

NEVADA AIRPORT SYSTEM PLAN UPDATE

PREPARED FOR

NEVADA DEPARTMENT OF
TRANSPORTATION



ARIES CONSULTANTS LTD.

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Nevada Department of Transportation

NEVADA AIRPORT SYSTEM PLAN UPDATE



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NEVADA AIRPORT SYSTEM PLAN UPDATE

FINAL REPORT

Prepared for

NEVADA DEPARTMENT OF TRANSPORTATION

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Prepared by

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TABLE OF CONTENTS

<u>Chapter</u>	<u>Page</u>
EXECUTIVE SUMMARY	ES-1
1 ISSUES, POLICIES AND STRATEGIES	1-1
1.1 Introduction.....	1-1
1.2 State Airport System.....	1-2
1.3 Study Issues	1-4
1.3.1 Integration of Existing Plans.....	1-5
1.3.2 Identification of Tourism and Mining Industry	1-5
1.3.3 Recognition of Border Town Airports.....	1-5
1.3.4 Development of Aviation Activity Forecasts	1-6
1.3.5 Development of Air Cargo Demand Forecasts.....	1-6
1.3.6 Establishment of Airport Roles and Identification of Critical Aircraft.....	1-6
1.3.7 Identification of Land Use and Physical Environment Constraints.....	1-6
1.3.8 Identification of Military Airspace Impact on Nevada Airports.	1-7
1.3.9 Identification of Navigational Aid Improvements.....	1-7
1.3.10 Determination of the Need for New Airports	1-7
1.3.11 Determination of Financial Requirements and Funding Sources	1-8
1.3.12 Creation of an Airport Information System.....	1-8
1.3.13 Determination of the Economic Benefits of Aviation	1-8
1.3.14 Identification of Special Study Requirements	1-9
1.3.15 Development of Continuous Airport System Planning Process.	1-9
1.3.16 Establishment of a Responsive Internal Review and Public Information Program	1-9
1.4 Policies and Strategies	1-10
1.4.1 Nevada Aviation Policies.....	1-10
1.4.2 Aviation System Planning	1-11
1.4.3 Regulatory and Safety.....	1-13
1.4.4 Capacity and Expansion of Airport Facilities.....	1-14
1.4.5 Environmental and Land Use Compatibility	1-15
1.4.6 Ground Access	1-16
1.4.7 Air Service	1-17
1.4.8 Programming and Funding	1-17
1.4.9 Local Assistance	1-18
1.4.10 Public Awareness	1-18
1.5 Summary.....	1-19

<u>Chapter</u>		<u>Page</u>
2	ANALYSIS OF EXISTING SYSTEM.....	2-1
2.1	Introduction.....	2-1
2.2	Definition of the Study Area.....	2-1
2.3	Socioeconomic Data	2-2
2.3.1	Population	2-2
2.3.2	Annual Per Capita Income	2-2
2.3.3	Tourism.....	2-6
2.3.4	Mining.....	2-7
2.3.5	Military	2-8
2.4	Nevada Weather.....	2-8
2.4.1	Las Vegas.....	2-9
2.4.2	Reno	2-10
2.4.3	Winnemucca	2-10
2.4.4	Elko	2-11
2.4.5	Ely	2-11
2.4.6	Automated Weather Information	2-11
2.5	Surface Transportation Systems	2-12
2.5.1	Highway System	2-15
2.5.2	Freight and Passenger Rail System.....	2-16
2.6	Airport Facilities.....	2-17
2.6.1	Computerized Database	2-17
2.6.2	Airport Service Levels	2-17
2.6.3	Airport Reference Code	2-18
2.6.4	Description of Airport Facilities	2-19
2.6.4.1	Commercial Service Airports	2-19
2.6.4.2	Reliever Airports.....	2-27
2.6.4.3	Other Significant Airports	2-28
2.6.4.4	Military Airports	2-31
2.6.4.5	Surface Transportation at General Aviation Airports....	2-32
2.6.4.6	Airport Facilities Summary	2-32
2.7	Aviation Activity	2-33
2.7.1	Commercial Service Activity.....	2-33
2.7.1.1	Passenger Enplanement Activity	2-33
2.7.1.2	Air Carrier and Air Taxi Aircraft Operations Activity ..	2-35
2.7.2	General Aviation and Air Taxi Activity	2-35
2.7.3	Military Aviation Activity	2-44
2.7.4	Aviation Activity Summary.....	2-44
2.8	Airspace and Air Traffic Control.....	2-44
2.8.1	Statewide Summary	2-44

<u>Chapter</u>		<u>Page</u>
2.8.2	Airspace Classifications.....	2-45
	2.8.2.1 Air Traffic Service Relationships	2-45
	2.8.2.2 Air Route Control Center Airspace	2-46
	2.8.2.3 Terminal Area Airspace.....	2-46
	2.8.2.4 Air Traffic Control Tower Airspace	2-49
	2.8.2.5 Federal Aviation Administration Flight Service Station	2-49
	2.8.2.6 Remote Communications.....	2-50
2.8.3	Airways.....	2-50
2.8.4	Airspace Usage.....	2-54
	2.8.4.1 Instrument Flight Rule Operations	2-54
	2.8.4.2 Visual Flight Rule Operations	2-62
2.8.5	Military Special Use Airspace	2-63
	2.8.5.1 Restricted Access.....	2-63
	2.8.5.2 Military Operations Areas	2-64
	2.8.5.3 Alert Areas	2-64
	2.8.5.4 Controlled Firing Areas	2-69
	2.8.5.5 Military Training Routes	2-69
	2.8.5.6 Military Use Airspace Impacts	2-69
2.8.6	Navigational Aids	2-71
	2.8.6.1 Electronic Navigational Aids.....	2-71
	2.8.6.2 Visual Navigational Aids.....	2-74
2.8.7	Navigational Aids Summary.....	2-75
3	FORECASTS OF AVIATION DEMAND.....	3-1
3.1	Introduction.....	3-1
3.2	Forecast Methodologies.....	3-1
3.3	Commercial Air Service Activity	3-2
	3.3.1 McCarran International Airport	3-3
	3.3.1.1 Passenger Enplanements.....	3-3
	3.3.1.2 Air Carrier and Air Taxi Operations.....	3-5
	3.3.2 Reno/Tahoe International Airport.....	3-5
	3.3.2.1 Passenger Enplanements.....	3-5
	3.3.2.2 Air Carrier and Air Taxi Aircraft Operations	3-5
	3.3.3 Elko Regional Airport (J.C. Harris Field).....	3-7
	3.3.3.1 Passenger Enplanements.....	3-7
	3.3.3.2 Air Carrier and Air Taxi Aircraft Operations	3-7
	3.3.4 Ely Airport/Yelland Field	3-7
	3.3.4.1 Passenger Enplanements.....	3-10
	3.3.4.2 Air Carrier and Air Taxi Aircraft Operations	3-10

<u>Chapter</u>		<u>Page</u>
	3.3.5 Henderson Executive Airport	3-10
	3.3.5.1 Passenger Enplanements.....	3-12
	3.3.5.2 Air Carrier and Air Taxi Aircraft Operations	3-12
	3.3.6 North Las Vegas Airport.....	3-12
	3.3.6.1 Passenger Enplanements.....	3-12
	3.3.6.2 Air Carrier and Air Taxi Aircraft Operations	3-14
	3.3.7 Commercial Air Service Demand Summary	3-14
3.4	General Aviation Activity.....	3-14
	3.4.1 Registered Aircraft.....	3-17
	3.4.2 Based Aircraft	3-17
	3.4.3 Aircraft Fleet Mix	3-19
	3.4.4 General Aviation Aircraft Operations.....	3-24
3.5	Aircraft Instrument Operations.....	3-24
3.6	Military Aviation Activity	3-28
3.7	Air Cargo Activity	3-28
3.8	Summary of Forecast Aviation Activity.....	3-28
4	AIRPORT CAPACITY ANALYSIS	4-1
	4.1 Introduction.....	4-1
	4.2 Definition of Airfield Capacity.....	4-1
	4.2.1 Meteorological Conditions	4-2
	4.2.2 Airfield Layout and Runway Use	4-3
	4.2.3 Navigational Aids	4-3
	4.2.4 Aircraft Operational Fleet Mix	4-3
	4.2.5 Touch-and-Go Operations	4-5
	4.3 Methodology Used.....	4-5
	4.4 Airfield Capacity Calculations	4-6
	4.5 Development of New Airport Facilities	4-10
	4.5.1 New Ivanpah Valley Airport	4-10
	4.5.2 New Mesquite Airport	4-10
	4.5.3 New Pahrump Valley Airport.....	4-10
	4.5.4 New Southern Nevada Regional Heliport	4-10
5	AIRPORT FACILITY REQUIREMENTS.....	5-1
	5.1 Introduction.....	5-1
	5.2 Airport Categories	5-1
	5.3 Comparing Airport Requirements with Existing Facilities	5-4
	5.4 Airspace and Air Traffic Control.....	5-11
	5.4.1 Airspace and Air Traffic Control.....	5-11

<u>Chapter</u>	<u>Page</u>
5.4.2	5-11
5.5	5-14
5.5.1	5-14
5.5.2	5-15
5.5.3	5-15
5.5.4	5-15
6	6-1
6.1	6-1
6.2	6-1
6.3	6-3
6.3.1	6-3
6.3.1.1	6-4
6.3.1.2	6-5
6.3.1.3	6-5
6.3.1.4	6-6
6.3.2	6-6
6.3.3	6-6
6.3.3.1	6-7
6.3.3.2	6-7
6.3.3.3	6-7
6.3.4	6-8
6.3.5	6-8
7	7-1
7.1	7-1
7.2	7-1
7.3	7-1
7.4	7-2
7.5	7-3
7.5.1	7-3
7.5.2	7-4
7.5.3	7-4
7.5.4	7-4
7.5.5	7-5
7.5.6	7-5
7.5.7	7-5
7.6	7-5
7.7	7-6
7.7.1	7-6
7.7.2	7-7

<u>Chapter</u>	<u>Page</u>
7.8 Continuous System Planning.....	7-7
7.8.1 Military Airspace	7-8
7.8.2 Transportation Security Administration	7-8
7.8.3 Aviation Activity Monitoring	7-9
7.8.4 Land Use and Environmental Monitoring	7-9
7.8.5 Coordination of Planning.....	7-9
7.8.6 Nevada Department of Transportation Staffing Requirements ..	7-10
7.8.7 Nevada Airport System Plan Update	7-10

BIBLIOGRAPHY

GLOSSARY

APPENDIX

LIST OF TABLES

<u>Number</u>		<u>Page</u>
2-1	Population by County	2-5
2-2	Historical Passenger Enplanement Activity	2-34
2-3	Historical Air Carrier and Air Taxi Aircraft Operations	2-36
2-4	McCarran International Airport Historical Aircraft Operations.....	2-37
2-5	Reno/Tahoe International Airport Historical Aircraft Operations	2-38
2-6	Elko Regional Airport (J.C. Harris Field) Historical Aircraft Operations	2-39
2-7	Henderson Executive Airport Historical Aircraft Operations	2-40
2-8	North Las Vegas Airport Historical Aircraft Operations	2-41
2-9	2000 Aviation Activity Summary	2-42
2-10	Major En Route Navigational Aids	2-53
2-11	Published Instrument Approaches by Airport	2-59
2-12	Nevada Restricted Airspace Areas	2-67
2-13	Nevada Military Operations Areas	2-68
2-14	Nevada Military Training Routes.....	2-70
2-15	Airports and Associated Navigational Aids	2-76
3-1	McCarran International Airport Commercial Air Service Activity	3-4
3-2	Reno/Tahoe International Airport Commercial Air Service Activity	3-6
3-3	Elko Regional Airport Commercial Air Service Activity	3-8
3-4	Ely Airport/Yelland Field Commercial Air Service Activity	3-9
3-5	Henderson Executive Airport Commercial Air Service Activity.....	3-11
3-6	North Las Vegas Airport Commercial Air Service Activity	3-13
3-7	Enplaned Passenger Forecast Summary	3-15
3-8	Air Carrier and Air Taxi Aircraft Operations Forecast Summary.....	3-16
3-9	Forecast of Registered Aircraft By County	3-18
3-10	Forecast of Based Aircraft By Airport	3-20
3-11	Historical and Forecast Aircraft Fleet Mix.....	3-22
3-12	Forecast of Aircraft Fleet Mix	3-23
3-13	General Aviation Aircraft Operations Forecast.....	3-25
3-14	Aircraft Instrument Operations Forecast	3-27
3-15	Air Cargo Forecast	3-29
3-16	Summary of Forecast Aviation Activity	3-30
3-17	Comparison of Historical and Forecast Based Aircraft.....	3-39
4-1	Aircraft Operational Fleet Mix Classifications	4-4
4-2	Nevada Airfield Capacity Summary	4-7

<u>Number</u>		<u>Page</u>
5-1	Airport Reference Code Designations.....	5-7
5-2	Airport Classification Minimum Development Standards.....	5-9
5-3	Unit Costs for Recommended Airport Improvements	5-130
5-4	Summary of Airport Capital Improvement Program Costs.....	5-131
6-1	Summary of Nevada Airports Capital Improvement Program Costs.....	6-2

LIST OF FIGURES

<u>Number</u>		<u>Page</u>
2-1	Study Area Location.....	2-3
2-2	Nevada Highway System	2-13
2-3	Location of Existing System Airports	2-21
2-4	FAA Airspace Classifications	2-47
2-5	En Route Airways and Low Level Military Training Routes	2-51
2-6	Las Vegas Terminal Area Airspace.....	2-55
2-7	Reno Terminal Area Airspace	2-57
2-8	Military Airspace Areas	2-65
5-1	Recommended System Airports	5-5
5-2	Alamo Landing Field.....	5-18
5-3	Austin	5-20
5-4	Battle Mountain	5-22
5-5	Beatty	5-24
5-6	Boulder City Municipal.....	5-26
5-7	Carson	5-28
5-8	Currant Ranch.....	5-32
5-9	Dayton Valley Airpark	5-34
5-10	Denio Junction.....	5-36
5-11	Derby Field	5-38
5-12	Duckwater	5-40
5-13	Dyer	5-42
5-14	Echo Bay	5-44
5-15	Elko Regional (J. C. Harris Field).....	5-46
5-16	Ely Airport/Yelland Field.....	5-48
5-17	Empire	5-50
5-18	Eureka.....	5-52
5-19	Fallon Municipal	5-54
5-20	Fort Ruby Ranch Airstrip	5-56
5-21	Gabbs.....	5-58
5-22	Goldfield.....	5-60
5-23	Hadley.....	5-62
5-24	Harriet Field/Wells Municipal.....	5-64
5-25	Hawthorne Municipal.....	5-66
5-26	Henderson Executive.....	5-68
5-27	Hidden Hills.....	5-70
5-28	Jackass Aeropark.....	5-72

<u>Number</u>		<u>Page</u>
5-29	Jackpot Airport/Hayden Field	5-74
5-30	Jean	5-76
5-31	Kidwell	5-78
5-32	Kingston	5-80
5-33	Lida Junction	5-82
5-34	Lincoln County	5-84
5-35	McCarran International	5-86
5-36	Mesquite Municipal	5-90
5-37	Mina.....	5-92
5-38	Minden-Tahoe	5-94
5-39	North Las Vegas	5-96
5-40	Owyhee.....	5-98
5-41	Parker Carson Stolport	5-100
5-42	Perkins Field.....	5-102
5-43	Reno Stead.....	5-104
5-44	Reno/Tahoe International	5-106
5-45	Rosaschi Air Park	5-110
5-46	Searchlight.....	5-112
5-47	Silver Springs	5-114
5-48	Sky Ranch Estates	5-116
5-49	Spanish Springs	5-118
5-50	Stevens/Crosby Field.....	5-120
5-51	Tiger Field	5-122
5-52	Tonopah.....	5-124
5-53	Winnemucca Municipal.....	5-126
5-54	Yerington Municipal	5-128

Executive Summary

EXECUTIVE SUMMARY

INTRODUCTION

Nevada is the seventh largest state in size but ranks only 35th in population. This large area and relatively small population base underscores the importance of aviation as a means of spanning the vast distances between communities in a timely and cost-effective manner. Most of Nevada's over 100 airports rely upon general aviation aircraft to provide access to the National Air Transportation System. Five communities (Elko, Ely, Las Vegas, North Las Vegas, and Reno) have scheduled air carrier service. Las Vegas has service to every major metropolitan area in the country and to several foreign cities. Reno has nonstop service in at least 18 markets including Atlanta, Dallas-Fort Worth, Denver, Las Vegas, Los Angeles, San Francisco and Seattle. Elko has nonstop service to both Reno and Salt Lake City. Ely has limited service to North Las Vegas and Elko. North Las Vegas has some scheduled service within Nevada and adjacent states.

The general aviation airports in Nevada are very valuable to the aviation system because they provide convenient air transportation access to many areas that depend heavily on this service, even though their based aircraft and aircraft operational activity levels are low. The exceptions to the low operational levels are the Boulder City Municipal, Carson, Henderson Executive, Jean, Minden-Tahoe, North Las Vegas, McCarran International, Reno Stead, Reno/Tahoe International, Winnemucca and Yerington Municipal Airports that each have over 20,000 annual general aviation aircraft operations. Over 100 airports are active in Nevada with 56 airports, including three proposed new airports (Ivanpah, Mesquite and Pahrump), included in the Nevada Airport System Plan (See Figure 1). There are 32 airports included in the Federal Aviation Administration (FAA) *National Plan of Integrated Airport Systems* (NPIAS) and are eligible for Federal financial assistance. It is within this context of small but important communities, vast distances and relatively low activity that the Nevada Airport System Plan Update has been prepared.

The preparation of the Nevada Airport System Plan Update has been a joint effort of the Nevada Department of Transportation (NDOT) and the consulting firm of Aries Consultants Ltd. The responsibilities of NDOT have been to collect the inventory information, provide continued system monitoring and conduct public involvement and communication meetings. The consultant's responsibilities have been to prepare the general aviation activity forecasts, determine individual airport capacities, determine the airport system requirements, develop the capital improvement program and identify potential funding sources, prepare an implementation plan and write the report.

STUDY ISSUES

Early identification of issues was helpful in shaping policies that are consistent with State goals and objectives. The following issues were identified as important considerations to be addressed as part of the Nevada Airport System Plan Update study:

- Integration of current airport master plans into the development of the State airport system plan.
- Identification of the importance of tourism and the mining industry in the State's economy.
- Recognition of the important role played by the Nevada airports and other state border town airports.
- Development of comprehensive demand forecasts that reflect the activity levels expected for the future.
- Development of air cargo forecasts and recognition of the State's potential role in the air cargo industry.
- Establishment of the appropriate role and identification of the critical aircraft for each airport in the State airport system.
- Identification of the constraints imposed on the aviation system by incompatible surrounding land uses and the physical environment.
- Identification of the impact of military airspace on the Nevada airport system.
- Identification of Nevada navigational aid improvements required to assure continued airspace compatibility for the recommended airport system.
- Determination of the additional new airports required.
- Determination of the financial requirements necessary to fund airport development.
- Improved data management through creation of an Airport Information System.
- Determination of generalized economic benefits of aviation both on an individual community basis and statewide.
- Identification of special study needs.

- Development of a continuous airport system planning process.
- Establishment of a public information program that will actively involve both the aviation community and the public in the plan's development.

ANALYSIS OF EXISTING SYSTEM

The State of Nevada is the fastest growing State in the United States. The population in the State increased approximately 66.3 percent between 1990 and 2000. This compares with an overall U.S. growth rate of 13.1 percent. The State of Nevada is divided into 17 individual counties that vary widely in population. Clark County is Nevada's highest populated county with a 2000 population of 1,375,765. The Las Vegas Metropolitan Statistical Area (Clark County and a portion in Arizona) experienced a population increase of 83.3 percent between 1990 and 2000, the highest percent change of any metropolitan area in the country. The largest percent gain in population occurred in Clark County, which experienced an 85.5 percent increase between the years 1990 and 2000. The greatest percent population decrease occurred in Esmeralda County, which experienced a 27.8 percent decrease over the same period.

Tourism is the largest contributor to Nevada's economy. Over 49 million people visited Nevada during 2000. About 42 million tourists visited the Clark County area and 5.2 million tourists visited the Reno/Sparks area. A large percentage of these visitors arrived by commercial aviation. Aviation in Nevada plays a critical role in tourism economics. Tourists visit Nevada for several reasons, including gaming, attending conventions and touring Nevada's State and National parks and recreation areas. More than 28 million people visited Nevada's parks and recreation areas during 2000.

AIRPORT FACILITIES

This study considered only publicly and privately-owned, public-use airports identified in the current NPIAS and those public-use facilities that the State considers important to the aviation system. Private-use airports were not included in this study.

There are currently five airports located in metropolitan areas and other communities in the State that provide scheduled commercial passenger air service. These airports are:

- **McCarran International Airport** – McCarran International Airport is a large hub, primary commercial service airport ranked ninth in the U. S. in terms of total aircraft operations in 2000. McCarran International Airport is currently served by over 20 scheduled air carriers, over 20 charter airlines that operate to the airport on a regular basis, five commuter air carriers, seven all-cargo air carriers and sightseeing air taxi charters that fly tours of the Grand Canyon National Park and Hoover Dam.

- **Reno/Tahoe International Airport** – Reno/Tahoe International Airport is a medium hub, primary commercial service airport with facilities to serve commercial air service and general aviation aircraft. Reno/Tahoe International is currently served by approximately eight scheduled air carriers, five charter airlines and one scheduled commuter air carrier.
- **Elko Regional Airport (J. C. Harris Field)** – Elko Regional Airport (J. C. Harris Field) is a primary commercial service airport with facilities to serve scheduled, unscheduled and general aviation activity. This airport is served by two scheduled commuter carriers and a charter carrier.
- **Ely Airport/Yelland Field** – Ely Airport/Yelland Field was a commercial service airport but is now classified as a general aviation airport. There is daily commuter passenger service, six days per week, to Elko and North Las Vegas. The Ely Airport passenger service is supported through the Essential Air Service program.
- **North Las Vegas Airport** – North Las Vegas Airport is a publicly-owned facility located approximately 8 nautical miles northwest of McCarran International Airport. One scheduled commuter carrier provides service to airports in Nevada, California and Arizona. There are also sightseeing air taxi tours of the Grand Canyon National Park operating from the Airport.

Reliever airports are airports designated as having the function of relieving congestion at commercial service airports. They do this by providing general aviation pilots with alternative airports and providing more general aviation access to the overall community. The NPIAS currently identifies Henderson Executive Airport and North Las Vegas Airport as reliever airports for the McCarran International Airport, and Carson Airport and Reno Stead Airport as reliever airports for the Reno/Tahoe International Airport.

Other significant airports are those airports located along the borders with the surrounding states. The airports include Jean Airport, Jackpot Airport/Hayden Field and Mesquite Municipal Airport. Airports outside the State include Lake Tahoe and Truckee-Tahoe Airports in California, Laughlin/Bullhead International Airport in Arizona, Wendover Airport in Utah and McDermitt State Airport in Oregon. These airports generate significant activity for the local tourism establishments and attract out-of-state visitors and are an important asset to Nevada.

There are three active military airports in the State of Nevada as well as the Nevada Air National Guard Unit at the Reno/Tahoe International Airport and the Nevada Army Guard Facility at Reno Stead Airport. These military facilities are as follows:

- **Nellis Air Force Base** – This base is located approximately 10 miles northeast of McCarran International Airport. Nellis Air Force Base is a tactical training center for jet fighter operations and weapons delivery.
- **Indian Springs Air Force Base** – This base is located approximately 35 miles northwest of Las Vegas and is an auxiliary base for Nellis Air Force Base. It is closed to all aircraft except those involved in tactical operations and direct support operations.
- **Fallon Naval Air Station** – Fallon Naval Air Station is located approximately 50 miles east of Reno and is the Navy’s top air tactical fighter weapons center.

AVIATION ACTIVITY

Overall, passenger enplanements in the State increased approximately 94 percent between 1990 and 2000. All commercial service airports, with the exception of Ely Airport/Yelland Field, have shown significant increases in passenger enplanements. Ely Airport/Yelland Field experienced only a 28 percent increase in passenger enplanements between 1990 and 2000.

The scheduled and unscheduled air carrier and commuter aircraft operations at the commercial service airports in Nevada have also increased substantially. Air carrier aircraft operations increased approximately 56 percent between 1990 and 2000 for these airports.

General aviation activity, which includes all types of aviation except commercial service and military activity, has been in a slump due to the economy and insurance liability concerns. Even though general aviation growth has been lower for the past 10 years, the activity is important to communities with airports.

AIRSPACE, AIR TRAFFIC CONTROL AND NAVIGATIONAL AIDS

In general, existing airspace procedures and air traffic control facilities provide for the safe, orderly and expeditious flow of air traffic and do not limit the capacity of aviation activity in the State. The aviation demand forecasts indicate that activity levels will remain below airfield capacity levels for essentially all of the Nevada Airport System Plan airports.

