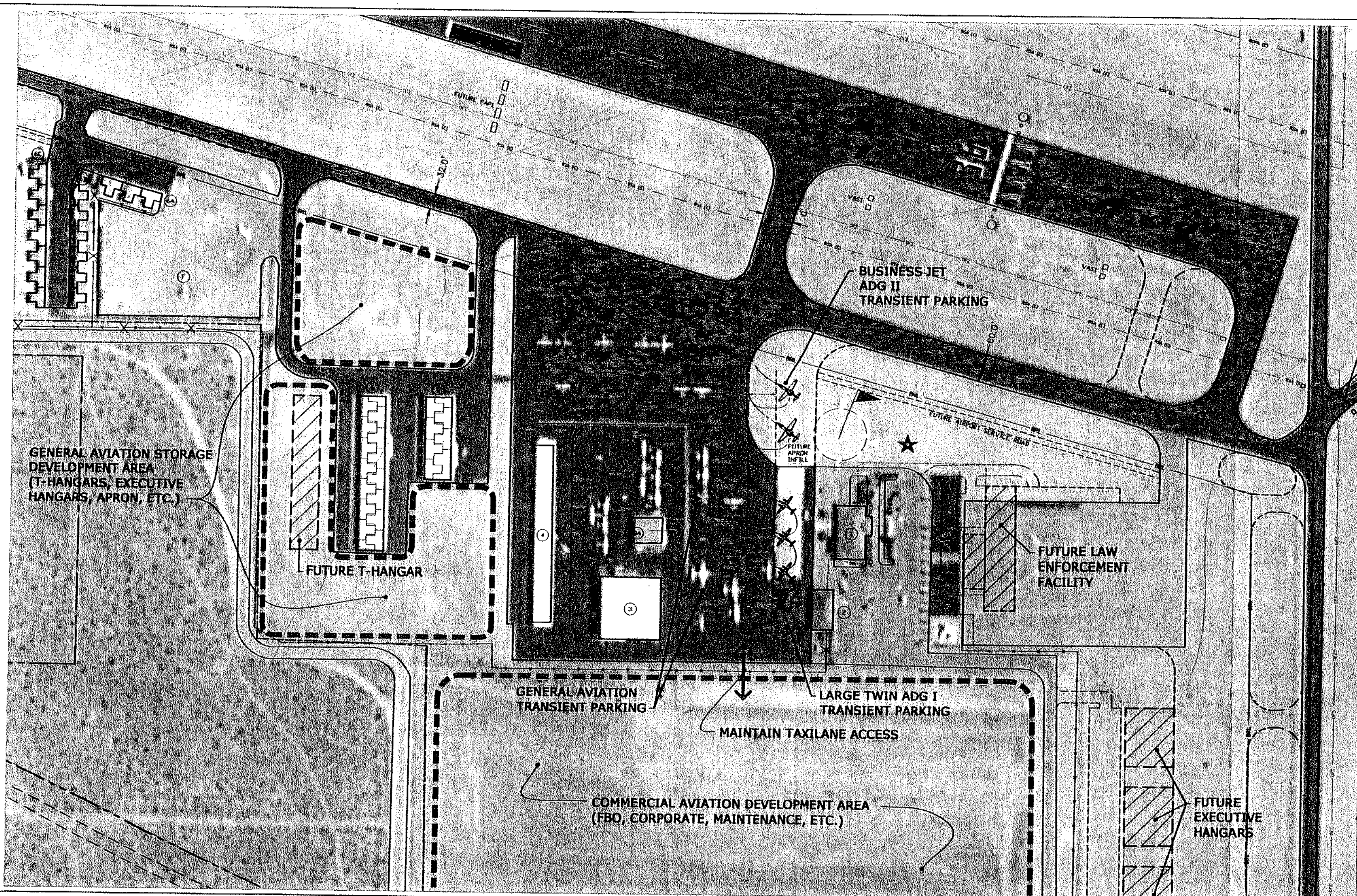
Apple Valley Airport

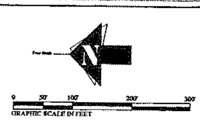
APPLE VALLEY — CALIFORNIA

Barnard Dunkelberg & Company
1616 East 15th Street
Tulsa, Oklahoma 74120
918.585.8666