Approximately 40 percent of the airspace within the State is military special use airspace. The restrictions imposed by Restricted Areas, Alert Areas and Military Training Routes do not pose a great inconvenience to the air carrier airlines. However, in some cases, special use airspace does limit the efficiency of general aviation flying. Special use airspace is a joint effort by the FAA and the Department of Defense, and there is a continuing effort by these two groups to increase the level of safety and convenience for both civil and military users of the airspace over the State.

The existing en route navigational aids are basically adequate for existing aviation activity. The airway system based on very high frequency omnidirectional range (VOR) and tactical air navigation facility (TACAN) is in the process of being replaced by a global positioning system (GPS). It had been expected that removal of part of the VORTAC system would have been initiated by this time. However, it is expected that the transition will take longer than previously planned.

Terminal area navigational aids generally include approach/landing aids, visual approach aids, weather reporting facilities and runway and taxiway lighting.

There are twelve airports in Nevada that have published instrument flight rule (IFR) approach procedures. Most of the airports in the Nevada Airport System Plan do not have published IFR approach procedures. As time and money permits, the FAA is developing GPS procedures for additional airports throughout the State and the country. Many of the general aviation airports are in need of other landing and visual navigational aids.

FORECASTS OF AVIATION DEMAND

The aviation demand forecasts provide a basis for determining the type, size and timing of aviation facilities development. In addition, forecasts of aviation demand serve as the basis for comparison against airfield and landside capacities to determine the overall need for facility improvements. Forecasts were developed for the short-range (2000 to 2005), intermediate-range (2006 to 2010) and long-range (2011 to 2020) time frames.

Air carrier activity in Nevada has increased considerably and is expected to continue to grow significantly during the next 20 years. When enplaned passenger forecasts for the commercial airports with air service are combined, 22 percent and 22 percent increases are predicted in both the 2000 to 2005 and 2006 to 2010 periods, respectively. A 38 percent passenger growth is anticipated during the 2011 to 2020 time frame. Much of this growth is anticipated at McCarran International Airport that expects to grow from about 18.4 million enplaned passengers in 2000 to 37.9 million enplaned passengers in 2020. Passengers at Reno/Tahoe International Airport are also expected to grow substantially from 2.8 million enplaned passengers in 2000 to 6 million enplaned passengers by 2020. Overall growth for the 20-year period for all commercial service airports combined is expected to be 105 percent above the 2000 enplaned passenger activity levels.

Because of a trend to use aircraft with larger seating capacities, air carrier and air taxi operations are expected to increase 73 percent, from 571,300 total combined operations in 2000 to over 986,000 operations by 2020.

General aviation aircraft operations are anticipated to grow by about 50 percent during the 20-year planning period. Following the national trends, Nevada general aviation aircraft corporate activity is outgrowing recreational flying. Based aircraft at the 53 airports are

forecast to increase from 2,534 aircraft in 2000 to 3,457 aircraft by the end of the planning period. This growth will reflect an increasing percentage of multi-engine and jet aircraft of the total fleet mix.

AIRPORT CAPACITY AND SYSTEM REQUIREMENTS

Critical to any aviation system is the ability to satisfy current and projected aviation demand. Airfield and landside capacity, when compared to forecast levels of operational activity, provide the foundation upon which facility deficiencies or surpluses can be identified and, therefore, becomes the essence of formulating recommendations for future facilities. Both airfield and landside capacities at Nevada airports were calculated and compared to their anticipated demands in 2020.

The airfield capacity analyses indicated that capacity exceeds the demand for the year 2020 at virtually every airport in Nevada. McCarran International Airport will require the planning, design and implementation of additional airfield capacity within the time frame of this study. Two other airports, Reno/Tahoe International Airport and Minden-Tahoe Airport will require planning for additional airfield capacity by the year 2020.

Development of new airport facilities at Ivanpah, Mesquite and Pahrump will provide additional airport and airfield capacity in Southern Nevada. A new Southern Nevada Regional Heliport will accommodate sightseeing helicopter air taxi activity.

AIRPORT FACILITY REQUIREMENTS

Airport reference codes (ARCs) were determined and identified for each airport classification. The airport reference code, a coding system used to relate airport design criteria to the operational and physical characteristics of airplanes expected to operate at a particular airport, consists of two components. The first component, depicted by a letter, designates the aircraft approach category which relates to approach speed. The second component, depicted by a Roman numeral, designates the airplane design group, which takes into account the wingspan of the airplane. An ARC was chosen for each study airport in Nevada, depending on the current airport classification and based on the current activity, along with an assumption of the critical aircraft. The range of the ARCs for each airport classification used is shown below:

<u>State of Nevada Airport Category</u>	<u>FAA Airport Reference Codes Accommodated</u>
Commercial Service Airport (CM)	C-II through D-V
Reliever Airport (RL)	B-II through C-III
Community Airport (CA)	B-I through B-II
Rural Airport (RA)	A-I through B-I
Basic Airport (BA)	A-I

All facility requirements identified in this study were determined by these classifications. Facility requirement standards refer to acceptable planning guidelines issued by the FAA, State, or other recognized industry authority. These guidelines deal with airport improvements which link increased aviation activity to the role and service level of the airport.

The landside facility requirements for Nevada airports were developed on a generalized basis using the demand/capacity relationships. Landside facility requirements refer to the aircraft or passenger processing capability of an airport. Landside facility needs were identified for the terminal areas of commercial service airports and for the hangar and aircraft parking apron areas of the general aviation areas of all airports. Nearly all of the system airports analyzed will require some type of landside improvements during the planning period.

In determining the physical deficiencies for each airport in the Nevada airport system, a table of minimum development standards was identified for each airport classification. These minimum standards for each airport classification were compared to the existing facilities at each system airport. The physical deficiencies determined for each system airport then became the facility needs for that airport. Since the needs determination is created on a “theoretical” basis, the level of detail may not be sufficient to indicate the precise facility improvements needed, but it will give an indication of the general areas where airport deficiencies exist. Further analysis of each airport and the needs identified produced a detailed listing of facility development recommendations by time frame for each component within the airport.

DESCRIPTION OF RECOMMENDED AIRPORT SYSTEM

Recommended airport development figures and tables were created to provide a detailed description of each airport in the recommended airport system. Each figure presents an airport within the system, along with information describing its current conditions and facilities. New facility improvements contained in the recommended system are then presented by phase to meet the established minimum development standards, or those improvements contained in the most current individual airport master plan, where available.

The recommended airport system identified eight privately-owned, public-use facilities to be included as part of the Nevada airport system. Since privately-owned facilities are currently ineligible for Federal funding, recommended improvements and their associated costs will be difficult to promote or fund at the local level. Even though a small number of privately-owned facilities are included, the significance of these facilities may make it desirable to adopt legislation enabling these facilities to become eligible for funding provided that an operating agreement between the airport and the governing body be reached to ensure that the facility will remain open for public use. This agreement should be established for a minimum specified time, such as 20 years, to provide a reasonable return on public investment.

A total of 12 airports are proposing runway extensions. These are Alamo, Austin, Derby Field (Lovelock), Elko Regional, Ely Airport/Yelland Field, Fallon Municipal, Harriet Field (Wells Municipal), Lincoln County, Mesquite Municipal, Silver Springs, Tiger Field (Fernley) and Tonopah Airports. A new runway is planned at Owyhee Airport.

Landside expansions will be made at numerous airports in the system during the planning period with the most extensive developments occurring at the commercial service airports. Landside expansions and improvements will also be made at general aviation airports.

CAPITAL IMPROVEMENT PROGRAM

The capital improvement program costs were prepared and summarized for the individual airports by short-term (2002-2005), intermediate (2006-2010) and long-term (2011-2020) improvement needs. Of the estimated \$1.4 billion total program cost over the 20-year planning period for the existing airports, an estimated \$447 million will be eligible for Federal funding under the current FAA Airport Improvement Program criteria. In addition to the \$1.4 billion, it is estimated that an additional \$1.5 billion will be needed for the development of three new airports in the State at Ivanpah, Mesquite and Pahrump.

The development cost requirements for the primary airports, including the Elko Regional, McCarran International, North Las Vegas and Reno/Tahoe International Airports total \$1.2 billion, or 88 percent of the total program requirements. The development cost requirements for the nonprimary airports total \$161 million, or 11 percent of the total program requirements. The development cost requirements for the other airports in the State system that are not included in the NPIAS and are not eligible for FAA Airport Improvement Program funds total \$1 million and account for 1 percent of the total program requirements.

Federal funding requirements for the nonprimary airports for the Phase I (2002-2005) capital improvement program average over \$31 million annually, and its very unlikely that FAA Airport Improvement Program grants will be available to fund all of the projects within the Phase I timeframe.

Four sources of funds were identified that are typically used to fund capital improvement programs for the State's system airports including 1) Federal Funding Programs; 2) State Funding Programs (Aviation Trust Fund); 3) Local Funding; and 4) Private Funding.

The major source of revenues for funding capital improvement projects for airports in Nevada has been from FAA Airport Improvement Program grants for eligible project costs. The FAA has published criteria for airport sponsors eligible to receive Airport Improvement Program grants including metropolitan and statewide planning agencies, public agencies owning and/or operating public airports, and private airport owners/operators of public-use reliever or commercial service airports. An airport must be included in the FAA's *National*

Plan of Integrated Airport Systems to be eligible to receive Airport Improvement Program grants.

Of the 53 airports included in the Nevada Airport System Plan, 32 airports are included in the *National Plan of Integrated Airport Systems* and are eligible for FAA Airport Improvement Program grants. The proposed new airports, Ivanpah, Mesquite and Pahrump Valley Airports are also included in the *National Plan of Integrated Airport Systems*.

The Nevada Aviation Trust Fund was approved by the Governor on May 31, 2001 with an effective date of October 1, 2001. The legislation states that this is *an act relating to aviation; creating the fund for aviation; providing for the administration and expenditure of the money in the fund for certain purposes relating to airports, landing areas and air navigation facilities that are owned or controlled by certain counties, cities or other local governments; and providing other matters properly relating thereto*. The State Aviation Trust Fund is not yet funded. A portion of the revenues from the recently-approved aviation specialty license plates go into the Trust Fund, however, each license plate generates only \$20. The NDOT staff have a continuous ongoing effort to identify sources of revenues to fund the State Aviation Trust Fund. Funding of the Aviation Trust Fund would greatly benefit the State's system of airports.

Local public airport sponsors including counties, cities, authorities and commissions are responsible for providing the local 5 percent matching funds for receipt of FAA Airport Improvement Program grants. Local government funding of airport development projects is derived from three basic sources including 1) General Fund Revenues; 2) Bond Issues; and 3) Airport Generated Revenues. Of these, general fund revenues and general obligation bonds are by far the most common funding sources.

IMPLEMENTATION

Aviation is a major part of what the State of Nevada is about. Based on the December 2003 Proclamation by the Governor, aviation is a key economic factor in the quality of life for Nevada's citizens. While the McCarran International and Reno/Tahoe International Airports are positioned as major west coast air-ground distribution centers and considered major inland ports of entry, Nevada's economic future and transportation infrastructure is directly tied to an efficient and effective air transportation system for all citizens.

The Nevada Airport System Plan (NASP Update) has been updated by NDOT and is focused on the State's airports and the role of the individual airports within the overall aviation system. The airport system planning process has included numerous activities including airport pavement condition analyses, FAA Form 5010-1, *Airport Master Record* inspections and numerous coordination meetings including meetings with the Nevada Aviation Technical Advisory Committee (NATAC).

Implementation activities that are provided by the NDOT staff in the State's Office of Aviation Planning include both encouragement and technical assistance to individual airport sponsors and coordinating the State's aviation activities with the FAA. The NDOT staff should continue to do everything possible to see that the system of airports identified are developed to the extent required to carry out their role in the State aviation system and generally ensure the future of aviation throughout the State. The following activities can be performed by NDOT that will contribute to the implementation of the Nevada Aviation System Plan recommendations for improvements to the State aviation system.

- Continue to assist in maintaining and preserving the existing airport facilities to the maximum extent possible.
- Identify the costs and sources of funding required and assist in securing the necessary development funding to implement needed airport improvements.
- Continue preparing the Airport Pavement Management Plans.
- Continue to provide technical assistance to airport sponsors in establishing airport overlay zones and height-hazard zoning, along with providing comprehensive land use planning in the vicinity of the airports.
- Continue the FAA Form 5010-1 *Airport Master Record* inspection program.
- Continue to provide input to the *Statewide Intermodal/Multimodal Transportation Plan* with airport improvement projects that have been identified in the system planning process.
- Continue to work on identifying funding sources for the Aviation Trust Fund.
- Continue to support the Nevada Airport Managers Association (NAMA) activities to the maximum extent possible.
- Continue to work with the Aircraft Owners and Pilots Association, National Business Aviation Association, National Association of State Aviation Officials and other aviation interest groups.
- Consider publishing periodic newsletters to disseminate information on the Statewide level.
- Continue to work with the airport sponsors and FAA to establish airport improvement priorities as part of the Airport Capital Improvement Program.

- Determine the economic impact of the Statewide system of the airports.
- Adapt the Aviation Information System to continuously update and monitor the Capital Improvement Program and establish priorities for funding.
- Consider the implications of accepting FAA Airport Improvement Program grants for multiple projects.

Special Study Needs

The NASP Update planning process identified two issues that require special studies.

One of the most critical issues facing Nevada airports is the continuing encroachment by incompatible land uses around the airports. Encroachment by incompatible land uses is becoming a major issue at several airports, particularly in western Nevada as population and economic development has continued to expand. It is recommended that NDOT take the necessary steps to develop land use compatibility planning criteria to protect the State's airports from incompatible encroachment before the range of future development alternatives for some airports is diminished.

NDOT should consider preparing an overview of the existing commercial air services and addressing potential requirements for additional points for commercial service within the State either now or in the future. The large geographic area of the State (close to 500 miles from north to south and over 300 miles from east to west) and the expanding population within the State suggest that NDOT review the demographics of remote locations to identify if and when commercial air transportation services may be required. Consideration should be given to addressing the existing requirements of receiving Essential Air Service and/or preparing a proposal under the U.S. Department of Transportation Small Community Air Service Pilot Program to further evaluate the potential for new and/or improved scheduled air service, particularly to the remote areas in the north and eastern portions of the State.

Continuous System Planning

Implementation of a continuous system planning process by NDOT to monitor, enhance and revalidate the NASP will provide the necessary information for the timely updating of the NASP. Continuous updated information on aviation activity and airport development in the State is needed to protect the investment of the FAA, NDOT, local public airport sponsors and the private sector and insure that all aviation users are provided with a safe and efficient air transportation system that is developed and maintained to meet the requirements and needs of all of the communities. The following activities are recommended for continuous planning activities.

- Review of military airspace use.
- Disseminate the Transportation Security Administration's *Security Guidelines for General Aviation Airports* and any updates and refinements to the general aviation airports as they become available.
- Update aviation activity forecasts every three to five years, or whenever significant changes occur in aviation activity.
- Monitor the based aircraft and aircraft operations in the State to provide the necessary data to make informed decisions on when airport development or other planning activities should be implemented.
- Monitor changes in the population, employment and land uses in the State and the environmental impacts associated with these characteristics as they relate to the facilities and services required to meet the needs of the air transportation system.
- Coordinate the State's aviation planning activities through the Nevada Aviation Technical Advisory Committee formed for the preparation of the system plan update.
- Consider the staffing requirements of the Office of Aviation Planning to provide the additional services and activities recommended in the system plan.
- Re-evaluate when the elements of the system require an update every three to five years. This is due to the importance of air transportation services to the State's social and economic development, and the part that activity plays in the air transportation system.
- Assist NATAC and NAMA in developing, publishing and distributing a planning and zoning guide for the protection of airports. The guide should contain the following:
 - Model land use planning and zoning ordinances.
 - Explanations of Federal Aviation Regulations (FAR) Part 77, *Objects Affecting Navigable Airspace*, imaginary surfaces, obstacle free zones, instrument approach protection criteria, noise compatible building codes and aircraft overflight issues.
 - Real estate disclosure guidelines, aviation easement examples and buyer awareness notices.
- Develop and publish as funding becomes available, and working with federal land agencies, an inventory of federally owned land adjacent to airports that might be available for acquisition or conveyance to help protect airports from encroachment by

incompatible land uses. This land could be used for compatible airport development or airport protection.

Chapter 1

Issues, Policies, Strategies

Chapter 1

ISSUES, POLICIES AND STRATEGIES

1.1 INTRODUCTION

The State of Nevada has played an important role in transcontinental transportation since the California Trail in 1849. Most of the larger towns in Nevada developed in the northern part of the State along with the early railroad development with one exception. Las Vegas emerged as one of the premier tourist attractions, and today the Las Vegas McCarran International Airport is a large hub facility with over 18 million enplaned passengers annually.

Nevada is the seventh largest state in the Union in size but ranks only 35th in total population. This large area and relatively small population base underscores the importance of aviation as a means of spanning the vast distances between communities in a timely and cost-effective manner. Much of the intrastate air transportation utilizes general aviation aircraft as only five communities (Elko, Ely, North Las Vegas, Reno and Las Vegas) have scheduled air service. Las Vegas McCarran International is served by over 20 scheduled air carriers, over 20 charter airlines, five commuter air carriers, seven all-cargo air carriers and sightseeing air taxi charters. Reno/Tahoe International is served by approximately eight scheduled air carriers, five charter carriers and one scheduled commuter. Elko has nonstop scheduled service to both Reno and Salt Lake City. Ely has limited scheduled service to North Las Vegas. North Las Vegas has scheduled service to several communities.

The general aviation airports in Nevada are very valuable to the aviation system because they provide convenient air transportation access to many areas that depend heavily on this service, even though their based aircraft and aircraft operational activity levels are low. The exceptions to the low operational levels are the Boulder City Municipal, Carson, Henderson Executive, Jean, Minden-Tahoe, North Las Vegas, McCarran International, Reno Stead, Reno/Tahoe International, Winnemucca and Yerington Municipal Airports that have over 20,000 annual general aviation aircraft operations. Over 100 airports are active in Nevada but only 56 airports, including three proposed new airports (Ivanpah, Mesquite and Pahrump), are included in the Nevada Airport System Plan. Only 32 of the airports are included in the Federal Aviation Administration (FAA) *National Plan of Integrated Airport Systems* (NPIAS) and are eligible for Federal financial assistance. Nationally, as of 2002, 19,306 airports existed in the United States with 3,364 of these airports included in the NPIAS. It is within this context of small but important communities, vast distances and relatively low activity that the Nevada Airport System Plan Update has been prepared.

The preparation of the Nevada Airport System Plan Update has been a joint effort of the Nevada Department of Transportation (NDOT) and the consulting firm of Aries Consultants Ltd. The responsibilities of NDOT have been to collect the inventory information, provide continued system monitoring and conduct public involvement and communication meetings. The consultant's responsibilities have been to prepare the general aviation activity forecasts, determine individual airport capacities, determine the airport system requirements, develop the capital improvement program and identify potential funding sources, prepare an implementation plan and write the report.

1.2 STATE AIRPORT SYSTEM

The definition of state airport system planning in the FAA Advisory Circular (AC) 150/5050-3B, *Planning the State Aviation System*, is the process which results in the documentation of the airport facilities, including heliport and float plane facilities, and related facilities needed to meet the current and future air transportation needs of the state. The state airport system plan identifies the aeronautical role of existing and recommended new airports. The plan describes the development required at each airport, including time frames and estimated costs. State system planning is accomplished within a comprehensive planning framework, consistent with state goals and objectives for economic development, transportation, land use and the environment. It incorporates metropolitan/regional airport system planning and provides direction for airport master planning. Finally, it serves as an important component of the FAA's *National Plan of Integrated Airport Systems*.

The purpose of state airport system planning, as described in its broadest sense in FAA AC 150/5050-3B, is to determine the extent, type, nature, location, and timing of airport development needed in the state to establish a viable, balanced and integrated system of airports. However, a description of the purpose of state system planning in more specific terms will vary from state to state depending on a number of factors. The key factor is state law related to aviation, which in turn defines state government responsibilities, authority, functions, and funding for airport activities. Other important factors include state goals and objectives regarding economic development, transportation, land use and environmental matters.

Thus, the specific purpose of a plan, and its value to an individual state, will depend to a large extent on that state's emphasis on and commitment of resources to aeronautical activities in general and airport development in particular.

It is conceivable that the purpose of a plan in a state with minimum emphasis on airport development would be limited to the broad statement of purpose described earlier and on determining airport development requirements for inclusion in the FAA's NPIAS. The principal value to the state would be the inclusion of appropriate

portions of the state plan in its national counterpart, thus contributing justification and priorities for state funding participation as well as Federal financial assistance in airport development under the FAA Airport Improvement Program. It is the opinion of the FAA that airport system planning at the state level lies between FAA's national planning, as documented in the NPIAS, and individual airport master planning. It feeds planning information *up* to the NPIAS and *down* to the individual airports.

The state plan includes airport locations (both existing and new) considered important to state air transportation objectives as well as those that are of sufficient national interest to be incorporated in the NPIAS. An important function of the state planning process is to assist in identifying airports that meet national interest criteria but which might not be identified as such by the FAA alone. This advocacy role is important in the *feeding up* process.

The airport development included in a state plan should not be limited to only those items of development eligible for Federal financial aid. In addition, cost estimates need not be as precise. The planning horizons are usually longer in state plans than in the NPIAS, with five, 10 and 20 years the normal state system planning periods. State plans may also include more detailed airport planning than the NPIAS, but should be less than that expected from individual airport master plans.

The state will apply its planning and engineering guidelines in a manner consistent with anticipated development items included in the NPIAS and applicable FAA planning and design standards.

The state plan considers areas beyond state boundaries to determine demand projections and facility impacts.

Often, state plans include recommendations for landing aids, navigational aids and weather facilities, regardless of the state role in providing funding for these items. Priorities for airport weather and navigational aid recommendations are often stated and are important if state funding is involved.

The state plan should include a description of transportation, economic land use, and environmental goals that directly or indirectly affect airport planning. The state plan should attempt to coordinate state objectives by the integration of aviation with other transportation modes and with economic development objectives.

1.3 STUDY ISSUES

Early identification of issues is helpful in shaping policies that are consistent with state goals and objectives. It can be expected that new issues will surface during the course of the study and that policy development will be a continuing activity.

The following issues have been identified as important considerations to be addressed as part of the Nevada Airport System Plan Update:

- Integration of current airport master plans into the development of the State airport system plan.
- Identification of the importance of tourism and the mining industry in the State's economy.
- Recognition of the important role played by the Nevada airports and other state border town airports.
- Development of comprehensive demand forecasts that reflect the activity levels expected for the future.
- Development of air cargo forecasts and recognition of the State's potential role in the air cargo industry.
- Establishment of the appropriate role and identification of the critical aircraft for each airport in the State airport system.
- Identification of the constraints imposed on the aviation system by incompatible surrounding land uses and the physical environment.
- Identification of the impact of military airspace on the Nevada airport system.
- Identification of Nevada navigational aid improvements required to assure continued airspace compatibility for the recommended airport system.
- Determination of the additional new airports required.
- Determination of the financial requirements necessary to fund airport development.
- Improved data management through creation of an Airport Information System.

- Determination of generalized economic benefits of aviation both on an individual community basis and statewide.
- Identification of special study needs.
- Development of a continuous airport system planning process.
- Establishment of a public information program that will actively involve both the aviation community and the public in the plan's development.

Brief discussions of each of the identified airport system plan issues are presented below.

1.3.1 Integration of Existing Plans

One of the issues in the development of the Nevada Airport System Plan was the utilization of as much of the existing planning data available from previous studies as appropriate. Valuable data is often available in the form of recent airport master plans, airport layout plans, and environmental analyses. Use of these existing data sources ensured the currency and cost effectiveness of the study's development.

1.3.2 Identification of Tourism and Mining Industry

The two largest contributors to the Nevada economy are the tourism and mining industries. Both of these industries are extremely dependent on the availability of adequate and convenient air service and airport facilities. The airport system plan examined the magnitude of these two industries and their relationship to the aviation system to determine if the necessary airport facilities were being provided.

1.3.3 Recognition of Border Town Airports

Several airports in Nevada and a few in surrounding states, that are located in close proximity to the State border, play an important role in the State's economy. These airports provide a convenient opportunity for tourists to reach the State's gambling casinos and other nearby tourist attractions in a small town relaxed atmosphere. Airports that serve this role must be developed to a much greater extent than would normally be expected. The important role these border town airports play in the State airport system and their unique facility needs were addressed in this study.

1.3.4 Development of Aviation Activity Forecasts

To properly reflect the airport development needs for the next 20 years, comprehensive aviation demand forecasts were created. These forecasts recognize the significant changes in aviation that have occurred both in Nevada and the nation since the passage of the Airline Deregulation Act of 1978. The latest available forecasts of passenger and scheduled air carrier and commuter aircraft operations were utilized for the commercial service airports. The forecasts of general aviation and nonscheduled air taxi activity were updated from the 1995 forecasts.

1.3.5 Development of Air Cargo Demand Forecasts

One of the fastest growing elements of the aviation industry is the shipment of air cargo. The two Nevada metropolitan areas of Las Vegas and Reno have demonstrated the same historic air cargo trends as the nation and have the potential to exceed the national rate of air cargo growth. Existing forecasts indicate both the Las Vegas and Reno areas expect their cargo activity to exceed the FAA's national projections. This study incorporated the existing air cargo forecasts for the Nevada airports and identified the factors that could affect the realization of the projections or increase their potential even more.

1.3.6 Establishment of Airport Roles and Identification of Critical Aircraft

One of the more important challenges in the study was to determine the appropriate role of each airport in the State airport system. For some airports, this task is fairly straight forward, but for other facilities that perform a variety of functions, the primary role is harder to determine. Some airports may also be assigned a secondary role because of the facilities available and the services they provide. Assignment of airport roles was based on their physical location relative to other airports, the requirement for aviation services, operational capacity and constraints to expansion. Additionally, the critical aircraft for each system airport was identified. The definition of these role assignments and identification of the critical aircraft assisted in establishing development requirements, funding priorities and creating a more responsive aviation system.

1.3.7 Identification of Land Use and Physical Environment Constraints

Presently, an airport's number one environmental impact is generally noise. Technically, this is more of an airport land use compatibility issue since, generally, noise affects people more intensely than the natural environment. Nonetheless, the concern about noise has been focused on airports and is being studied by various other planning efforts. The effects of noise, particularly its impacts on the recommended airport system, results in a need to ensure compatible land uses of adjacent properties.

Existing and proposed land uses surrounding each airport should be identified. In addition to noise and land use compatibility, the impact of the recommended airport improvements on the natural environment should also be examined. NDOT should continue their land use compatibility planning efforts.

1.3.8 Identification of Military Airspace Impact on Nevada Airports

Because of the excellent flying weather and large amount of sparsely populated areas, Nevada has become the major training ground for U.S. military pilots. Even though there is a positive economic effect associated with this military activity, there is a corresponding loss of airspace for commercial or private aviation purposes. More of the Nevada airspace is used for military training purposes than is experienced by any other state. The impact of military use of airspace on the existing general aviation and commercial service airports was one of the important issues addressed in this study.

1.3.9 Identification of Navigational Aid Improvements

The State of Nevada considers the improvement of navigational aids that serve airport users and assure airspace compatibility an issue of vital importance. Even though this has been considered the prerogative of the Federal Aviation Administration for many years, the nature and importance of these improvements is one in which the State should be prepared to respond to fill some of the voids left as a result of Federal budgetary constraints. As a result, this plan identifies the navigation aids needed to maximize safety and to assure airspace compatibility for the Nevada system of airports.

1.3.10 Determination of the Need for New Airports

Even though a summary of the total airport capacity existing today or in future years in the State would indicate a considerable surplus statewide, reality indicates that deficiencies may exist in several areas. This fact and the uncertainty of whether all the existing private airports will continue to exist for the long-term poses the need to determine when and where additional new airports may be required. The potential closure of some private airports could create a problem in some areas of the State that depend on the use of the closing facility. Therefore, one of the issues addressed in this study was that of where new airport facility needs continue to exist or may likely occur before the year 2020.

1.3.11 Determination of Financial Requirements and Funding Sources

Another issue confronting the State concerns the questions of airport funding requirements and implementation. It is imperative that the system study address the problems of airport financial needs since most general aviation or even small air carrier airports are not typically self-supporting enterprises that produce surplus revenues for airport development. Many local governments are hard pressed to provide sufficient airport operating revenue and encounter greater difficulty when funding an airport construction improvement program or acquiring a complete new facility. In addition, privately-owned airports that are not eligible for Federal funding will require alternative sources of funding, and identifying sources of funding the Nevada Aviation Trust Fund will become increasingly important in order to retain these airports in the State airport system.

Therefore, attention was given to identifying and describing the funding requirements for each airport that appears to be economically feasible and that can be implemented, as contrasted to development of a plan which fails to address the realities of programming and implementation. In addition, rarely are there ever enough financial resources to fund all of the airport projects that require improvement. Because of this fiscal reality, airport system planning recommends a priority setting of development projects that, in turn, may be used to allocate available resources. A project funding rating system is not intended to remove the human element, but to provide technical assistance in the decision making process. As a result, this process will aid in the orderly and timely development of the most critical projects in the State.

1.3.12 Creation of An Airport Information System

The increasing complexity of aviation, due to technological advances and traffic growth, has underscored the need for system-wide coordination of aviation activities. The best method of coordinating and utilizing vast amounts of aviation data available is through the use of an airport information system. Computerization is one of the tools that can be used to increase the State's effectiveness in dealing with the massive amount of information available and changes that frequently occur in the aviation system. Therefore, the system plan identifies efforts required to continue the development of an airport information system.

1.3.13 Determination of the Economic Benefits of Aviation

Another issue that was addressed in the 1995 Nevada Airport System Plan is the opportunity to identify a relative value for public-use airports. This capability becomes extremely important in areas where airports require public support, but the local jurisdiction or the airport neighbors are unaware of the airport's value or economic impact on the community. One of the components of the 1995 study was

the development of a methodology that can be used to determine the economic benefits of aviation on both a specific airport and statewide basis. Aviation provides two basic economic functions. First, it functions as an economic activity that generates employment, the purchase of goods and services, and the payment of taxes. Second, aviation provides a service that contributes significantly to development, and commercial and industrial growth. At both levels of analysis, the goals are to quantify the benefits of aviation to demonstrate its value to the public and to create enthusiasm for aviation and airport development. Sectors of the aviation economy that were examined include payrolls, capital improvements, maintenance, fuel, taxes, and purchases that relate to the direct economic impacts. The indirect impacts created by airport visitors in their off airport expenditures was also determined along with the induced impacts of both. NDOT plans to continue their efforts in this area by addressing the overall economic impact of aviation on the State.

1.3.14 Identification of Special Study Requirements

Issues requiring special study considerations were identified during the planning process. Special study elements include those issues identified that are relevant to the aviation system and should be prepared as supplemental studies to the system plan. Significant issues that require immediate attention include the need for land use compatibility planning and commercial air services to remote areas within the State.

1.3.15 Development of Continuous Airport System Planning Process

To keep the data collected and recommendations resulting from this study current for the longest time possible, a continuing airport system planning process is suggested. The development of the components of this process is addressed in this effort. This includes preparing technical memoranda, working papers and reports, participating in staff briefings or training sessions, and establishing the timing of follow-on evaluations required to extend the value of the study. The continuous monitoring of aviation activity, land use and environmental concerns, use of military airspace, the requirements of the Transportation Security Administration and coordination of future planning efforts are also recommended.

1.3.16 Establishment of a Responsive Internal Review and Public Information Program

Working with the Nevada Department of Transportation, an internal review and a public information program was established as part of the Nevada Airport System Plan Update. In keeping with the full disclosure tenor of the statutes, the opportunity for public participation was provided. Some of the means by which public enlightenment was achieved was through the use of press releases at appropriate study milestones and program participation with various organizations. A series of regional meetings with the public will be held to review the plan's findings and conclusions.

Internal reviews were accomplished in a series of strategically scheduled meetings with the Nevada Aviation Technical Advisory Committee. Review materials were provided to the Committee members in advance of the scheduled meetings.

1.4 POLICIES AND STRATEGIES

While the approach and format of aviation planning studies are well established, the ultimate success of the resulting plan depends largely on the initial planning goals, policies, and strategies. If the plan is responsive to local, regional and statewide aviation goals, whether explicit or implicit, its effectiveness is greatly increased.

The goals and policies identified for this study for the Nevada Department of Transportation and the Nevada Airport Technical Advisory Committee express desired conclusions that relate in a physical, social, or economic context as to how the aviation system should develop and how it should be operated. For the purposes of this study, policies are defined as goals to be achieved by NDOT.

Strategies, by their nature, relate more specifically to the process and measurement of policy attainment. Thus, while policies may set forth a broad set of desired conditions, strategies specify more definite action steps toward their achievement.

In formulating a set of Nevada aviation policies and strategies, an attempt was made to address the major issues and external influences, which collectively constitute the conditions confronting the aviation system. Thus, a set of policies and strategies have been developed that relate to the aviation needs in the State and to the effects of these needs being served.

1.4.1 Nevada Aviation Policies

The Nevada Department of Transportation's overall mission is as follows:

Working in active partnership with other jurisdictions and the private sector, NDOT's mission is to ensure adequate mobility and choice for the transportation of Nevada's people and goods, now and in the future, through the development and maintenance of a technologically advanced, interlocking transportation system that stresses safety, protects and enhances the quality of life, and contributes to the economic vitality of the State.

NDOT's policy is to assist in the development and maintenance of a balanced statewide air transportation system that is safe, provides adequate service to the people of Nevada, and is in harmony with the environment.

To fulfill its air transportation mission, NDOT has set forth the following goals:

- To foster and promote the development of a safe, efficient, dependable, and environmentally compatible air transportation system.
- To cooperate and coordinate with the Federal Aviation Administration, regional transportation planning agencies, local governments, military authorities other appropriate political subdivisions, the public, the air carrier and general aviation industries, and the private sector in carrying out its aviation responsibilities.

To implement the mission statement, NDOT will:

Assist in the development of an air transportation system that is consistent with the needs and desires of the public, and in which airports are compatible in location with, and provide services for meeting Statewide and regional goals and objectives.

Development and implementation of the Nevada Airport System Plan is NDOT's primary method of responding to its mission and goals for the aviation mode and specifying how the mission and goals are to be fulfilled.

Policies and strategies for action are defined for each of the emphasis areas. They are designed to address and identify problems impacting aviation in the State.

1.4.2 Aviation System Planning

POLICY 1

NDOT will identify a statewide airport system to meet the State's immediate and future air transportation needs and will promote development and maintenance of the system.

STRATEGIES:

- Develop a Nevada Airport System Plan which will: identify airports and their significance to a balanced statewide system; establish a program identifying where improvements or expansion are needed; establish investment priorities on a state system basis; define policies and processes for implementation; and serve as the basis for continuing statewide aviation system planning.

- Develop a system of airports that will meet the air transportation needs of Nevada for the period 2000 to 2020 which will be compatible with the National Plan of Integrated Airport Systems and local planning activities.
- Create a continuing planning mechanism which is dynamic and capable of responding to changes in aviation policy and related factors.
- Establish and maintain an acoustical counting program for non-towered airports to obtain reliable aircraft operations data.
- Integrate, to the maximum extent appropriate, current airport master plans, environmental analyses, or other planning efforts into the development of the aviation system plan.
- Establish an improved data management system through creation of a computerized airport information system.
- Develop a continuously updated airport database that is accessible to all public agencies.

POLICY 2

NDOT will facilitate coordinated and comprehensive statewide aviation system planning through continuous and active participation in Federal, State, regional, and local activities related to aviation.

STRATEGIES:

- Coordinate statewide system planning with the Federal Aviation Administration.
- Coordinate aviation-related issues and activities with other State agencies.
- Continue to meet with the Nevada Aviation Technical Advisory Committee representing all segments of Nevada's aviation industry.
- Develop a continuous aviation system planning process.

POLICY 3

NDOT will coordinate aviation system planning efforts with the FAA and the military on airspace issues to achieve efficient and safe use of airspace in Nevada.

STRATEGIES:

- Review and comment on FAA notices of proposed rule making.
- Participate with the FAA and the military in activities related to airspace issues.

1.4.3 Regulatory and Safety

POLICY 4

NDOT will strive to achieve the safest possible public-use airport facilities.

STRATEGIES:

- Consider safety in all decision-making situations in the development of the aviation system.
- Work closely with the FAA and TSA to formulate policies that properly reflect the diversity of security concerns at airports throughout Nevada.
- Conduct airport safety inspections.
- Identify the navigational aid improvements required to assure continued airspace compatibility and safety.
- Recognize the need for improved weather collection and dissemination equipment.

POLICY 5

NDOT will encourage the creation and maintenance of hazard-free approach surfaces at all public-use airports, and will seek to achieve obstruction-free airport runway protection zones.

STRATEGIES:

- Evaluate approaches to public-use airports through the FAA 5010 inspection process to determine hazards and obstructions to air navigation using Federal Aviation Regulations (FAR) Part 77, *Objects Affecting Navigable Airspace*, as the standard.
- Address the continuous deterioration of area airspace due to the uncontrolled proliferation of hazards and tall structures.
- Encourage local jurisdictions to evaluate existing regulations and, where appropriate, amend regulations to prevent the creation of obstructions or hazards to aircraft operations, and to protect the airports from other off-site interference affecting aircraft operations.

1.4.4 Capacity and Expansion of Airport Facilities

POLICY 6

To maintain a growing economy, there must be sufficient aviation capacity to meet the needs of aviation users. To do otherwise limits the ability of the air transportation system to serve a vital link in both the State's and the Nation's overall transportation network. NDOT will therefore, encourage development of an air transportation system that meets demand as identified in the Nevada Airport System Plan and achieves adequate airspace and air traffic control capacity.

STRATEGIES:

- Promote the efficient utilization of existing airport facilities by establishing the appropriate airport role of each airport in the system.
- Encourage the development of new airport facilities where reasonable transportation system management strategies will not satisfy capacity needs.
- Support the development of new airports and improving existing airports in rural Nevada.
- Discourage the abandonment of any existing usable public or private airports or facilities.
- Encourage joint use of military airport facilities where unserved demand and civil activities will not interfere with the military mission.

- Plan for increases in instrument approaches due to new technologies global positioning system (GPS) satellites.
- Develop strategies for the continued operation of airports (military, public and privately owned) that have been identified in the Nevada Airport System Plan to be of statewide significance.
- Support programs which will expedite modernization of the aviation system and oppose measures which will unreasonably constrain overall economic growth and, ultimately, limit global competitiveness.

1.4.5 Environmental and Land Use Compatibility

POLICY 7

NDOT will encourage compatibility between airports and surrounding land uses.

STRATEGIES:

- Monitor, review, and comment on environmental documents for projects near airports.
- Encourage local jurisdictions to adopt airport overlay zones that address noise, safety and height restrictions, and establishment of land use compatibility standards for these areas.
- Support local agencies and airports in achieving compatibility between airports and surrounding land uses.
- Encourage use of aviation easements and buyer awareness notices when development is permitted near airports to alert occupants and prospective buyers and to protect airport and aircraft operations.
- Encourage the establishment of a proper balance between legitimate local noise concerns and the need to provide airport capacity. Noise control measures should be designed so they do not significantly reduce the safety and efficiency of aircraft using the airports; are not discriminatory to any class or group of aviation users; do not create an undue burden on interstate commerce; and do not conflict with any Federal requirements or regulations.

POLICY 8

NDOT will encourage compliance, to the greatest extent possible, with Federal environmental guidelines.

STRATEGIES:

- Use sound, well-reasoned environmental policies that fully recognize both the actual cost to the user, as well as overall benefit to the environment.
- Evaluate and comment on environmental studies of projects that have or may have significant adverse impacts on airport and aircraft operations.

1.4.6 Ground Access

POLICY 9

In accordance with Nevada Revised Statutes Chapter 408, NDOT will promote and encourage development of adequate ground access to public-use airports with multi-modal interface to develop and coordinate a balanced transportation policy consistent with the social, economic and environmental goals of the State.

STRATEGIES:

- Work with local governments, to identify and address airport ground transportation problems.
- Encourage the development of strategies for improvement of ground access to congested airports by considering alternative transportation modes, off-airport terminals, economic incentives, and methods identified in air quality management plans, regional transportation plans, and local general plans.
- Work within the constraints of the Federal Transportation Equity Act for the 21st Century (TEA-21) to ensure the Statewide Airport System Plan enhances Nevada's ability to compete globally, focus on innovation, and help achieve state goals of improving air quality, reducing petroleum energy consumption, and providing mobility for all persons.
- Incorporate the findings and conclusions of the Statewide Airport System Plan into the State's long-range transportation plan.

1.4.7 Air Service

POLICY 10

A constant vigil must be maintained to protect all classes of users from threats that can deny airport access. Seemingly legitimate measures, such as landing fees and noise rules, have been used to unfairly discriminate against certain aviation users. Therefore, NDOT will encourage adequate air transportation access to the State and national air transportation system for all the State's citizens. NDOT will, also, encourage activities that will allow Nevada airports to participate in a global economy through international air carriers.

STRATEGIES:

- Encourage the coordination of air service between airlines and communities, provide recommendations to the U.S. Department of Transportation on air service issues, maintain knowledge on changes in air service and the airline industry, and provide technical assistance to local government.
- Oppose measures that unfairly limit airport access and thus discriminate against general aviation.

1.4.8 Programming and Funding

POLICY 11

NDOT will encourage funding in a manner that will provide the optimum benefit to the State airport system.

STRATEGIES:

- Administer the Aviation Trust Fund.
- Emphasize the maintenance and preservation of the existing airport system ahead of system expansion.
- Use the Airport Pavement Management System to aid in establishing strategies for addressing statewide airport pavement needs.
- Recommend that taxes collected from aviation users be spent on aviation improvements and not be used to fund non-aviation programs.

- Develop a capital expenditure program that assures airport improvements will meet the high priority long-range needs of the State, within available funding sources.

1.4.9 Local Assistance

POLICY 12

NDOT will provide aviation expertise to airports as requested and as appropriate in planning and technical areas.

STRATEGIES:

- Provide planning assistance to local agencies.
- Assist the Nevada Airport Managers Association in serving as a clearinghouse for airport management expertise to provide assistance to airport operators.

1.4.10 Public Awareness

POLICY 13

NDOT will promote awareness of the statewide aviation system planning process, the socioeconomic benefits of aviation throughout the State, and will support aviation education.

STRATEGIES:

- Determine the economic impact of individual airports on their associated communities.
- Establish a responsive public information program that will actively involve both the aviation community and the public in the system plan's development.
- Seek methods to increase public awareness of the benefits of all segments of aviation.
- Encourage the development and integration of aviation education in the school, college and university systems.
- Determine the socio-economic contribution of aviation to the State.

1.5 SUMMARY

The preceding sections have described the airport system planning process; identified appropriate study issues, goals, and policies for the Nevada Airport System Plan and give specific strategies consistent with each. Subsequent chapters describe the airport and aviation facilities available, their present and projected use, the physical facility limitations that exist, system requirements that can be considered, and improvement recommendations that can be implemented to improve the Nevada aviation system.

Chapter 2

Analysis of Existing System

Chapter 2

ANALYSIS OF EXISTING SYSTEM

2.1 INTRODUCTION

This chapter presents an analysis of airport and aviation facilities and services and related conditions as they currently exist in the State of Nevada. Data collection for this effort included demographic and socioeconomic data, surface transportation data, airport inventories, activity data, navigation and landing aids, and airspace information. Sources for the data collected include the Federal Aviation Administration (FAA), the Nevada Department of Transportation (NDOT), individual airport operators and airport master and system plans.

This chapter is divided into the following key planning elements:

- Definition of the Study Area
- Socioeconomic Data
- Nevada Weather
- Surface Transportation Systems
- Airport Facilities
- Aviation Activity
- Airspace and Air Traffic Control

Each of these planning elements is discussed in the following sections.

2.2 DEFINITION OF THE STUDY AREA

The State of Nevada covers approximately 109,826 square miles and is the seventh largest state in the Nation. Nevada is geographically located almost entirely within the Great Basin, which is characterized by North-South mountain ranges and valleys. The highest point in the State is Boundary Peak at 13,140 feet above sea level, located in Esmeralda County. The lowest point in the State is 490 feet, which is on the Colorado River in Clark County. Eighty-two percent of the land in Nevada is owned and administered by the Federal Government. Only Alaska has more federally administered land. Regionally, the State is bordered on the north by the states of Oregon and Idaho, on the east by the states of Utah and Arizona, and on the south and west by the State of California. Nevada spans approximately 315 miles east to west and approximately 480 miles from the north to the most southern tip. Figure 2-1 illustrates the geographical location of Nevada in relation to the United States.

2.3 SOCIOECONOMIC DATA

2.3.1 Population

The State of Nevada is the fastest growing state in the United States. According to the 2000 United States Census, the population in the State increased approximately 66.3 percent over the years 1990 through 2000. This compares with an overall U.S. growth rate of 13.1 percent. Most of Nevada's population growth is the result of in-migration (moving into the State) as opposed to natural increases (more births than deaths).

The State of Nevada is divided into 17 individual counties. These counties vary widely in population. Clark County is Nevada's highest populated county with a 2000 population of 1,375,765 as indicated in Table 2-1. The Las Vegas Metropolitan Statistical Area (Clark County and a portion in Arizona) experienced a population increase of 83.3 percent between 1990 and 2000, the highest percent change of any metropolitan area in the country. Esmeralda County is the State's lowest populated county with a 2000 population of 971. The largest percent gain in population occurred in Clark County, which saw an 85.5 percent increase between the years 1990 and 2000. The greatest percent decline in population occurred in Esmeralda County, which saw a 27.8 percent decrease.

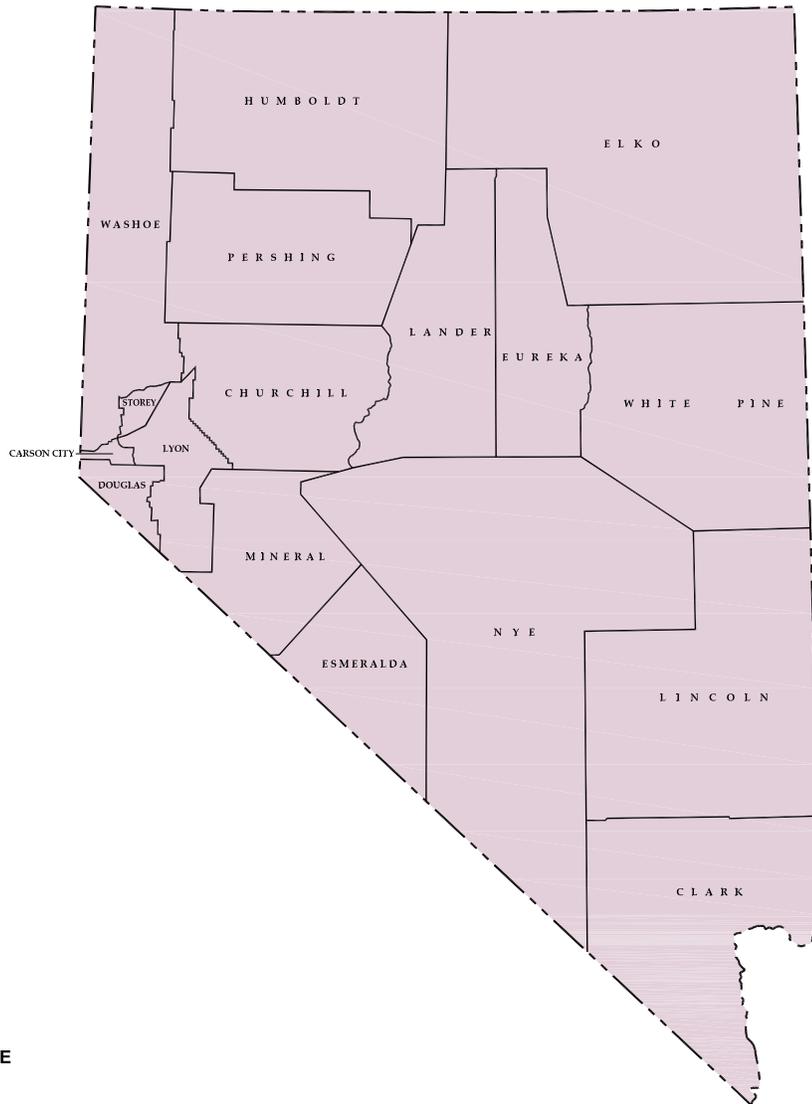
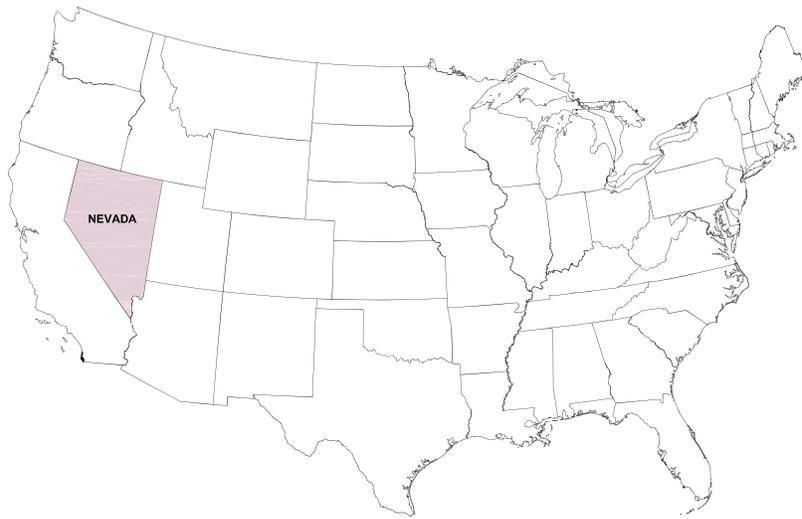
The 1990 through 2000 annual population totals, together with the percent change for each county, are presented in Exhibit 1 in the Appendix.