San Bernardino County
Department of Airports

Figure F6 **Inner Portion of Approach Surface Drawing - Runway 8/26**





BUILDING LEGEND

NO.	DESCRIPTION	TOP ELEVATION *
1	TERMINAL	2988'
2	AIRPORT MAINTENANCE BUILDING	2988'
3	FBO HANGAR	3001'
3A	FBO HANGAR	2992'
4	T-HANGAR	2992'
5	T-HANGAR	3000'
6	T-HANGAR	2998'
6A	PORT-A-PORT	3008'
6B	PORT-A-PORT	3004'
6C	PORT-A-PORT	3001'
7	FBO HANGAR	3025'
7A	PORT-A-PORT	3011'
7B	PORT-A-PORT	3013'
7C	PORT-A-PORT	3015'
7D	PORT-A-PORT	3017'
7E	PORT-A-PORT	3018'
7F	PORT-A-PORT	3020'
8	HANGAR	3036'
F	FUEL STORAGE AREA	

* ESTIMATED AMSL

AIRPORT DATA

	EXISTING	FUTURE
AIRPORT ELEVATION (AMSL) NGS 405 (NAVD 88)	3,061.7'	SAME
AIRPORT REFERENCE POINT (ARP) NGS 405 (NAD 83)	[illegible]	SAME
AIRPORT REFERENCE CODE	C-II	SAME
NPIAS CATEGORY	GA	SAME
MEAN MAX. TEMPERATURE (HOTTEST MONTH)	97.9° JULY	SAME
TAXIWAY LIGHTING	NONE	SAME
TAXIWAY MARKING	C/L	SAME
AIRPORT & TERMINAL NAVAIDS	GPS	SAME

LAYOUT PLAN LEGEND

	EXISTING	FUTURE
AIRPORT PROPERTY LINE		
AIRPORT SECURITY FENCE		
AIRPORT BUILDINGS		
AIRFIELD PAVEMENT		
PAVED ROADS		
RUNWAY PROTECTION ZONE		SAME
BUILDING RESTRICTION LINE	BRL	SAME
OBSTACLE FREE ZONE	OFZ	SAME
RUNWAY SAFETY AREA	RSA	SAME
RUNWAY OBJECT FREE AREA	ROFA	SAME
AIRPORT REFERENCE POINT (ARP)		SAME
AIRPORT BEACON		SAME
LIGHTED WIND CONE & SEGMENTED CIRCLE		SAME
WIND CONE		SAME
PRECISION APPROACH PATH INDICATOR (PAPI)	PAPI	FUTURE PAPI
VISUAL APPROACH SLOPE INDICATOR (VASI)	VASI	SAME
RUNWAY END IDENTIFIER LIGHTS (REIL)	NONE	
TAXIWAY HOLDLINE & SIGN		SAME
SECTION CORNER		SAME