2.3.2 Annual Per Capita Income

The annual per capita income is derived by dividing personal income by the resident population. Personal income includes the sum of all wages, salaries and non-corporate business income plus earnings such as personal dividends and interest. In calculating per capita income, the U.S. Department of Commerce uses its own population estimates for counties and states. Because these estimates under count Nevada's population, the per capita figures produced for Nevada are probably slightly overstated.

The annual per capita income for the State in 2000 was \$30,438 ranking the State 15th in the nation in per capita income. According to the U.S. Department of Commerce, Bureau of Economic Analysis, per capita income for the State increased 50 percent from 1990 through 2000 slightly behind the national average of 53 percent over the same period.

On the county level, the 2000 per capita income ranged from \$16,887 in Pershing County to \$39,547 Douglas County with three of the 17 counties above the State average of \$30,438 and three above the national average of \$29,847. The highest increase in per



NOT TO SCALE



**NEVADA AIRPORT
SYSTEM PLAN**



Nevada Department of Transportation

FIGURE 2-1

**STUDY AREA
LOCATION**

ARIES CONSULTANTS LTD.

NAME: NDOT-II-134.doc | NO: 4200-04
DATE: 09-03-2004 | PLOT SCALE: 1=300

Table 2-1

POPULATION BY COUNTY
Nevada Airport System Plan

<u>County</u>	<u>April 1, 1990</u>	<u>April 1, 2000</u>	<u>Difference</u>	<u>Percent Change</u>
Clark	741,459	1,375,765	634,306	85.5
Nye	17,781	32,485	14,704	82.7
Lyon	20,001	34,501	14,500	72.5
Pershing	4,336	6,693	2,357	54.4
Douglas	27,637	41,259	13,622	49.3
Elko	33,530	45,291	11,761	35.1
Storey	2,526	3,399	873	34.6
Churchill	17,938	23,982	6,044	33.7
Washoe	254,667	339,486	84,819	33.3
Carson City	40,443	52,457	12,014	29.7
Humboldt	12,844	16,106	3,262	25.4
Lincoln	3,775	4,165	390	10.3
Eureka	1,547	1,651	104	6.7
White Pine	9,264	9,181	-83	-0.9
Lander	6,266	5,794	-472	-7.5
Mineral	6,475	5,071	-1,404	-21.7
Esmeralda	1,344	971	-373	-27.8
STATE TOTAL	<u>1,201,833</u>	<u>1,998,257</u>	<u>796,424</u>	<u>66.3</u>

SOURCE: U. S. Census Bureau, Census 2000 Redistricting Data Summary File
 and 1990 Census

capita income from 1990 through 2000 occurred in Douglas County, where per capita income increased 54 percent from \$25,660 in 1990 to \$39,547 in 2000.

The annual per capita income for each county and the State for 1990 through 2000 are also presented in Exhibit 1 in the Appendix.

2.3.3 Tourism

The largest contributor to the Nevada economy is, and will continue to be, tourism. The tourism industry added an estimated \$35 to \$40 billion to the state and local economies during 2003 according to the Nevada Commission on Tourism. The largest portion of that economic impact occurred in Clark County with an estimated \$33 billion for the year. Washoe County contributed an estimated \$4 billion.

A significant amount of this economic impact was based on the immense amount of tourist visits. More than 49 million people visited Nevada during 2000. A total of 42 million of these tourists visited the Clark County (Las Vegas, Laughlin and Mesquite) area, while Washoe County (Reno/Sparks) reported 5.2 million visitors. All other areas of the State totaled 2.4 million tourists, including the Lake Tahoe area.

Even though the majority of the State's tourists arrived by automobile, Nevada's two largest air carrier airports accounted for over 21.2 million enplaned passengers in 2000. The Las Vegas-McCarran International Airport handled 18.4 million enplaned passengers while the Reno/Tahoe International Airport accounted for 2.8 million enplaned passengers. Data from the United States Travel and Tourism Administration revealed that 2,364,000 people visited Nevada from overseas countries in 2000. This number represents an increase of more than 1,123,000 overseas visitors to Nevada from 1991, or almost a doubling of the overseas visitors.

Nevada tourists visit the State for several reasons, including their desire to gamble, attend conventions, and tour the State and National parks in the area. More than 4.3 million of the State's tourists attended conventions during 2000. Clark County is the favorite convention location for most visitors with 91 percent of the visitors while Washoe County reported 3 percent of the convention visitors for 2000.

More than 28.3 million people visited Nevada's parks during 2000 with 3.5 million of these visiting the Nevada State Parks System. A total of 9.1 million visited the Lake Mead Recreational Area, while the Great Basin National Park welcomed 81,000 visitors. Two other national parks near the State border also experienced high visitation levels. The Grand Canyon National Park had 4.8 million visitors, while Death Valley National Monument received 1.2 million visitors.

Many of the Grand Canyon National Park visits are made by air using several airlines that provide air service for Grand Canyon tourists from Las Vegas area airports. The passengers use air services at the McCarran International Airport, North Las Vegas Airport, Boulder City Municipal and the Henderson Executive Airports as well as the Laughlin/Bullhead International Airport.

Gaming revenues continue to play a major role in the State's economy. Nevada casinos won more than \$9.3 billion in fiscal year 2002. The majority of this revenue came from Clark County, which won \$7.4 billion and whose casinos paid \$576 million in taxes. Washoe County won \$1.0 billion and their casinos paid \$78 million in taxes. Douglas County (which includes South Lake Tahoe) won \$334 million and provided \$23.9 million in casino taxes. Elko County and Carson Valley won \$227 million and \$97 million, respectively, while their casinos paid \$16.6 million and \$7.5 million, respectively, in taxes in fiscal year 2002.

2.3.4 Mining

The Nevada mineral industry continued to make a significant contribution to the economy of both the State and the nation in 2000. However, mineral exploration in Nevada continued to decline in 2000.

Information provided by the Nevada Bureau of Mines and Geology for 2000 indicated that, as has been the case for several years, gold continued to be Nevada's most valuable mineral commodity. The State continued to be second in the Nation in nonfuel mineral production value, of which Nevada accounted for more than 7.5 percent of the United States total.

Nevada, the Nation's leading State in gold production and silver production, provided 76 percent and 37 percent of the Nation's gold and silver, respectively. The "Silver State" has been first in silver production since 1987, as well as first in gold since 1981. In 2000 gold accounted for more than 80 percent of Nevada's nonfuel mineral value, as well as largest portion of the State's rise in value. The total value of gold increased by \$100 million owing to increased production.

Other nonfuel minerals that had significant increases included construction sand and gravel, up \$36 million and silver up \$28 million. Increases ranging between \$3 million and \$1 million occurred in barite, gypsum, Portland cement and diatomite in descending order of change. A more than \$40 million decrease in the production value of copper, about \$5 million in that of lithium minerals, and about \$2 million in lime accounted for nearly all decreases in the State's nonfuel minerals commodities.

Nevada produced 267,000 kilograms of gold in 2000 along with 722,000 kilograms of silver. Production of both metals was higher than that of 1999. Nevada maintained its

place as the leading gold- and silver-producing State in the United States with 28 mines reporting gold production and 25 mines producing silver during 2000.

Over 10,000 individuals were employed in the Nevada mining industry in 2000. The mining, petroleum, and geothermal industries pay taxes and fees directly and indirectly to the State of Nevada. The State government receives the net proceeds of minerals tax and a percentage of the revenues from federal oil and gas and geothermal leases, mining claim fees, and oil production taxes. Additional mining-related revenues are derived by the State through reclamation and other permitting fees. In addition, substantial amounts of income accrue to the State government through sales taxes on equipment and supplies purchased by the mines, on travel and other expenditures by exploration crews and on purchases made by employees. The overall contribution of the extractive industries to the State's economy is substantial, particularly in the rural counties. The local airport that supports the mining activities in the area is of vital importance to the continued success of the industry by providing convenient access for personnel and equipment parts.

2.3.5 Military

The military plays a significant role in the State and has a major economic impact. The two major military facilities are Nellis Air Force Base and Naval Air Station Fallon. In 2001 there were approximately 6,900 active duty military personnel assigned to Nellis Air Force Base together with 2,800 civil service workers with a combined payroll of over \$237 million. In addition, there are significant numbers of contract employees as well as temporary duty personnel. There are also over 20,000 military retirees in the local area with an estimated \$359 million annual payroll.

In 2001, Naval Air Station Fallon had an estimated 3,000 personnel with over 1,000 active duty personnel and over 1,200 contract workers. The estimated annual payroll totals \$72 million. The estimated total economic impact of Naval Air Station Fallon is over \$117 million annually.

2.4 NEVADA WEATHER

The extremes of Nevada weather are as great as anywhere in the country. With summer temperatures in the southern Nevada exceeding 100 degrees Fahrenheit on numerous occasions and winter temperatures in northern Nevada that remain below freezing for months at a time characterize the diversity of the State's weather. To provide a more detailed discussion of the State's weather, five communities in different areas of the State and their weather are described in the following sections.

2.4.1 Las Vegas

Las Vegas is situated near the center of a broad desert valley, which is almost surrounded by mountains ranging from 2,000 to 10,000 feet higher than the floor of the valley. This Las Vegas Valley, comprising about 600 square miles, runs from northwest to southeast, and slopes gradually upward on each side toward the surrounding mountains. Weather observations are taken at McCarran International Airport, 7 miles south of downtown Las Vegas, and about 5 miles southwest and 300 feet higher than the lower portions of the valley. Since mountains encircle the valley, drainage winds usually downslope toward the center, or lowest portion of the valley. This condition also affects minimum temperatures, which in lower portions of the valley can be from 15 to 25 degrees colder than recorded at the Airport on clear, calm nights.

The four seasons are well defined. Summers display desert conditions with maximum temperatures usually in the 100 degree Fahrenheit range. The proximity of the mountains contributes to the relatively cool summer nights, with the majority of minimum temperatures in the mid 70 degree Fahrenheit. During about two weeks almost every summer, warm, moist air predominates in this area and causes scattered thunderstorms, occasionally quite severe, together with higher than average humidity. Soil erosion, especially near the mountains and foothills surrounding the valley, is evidence of the intensity of some of the thunderstorm activity. Winters on the whole are mild and pleasant. Daytime temperatures average near 60 degrees Fahrenheit with mostly clear skies. The spring and fall seasons are generally considered most ideal, although rather sharp temperature changes can occur during these months. There are very few days during the spring and fall months when outdoor activities are affected in any degree by the weather.

The Sierra Nevada Mountains of California and the Spring Mountains immediately west of the Las Vegas Valley, the latter rising to elevations over 10,000 feet above the valley floor, act as effective barriers to moisture moving eastward from the Pacific Ocean. It is mainly these barriers that result in a minimum of dark overcast and rainy days. Rainy days average less than one in June to three per month in the winter months. Snow rarely falls in the valley and it usually melts as it falls, or shortly thereafter. Notable exceptions have occurred.

Strong winds, associated with major storms, usually reach this valley from the southwest or through the pass from the northwest. Winds over 50 miles per hour are infrequent but, when they do occur, are probably the most provoking of the elements experienced in the Las Vegas Valley because of the blowing dust and sand associated with them.

Based on data collected for the 1951 to 1980 period, the average first occurrence of 32 degree Fahrenheit temperature in the fall was November 21 and the average last occurrence in the spring was March 7.

2.4.2 Reno

At an elevation of 4,400 feet above mean sea level, Reno is located at the west edge of Truckee Meadows in a semi-arid plateau lying in the lee of the Sierra Nevada Mountain Range. To the west, the Sierras rise to elevations of 9,000 to 11,000 feet. Hills to the east reach 6,000 to 7,000 feet. The Truckee River, flowing from the Sierras eastward through Reno, drains into Pyramid Lake to the northeast of the city.

The daily temperatures on the whole are mild, but the difference between the high and low often exceeds 45 degrees Fahrenheit. While the afternoon high may exceed 90 degrees Fahrenheit, the temperature drops shortly after sunset. Nights with low temperatures over 60 degrees Fahrenheit are rare. Afternoon temperatures in the winter are moderate.

More than half of the precipitation in Reno occurs mainly as mixed rain and snow, and falls from December to March. Although there is an average of about 25 inches of snow a year, it seldom remains on the ground for more than three or four days at a time. Summer rain comes mainly as brief thunderstorms in the middle and late afternoons.

Humidity is very low during the summer months and moderately low during the winter. Fogs are rare and are usually confined to the early morning hours of midwinter. Sunshine is abundant throughout the year.

Based on data collected for the 1951 to 1980 period, the average first occurrence of 32 degree Fahrenheit temperature in the fall was September 16 and the average last occurrence in the spring was June 1.

2.4.3 Winnemucca

Winnemucca lies at an elevation about 4,300 feet above sea level and is effectively cut off by the Sierra Nevada Mountains from the moisture source of the Pacific Ocean. Winnemucca has a climate marked by warm days, cool nights, and light precipitation. Most of the annual rainfall occurs as rain and snow between December and May. Though it is heavier in the mountains, snowfall at Winnemucca itself has had measurable amounts fall in every month except July, August and September.

Temperatures in this plateau area tend to rise sharply right after sunrise and remain comparatively high during the daylight hours, then drop rapidly around sundown. Daily temperature variations of 50 degrees Fahrenheit are not uncommon.

Based on data collected for the 1951 to 1980 period, the average first occurrence of 32 degree Fahrenheit temperature in the fall was September 10 and the average last occurrence in the spring was June 8.

2.4.4 Elko

Elko is located in the Humboldt River Valley of northeastern Nevada. Weather observations were taken at the Federal Aviation Administration (FAA) Flight Service Station that was located at the Airport on the west side of town. An automated surface observing system (ASOS) was installed on the Airport in the 1990s. The elevation at the Airport is just above 5,000 feet. The Ruby Mountain Range, with many peaks near or exceeding 10,000 feet in height, dominates the landscape from about 40 miles northeast through 40 miles southeast of Elko. Because of the high elevation and proximity of the mountains, there is a wide range between the normal high and low temperatures. High radiative cooling at night makes cool nights the rule, even in mid summer. Normal precipitation is light, especially during the summer months when the precipitation falls mostly as light showers.

Based on data collected for the 1951 to 1980 period, the average first occurrence of 32 degree Fahrenheit temperature in the fall was September 8 and the average last occurrence in the spring was June 5.

2.4.5 Ely

Ely is located within the Great Basin. The neighboring terrain consists of alternate mountain ranges and sagebrush covered valleys. Valley floors in this region are near 6,000 feet above sea level. This high elevation is conducive to sharp nighttime radiation, which produces pleasant summer nights but also reduces the season that is free from freezing temperatures.

The Ely weather station was near the center of Steptoe Valley, which is 5 miles wide at that point. An ASOS was installed on the Airport in the 1990s. The mountains of the Egan Range to the west and the Schell Creek Range to the east range up to 4,000 feet above the station elevation and prevent strong surface winds from these directions. A very pronounced drainage wind sweeps down the valley during the morning hours. More precipitation is noted near the mountains than is measured in the center of the valley.

Based on data collected for the 1951 to 1980 period, the average first occurrence of 32 degree Fahrenheit temperature in the fall was September 6 and the average last occurrence in the spring was June 16.

2.4.6 Automated Weather Information

The concept of automating the collection and dissemination of weather information necessary for charting and conducting aircraft flights has been in the making for a number of years. Initially all weather observations that affected the airport environment (wind direction, wind speed, wind gust values, temperature, dew point, barometric

pressure/altimeter setting, sky cover, prevailing visibility and runway visibility) were made exclusively by human observers. While airlines and the military provided their own observations, most information required to meet the needs of the general aviation user was collected and disseminated by the numerous Flight Service Stations operated by the Federal Aviation Administration and the National Weather Service. As general aviation has grown, particularly business flying, the demand for weather information has also increased as has the cost in manpower to provide these critically needed services.

Federal Aviation Regulations require that each pilot in command shall, before beginning a flight, familiarize himself with all available information concerning that flight. This information must include weather reports and forecasts.

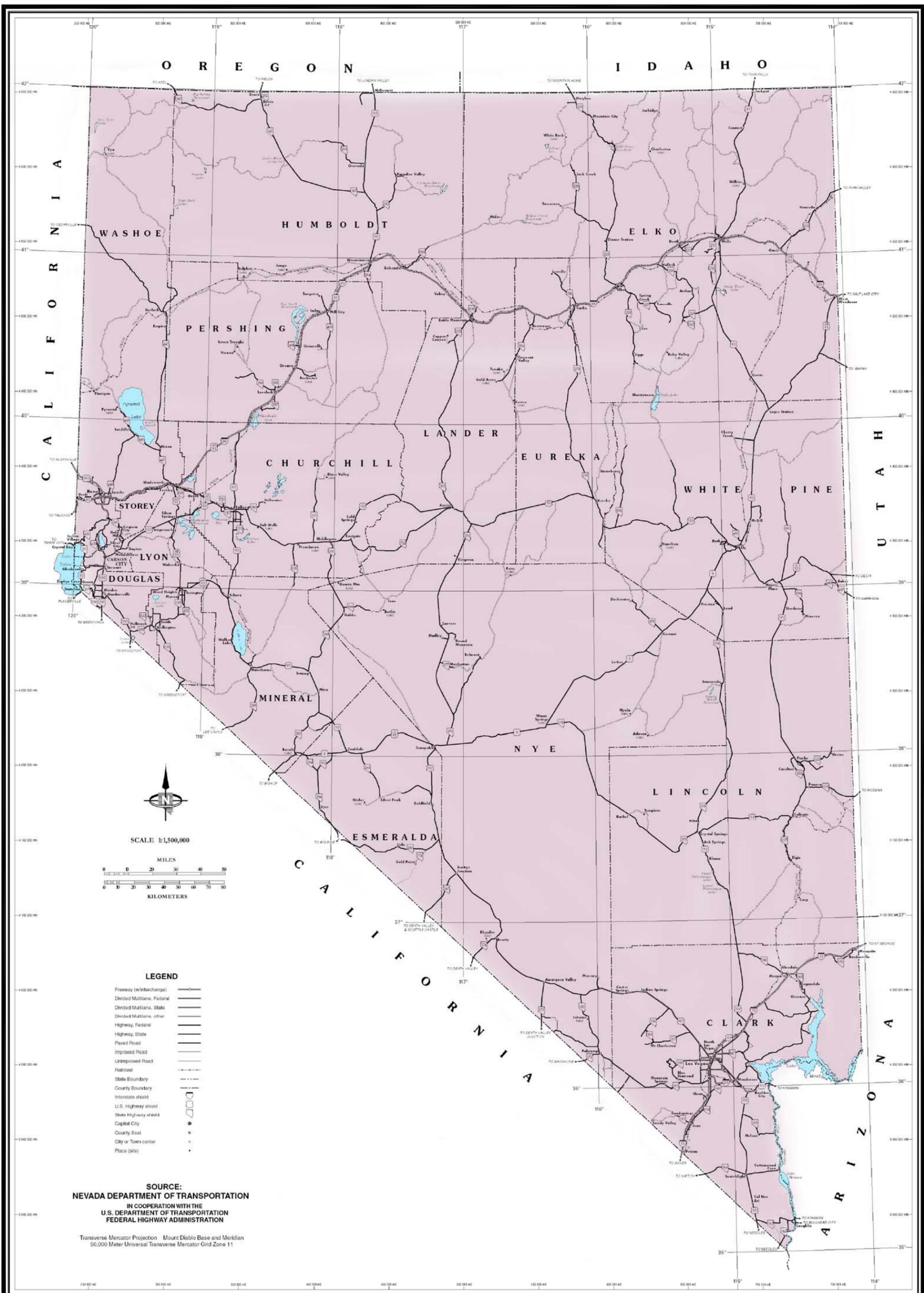
In Nevada, this requirement became more difficult to meet with the closing of Flight Service Stations. While aircraft operations have grown, the FAA has reduced the number of manned Flight Service Stations to a single automated Flight Service Station at Reno.

The automated weather observation system (AWOS) provides help to weather observing or reporting capabilities and should be expanded to more remote locations in the State. The AWOS system is operationally classified into four basic levels. However, essentially all AWOS facilities in Nevada are AWOS-3 and report altimeter setting, wind data, temperature, dewpoint, density altitude, visibility and cloud/ceiling data. An AWOS-3 reports all measurements by a computer-generated voice that can be transmitted over a VHF transmitter, on the voice output of a navigational aid, and via telephone lines. The system works 24 hours a day and updates the weather report every minute. There are also several ASOS facilities in Nevada that report the weather essentially the same as the AWOS-3.

Because of safety of aircraft flight considerations, involving the need for real time weather information in flight or in preparation for flight, State of Nevada and/or local airport sponsors should pursue providing additional capabilities in this area. If funding can be obtained from the FAA, the implementation of additional all-weather data collection and dissemination facilities in Nevada could improve flight safety and provide for airport economic development.

2.5 SURFACE TRANSPORTATION SYSTEMS

The surface transportation systems for the State of Nevada includes a highway system of Interstate, U.S and State Highways, and a freight and passenger rail system as illustrated on Figure 2-2. The surface transportation system is of vital importance to the State of Nevada due to the tourism and mining industries on which the State heavily depends. There are now over 52,000 miles of roads, streets and highways in the State, about 5,100 miles of which are state maintained.



NEVADA AIRPORT SYSTEM PLAN



Nevada Department of Transportation

**FIGURE 2-2
 NEVADA
 HIGHWAY SYSTEM**

VARIES CONSULTANTS LTD.

NAME: NDOT-II-13-LOC NO: 4200-03
 DATE: 09-03-2004 PLOT SCALE: 1=100

2.5.1 Highway System

Figure 2-2 depicts the existing interstate and primary highway systems in the State of Nevada. Only two interstate highways, Interstate 80 and Interstate 15 serve the State. Interstate 80, referred to as the *Wagon Master Trail*, runs east to west in the northern part of the State from the Nevada/Utah border in Elko County west through the City of Reno to the Nevada/California border. Interstate 80 proceeds east to Salt Lake City, Utah, and southwest to Sacramento, California.

Interstate 15, referred to as the *Los Angeles Highway*, runs northeast to southwest through the most southern tip of the State, from Mesquite on the Nevada/Arizona border, through Las Vegas to the Nevada/California border. Interstate 15 proceeds northeast through the most northwestern corner of the State of Arizona, to Cedar City, Utah and into Salt Lake City, Utah. Interstate 15 also proceeds southwest through California to Riverside and to the Los Angeles area. Interstates 215 and 515 serve areas of Las Vegas and connect to Interstate 15.

Important primary highways that serve the State include US95, US50, and US93. US95, known as the *Silver Trail*, travels north to south in the western part of the State from the Nevada/Oregon border, north of Winnemucca, south to the Nevada/California border south of Las Vegas. Major cities along this route include Winnemucca, Fallon, Hawthorne, Tonopah, Beatty and Las Vegas. US50, known as the *Loneliest Road in America*, travels east to west from the Nevada/Utah border, east of Ely, west to the Nevada/California border, southwest of Carson City. Major cities along this route include Ely, Eureka, Austin, Fallon and Carson City. US93, known as the *Caravan Trail*, travels north to south along the eastern side of the State from the Nevada/Idaho border at Jackpot, south through Las Vegas and into Arizona, east of Boulder City. Major cities along this route include Wells, Ely, Pioche, Alamo, North Las Vegas, Henderson and Boulder City. Another primary U.S. highway that serves the State is US6. This highway travels southwest/northeast from the Nevada/California border, west of Coaldale, northeast to Ely.

Over 80 percent of the airports in the State are located along these primary routes. The U.S. and State highways provide adequate access to the two other commercial service airports, Elko Regional and North Las Vegas and the busier general aviation airports.

As of September 2002 more than 29.6 million vehicles entered Nevada annually on its major highways. Over 80 percent of the annual traffic enters Nevada from California.

The existing highway system could have an effect on existing airports as well as the location or need for new airports. At many major air carrier airports around the country, limitations in the capacity of the ground access system is a problem or rapidly becoming a critical concern. Continued growth in air travel means that more and more people must

be able to get into and out of the airports. Over the years dramatic increases have occurred in passenger enplanements at McCarran International Airport requiring significant development in all areas of the Airport including the terminal and ground access areas. As a direct result of this continued growth, the roadways from around Las Vegas and the surrounding communities are becoming more congested as passengers maneuver into and out of the airport area.

Specifically, Tropicana Road, Sunset Road, Paradise Road, Swenson Street, Russell Road, I-215 and I-15, are all roads in the vicinity of McCarran International Airport that need to be continually monitored for improvement needs to keep pace with airport growth. The *Draft Nevada DOT Transportation System Projects (FY) 2005-2014* lists very few projects of any significance in this area. With a forecast 100 percent increase in passenger enplanements between 2000 and 2020 and 60 percent increase in aircraft operations, some airport ground access improvements are expected to be required.

A similar situation exists in Reno regarding the Reno/Tahoe International Airport. Improvements to US395 have been made to currently provide good access to the airport airline terminal area. Activity at Reno/Tahoe International is growing and is expected to increase over 100 percent in passenger enplanements between 2000 and 2020. The *Draft Nevada DOT Transportation System Projects (FY) 2005-2014* describes few projects that relate to airport-generated ground access traffic. Even though adequate surface transportation system capacity exists, continued surveillance will need to be maintained concerning US395, Mill Street, South Rock Boulevard, Terminal Way and Durham Road to ensure that adequate facilities are available to support the Reno/Tahoe International Airport's growth.

2.5.2 Freight and Passenger Rail System

The State of Nevada is served by the Union Pacific Railroad. The Union Pacific Railroad runs east to west along Interstate 80 in the northern part of the State from the Nevada/Utah border west through Reno to the Nevada/California border. This railroad separates into two branches at Hazen, east of Reno. One branch travels southwest into Fallon and the Fallon Naval Air Station and the other branch, the Thorne Branch, travels south/southeast into the Hawthorne Army Ammunition Plant.

The Union Pacific Railroad travels east to west in the northern part of the State from the Nevada/Utah border along Interstate 80 to Winnemucca and then travels west/southwest through Gerlach to the Nevada/California border. The Union Pacific Railroad travels northeast/southwest in the southern part of the State from the Nevada/Utah border, east of Caliente, south/southwest through Las Vegas and to the Nevada/California border. A branch of this railroad separates at Moapa, northeast of Las Vegas, and travels southeast into Overton. Another branch of this railroad separates south of Las Vegas and travels into Boulder City.

Amtrak passenger service is available along the Union Pacific rail lines for northern Nevada passengers. This provides service to Reno, Sparks, Winnemucca, and Elko on a route that connects Chicago and the San Francisco Bay Area.

The Federal Railroad Administration, California Department of Transportation and the Nevada Department of Transportation are currently preparing a Program Environmental Impact Statement for a proposed 269-mile high-speed rail system between the Los Angeles and Las Vegas metropolitan areas.

2.6 AIRPORT FACILITIES

This section presents a summary of the existing public-use airport facilities located in Nevada. This study considered only publicly and privately owned, public-use airports identified in the current FAA *National Plan of Integrated Airport Systems* (NPIAS) and those public-use facilities that the State considers important to the aviation system. Private-use airports were not included in this study.

An inventory of the airport facilities was conducted by interviews with airport managers and airport sponsors and review of data available from NDOT, FAA, including FAA Form 5010-1 *Airport Master Record*, and the latest airport master and system plans.

A listing of the State's public-use airports and their major facilities are shown in Exhibit 2 in the Appendix.

2.6.1 Computerized Database

One of the study outputs will be an updated computerized database that provides the Nevada Department of Transportation with a method for updating aviation and airport facility data for its system of airports.

2.6.2 Airport Service Levels

Service levels reflect the type of public service provided to the community. These service levels also represent funding categories established by Congress to assist in airport development. The service levels as defined in the NPIAS are as follows.

- **Commercial Service Airports (CM)** – these are airports receiving scheduled passenger service and having 2,500 or more annual passenger enplanements. Primary airports (PR) are those commercial service airports having 10,000 or more annual passenger enplanements.
- **Reliever Airports (RL)** – these are general aviation airports in metropolitan areas that are intended to reduce congestion at large commercial service airports by providing

general aviation pilots with alternative airports to use. They also provide the surrounding areas with access to air transportation.

- General Aviation Airports (GA) – these are public-use airports that accommodate general aviation aircraft, and those airports that have scheduled commercial air service but enplane less than 2,500 passengers annually.

These service roles are not intended to dictate what types of aircraft can be based or conduct operations at a specific airport. The airport service levels and other attributes of airports in Nevada are identified in a later subsection.

2.6.3 Airport Reference Code

Airport classifications refer to the operational role of the airport within the system. This standard provides an indication of the types of aircraft that can be safely accommodated at each airport.

The old FAA Airport Classification types of Basic Utility, General Utility and Transport Airports are no longer used and have been replaced by an Airport Reference Code system. FAA Advisory Circular (AC) 150/5300-13, *Airport Design*, establishes an airport reference code (ARC) to identify specific design criteria appropriate for the types of aircraft expected to be accommodated at a particular airport. The ARC has two components: (1) a letter referring to the “aircraft approach category” in terms of speed; and (2) a Roman numeral referring to the “airplane design group” in terms of wingspan. Aircraft in a lower ARC would be accommodated by a higher ARC (i.e., A-I fits into B-II).

<u>Approach Category</u>	<u>Speed in Knots</u>
A	up to 90
B	91 to 120
C	121 to 140
D	141 to 165
E	166 or more

<u>Design Group</u>	<u>Wingspan in Feet</u>
I	up to 48
II	49 to 78
III	79 to 117
IV	118 to 170
V	171 to 213
VI	214 to 262

2.6.4 Description of Airport Facilities

Presently, there are 32 existing public-use airports located in the State of Nevada that are identified in the NPIAS. The proposed Ivanpah Valley, Mesquite and Pahrump Valley Airports are considered NPIAS airports. There are an additional 20 existing public-use airports that are not included in the NPIAS but are considered important to the State's aviation system. A total of 53 existing airports are included in this study. Of these 53 airports, 47 are publicly owned and operated by either a county, municipality, or authority type governing body while 6 airports are privately owned and operated by individuals or incorporated entities. Figure 2-3 depicts the location of each existing airport that is included in this study.

The following sections briefly discuss the commercial service and reliever airports in the State. In addition, other significant airports, both inside and outside the State, are also discussed. Airports inside the State include Boulder City Municipal, Jackpot Airport, Jean Airport, Mesquite Municipal Airport and Minden-Tahoe Airport. The airports outside the State include Lake Tahoe and Truckee-Tahoe, California; Laughlin/Bullhead City International, Arizona; Wendover, Utah; and McDermitt State, Oregon. These airports have a significant impact on the State of Nevada and local communities due to their location along the adjacent State borders. These facilities attract out-of-state visitors to Nevada for tourism, gambling, business and personal travel purposes.

2.6.4.1 Commercial Service Airports

There are four airports located in metropolitan areas and other communities in the State that are defined as commercial service airports. These airports are:

- McCarran International Airport
- Reno/Tahoe International Airport
- Elko Regional Airport (J. C. Harris Field)
- North Las Vegas Airport

Ely Airport/Yelland Field and Henderson Executive Airport were classified as commercial service airports until recently when they were reclassified as a general aviation and reliever airport, respectively.

A brief description of each of these airports is provided in the following paragraphs.

McCarran International Airport

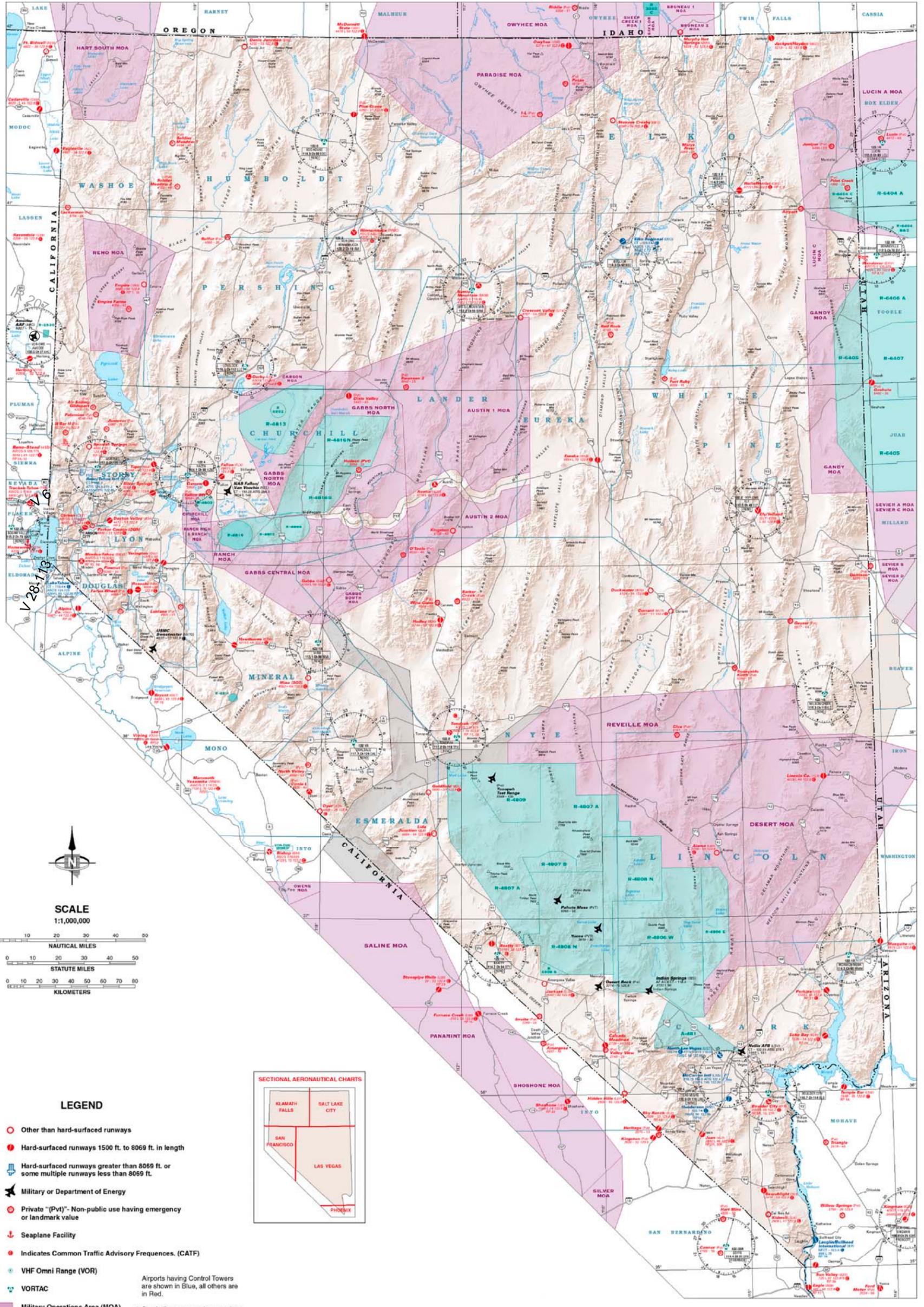
McCarran International Airport is a large hub, primary commercial service airport ranked ninth in the U. S. in terms of total aircraft operations in 2000. McCarran International Airport is currently served by over 20 scheduled air carriers, over 20 charter airlines that operate to the airport on a regular basis, five commuter air carriers, seven all-cargo air carriers and sightseeing air taxi charters that fly tours of the Grand Canyon National Park and Hoover Dam.

McCarran International Airport has four runways. Runway 7L-25R is the primary runway used by air carrier aircraft. This runway is 14,510 feet long by 150 feet wide and has an asphalt, porous friction surface. The landing threshold on the Runway 7L end is displaced by 2,139 feet to the east to provide the required clearance over a hangar west of the airport. The Runway 25R end is equipped with an instrument landing system (ILS) and a medium intensity approach lighting system with runway alignment indicator lights (MALSR). The landing threshold on Runway 25R is displaced by 1,397 feet to the west for noise abatement. This runway is also equipped with high intensity runway lights (HIRL) and has a full-length parallel taxiway. Both ends of this runway are equipped with a precision approach path indicator (PAPI {P4L}).

The parallel Runway 7R-25L is also used primarily by air carrier aircraft at 1,000 feet separation centerline to centerline from Runway 7L-25R. This runway is 10,526 feet long by 150 feet wide and has an asphalt, porous friction surface. The Runway 25L end is equipped with an ILS system and a medium intensity approach lighting system with flashing sequenced lights (MALSF). Runway 7R end is equipped with runway end identifier lights (REIL). This runway is also equipped with HIRL and has a full-length parallel taxiway. Both ends of this runway are equipped with precision approach path indicator (PAPI{P4L}).

Runway 1R-19L is another runway used primarily by air carrier aircraft. This runway is 9,775 feet long and 150 feet wide and has an asphalt, porous friction surface. Runway 1R has a 491-foot displaced threshold to provide adequate clearance over a set of railroad tracks in the approach path, and Runway 19L is displaced by 878 feet to provide adequate clearance over a pole in the approach path. This runway is equipped with medium intensity runway lighting (MIRL) and a PAPI (P4L) on both ends of the runway with a threshold crossing height that will accommodate wide-bodied aircraft. This runway is also served by a full-length parallel taxiway.

The parallel runway, Runway 1L-19R, is the fourth runway and is now used primarily by air carrier aircraft. This runway is 9,765 feet long and 150 feet wide and has a grooved concrete surface. This runway is equipped with HIRL, has a PAPI (P4L) on both ends of the runway with a threshold crossing height that will accommodate wide-bodied aircraft, and has REIL on both ends. This runway has a full-length parallel taxiway.



NOTE:
 This map is NOT an aeronautical chart and is NOT intended to be used for navigation purposes. Airport location and military airspace are approximate. Always secure prior permission and verify condition before using private or unverified landing strips; many landing strips are not maintained on a year-round basis and may not be suitable for aircraft operations during wet weather.

Users of this map are encouraged to contact the Nevada Department of Transportation, Office of Aviation Planning with any changes or corrections: (775) 688-7354 or (800) 992-0900, or e-mail: pio@ndot.state.nv.us.



NEVADA AIRPORT SYSTEM PLAN



**FIGURE 2-3
 LOCATION OF
 EXISTING SYSTEM
 AIRPORTS**

VARIES CONSULTANTS LTD.
 NAME: NASP-23-EXIS SYS | NO: 4200-06
 DATE: 09-03-2004 | PLOT SCALE: 1=200

The existing runway declared distances in feet are shown below:

<u>Runway</u>	<u>TORA</u>	<u>TODA</u>	<u>ASDA</u>	<u>LDA</u>
01L	9,765	9,998	8,990	8,402
07L	14,510	15,099	14,099	11,966
19R	9,765	10,177	9,177	8,394
25R	14,510	15,155	14,155	12,755

- TORA = Takeoff Run Available
- TODA = Takeoff Distance Available
- ASDA = Accelerate Stop Distance Available
- LDA = Landing Distance Available

The airport has one main terminal building (Terminal 1) for domestic flights and a second terminal building (Terminal 2) for domestic charter and international flights. The main terminal building has approximately 1.3 million square feet of space and six total levels. The first two levels are for passenger enplanements and deplanements, and the top four levels contain public vehicle parking. Concourses A, B, C and D are connected to Terminal 1, with automated transit systems (ATS) connecting Concourses C and D. The charter and international terminal building contains approximately 41,000 square feet of space for Federal inspection services, including customs and immigration processing, airline ticketing and hold rooms. The air cargo center includes three buildings with approximately 180,000 square feet. General aviation facilities are provided by several fixed base operators (FBOs) with services that include 100LL and Jet-A fuel, passenger lounge, aircraft parking and hangar storage, major airframe and power plant repair service, and an avionics shop.

Surface transportation services at McCarran International are provided by a wide variety of firms and equipment. Rental cars, shuttle buses, taxicabs and limousines provide transportation to area hotels and businesses. In the future, a monorail transit system developed to connect hotels along the Las Vegas strip may be extended to provide access from the airport to the Las Vegas strip hotels and the Las Vegas Central Business District.

Reno/Tahoe International Airport

Reno/Tahoe International Airport is located approximately four miles southeast of the City of Reno's central business district. Lake Tahoe, an internationally-recognized resort destination, is 22 nautical miles to the southwest. Principal access to the airline terminal area is from U. S. Highway 395 and East Plumb Lane. The Airport encompasses approximately 1,400 acres.

Reno/Tahoe International Airport is a medium hub, primary commercial service airport with facilities to serve commercial air service and general aviation aircraft. Reno/Tahoe International is served by approximately eight scheduled air carriers, five charter carriers and one scheduled commuter.

Reno/Tahoe International Airport has three runways. Runway 16R-34L is the primary runway and is 11,000 feet in length, 150 feet wide and has a grooved concrete surface. Runway 16R has a 1,000-foot displaced threshold, and Runway 34L has a 990-foot displaced threshold. The Runway 16R end is equipped with an ILS system and a medium intensity approach light system (MALSR). Runway 16R-34L is equipped with HIRL and has a PAPI (P4L) on both ends. Runway 16L-34R is 9,000 feet long and 150 feet wide and has a grooved concrete surface. This runway is equipped with HIRL, REIL on both ends, and has a PAPI (P4L) on both ends of the runway with a threshold crossing height that will accommodate wide body aircraft. The crosswind Runway 7-25 is 6,101 feet long and 150 feet wide and has a grooved concrete surface. This runway is equipped with MIRL, REIL and PAPI (P4L) on both ends of the Runway with a threshold crossing height that will accommodate wide body aircraft. All runways have full-length parallel taxiways.

The airline terminal building has approximately 380,000 square feet of space on two levels. The ground level includes airline ticket counters, airline offices, baggage claim, car rental and a restaurant. The upper level provides access to the hold rooms, passenger lounge and boarding gates. General aviation services are provided by several FBOs with services that include 100LL and Jet-A fuel, aircraft parking and hangar storage and major airframe and power plant repair service.

Ground transportation services at Reno/Tahoe International include rental cars, shuttle buses, taxicabs and limousines. The services are available at the airline terminal and FBO facilities for transportation to hotels and businesses in the area.

Elko Regional Airport (J. C. Harris Field)

Elko Regional Airport (J. C. Harris Field) is a primary commercial service airport with facilities to serve scheduled, unscheduled and general aviation activity. This airport is served on a regular basis by Skywest Airlines, a scheduled commuter carrier, and by Casino Express Airlines, a charter carrier owned and operated by Red Lion Casinos. Skywest operates Embraer Brasilia 30-passenger type aircraft. Casino Express operates charter flights using Boeing 737 aircraft with an average of two flights daily.

Elko Regional Airport has two runways. Runway 5-23, the primary runway, is 7,214 feet long and 150 feet wide and has an asphalt, porous friction surface. The Runway 23 end is displaced by 795 feet in order to provide the appropriate clearance over a pole in the approach path. Runway 23 end is equipped with an LDA/DME approach and a MALSR.

There is also a GPS approach to Runway 5, a VOR or GPS-A and a VOR/DME or GPS-B approach to the Airport with circling minimums only. Runway 5-23 is also equipped with MIRL and a visual approach slope indicator (VASI {V4L}) on both runway ends. This runway has a full-length parallel taxiway. The second runway, Runway 12-30, is an asphalt paved runway used only by small general aviation aircraft. This runway is 2,871 feet long and 60 feet wide and has no electronic or visual landing aids.

A new 20,000 square foot terminal building with space for ticket counters, baggage claim, passenger lounges, restaurant, administrative offices, airline offices and rental car facilities opened in August 2001. The airport has an air traffic control tower. General aviation facilities are provided by an FBO that provides major airframe and power plant repair service, aircraft parking and storage facilities, and 100 and Jet-A fuel. Ground transportation services from the Elko Regional Airport to local hotels and businesses is provided by a combination of rental cars, transit buses and taxicabs.

Ely Airport/Yelland Field

Ely Airport/Yelland Field is a commercial service airport. Scenic Airlines recently began one scheduled daily flight (six days per week) between Ely and North Las Vegas with 19 passenger DHC-6 Twin Otter aircraft. Passenger service is subsidized under the Essential Air Service (EAS) program. The EAS program guarantees air carrier service to small selected cities and provides subsidies, if needed, to prevent these cities from losing passenger service.

Ely Airport/Yelland Field has two runways. The primary Runway 18-36 is 6,018 feet long and 150 feet wide and has an asphalt, porous friction surface. This runway is equipped with MIRL and has a VASI-2 on both ends and a full-length parallel taxiway. The crosswind Runway 12-30 is used solely by general aviation aircraft. This runway is 4,814 feet long and 60 feet wide with an asphalt surface and has no electronic or visual landing aids. This runway does not have a parallel taxiway. There is a VOR/DME or GPS-C approach and a VOR or GPS-A approach to the Airport with circling minimums only.

The terminal building has approximately 10,000 square feet of space for passenger ticketing, baggage claim and passenger holding area. General aviation services are provided by an FBO operating from another building. FBO services include minor airframe and power plant repair service, aircraft parking, aircraft parking, hangar storage facilities and 100LL and Jet-A fuel. Ground transportation services from the terminal building are provided by rental cars and taxicabs.

Henderson Executive Airport

Henderson Executive Airport is a publicly-owned airport located approximately 6 NM south of McCarran International Airport. There are sightseeing air taxi tours of the Grand Canyon National Park operating from the airport.

This airport has recently undergone major reconstruction. The airport now has two paved runways. Runway 17R-35L is 6,500 feet long and 100 feet wide. This runway is equipped with MIRL, REILs and PAPIs at both ends of the runway. The load-bearing capability will accommodate aircraft with 12,500 single-wheel loading. The parallel runway, 17L-35R, is east of the main runway. It is 5,000 feet long and 75 feet wide, equipped with runway edge lights, REILs and PAPIs at both ends of the runway. A full-length parallel taxiway is located on the west side of the main runway, 17R-35L. The airport has an air traffic control tower. There are no published IFR approach procedures.

Facilities include a terminal building, aircraft parking and hangar storage. FBO services include a passenger lounge, flight training, major airframe and power plant repair service, 100LL and Jet-A fuel.

North Las Vegas Airport

North Las Vegas Airport is a publicly-owned facility located approximately 8 NM northwest of McCarran International Airport. There are some scheduled flights as well as sightseeing air taxi tours of the Grand Canyon National Park operating from the airport.

This airport has an air traffic control tower and three runways. Runway 7-25 is 5,004 feet long by 75 feet wide. It has an asphalt surface rated at 30,000 pounds single-wheel loading. This runway is equipped with MIRL and has PAPI (P4L) on both the runway ends. The second Runway 12R-30L is 5,000 feet by 75 feet and is rated at 30,000 pounds single-wheel loading and is asphalt paved. This runway has MIRL and PAPI (P4L) on both runway ends. The third Runway 12L-30R is 4,000 feet by 75 feet and has MIRL and PAPI (P4L) on both runway ends and was opened in 2002. The second and third runways are parallel, separated by 700 feet centerline to centerline. There are GPS approaches to Runways 12R and 30L with straight-in minimums. An instrument landing system (ILS) will be installed on Runway 12L in 2003 primarily for training activities.

Facilities at the North Las Vegas Airport include a terminal building that was opened in 2002, restaurant, rental vehicles, aircraft parking and hangar storage. FBO services include a passenger lounge, aircraft parking and hangar storage, flight training, major airframe and power plant repair service, and 100LL, 80 and Jet-A fuel.

2.6.4.2 Reliever Airports

Reliever airports are an integral part of the overall air transportation system. Reliever airports are airports designated to relieve congestion at commercial service airports. They do this by providing general aviation pilots with alternative airports and by providing more general aviation access to the overall community. The NPIAS currently has the Carson and Reno Stead Airports designated as relievers for Reno/Tahoe International Airport. Henderson Executive Airport has recently been redesignated as a reliever for McCarran International Airport as noted earlier. The North Las Vegas Airport also serves as a reliever airport for McCarran International Airport. Ground transportation services from the reliever airport FBOs to local area hotels and businesses are provided by rental vehicles, taxicabs and courtesy transportation. A brief description of these airports is contained in the following paragraphs.

Carson Airport

Carson Airport is located approximately 18 NM south of Reno/Tahoe International Airport. This is a publicly-owned facility serving as a reliever for Reno/Tahoe International as well as a community airport for Carson City. This airport has one runway. Runway 9-27 is a 5,900-foot by 75-foot asphalt runway rated at 30,000 pounds single-wheel loading and is equipped with MIRL. Runway 9 has a non-standard pulsating visual approach slope indicator (PVASI) and Runway 27 has a VASI-2. No other instrumentation exists for either visual or instrument approaches. This runway has a full-length parallel taxiway.

Facilities at Carson Airport include a terminal building, aircraft parking and hangar storage. FBO services include major airframe and power plant repair service and 100LL and Jet-A fuel. There is no instrument approach procedure to the Airport.

Reno Stead Airport

Reno Stead Airport is located approximately 11 NM northwest of Reno/Tahoe International Airport. This airport has two asphalt paved runways. Runway 14-32 is 9,000 feet long by 150 feet wide. This runway is equipped with HIRL and is rated at 75,000 pounds single-wheel, 200,000 pounds dual-wheel, and 320,000 pounds dual-tandem-wheel loadings. There is a PAPI-4 on both runway ends for visual approaches. Runway 8-26 is 7,608 feet by 150 feet and has an asphalt surface rated at 60,000 pounds single-wheel and 90,000 pounds dual-wheel loadings. This runway is equipped with HIRL and has a PAPI-4 on both runway ends for visual approaches. Both runways have full-length parallel taxiways.