TERMINAL AREA PLAN

Apple Valley Airport

APPLE VALLEY CALIFORNIA

Barnard Dunkelberg & Company

San Bernardino County
Department of Airports

Figure F7 **Terminal Area Plan**

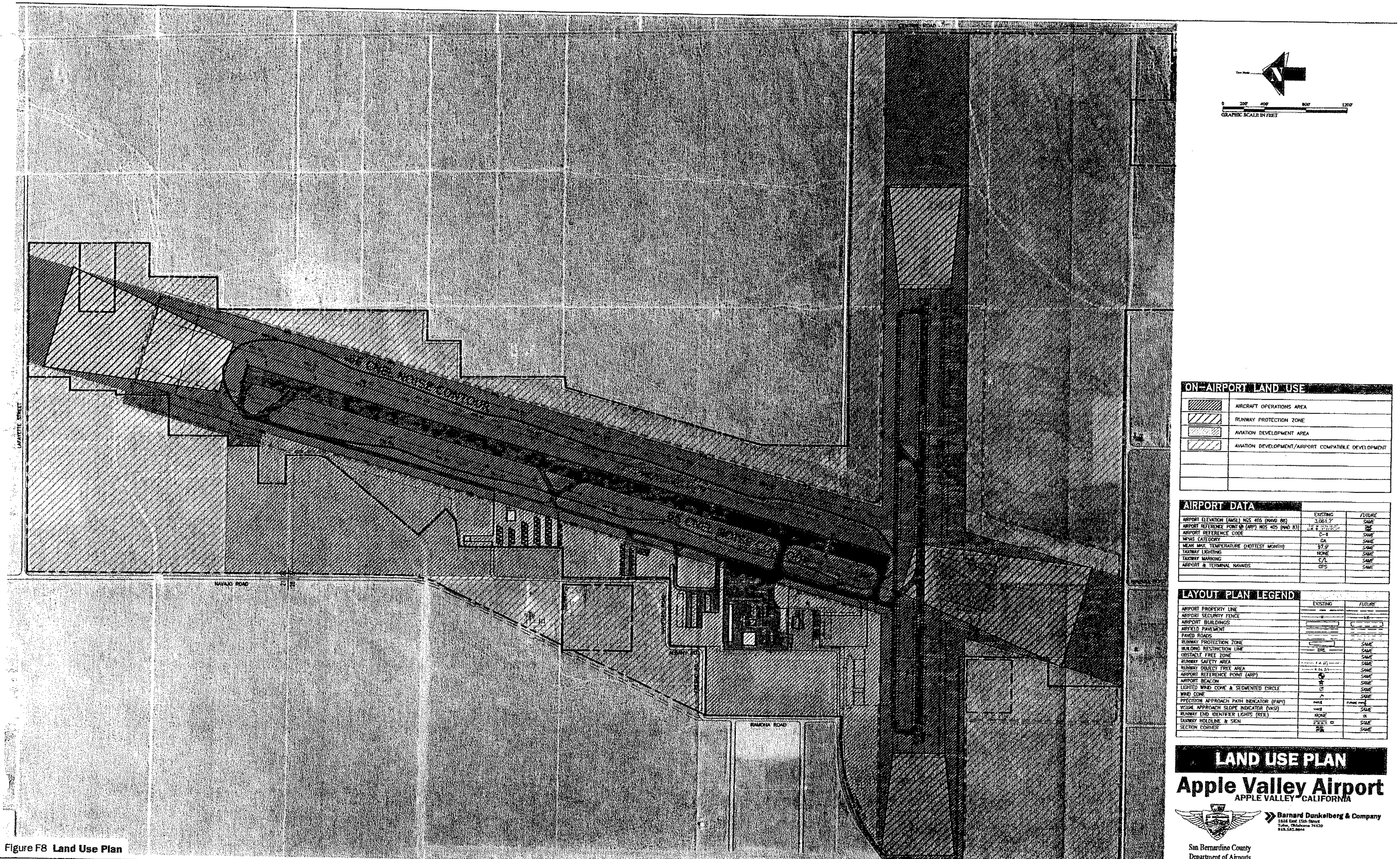


Figure F8 **Land Use Plan**

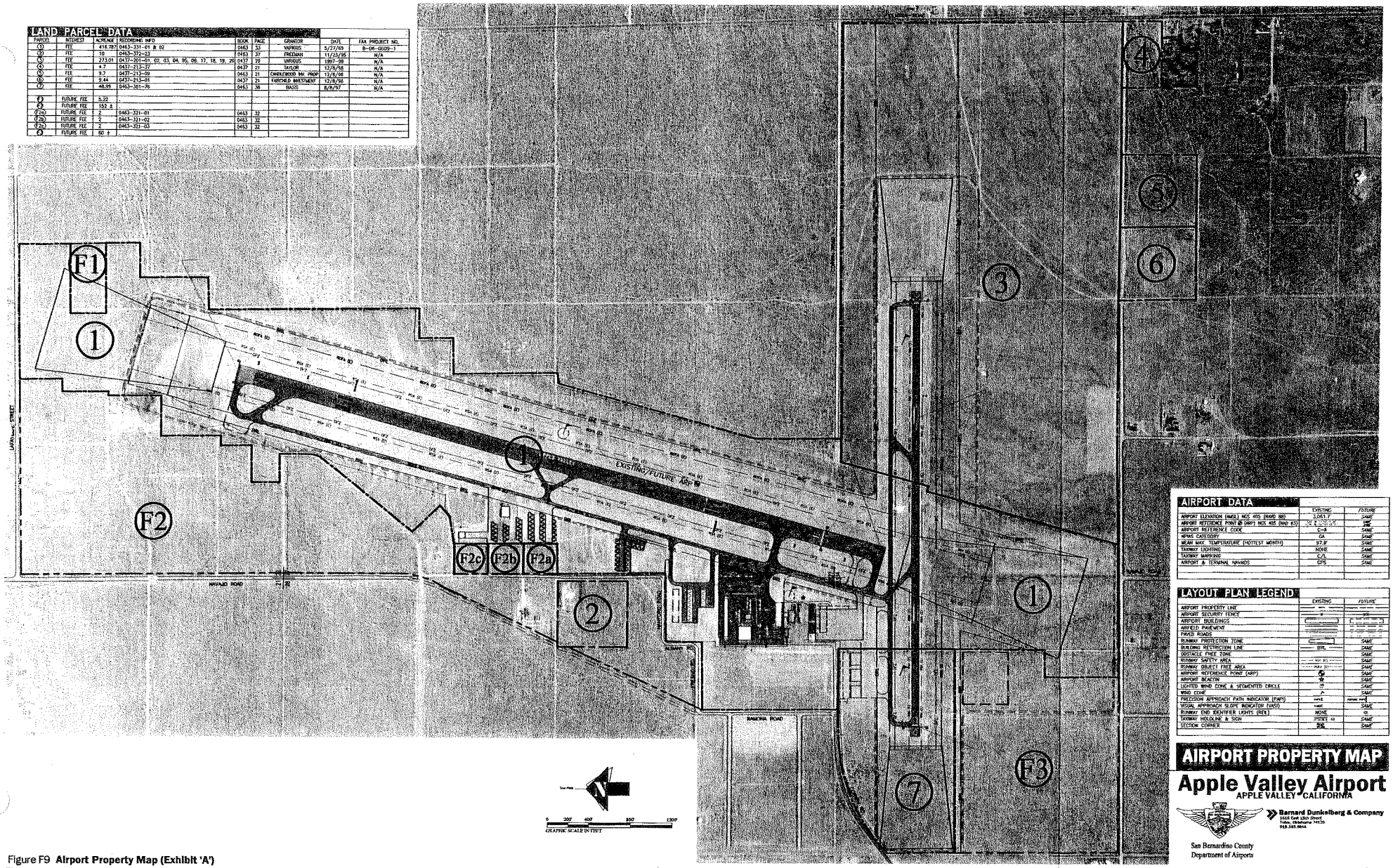


Figure F9 **Airport Property Map (Exhibit 'A')**

DEVELOPMENT PROGRAM

The improvements that may be necessary to satisfy the forecast aviation demands for Apple Valley Airport have been placed into three phases: phase one (0-5 years), phase two (6-10 years), and phase three (11-20 years). The cost estimates for the necessary facility requirements are presented in the following tables. The implementation schedule for the projects is graphically presented in the following graphic entitled *PHASING PLAN*.

Cost estimates will be categorized by the total cost for each facility requirement; that portion of the total cost eligible to be paid by the FAA under the Airport Improvement Program (AIP) or similar program; that portion eligible for payment by the State of California; and, that portion to be borne by the airport sponsor or related local entity.

The percentage of costs shown as eligible for participation by the state and federal agencies is subject to change depending upon current funding legislation and policy at the time of implementation. On qualified projects, the relationship between total cost and anticipated federal funding is based on current FAA participation of 95%, with the majority of the remainder of the project cost being eligible for funding from the State of California.

Table F1
PHASE I (0-5 YEARS) DEVELOPMENT PLAN PROJECT COSTS

	Project Description	Total Costs	Recommended Financing Method		
			Local[1]	State	Federal[2]
A.1	Construct Run-up Aprons - Runway 18/36 and Install Perimeter Fence Along Emergency Access Road	$400,000	$1,000	$19,000	$380,000
A.2	Reconstruct Taxiway A, Including A1 and A7, and Widen to 35'	$1,590,000	$3,975	$75,525	$1,510,500
A.3	Construct 12 Unit T-hangar Complex w/Public Restroom Facility and Apron	$450,000	$450,000	---	---
A.4	Expand Terminal Apron to the South	$753,000	$1,883	$35,768	$715,350
A.5	Acquire Land on the East Side of Runway 18 RPZ (Approx. 5 Acres)	$500,000	$1,250	$23,750	$475,000
A.6	Construct Stormwater Detention Area West of Runway 36 RPZ	$160,000	$400	$7,600	$152,000
A.7	Reconstruct Airport Access Road	$170,000	$425	$8,075	$161,500
A.8	Construct Southwest Ramp	$310,000	$775	$14,725	$294,500
A.9	Rejuvenate and Repaint Airfield Pavements	$75,000	$188	$3,563	$71,250
A.10	Install Obstruction Lights on the Approaches to Runway 8/26	$100,000	$250	$4,750	$95,000
A.11	Construct Law Enforcement Hangar and Apron	$3,500,000	$3,500,000	---	---
A.12	Acquire Land West of Runway 18 RPZ for Perimeter Road & Removal of Rock Mound (Approx. 1.5 Acres)	$150,000	$375	$7,125	$142,500

A.13	Remove Rock Mound West of Runway 18 RPZ - Approximately 5,500 c.y. (assumes off-site disposal of waste)	$165,000	$413	$7,838	$156,750
A.14	Construct T-hangars w/Apron	$450,000	$450,000	---	---
A.15	Airfield Pavement Rehabilitation ($25,000 per year)	$125,000	$313	$5,938	$118,750
Sub-Total/Phase One		**$8,898,000**	**$4,411,245**	**$213,655**	**$4,273,100**

Notes: *Cost estimates are based upon 2004 data, are intended for preliminary planning purposes, and do not reflect a detailed engineering evaluation. [1] Local Funding - Private, current revenues, cash reserves, bonds, etc. [2] FAA AIP (Airport Improvement Program) – unless otherwise noted. ---Data not available.*

Table F2
PHASE II (6-10 YEARS) DEVELOPMENT PLAN PROJECT COSTS

Project Description		Total Costs	Recommended Financing Method		
			Local[1]	State	Federal[2]
B.1	Rejuvenate and Repaint Airfield Pavements	$75,000	$188	$3,563	$71,250
B.2	Construct T-hangars w/Apron	$450,000	$450,000	---	---
B.3	Acquire Land on the West Side of Airport (Approx. 170 Acres)	---	---	---	---
B.4	Install REILs to Runway 18/36 and Runway 8/26	$75,000	$188	$3,563	$71,250
B.5	Construct Perimeter Road (14' wide - approx. 9,300 linear feet)	$530,000	$1,325	$25,175	$503,500
B.6	Airfield Pavement Rehab ($25,000/yr.)	$125,000	$313	$5,938	$118,750
Sub-Total/Phase Two		**$1,255,000**	**$452,013**	**$38,238**	**$764,750**

Notes: *Cost estimates are based upon 2004 data, are intended for preliminary planning purposes, and do not reflect a detailed engineering evaluation. [1] Local Funding - Private, current revenues, cash reserves, bonds, etc. [2] FAA AIP (Airport Improvement Program) – unless otherwise noted. ---Data not available.*

Table F3
PHASE III (11-20 YEARS) DEVELOPMENT PLAN PROJECT COSTS

	Project Description	Total Costs	Recommended Financing Method		
			Local[1]	State	Federal[2]
C.1	Construct T-hangars w/Apron	$450,000	$450,000	---	---
C.2	Airfield Pavement Rehab ($25,000/yr.)	$250,000	$625	$11,875	$237,500
C.3	Construct Perimeter Road (14' wide - approx. 18,600 linear feet)	$1,145,000	$2,863	$54,388	$1087,750
C.4	Rejuvenate and Repaint Airfield Pavements ($75,000 every five years)	$150,000	$375	$7,125	$142,500
Sub-Total/Phase Three		**$1,995,000**	**$453,863**	**$73,388**	**$1,467,750**
GRAND TOTALS		**$12,148,000**	**$5,317,120**	**$325,280**	**$6,505,600**