Facilities at Reno Stead include conventional and T-hangar storage and aircraft parking. FBO services include flight training, major airframe and power plant repair service, 80,

100LL and Jet-A fuel and oxygen. There is a GPS-B approach to the Airport with circling minimums only.

Reno Stead is home for the Nevada Army Guard's heavy lift sky crane helicopters. Reno Stead also hosts the National Championship Air Races. Parachute jumping is a frequent activity at the airport.

2.6.4.3 Other Significant Airports

Other significant airports include those airports located along the Nevada border with the surrounding states, both inside the State of Nevada and just across the border, as well as other airports with significant amounts of aviation activity. The airports inside the State of Nevada include Boulder City Municipal Airport, Jackpot Airport/Hayden Field, Jean Airport, Mesquite Municipal Airport and Minden-Tahoe Airport. Airports outside the State include Lake Tahoe Airport in California, Laughlin/Bullhead International Airport in Arizona, Wendover Airport in Utah, and McDermitt State Airport in Oregon. These airports generate significant activity for the local tourist and gaming establishments by attracting out-of-state visitors. These airports deserve special attention as they are an important asset to the Nevada aviation system.

Boulder City Municipal Airport

Boulder City Municipal Airport is located approximately 15 NM southeast of McCarran International Airport and approximately 7 NM southwest of Boulder Dam and the Lake Mead recreation area. There are sightseeing air taxi tours of the Grand Canyon National Park operating from the airport. This airport is a publicly-owned, public use airport that has three asphalt paved runways. The main Runway 9R-27L is 4,800 feet long and 75 feet wide with medium intensity runway edge lights (MIRL), runway end identifier lights (REIL) and precision approach path indicators (PAPI) at both ends of the runway. The second Runway 15-33 is 3,850 feet long and 75 feet wide with no runway edge lights. The third Runway 9L-27R is parallel to Runway 9R-27L and is 2,200 feet long by 60 feet wide with no runway edge lights. The pavement of all three runways will accommodate aircraft with 12,500 pounds single-wheel loading. Facilities include conventional and T-hangar storage and aircraft parking. FBO services include a passenger lounge, flight training, major airframe and power plant repair service, 100LL and Jet-A fuel.

Jackpot Airport/Hayden Field

This publicly owned general aviation airport is located along the Idaho/Nevada border in Jackpot, Nevada. Jackpot Airport has a 6,200-foot by 60-foot asphalt runway equipped with MIRL. Runway 15-33 can support aircraft with up to 12,500 pounds single-wheel loading. A VASI-2 is provided on the Runway 33 end. This airport is attended

continuously by a local casino providing transportation to the casinos and supplying pilots with 100LL fuel. No airframe or power plant repair service is available.

Jean Airport

Jean Airport is located approximately 20 NM southwest of McCarran International Airport. This general aviation airport has two parallel asphalt paved runways. Runway 02L-20R is 4,600 feet by 75 feet and is equipped with MIRL. Runway 02R-20L is 3,700 feet by 60 feet with no runway edge lights. The pavement of both runways will accommodate aircraft with 12,500 pounds single-wheel loading. This is a publicly-owned airport that attracts travelers to the nearby casinos. Extensive glider and other recreational and sport flying operations are performed at this airport. Services include 100LL and Jet-A fuel, but no airframe or power plant repair service.

Mesquite Municipal Airport

Mesquite Municipal Airport is located along the Nevada/Utah border, approximately 80 miles northeast of Las Vegas. This publicly-owned general aviation airport has one asphalt runway 5,100 feet long by 75 feet wide. Runway 1-19 is equipped with MIRL, has a PAPI-2 and REIL on both runway ends, and is rated at 30,000 pounds single-wheel loading. Services at the airport include a pilots lounge, 100LL and Jet-A fuel, but no airframe or power plant repair service is available.

Minden-Tahoe Airport

Minden-Tahoe Airport is located approximately 30 NM south of Reno/Tahoe International Airport. This is a publicly-owned, public use airport that has two asphalt paved runways and one dirt runway. The main Runway 16-34 is 7,395 feet long and 100 feet wide with MIRL runway lights and visual approach slope indicator (VASI) systems at both ends of the runway. Runway 12-30 is 5,289 feet long by 75 feet wide with no runway edge lights. Runway 12G-30G is a dirt runway 2,600 feet long by 20 feet wide with no runway edge lights. There is extensive glider activity at the Airport. Facilities at the Airport include aircraft parking and storage hangars. Services at the Airport include a restaurant, passenger lounge, flight training, 100LL and Jet-A fuel, with major airframe and power plant repair service available.

Lake Tahoe Airport, California

Lake Tahoe Airport is a commercial service airport located approximately 3 NM southeast of South Lake Tahoe, California, near Stateline, Nevada. This airport is not currently served by any airline. Even though this airport is located in California, it serves many Nevada interests in the Lake Tahoe basin, including the South Lake Tahoe tourist and gaming establishments in Nevada. This facility is somewhat restricted from serving

its air carrier potential because of terrain limitations and environmental and political issues. It is important that the State of Nevada continue to closely monitor this facility as this airport directly serves the interests of Nevada. This airport has one asphalt paved Runway 18-36 equipped with MIRL. Runway 18 has approach lighting MALSF and PAPI-4. Runway 36 has REIL installed and a displaced threshold of 2,037 feet to clear trees and terrain in the approach path. The pavement load-bearing capability is 70,000 pounds single-wheel, 125,000 pounds dual-wheel, 210,000 pounds dual-wheel tandem. There are two LDA/DME approaches, one VOR/DME approach and one GPS approach to Runway 18. In addition to air carrier passenger terminal facilities, services at the Airport include aircraft parking, storage hangars, passenger lounge, flight training, a restaurant, and 100LL and Jet-A fuel, with minor airframe and power plant repair service available.

Truckee-Tahoe Airport, California

The Truckee-Tahoe Airport is a general aviation airport located north of Lake Tahoe, just west of the California-Nevada state line in Truckee, California. The public-use Airport is owned by the Truckee-Tahoe Airport District and is approximately 35 miles west of Reno. U. S. Interstate 80, the major east-west trans-Sierra highway, passes through Truckee on its way between California and Nevada. The Airport's primary Runway 10-28 is 7,000 feet long and 100 feet wide, and the pavement load-bearing capability is 60,000 pounds single-wheel and 100,000 pounds dual-wheel. Runway 1-19 is 4,650 feet long and 75 feet wide, and the pavement load-bearing capability is 12,500 pounds for single-wheel aircraft and 65,000 pounds for dual-wheel aircraft. Both runways are equipped with MIRL. There is a VASI-2 on Runway 19 and a REIL on Runway 10. There are VOR/DME RNAV or GPS-A and a GPS Runway 19 nonprecision approaches. In addition to tiedowns, services at the Airport include storage hangars, 100LL and Jet-A fuel and major airframe and power plant repair services are available.

Laughlin, Nevada/Bullhead International Airport, Arizona

This airport is a primary commercial service airport located east of Laughlin, along the Nevada/Arizona border northeast of Bullhead City, Arizona. This airport provides direct service across the country with both scheduled and charter air carriers. This airport has one asphalt paved Runway 16-34 that is 7,520 feet long by 150 feet wide and is equipped with MIRL. Both ends of the runway have PAPI-4 installed. The pavement load-bearing capability is 75,000 pounds single-wheel, 200,000 pounds dual-wheel and 400,000 pounds dual-tandem wheel. In addition to air carrier passenger terminal facilities, services at the Airport include aircraft parking, storage hangars, passenger lounge and 100LL and Jet-A fuel, with major airframe and power plant repair service available. There is a VOR/DME approach and a GPS approach to Runway 34.

Wendover Airport, Utah

Wendover Airport is currently a general aviation airport located in Utah, east of West Wendover, Nevada. This airport, with its facilities and location close to West Wendover, is an attraction for the tourism and local gaming industry and is hoping to have air carrier charter flights in the near future. This airport has two asphalt runways capable of supporting air carrier-type aircraft. For Runway 8-26, the pavement load-bearing capability is 75,000 pounds single-wheel and 140,000 pounds dual-wheel. For Runway 12-30, the pavement load-bearing capability is 64,000 pounds single-wheel, 85,000 pounds dual-wheel and 120,000 pounds dual-tandem wheel, and this runway will be overlaid in the near future. Runway 8-26 is 8,000 feet by 150 feet. Runway 12-30 is 8,000 feet by 100 feet. Both runways are equipped with MIRL. Runways 8, 12 and 30 have REIL installed. Runways 8 and 30 have PAPI-4 installed. There is a GPS-A and a VOR/DME or TACAN-B approach. Both approaches are to the Airport with circling minimums only. In addition, there is an area navigation RNAV (GPS) Runway 26 and a VOR/DME Runway 26 approach, both with straight-in minutes. New passenger terminal facilities will be required for air carrier charter flights. Services at the Airport include passenger lounge, 100 and Jet-A fuel, with minor airframe and power plant repair service available.

McDermitt State Airport, Oregon

McDermitt State Airport is a publicly-owned general aviation airport located just northwest of McDermitt, Nevada, and US Interstate 95 in Oregon. It is significant for use by the surrounding mines in Nevada. Runway 16-34 is asphalt paved, 5,900 feet long and 60 feet wide. There is an NDB, but no currently published IFR approach to the Airport. There are no services available at this airport.

2.6.4.4 Military Airports

Military airports are usually located adjacent to or within military special use airspace. There are three active military airports in the State of Nevada as well as the Nevada Air National Guard Unit at the Reno/Tahoe International Airport and the Nevada Army Guard Facility at Reno Stead Airport. These military facilities are as follows:

Nellis Air Force Base

This base is located approximately 10 miles northeast of McCarran International Airport. Nellis Air Force Base (AFB) is a tactical training center for jet fighter operations and weapons delivery. Support aircraft for transport and emergency rescue, as well as transient military aircraft of all types, are active at Nellis AFB. There are two parallel runways at this base. Runway 3L-21R is asphalt paved, 10,199 feet long and 200 feet wide. Runway 3R-21L is concrete paved, 10,051 feet long and 150 feet wide. Both

runways have HIRL with VASI and approach lighting system with sequenced flashing lights (ALSF-1), and approach lights at each runway end.

Indian Springs Air Force Auxiliary Field

This base is located approximately 35 miles northwest of Las Vegas and is an auxiliary base for Nellis AFB. It is closed to all aircraft except those involved in tactical operations and direct support operations. There are three asphalt paved runways. Runway 8-26 is 9,002 feet long and 150 feet wide equipped with HIRL. Runway 4-22 is 6,500 feet long and 150 feet wide with no runway lighting. Runway 13-31 is 5,200 feet long and 75 feet wide with no runway lighting.

Fallon Naval Air Station

Fallon Naval Air Station (NAS) is located approximately 50 miles east of Reno and is the Navy's top air tactical fighter weapons center. There are two parallel runways and a third intersecting runway. Runway 13R-31L is asphalt paved, 14,003 feet long and 201 feet wide, with PAPI (P4L) at each end of the runway. Runway 13L-31R is concrete paved, 11,077 feet long and 200 feet wide, with P4L at the 13L end. Runway 7-25 is asphalt/concrete paved, 7,000 feet long and 150 feet wide. All three runways are equipped with HIRL.

2.6.4.5 Surface Transportation at General Aviation Airports

The availability of surface transportation services at the previously described general aviation airports, and the other general aviation airports that comprise the Nevada Airport System, are somewhat limited. Larger general aviation airports that serve a community, especially one with casino facilities, have rental vehicles available on call or a shuttle bus or taxi to the casino. Smaller community airports seldom have any surface transportation services available other than private vehicles.

2.6.4.6 Airport Facilities Summary

A total of 53 existing public-use airports located in Nevada, which are included in the NPIAS and/or are considered important to the State of Nevada, are included in this study. An overview of the 53 existing system airports follows.

- Out of the 53 airports, 32 airports are included in the NPIAS. Three new airports are currently proposed for Nevada (Ivanpah Valley, Mesquite and Pahrump Valley).
- Of the 53 airports:

- Six provide commercial air service. Of the six, four are classified as Primary Commercial Service (PR) airports. Ely Airport/Yelland Field has recently been reclassified as a General Aviation Airport and Henderson Executive Airport as a Reliever Airport as noted earlier.
- Two airports are classified as Reliever airports.
- The other 45 airports are classified as General Aviation (GA) airports.
- Of the 45 General Aviation (GA) airports:
 - 14 are classified as ARC A-I
 - 20 are classified as ARC B-I
 - 10 are classified as ARC B-II
 - 1 is classified as ARC C-II

2.7 AVIATION ACTIVITY

This section presents an overview and summary of historical aviation activity in Nevada. Data concerning levels of enplaned passengers, aircraft operations, and based aircraft serve as the basis for forecasting future demand, assessing capacities, and identifying additional aviation system requirements. The following aviation activity indicators are discussed below:

- Commercial Service Activity
- General Aviation Activity
- Military Aviation Activity

2.7.1 Commercial Service Activity

For this study, commercial service activity descriptors include passenger enplanements and aircraft operations. An enplaned passenger is defined as an originating, stopover, or transfer passenger that boards a departing commercial service flight. An aircraft operation can be either a takeoff or a landing. A takeoff and landing constitute two operations. A brief summary of each activity descriptor is included in the following paragraphs.

2.7.1.1 Passenger Enplanement Activity

Table 2-2 shows the historical passenger enplanements for the six commercial service airports in Nevada. Overall, passenger enplanements in the State increased approximately 53 percent between 1990 and 1995, and approximately 26 percent

Table 2-2

HISTORICAL PASSENGER ENPLANEMENT ACTIVITY
Nevada Airport System Plan

AIRPORT	1990	1995	2000
McCarran International Airport ⁽¹⁾	9,578,510	14,035,400	18,443,481
Reno/Tahoe International Airport ⁽²⁾	1,548,022	2,894,184	2,812,862
Elko Regional (J.C. Harris Field) ⁽³⁾	75,600	136,650	125,273
Ely Airport/Yelland Field ⁽³⁾	1,860	2,672	2,382
Henderson Executive Airport ⁽¹⁾	--	88,580	104,887
North Las Vegas Airport ⁽¹⁾	11,290	46,620	212,352
TOTAL	11,215,282	17,204,106	21,701,237

1. Clark County Department of Aviation
2. Airport Authority of Washoe County
3. FAA Terminal Area Forecasts for FY 2001-2015

between 1995 and 2000. All airports, with the exception of Ely Airport/Yelland Field, have shown significant increases in passenger enplanements. Ely Airport/Yelland Field, on the other hand, has experienced only a 28 percent increase in passenger enplanements between 1990 and 2000. Ely Airport/Yelland Field is currently being subsidized by the Essential Air Service program, as noted earlier, and without this subsidy, commercial service activity would cease to exist.

2.7.1.2 Air Carrier and Air Taxi Aircraft Operations Activity

The historical scheduled and unscheduled air carrier and air taxi aircraft operations at the six commercial service airports in Nevada are summarized in Table 2-3. (The air taxi operations include scheduled commuter flights, sightseeing air tour flights and non-scheduled air taxi aircraft operations and is the classification used by FAA.) For McCarran International Airport, these operations increased by 38 percent between 1990 and 2000. At Reno/Tahoe International Airport, these operations increased by 49 percent between 1990 and 1995, but then decreased by 10 percent between 1995 and 2000 with the cutback in air service at the airport. For Elko Regional (J. C. Harris Field), the increase in air carrier and air taxi activity is due primarily to the charter aircraft operations and the increased use of commuter aircraft to this airport. At Ely Airport/Yelland Field, the operations have declined with the reduction in scheduled commuter service. At North Las Vegas Airport, there has been a significant increase in the sightseeing air taxi aircraft operations. There is only limited reported historical data for Henderson Executive Airport.

Historical aircraft operations data is only available for a few airports in the State with an air traffic control tower. This information is presented in Table 2-4 for McCarran International Airport, Table 2-5 for Reno/Tahoe International Airport, Table 2-6 for Elko Regional Airport, Table 2-7 for Henderson Executive Airport and Table 2-8 for North Las Vegas Airport.

2.7.2 General Aviation and Air Taxi Activity

General aviation activity includes all forms of aviation except air carrier, commuter/air taxi and military activity. Similar to commercial service air carrier and air taxi activity, general aviation aircraft operations counts provide an important measure of overall activity. Facility requirements, such as runway capacity and aircraft parking apron areas, are dependent on aircraft operations. Another measure of activity is the number of based aircraft for each airport. Hangar storage and tiedown facilities and services to accommodate these aircraft are dependent on future based aircraft numbers. The 2000, or latest year available, general aviation operations and based aircraft for each airport in Nevada are presented in Table 2-9.

Table 2-3

HISTORICAL AIR CARRIER AND AIR TAXI AIRCRAFT OPERATIONS
Nevada Airport System Plan

AIRPORT	1990	1995	2000
McCarran International Airport ¹	284,776	362,737	394,315
Reno/Tahoe International Airport ¹	64,517	95,846	86,237
Elko Regional (J.C. Harris Field)	7,100 ²	12,767 ²	12,431 ¹
Ely Airport/Yelland Field ²	3,640	3,400	3,400
Henderson Executive Airport ²	--	--	23,484
North Las Vegas Airport ¹	<u>5,849</u>	<u>25,048</u>	<u>51,040</u>
TOTAL	365,882	499,798	570,907

1. FAA Air Traffic Activity Data

2. FAA Terminal Area Forecasts for FY 2001-2015

Table 2-4

**MCCARRAN INTERNATIONAL AIRPORT HISTORICAL AIRCRAFT OPERATIONS
Nevada Airport System Plan**

Year	Itinerant Operations					Local Operations			Total
	Air Carrier	Air Taxi	General Aviation	Military	Subtotal	General Aviation	Military	Subtotal	
1990	202,850	81,326	91,490	4,660	380,326	19,234	201	19,435	399,761
1991	210,127	81,904	82,946	5,311	380,288	17,758	200	17,958	398,246
1992	199,591	96,908	89,690	8,446	394,635	16,785	180	16,965	411,600
1993	211,472	105,474	105,170	16,693	438,809	18,152	274	18,426	457,235
1994	238,518	107,374	112,692	15,917	474,501	21,268	171	21,439	495,940
1995	258,516	104,221	105,663	17,818	486,218	17,325	155	17,480	503,698
1996	281,214	71,998	89,038	18,484	460,734	15,727	50	15,777	476,511
1997	294,845	52,896	92,946	21,102	461,789	11,465	0	11,465	473,254
1998	297,000	40,374	93,714	28,784	459,872	10,818	17	10,835	470,707
1999	326,872	66,706	118,993	15,529	528,100	14,822	0	14,822	542,922
2000	336,682	57,633	102,061	21,930	518,306	2,994	0	2,994	521,300
2001	323,888	81,818	75,148	18,058	498,912	58	0	58	498,970
2002	317,298	86,788	72,913	20,926	497,925	112	0	112	498,037

SOURCE: FAA Air Traffic Activity Data System

Table 2-5

RENO/TAHOE INTERNATIONAL AIRPORT HISTORICAL AIRCRAFT OPERATIONS
Nevada Airport System Plan

Year	Itinerant Operations					Local Operations			Total
	Air Carrier	Air Taxi	General Aviation	Military	Subtotal	General Aviation	Military	Subtotal	
1990	45,550	18,967	64,782	7,653	136,952	21,513	1,874	23,387	160,339
1991	49,726	18,577	58,636	7,898	134,837	21,758	2,676	24,434	159,271
1992	51,724	20,410	59,301	8,836	140,271	20,574	2,372	22,946	163,217
1993	60,837	27,694	54,037	7,292	149,860	11,812	1,138	12,950	162,810
1994	61,871	32,437	48,391	6,387	149,086	9,144	568	9,712	158,798
1995	66,872	28,974	45,508	4,971	146,325	5,634	288	5,922	152,247
1996	83,280	16,409	44,852	2,766	147,307	7,358	360	7,718	155,025
1997	88,659	15,630	46,220	2,698	153,207	8,734	440	9,174	162,381
1998	83,181	14,997	43,897	2,895	144,970	10,408	310	10,718	155,688
1999	76,391	16,108	48,398	2,662	143,559	8,230	314	8,544	152,103
2000	67,353	18,884	49,913	3,265	139,415	10,094	364	10,458	149,873
2001	55,692	20,373	47,703	3,631	127,399	11,828	436	12,264	139,663
2002	53,877	21,013	52,241	4,229	131,360	13,240	436	13,676	145,036

SOURCE: FAA Air Traffic Activity Data System

Table 2-6

ELKO REGIONAL AIRPORT (J.C. HARRIS FIELD) HISTORICAL AIRCRAFT OPERATIONS
Nevada Airport System Plan

Year	Itinerant Operations					Local Operations			Total
	Air Carrier	Air Taxi	General Aviation	Military	Subtotal	General Aviation	Military	Subtotal	
1990					0			0	0
1991					0			0	0
1992					0			0	0
1993					0			0	0
1994					0			0	0
1995					0			0	0
1996					0			0	0
1997	1,628	8,138	7,580	36	17,382	4,809	9	4,818	22,200
1998	1,878	9,637	9,254	48	20,817	4,617	32	4,649	25,466
1999	1,882	9,670	11,966	60	23,578	5,512	8	5,520	29,098
2000	2,184	10,247	11,109	148	23,688	4,207	32	4,239	27,927
2001	1,289	9,424	10,234	160	21,107	6,098	64	6,162	27,269
2002	1,448	9,988	9,097	190	20,723	9,768	318	10,086	30,809

SOURCE: FAA Air Traffic Activity Data System

Table 2-7

HENDERSON EXECUTIVE AIRPORT HISTORICAL AIRCRAFT OPERATIONS
Nevada Airport System Plan

Year	Itinerant Operations					Local Operations			Total
	Air Carrier	Air Taxi	General Aviation	Military	Subtotal	General Aviation	Military	Subtotal	
1990					0			0	0
1991					0			0	0
1992					0			0	0
1993					0			0	0
1994					0			0	0
1995					0			0	0
1996					0			0	0
1997					0			0	0
1998					0			0	0
1999					0			0	0
2000					0			0	0
2001	0	4,774	8,423	30	13,227	9,840	0	9,840	23,067
2002	0	13,185	29,596	139	42,920	32,328	4	32,332	75,252

SOURCE: FAA Air Traffic Activity Data System

Table 2-8

NORTH LAS VEGAS AIRPORT HISTORICAL AIRCRAFT OPERATIONS
Nevada Airport System Plan

Year	Itinerant Operations					Local Operations			Total
	Air Carrier	Air Taxi	General Aviation	Military	Subtotal	General Aviation	Military	Subtotal	
1990	0	5,849	44,733	66	50,648	74,076	14	74,090	124,738
1991	0	8,295	43,461	54	51,810	75,646	83	75,729	127,539
1992	0	7,851	49,022	26	56,899	86,562	30	86,592	143,491
1993	0	7,178	55,491	48	62,717	100,596	247	100,843	163,560
1994	0	11,004	63,737	309	75,050	115,329	1,059	116,388	191,438
1995	0	25,048	65,548	187	90,783	124,546	851	125,397	216,180
1996	0	62,713	76,594	10	139,317	111,099	349	111,448	250,765
1997	2	77,430	79,836	129	157,397	114,768	114	114,882	272,279
1998	18	64,597	85,813	815	151,243	112,369	70	112,439	263,682
1999	0	37,426	80,413	71	117,910	111,603	7	111,610	229,520
2000	7	51,042	75,325	32	126,406	99,099	0	99,099	225,505
2001	1	40,784	60,653	161	101,599	90,653	4	90,657	192,256
2002	0	36,490	68,529	246	105,265	113,019	12	113,031	218,296

SOURCE: FAA Air Traffic Activity Data System

Table 2-9

2000 AVIATION ACTIVITY SUMMARY
Nevada Airport System Plan

AIRPORT	Aircraft Operations					
	Based Aircraft	Air ¹ Taxi	General Aviation		Military	Total ²
			Local	Itinerant		
Alamo Landing Field	0	0	20	80	0	100
Austin Airport	3	0	800	500	100	1,400
Battle Mountain Airport	16	1,800	6,420	3,600	120	11,940
Beatty Airport	4	75	100	800	30	1,005
Boulder City Municipal Airport	132	3,000	15,000	15,000	0	33,000
Carson Airport (Carson City)	238	4,000	35,000	35,000	0	74,000
Currant Ranch Airport	0	0	0	160	0	160
Dayton Valley Airpark	14	0	1,000	200	20	1,220
Denio Junction Airport	0	0	0	500	0	500
Derby Field (Lovelock)	6	0	110	1,240	80	1,430
Duckwater Airport	0	0	0	0	0	0
Dyer Airport	6	0	0	40	0	40
Echo Bay Airstrip	0	0	0	750	0	750
Elko Regional Airport (J.C. Harris Field)	50	10,247	5,823	8,784	103	24,957
Ely Airport/Yelland Field	26	3,400	600	6,000	100	10,100
Empire Airport	2	0	150	0	0	150
Eureka Airport	4	0	400	1,000	0	1,400
Fallon Municipal Airport	57	2,000	2,045	10,105	100	14,250
Ft. Ruby Ranch Airstrip (Ruby Valley)	0	0	0	10	0	10
Gabbs Airport	4	0	1,800	200	0	2,000
Goldfield Airport	2	0	275	25	0	300
Hadley Airport (Round Mountain)	3	0	1,095	1,095	0	2,190
Harriet Field/Wells Municipal	11	0	2,500	3,000	0	5,500
Hawthorne Municipal Airport	7	400	2,540	10,160	300	13,400
Henderson Executive Airport	149	23,484	32,732	21,343	26	77,585
Hidden Hills Airport (Pahrump)	0	0	0	200	0	200
Jackass Aeropark (Amargosa Valley)	5	0	100	500	4	604
Jackpot Airport/Hayden Field	1	0	300	5,200	0	5,500
Jean Airport	23	0	5,000	15,000	0	20,000
Kidwell Airport (Cal Nev Ari)	16	0	3,000	500	0	3,500
Kingston Airport	1	0	50	200	0	250

2000 AVIATION ACTIVITY SUMMARY**Nevada Airport System Plan**

AIRPORT	Aircraft Operations					
	Based Aircraft	Air ¹ Taxi	General Aviation		Military	Total ²
			Local	Itinerant		
Lida Junction Airport (Goldfield)	0	0	0	10	0	10
Lincoln County Airport (Panaca)	3	100	900	1,500	0	2,500
McCarran International Airport	220	57,633	2,994	102,061	21,930	184,618
Mesquite Municipal Airport	19	0	2,000	13,000	0	15,000
Mina Airport	3	0	100	100	0	200
Minden-Tahoe Airport	261	2,500	42,000	35,000	300	79,800
North Las Vegas Airport	575	77,559	116,264	81,479	84	275,386
Owyhee Airport	6	0	360	1,140	0	1,500
Parker Carson Stolport (Carson City)	12	0	1,000	500	0	1,500
Perkins Field (Overton)	20	0	3,200	2,000	0	5,200
Reno Stead Airport	231	1,000	35,000	19,000	10,000	65,000
Reno/Tahoe International Airport	168	17,693	6,794	43,830	3,441	71,758
Rosaschi Air Park	10	0	5,000	820	20	5,840
Searchlight Airport	1	0	0	300	0	300
Silver Springs Airport	17	0	2,100	2,700	0	4,800
Sky Ranch Estates Airport (Sandy Valley)	26	0	1,500	500	0	2,000
Spanish Springs Airport	13	0	3,600	1,000	50	4,650
Stevens/Crosby Field (North Fork)	0	0	0	25	0	25
Tiger Field (Fernley)	10	0	1,200	1,200	0	2,400
Tonopah Airport	10	3,135	7,832	1,540	220	12,727
Winnemucca Municipal Airport	42	370	16,000	8,000	150	24,520
Yerington Municipal Airport	44	100	7,000	17,000	300	24,400
Total	2,471	208,496	371,704	473,897	37,478	1,091,575

1. Air taxi data includes scheduled commuter, sightseeing air tour and non-scheduled air taxi aircraft operations.

2. Total does not include air carrier aircraft operations.

SOURCE: FAA Form 5010-1, Airport Master Record, and Individual Airports

Air taxi aircraft operations include scheduled commuter, sightseeing air tour and non-scheduled air taxi aircraft (fixed wing and helicopter) operations. This information is also included in Table 2-9.

2.7.3 Military Aviation Activity

The 2000, or latest year available, military aviation activity at civil airports are presented in Table 2-9.

2.7.4 Aviation Activity Summary

Consistent throughout the aviation activity section, the trend for all activity indicates a continued overall increase. Virtually every segment of commercial service activity as well as general aviation activity has increased with overall growth expected to continue. Even though general aviation has been slow for the past 10 years, the importance of the activity has never been greater to communities with airports. These historical trends are examined in Chapter 3, Forecast of Aviation Demand, of this study.

2.8 AIRSPACE AND AIR TRAFFIC CONTROL

2.8.1 Statewide Summary

This section describes and inventories airspace and air traffic control (ATC) facilities and operations in the State of Nevada. The inventory process includes the following steps:

- A review of the Las Vegas, Phoenix, San Francisco, Klamath Falls and Salt Lake City Sectional Aeronautical Charts that cover the State of Nevada, published instrument procedures, en route charts, ATC controller charts, letters of agreement between ATC facilities and internal operating procedures.
- Discussions with FAA personnel at the Los Angeles, Oakland and Salt Lake City Air Route Traffic Control Centers (ARTCC), select Air Traffic Control Towers (ATCT) and visits to airports throughout the State.
- Preparation of figures that show airspace classifications, low altitude airway/routes within the State and significant features related to air navigation and terminal areas airspaces.

The airspace within the State of Nevada serves a complex of airports and accommodates a wide range of civil and military aircraft types and activities. Established procedures and facilities provide for the safe, orderly and expeditious flow of traffic for existing levels of aviation activity. Most airline and itinerant military flights are conducted in accordance with instrument flight rules (IFR). However, some military training flights

and many general aviation flights (both local and itinerant) are conducted in accordance with visual flight rules (VFR).

The basic difference between IFR and VFR is that the pilot maintains control of the spatial orientation of his aircraft by reference to instruments for IFR and by visual reference to the surface of the ground or water for VFR. Flights under IFR flight plans can be accomplished in poor visibility, whereas VFR flights cannot. Meteorological (weather) conditions that permit flight under VFR rules are prescribed in Federal Aviation Regulations (FAR) Part 91, *General Operating and Flight Rules*, Paragraph 155, *Basic VFR Weather Minimums*, in terms of visibility and distance from clouds.

2.8.2 Airspace Classifications

Controlled airspace within the United States is classified either as Class A, B, C, D or E. Class G airspace is uncontrolled. Class A applies to all airspace above 18,000 feet. Classes B, C and D are applied to airports with operational control towers. Class B applies to the nation's busiest airports, including McCarran International Airport and Nellis Air Force Base. Class C applies to the next busiest group of airports, which includes Reno/Tahoe International Airport. Class D applies to the rest of the airports with an operational control tower. Elko Regional, Fallon Naval Air Station, Henderson Executive, Indian Springs Air Force Auxiliary Field, Laughlin/Bullhead International and North Las Vegas Airports each have Class D airspace. All other controlled airspace is Class E airspace, including Federal airways and the transition areas to and from terminal or en route environment. Class G is any other airspace not designated Class A through Class E, and is therefore uncontrolled airspace. Class G extends upward to a higher class of airspace or 14,500 feet mean sea level (MSL), whichever is lower. Class E airspace then extends upward to, but not including, 18,000 feet MSL. Figure 2-4 is a diagram of the various airspace classifications.

2.8.2.1 Air Traffic Service Relationships

There are three major categories for air traffic control of the airspace over the State of Nevada and one automated flight service station. The three major categories for ATC are:

- Air Route Traffic Control Airspace
- Terminal Area Airspace
- Air Traffic Control Tower Airspace

These categories define a specific volume of airspace and the ATC facility that controls the airspace. Each of these categories of airspace is discussed in the following paragraphs.

2.8.2.2 Air Route Control Center Airspace

The airspace over the United States has been divided by the Federal Aviation Administration into approximately 25 areas for air traffic control service to aircraft operating on IFR flight plans. Air traffic control in these areas is provided by the personnel and equipment of FAA Air Route Traffic Control Centers (ARTCC), commonly known as Centers. The State of Nevada is covered by the Los Angeles, Oakland, Salt Lake City and Seattle ARTCCs. Los Angeles covers the part of Nevada south of Tonopah, Oakland covers the area west of Tonopah and Salt Lake City covers the rest of the State, except for a small part in the northwest corner of the State of Nevada that is covered by Seattle.

2.8.2.3 Terminal Area Airspace

Terminal area airspace is designated for maneuvering of aircraft approaching and departing airports. Approach and departure control of IFR aircraft may be exercised by the Center, or the Center may delegate terminal area airspace to a local ATC facility for IFR approach and departure control.

The Los Angeles Center has delegated airspace to Las Vegas Terminal Radar Approach Control (TRACON) and Nellis Air Traffic Control Facility (NATCF). Oakland Center has delegated airspace to Reno TRACON and NAS Fallon Radar Air Traffic Control Facility (RATCF).

The above ATC facilities are commonly referred to in radio transmissions as approach control or departure control, depending on the phase of flight of the aircraft and prefixed by locations as follows:

Las Vegas Approach / Departure Control
Nellis Approach / Departure Control or Nellis Control
Reno Approach / Departure Control
Fallon Approach / Departure Control

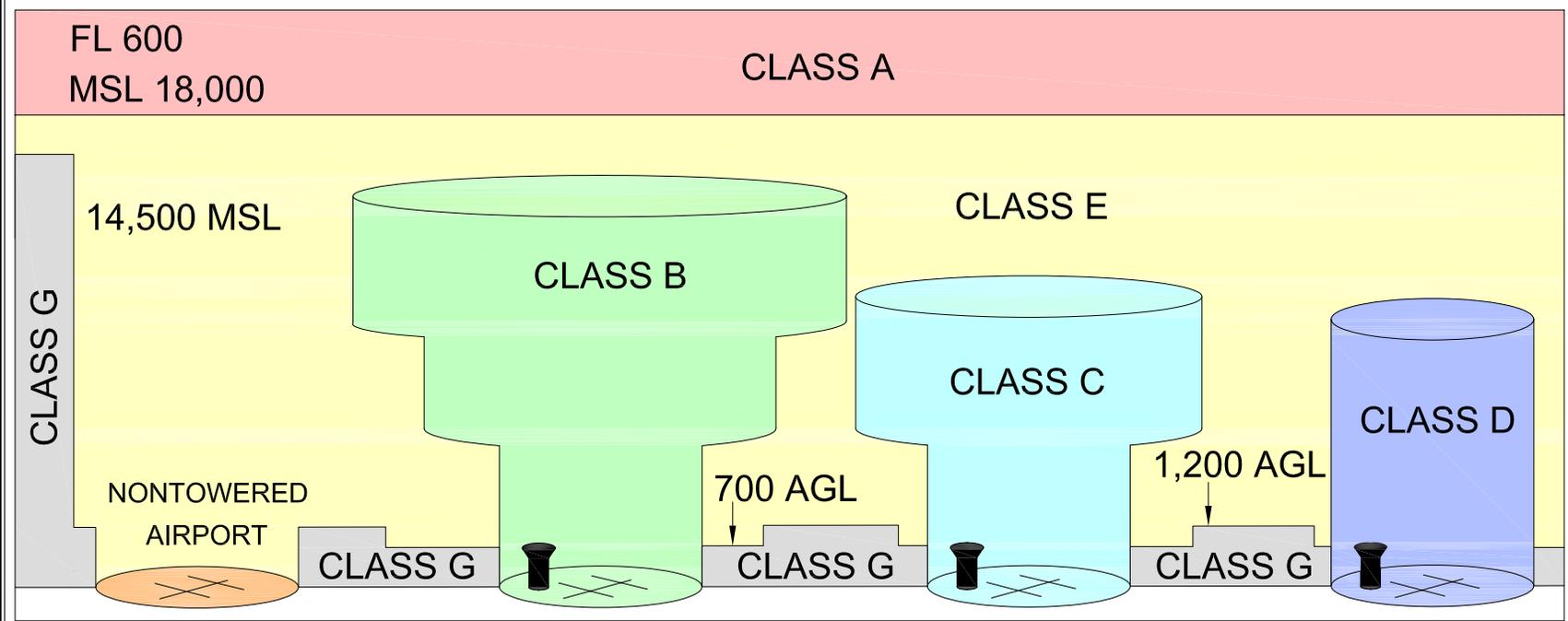
In general, the altitudes controlled by these Air Traffic Control facilities within their delegated airspace are:

Las Vegas: Flight Level 190 (FL 190) and below. FL 190 is approximately 19,000 feet MSL.
Nellis: Depending on the area, altitudes within NATCF's airspace could be up to, and including, FL230, FL270, FL600, or to infinity.
Reno: 15,000 feet MSL and below.
Navy Fallon: 15,000 feet MSL and below.



NEVADA AIRPORT
SYSTEM PLAN

Nevada Department of Transportation
NEVADA
DBOT



MSL - Mean Sea Level
AGL - Above Ground Level
FL - Flight Level

Source: Aeronautical Information Manual

FIGURE 2-4
FAA AIRSPACE
CLASSIFICATIONS

2.8.2.4 Air Traffic Control Tower Airspace

There are three different airport Air Traffic Control Tower (ATCT) airspace dimensions for Nevada airports with ATCTs.

Class B airspace has been designated for Las Vegas extending to a radius of 36 nautical miles (NM) to the north, 25 NM to the east, 20 NM to the south and 10 NM to the west of Las Vegas VORTAC. The core areas over McCarran International Airport and Nellis Air Force Base extend from the surface up to 9,000 feet MSL. As the Class B airspace radiates outward from the Las Vegas VORTAC, the floor of the Class B airspace rises to 4,000 feet MSL, and then in stages of higher altitudes, like an upside down wedding cake, up to 8,000 feet MSL. Las Vegas ATCT controls an area from 3,000 feet MSL and below around McCarran International. Nellis ATCT controls an area from 4,000 feet MSL and below around Nellis Air Force Base, both within Class B airspace.

Class C airspace has been designated for Reno extending to a radius of 10 NM of the Reno/Tahoe International Airport with two cut-out areas to the northwest and southwest. The core area of 5 NM radius extends from the surface upward to 8,400 feet MSL. The outer area to 10 NM radius has a floor of 7,200 feet MSL extending upward to 8,400 feet MSL. Reno ATCT controls 6,000 MSL feet and below within a 5 NM radius of the Airport.

Class D airspace has been designated to all of the other public use airports with ATCTs in the State of Nevada. Generally, the Class D airspace is approximately a 5 NM radius around the center of the airport, from the ground up to approximately 2,500 feet above the elevation of the airport. The configuration of each Class D airspace is individually tailored to meet the airspace requirements of the location. As examples, the Class D airspace for Henderson Executive Airport is 4.1 NM radius, excluding Class B airspace, and the North Las Vegas Airport is 4.5 NM radius to the north, west and southwest, but only 2.5 NM radius to the south and east, due to the proximity of McCarran International Airport, Nellis Air Force Base and air traffic activity in the area. The effective altitudes of Class D airspace in the State of Nevada are from the ground up to the altitudes as follows:

- Elko Regional 7,700 feet MSL
- Fallon Naval Air Station 6,400 feet MSL
- Henderson Executive Up to, but not including, 4,000 feet MSL
- Laughlin/Bullhead International 3,200 feet MSL
- North Las Vegas Up to, but not including, 4,500 feet MSL

2.8.2.5 Federal Aviation Administration Flight Service Station

The Reno Automated FAA Flight Service Station (FSS) is an air traffic facility that provides advisory services that include pilot weather briefings, en route communications,

VFR search and rescue services, assistance to lost aircraft and aircraft in emergency situations, relay ATC clearances, originate Notices to Airmen (NOTAM), broadcast aviation weather and National Airspace System (NAS) information, receive and process flight plans and monitor navigational aids. The Reno FSS provides these services over the entire State of Nevada.

2.8.2.6 Remote Communications

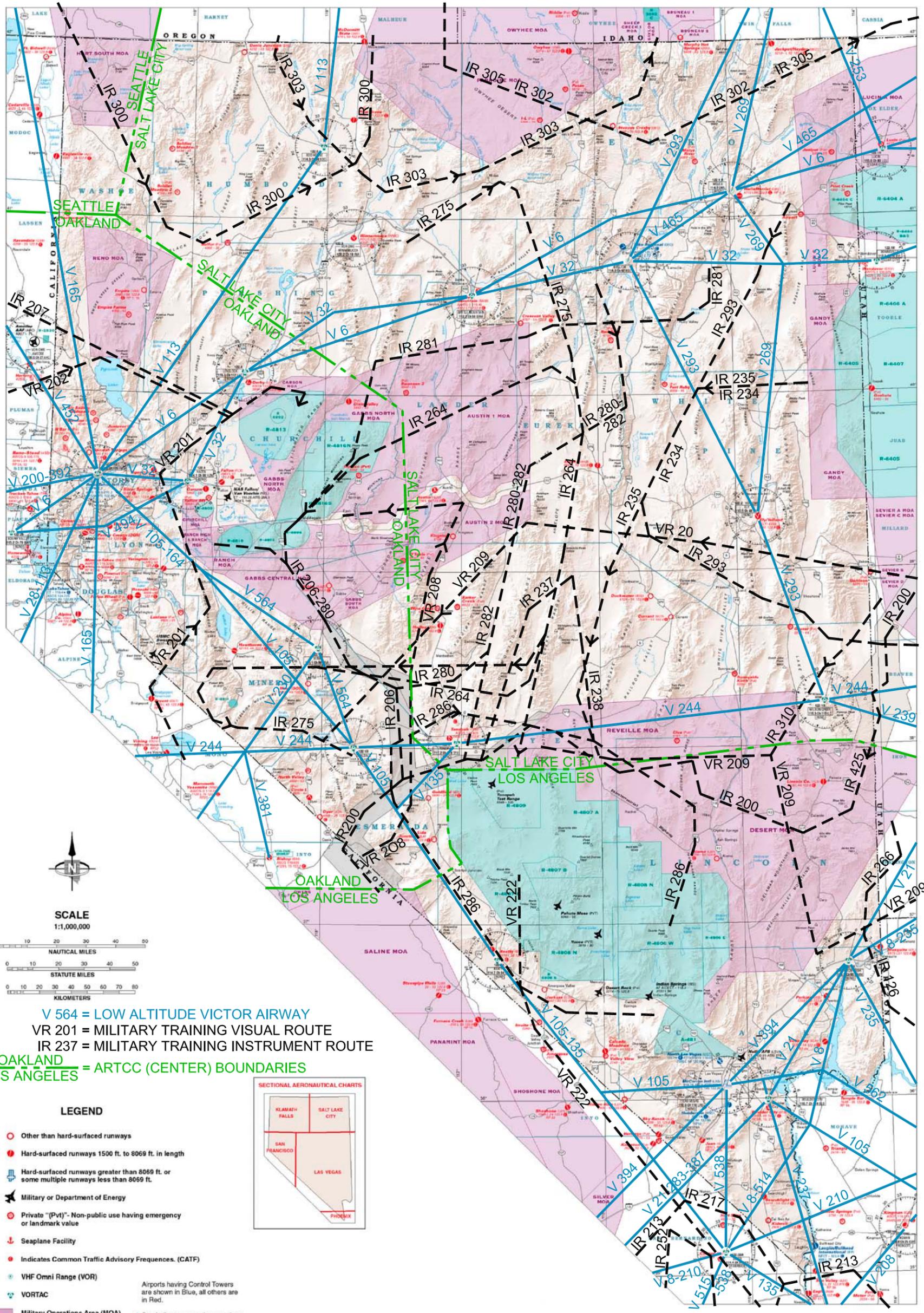
Remote radio communications capabilities have been established throughout the State to permit direct radio communications with personnel located at the appropriate Center (ARTCC) and/or Reno FSS.

Direct remote communications frequencies to the appropriate Center for a particular area of the map are listed on the IFR en route low altitude United States charts published by the FAA's National Aeronautical Charting Office. At some airports with IFR procedures, direct remote communications outlets (RCO) with an FSS or ARTCC are located on or near the airport for relay of IFR ATC clearances. Other RCOs are located in remote locations of the State of Nevada in addition to remote frequencies available through most VOR and VORTAC navigational aid stations throughout the State.

2.8.3 Airways

En route low altitude airways/routes serving the State of Nevada are shown on Figure 2-5. Also shown on Figure 2-5 are the location of the major en route navigational aids serving the State of Nevada. Some of these navigational aids also serve as terminal navigation aids for some of the nonprecision approaches listed for individual airports. The major navigational aids shown are VOR and TACAN facilities. Where VOR and TACAN facilities are collocated, they are called VORTAC facilities. All but four of the major navigational aid locations are VORTACs. Three of the other four locations are VORs with collocated DMEs (Bullion, Ely and Winnemucca). The fourth (Wells) is a VOR without DME. In addition, there are low/medium frequency (LF/MF) nondirectional radio beacons (NDB) serving as a locator middle marker (LMM) on the ILS to Runway 16R at Reno/Tahoe International Airport and as a terminal navigational aid for a private non-public use airport. Major navigational aids and nondirectional radio beacons are listed in Table 2-10.

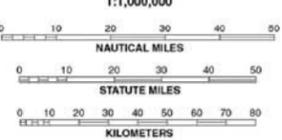
Most civil and military aircraft are equipped to receive VOR signals, whereas TACAN facilities are generally for military use. Civil aircraft are not usually equipped to receive TACAN azimuth signals, but can receive distance measuring (DME) signals associated with the TACAN equipment. Because TACAN equipment includes DME signals, civil aircraft can receive both azimuth and distance information from a VORTAC station, as well as from collocated VOR/DME stations.



V 564 = LOW ALTITUDE VICTOR AIRWAY
 VR 201 = MILITARY TRAINING VISUAL ROUTE
 IR 237 = MILITARY TRAINING INSTRUMENT ROUTE
 OAKLAND = ARTCC (CENTER) BOUNDARIES
 LOS ANGELES = ARTCC (CENTER) BOUNDARIES



SCALE
 1:1,000,000



LEGEND

- Other than hard-surfaced runways
- Hard-surfaced runways 1500 ft. to 8069 ft. in length
- ▬ Hard-surfaced runways greater than 8069 ft. or some multiple runways less than 8069 ft.
- ✈ Military or Department of Energy
- Private "(Pvt)"- Non-public use having emergency or landmark value
- ⚓ Seaplane Facility
- Indicates Common Traffic Advisory Frequencies. (CATF)
- ⊕ VHF Omni Range (VOR)
- ⊕ VORTAC
- Military Operations Area (MOA)
- Restricted Area
- Special Military Activity
- ★ Star indicates operation part-time.
- Airports having Control Towers are shown in Blue, all others are in Red.
- Check current aeronautical charts and contact appropriate agencies prior to flying through any military airspace.



NOTE:
 This map is NOT an aeronautical chart and is NOT intended to be used for navigation purposes. Airport location and military airspace are approximate. Always secure prior permission and verify condition before using private or unimproved landing strips; many landing strips are not maintained on a year-round basis and may not be suitable for aircraft operations during wet weather.

Users of this map are encouraged to contact the Nevada Department of Transportation, Office of Aviation Planning with any changes or corrections: (775) 688-7354 or (800) 992-0900, or e-mail: pio@ndot.state.nv.us



NEVADA AIRPORT SYSTEM PLAN



FIGURE 2-5 EN ROUTE AIRWAYS AND LOW LEVEL MILITARY TRAINING ROUTES
 VARIES CONSULTANTS LTD.
 NAME:NASP-25-Enroute Airways NO: 4200-04
 DATE: 09-03-2004 PLOT SCALE: 1=200

Table 2-10

**MAJOR EN ROUTE NAVIGATIONAL AIDS
Nevada Airport System Plan**

<u>Name</u>	<u>Call Sign</u>	<u>County</u>	<u>Type of Navigational Aids</u>
Battle Mountain	BAM	Lander	VORTAC
Beatty	BTY	Nye	VORTAC
Boulder City	BLD	Clark	VORTAC
Bullion	BQU	Elko	VOR/DME
Coaldale	OAL	Esmeralda	VORTAC
Ely	ELY	White Pine	VOR/DME
Hazen	HZN	Churchill	VORTAC
Las Vegas	LAS	Clark	VORTAC
Lovelock	LLC	Pershing	VORTAC
Mina	MVA	Mineral	VORTAC
Mormon Mesa	MMM	Clark	VORTAC
Mustang	FMG	Washoe	VORTAC
Sod House	SDO	Humboldt	VORTAC
Tonopah	TPH	Nye	VORTAC
Wells	LWL	Elko	VOR
Wilson Creek	ILC	Lincoln	VORTAC
Winnemucca	INA	Humboldt	VOR/DME
Mercury	MCY	Nye	NDB
Reno Locator Middle Marker	NO	Washoe	NDB
Fallon Naval Air Station	NFL	Churchill	TACAN
Indian Springs Air Force Auxiliary	NS	Clark	TACAN
Nellis Air Force Base	LSV	Clark	TACAN

SOURCE: Sectional Aeronautical Charts

2.8.4 Airspace Usage

Airspace usage over the State of Nevada is influenced by such factors as urban development, resort and recreational facilities, military special use airspace and other military activities and terrain features. Some of these factors attract aviation activity, some limit the use of airspace, and some do both.

2.8.4.1 Instrument Flight Rule Operations

The following description of IFR operations refers to information presented on Figures 2-5 through 2-7. Figure 2-5 shows IFR en route low altitude airway/route system serving the State. Figures 2-6 and 2-7 show the terminal area airspace for Las Vegas and Reno at a larger scale.