Notes: *Cost estimates are based upon 2004 data, are intended for preliminary planning purposes, and do not reflect a detailed engineering evaluation. [1] Local Funding - Private, current revenues, cash reserves, bonds, etc. [2] FAA AIP (Airport Improvement Program) – unless otherwise noted. ---Data not available.*

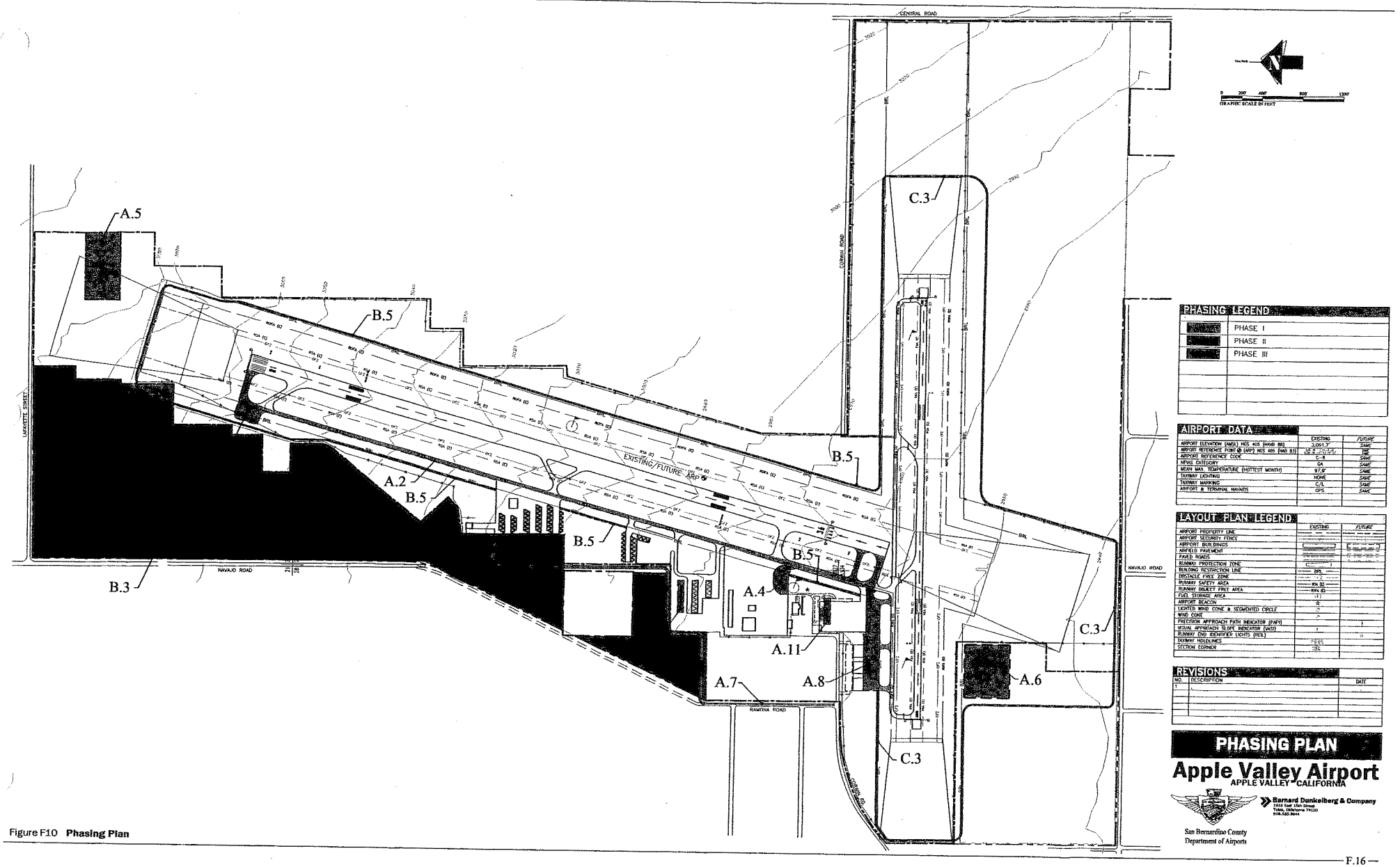


Figure F10 **Phasing Plan**