Arrivals: As an IFR flight nears the terminal area airspace for the airport of intended landing, the appropriate Center clears that flight for initial descent and directs the individual aircraft toward the destination airport. This may be accomplished by clearing the aircraft via a published Standard Terminal Arrival Route (STAR), procedure specified airway/routes or by radar vectors.

As an arrival flight enters terminal area airspace, air traffic control is transferred to the appropriate approach control facility. There are four local air traffic control facilities in the State of Nevada that have been delegated airspace and the responsibility to provide approach/departure control for IFR traffic as described earlier. They are Las Vegas Terminal Radar Approach Control (TRACON), Reno Tower TRACON, Navy Fallon RATCF and Nellis NATCF. Las Vegas TRACON provides approach/departure control for McCarran International and North Las Vegas Airports. Reno TRACON provides approach/departure control for Reno/Tahoe International, Reno Stead and Minden-Tahoe Airports. Navy Fallon RATCF provides approach/departure control for Fallon NAS and Fallon Municipal Airports. Nellis NATCF provides approach/ departure control for Nellis AFB and Indian Springs Air Force Auxiliary Field.

Salt Lake City ARTCC provides approach/departure control by direct communications for Battle Mountain, Elko Regional, Ely Airport/Yelland Field. Tonopah and Winnemucca Municipal Airports. Salt Lake City Center provides approach/departure control for Wendover by relay through Cedar City Radio. Cedar City Radio is the call sign for the Cedar City FSS. Oakland Center provides approach/departure control by direct communications for Lovelock (Derby Field). Los Angeles Center provides approach/departure control by direct communications for Laughlin/Bullhead International Airport.

The IFR airports in the State and the published instrument approach procedures to each airport are listed in Table 2-11. The facility providing approach/departure control at each



FIGURE 2-6

**LAS VEGAS
TERMINAL AREA
AIRSPACE**

VARIES CONSULTANTS LTD.

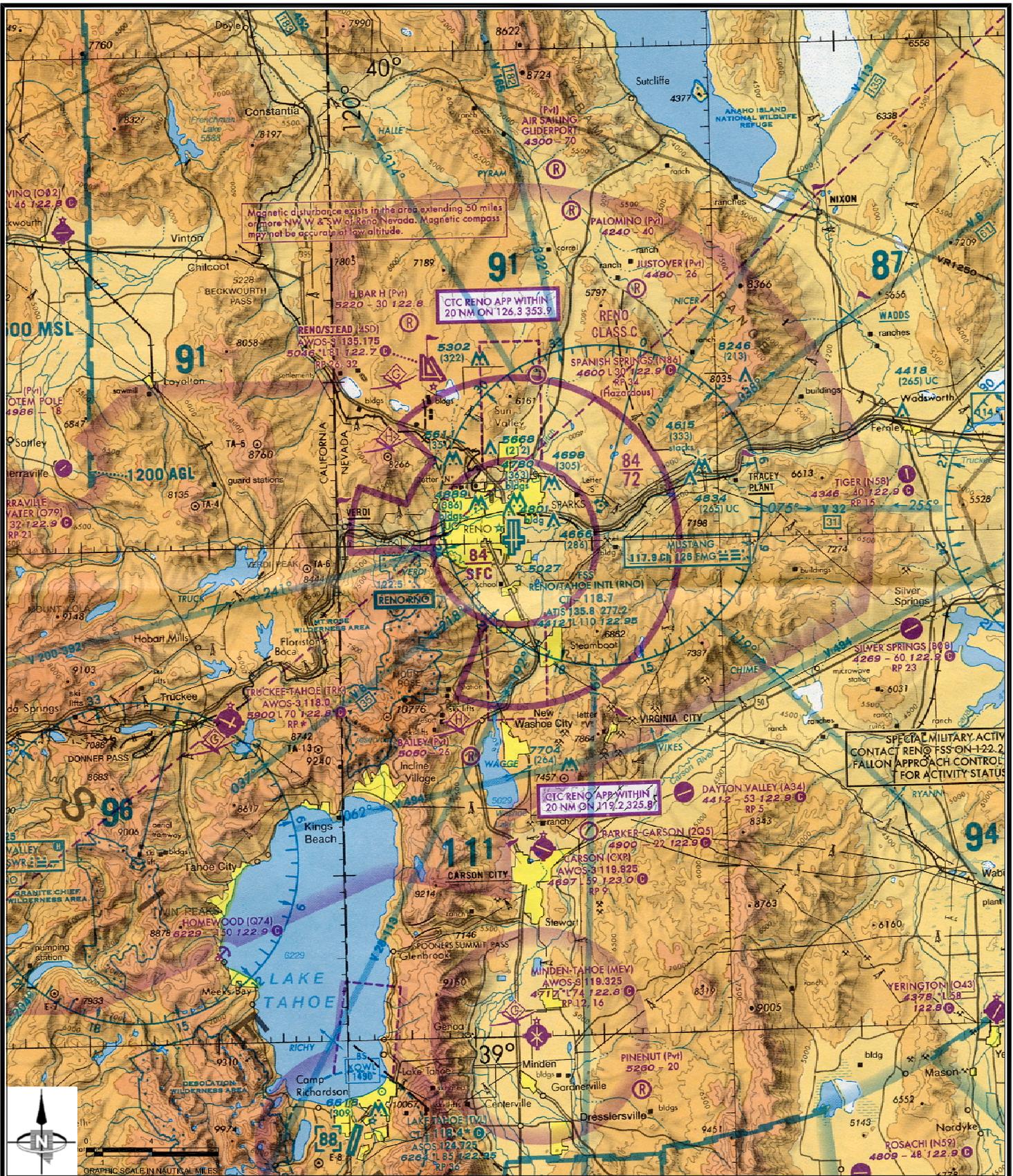
NAME: NASSP-204 Las Vegas NO: 4200-02
DATE: 09-03-2004 PLOT SCALE: 1"=48,608'



**NEVADA AIRPORT
SYSTEM PLAN**



Nevada Department of Transportation



SPECIAL MILITARY ACTIVITY CONTACT RENO FSS ON 122.2 FALLON APPROACH CONTROL FOR ACTIVITY STATUS

CTC RENO APP WITHIN 20 NM ON 119.2325.9

CTC RENO APP WITHIN 20 NM ON 126.3353.9

Magnetic disturbance exists in the area extending 50 miles or more NW, W & SW of Reno Nevada. Magnetic compass may not be accurate at low altitude.



NEVADA AIRPORT SYSTEM PLAN

NEVADA DOT
Nevada Department of Transportation

FIGURE 2-7

RENO TERMINAL AREA AIRSPACE

VARIES CONSULTANTS LTD.
NAME: NASP-26-Reno NO: 4200-02
DATE: 09-03-2004 PLOT SCALE: 1"=48,608'

Table 2-11

**PUBLISHED INSTRUMENT APPROACHES BY AIRPORT
Nevada Airport System Plan**

Airport	IFR Approaches
Battle Mountain (SLC Center)	VOR/DME Runway 3 VOR-A GPS Runway 3
Derby Field/Lovelock (OAK Center)	VOR/DME or GPS-A VOR or GPS-C, GPS Runway 1
Elko Regional (SLC Center)	LDA/DME Runway 23 VOR/DME-B VOR-A GPS Runway 5, RNAV (GPS) Runway 5
Ely Airport/Yelland Field (SLC Center)	VOR/DME-C VOR-A RNAV (GPS) Runway 18
R Fallon Municipal (Navy Fallon RATCF)	VOR/DME or GPS-B
R McCarran International (LV TRACON)	ILS Runway 25L ILS Runway 25R RNAV (GPS) Runway 1L, 1R RNAV (GPS) Runway 19L, 19R RNAV (GPS) Runway 25L, 25R VOR/DME-A VOR Runway 25L and 25R
Minden-Tahoe (Reno TRACON)	GPS-A, GPS-B
North Las Vegas (LV TRACON)	GPS Runway 12-R GPS Runway 30-L
R Reno Stead (Reno TRACON)	GPS-B
R Reno/Tahoe International (Reno TRACON)	ILS Runway 16R RNAV (GPS) Runway 16L, 16R RNAV (GPS) Runway 34L, 34R LOC/DME BC Runway 34L LOC-2 Runway 16R VOR or GPS-D
R Tonopah (SLC Center)	VOR or GPS-A GPS Runway 15
Winnemucca Municipal (SLC Center)	VOR/DME Runway 14 GPS Runway 14 GPS Runway 32

**PUBLISHED INSTRUMENT APPROACHES BY AIRPORT
Nevada Airport System Plan**

Airport	IFR Approaches
Lake Tahoe* (OAK Center)	LDA/DME-1 Runway 18 LDA/DME-2 Runway 18 VOR/DME or GPS-A, GPS Runway 18
R Laughlin/Bullhead International* (LA Center)	VOR/DME Runway 34 RNAV (GPS) Runway 34
Wendover* (SLC Center)	RNAV (GPS)-A RNAV (GPS) Runway 26 VOR/DME or TACAN Runway 26 VOR or TACAN-B

- DME = Distance Measuring Equipment
- RNAV = Area Navigation (refers to several systems, including GPS)
- RATCF = Radar Air Traffic Control Facility
- TACAN = Ultra High Frequency Tactical Air Navigation (military)
- TRACON = Terminal Radar Approach Control
- VOR = Very High Frequency Omni-directional Radio Range
- R = Terminal Approach/Departure Radar Control
- GPS = Global Positioning System
- SLC = Salt Lake City
- OAK = Oakland
- LV = Las Vegas
- LA = Los Angeles

* = Airport is outside Nevada

Letters (A-B-C) following type of approach indicate the procedure is to the airport with circling minimums only

SOURCE: U.S. Terminal Procedures Southwest U.S. – FAA National Aeronautical Charting Office

airport is indicated in parentheses next to the airport name. An “R” before the approach control facility name indicates terminal approach/departure radar.

Approach control has the responsibility of controlling arriving IFR aircraft from the point of entry into terminal area airspace to a final approach course for the airport of intended landing. In the terminal radar environment of Las Vegas and Reno, radar vectoring of aircraft is usually used for navigation to the final approach and for spacing of aircraft. In the non-radar terminal areas, pilots provide navigation and spacing is accomplished by controller clearances using timing and pilot position reports.

Approach control in a radar environment, such as the Las Vegas and Reno areas, guides the aircraft from the various arrival entry points so that they are sequenced in trail onto a final approach course to the airport of intended landing, maintaining an aircraft separation of not less than 3 NM in trail (minimum spacing separation), up to 5 NM if the leading aircraft is a B-757 or up to 6 NM if the leading aircraft is a “heavy” aircraft (255,000 pounds or greater maximum gross weight).

In a non-radar environment, the minimum spacing would be two minutes, or three minutes if a light aircraft is following a heavy aircraft. Considering the aircraft approach speeds involved, the distances would be greater than those described above for radar environment.

As an aircraft nears the extended final approach course, it is typically descended to approximately 3,000 feet above the airport elevation. At 5 to 10 NM out, aircraft are descended to approximately 1,500 feet above ground level (AGL) and are then cleared for final approach to land. They are then directed to contact the respective air traffic control tower at their destination airport or, at a non-tower airport, to use the appropriate common traffic advisory frequency (CTAF) to announce their intention.

Departures: Prior to takeoff, IFR aircraft receive a clearance that includes departure procedures via specified climb instructions, graphically-charted Instrument Departure Procedures (DP), Standard Instrument Departures (SID), radar vectors, or combinations thereof. Shortly after takeoff, the local air traffic control tower instructs the pilot to contact departure control. Departure control has the responsibility for controlling aircraft from this point until the aircraft departs terminal airspace where control is transferred to the appropriate Center.

Radar vectoring of departures is available at McCarran International and Reno/Tahoe International Airports. At Las Vegas and Reno, departures are radar vectored to a navigational fix in the en route airway system.

The graphically-charted instrument DP SID program is designed to reduce pilot/controller workload, air to ground communication, avoid obstructions, and enhance

safe and expeditious movement of air traffic in the National Airspace System. Other IFR DPs are published for use where graphically-charted DPs are either unavailable or the pilot or controller prefers not to use them. These published procedures are designed specifically to assist pilots in avoiding obstacles during climb to minimum en route altitude and immediate joining into the en route airway system. Some obstruction avoidance DPs are graphically charted and are labeled “(Obstacle)” on the face of the graphic. These procedures are published in the *U. S. Terminal Procedures* document published by the FAA’s National Aeronautical Charting Office.

2.8.4.2 Visual Flight Rule Operations

Unlike IFR flights, VFR flights are not controlled by the ATC system, except in the Class B airspace at McCarran International and Nellis Air Force Base, as well as the Class C airspace at Reno/Tahoe International and the Class D airspace at Elko Regional, Fallon Naval Air Station, North Las Vegas and Laughlin/Bullhead International.

Generation of VFR traffic occurs at all of the airports. At uncontrolled airports without an operating control tower, traffic advisory practices are recommended and listed in the FAA Aeronautical Information Manual and in FAA Advisory Circular 90-42F, *Traffic Advisory Practices at Airports Without Operating Control Towers*. A Common Traffic Advisory Frequency (CTAF) is also listed for each airport in the *Airport/Facility Directory, Southwest U.S.*, published by the FAA’s National Aeronautical Charting Office. The listing of a CTAF for each airport is part of a program designed to provide all vehicles and aircraft at uncontrolled airports a common frequency. Traffic advisory practices on a common frequency facilitates dissemination of information about the location and intentions of aircraft operating to and from an airport.

VFR flyways and preferred VFR routes in the vicinity of the Las Vegas Class B airspace are shown on the Las Vegas VFR Terminal Area Chart and on the Sectional Aeronautical Chart published by the FAA’s National Aeronautical Charting Office.

VFR helicopter traffic is on the increase in the State of Nevada. This is particularly true for tourist sightseeing trips to the Grand Canyon. In addition to sightseeing flights, helicopters are used for:

- On-demand charter
- Medical emergencies
- Security, law enforcement and firefighting
- Military

In addition to operating out of public use and private airports, helicopter flights also operate out of a few heliports, hospital heliports and resort heliports in the State.

Military helicopter activity is generated in significant volumes at military facilities including the Army National Guard unit at Reno Stead Airport. In addition to VFR operations, the military conducts IFR helicopter operations on a relatively frequent basis. Most military helicopter activity takes place at or near military airports or within special use airspace (SUA).

2.8.5 Military Special Use Airspace

Special use airspace (SUA) contains activities that must be contained because of their nature. They may be regulatory or non-regulatory. Prohibited and Restricted Areas are regulatory and are established in FAR Part 73, *Special Use Airspace*, through the rule-making process. Warning Areas, Military Operations Areas (MOAs) and Alert Areas are non-regulatory and are shown on aeronautical charts to warn non-participating pilots. Additionally, Controlled Firing Areas are non-regulatory special use airspace. However, they are not shown on aeronautical charts. Activities in Controlled Firing Areas are suspended when a non-participating aircraft is detected as possibly approaching the area. No Prohibited or Warning Areas have been established in the State of Nevada.

Military airspace presently accounts for approximately 40 percent of the total airspace over the State of Nevada. With military facilities closing around the country, the military facilities in Nevada continue to grow. As a result, the airspace around the State is becoming more congested and, at the same time, the United States is pursuing mitigation measures for additional airspace withdrawals.

There are presently four types of military special use airspace areas in the State of Nevada. These areas are as follows:

- Restricted Areas
- Military Operations Areas (MOA)
- Alert Areas
- Controlled Firing Areas

The military airspace in Nevada is depicted on Figure 2-8. A brief description and the affect of these areas and Military Training Routes is described below.

2.8.5.1 Restricted Areas

Restricted areas contain airspace identified by an area on the surface of the earth within which the flight of aircraft, while not wholly prohibited, is subject to restrictions. Restricted Areas denote the existence of unusual, often invisible, hazards to aircraft such as artillery firing, aerial gunnery, or guided missiles. Penetration of Restricted Areas without authorization from the using or controlling agency may be extremely hazardous

to the aircraft and its occupants. These areas are published in the Federal Register as well as depicted on aeronautical charts.

In and around the State of Nevada there are a total of 18 separate restricted areas. These areas are listed in Table 2-12. Restricted areas are depicted on Sectional, VFR Terminal Area and IFR Low Altitude En Route Charts.

2.8.5.2 Military Operations Areas

Military Operations Areas (MOAs) are established to separate military training activities from aircraft operating under Instrument Flight Rules (IFR). Whenever a MOA is being used, non-participating IFR traffic may be cleared through a MOA if IFR separation can be provided by ATC. Pilots operating under Visual Flight Rules (VFR) should exercise extreme caution while flying within an active MOA. MOAs are depicted on Sectional, VFR Terminal Area and IFR Low Altitude En Route Charts.

In and around the State of Nevada, there are 19 MOAs. These areas are listed in Table 2-13.

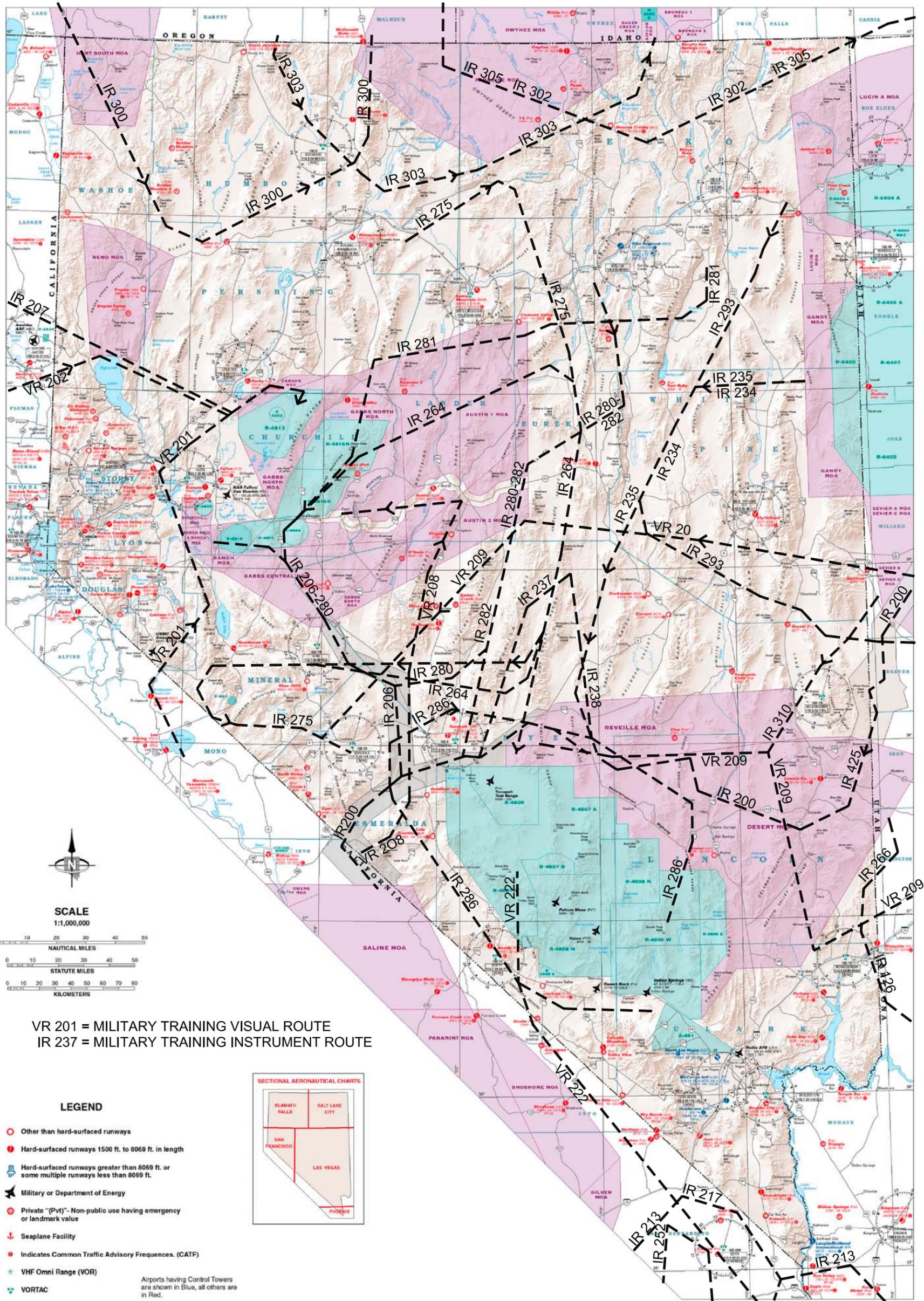
There are six airports directly impacted by MOAs. These airports are:

- Alamo Landing Field
- Lincoln County Airport
- Gabbs Airport
- Austin Airport
- Empire Airport
- Owyhee Airport

2.8.5.3 Alert Areas

Alert Areas are depicted on aeronautical charts to inform nonparticipating pilots of areas that may contain a high volume of pilot training or an unusual type of aerial activity. Pilots should be particularly alert when flying in these areas. Pilots of participating aircraft, as well as pilots transiting the area, are equally responsible for collision avoidance.

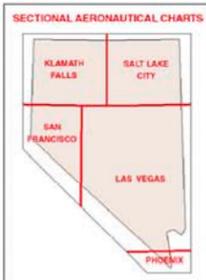
Only one Alert Area exists in Nevada. Alert Area A-481 is located north of Las Vegas, northwest of Nellis AFB. North Las Vegas Airport is approximately 2 NM south of this area.



VR 201 = MILITARY TRAINING VISUAL ROUTE
 IR 237 = MILITARY TRAINING INSTRUMENT ROUTE

LEGEND

- Other than hard-surfaced runways
- Hard-surfaced runways 1500 ft. to 8069 ft. in length
- ▬ Hard-surfaced runways greater than 8069 ft. or some multiple runways less than 8069 ft.
- ✈ Military or Department of Energy
- Private "(Pvt)"- Non-public use having emergency or landmark value
- ⚓ Seaplane Facility
- Indicates Common Traffic Advisory Frequencies. (CATF)
- ⊕ VHF Omni Range (VOR)
- ⊕ VORTAC
- Military Operations Area (MOA)
- Restricted Area
- Special Military Activity
- ★ Star indicates operation part-time.
- Airports having Control Towers are shown in Blue, all others are in Red.
- Check current aeronautical charts and contact appropriate agencies prior to flying through any military airspace.



NOTE:
 This map is NOT an aeronautical chart and is NOT intended to be used for navigation purposes. Airport location and military airspace are approximate. Always secure prior permission and verify condition before using private or unimproved landing strips; many landing strips are not maintained on a year-round basis and may not be suitable for aircraft operations during wet weather.

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NEVADA AIRPORT SYSTEM PLAN



**FIGURE 2-8
 MILITARY AIRSPACE AREAS**

VARIES CONSULTANTS LTD.
 NAME: NSASP-26-Military Airspace NO: 4200-02
 DATE: 09-03-2004 PLOT SCALE: 1=200

Table 2-12

NEVADA RESTRICTED AIRSPACE AREAS
Nevada Airport System Plan

Restricted Area	Location	Altitude	Time of Use
R4803	Fallon	to but not including FL 180	0715-2330
R4804A	Twin Peaks	to but not including FL 180	0715-2330
R4806E	Las Vegas	100 AGL to Unlimited	0500-2000 Mon-Sat
R4806W	Las Vegas	Unlimited	Continuous
R4807A	Tonopah	Unlimited	0600 Mon-1900 Fri
R4807B	Tonopah	Unlimited	Continuous
R4808N	Las Vegas	Unlimited	Continuous
R4808S	Las Vegas	Unlimited	Continuous
R4809	Tonopah	Unlimited	Continuous
R4810	Desert Mountains	to 17,000 MSL	0715-2330
R4811	Hawthorne	to 15,000 MSL	0800-1500 Mon-Fri
R4812	Sand Springs	to but not including FL 180	0715-2330
R4813A	Carson Sink	to but not including FL 180	0715-2330
R4816N	Dixie Valley	1500 AGL to but not including FL 180	0715-2330
R4816S	Dixie Valley	500 AGL to but not including FL 180	0715-2330
R6404C	Hill AFB, Utah	100 AGL to FL 280	Continuous
R6405	Wendover, Utah	100 AGL to FL 580	Continuous

MSL = Mean Sea Level
 AGL = Above Ground Level
 FL 180 = Flight Level (18,000 MSL approximately)

SOURCE: Sectional Aeronautical Charts

Table 2-13

NEVADA MILITARY OPERATIONS AREAS
Nevada Airport System Plan

Military Operations Area (MOA)	Altitude of Use ¹	Time of Use
Austin 1 and 2	200 AGL	0800-2100 Mon-Fri
Carson	500 AGL	0715-2330
Churchill High	9,000 MSL	0715-2245 Mon-Fri 0800-1800 Sat
Churchill Low	500 AGL to 9,000 MSL	0715-2245 Mon-Fri 0800-1800 Sat
Desert	100 AGL	SR-SS Mon-Sat
Gabbs North, Central and South	100 AGL	0715-2330
Gandy	100 AGL	0500-2000 Mon-Sat
Hart South	11,000 MSL	Intermittent by NOTAM
Lucin A	100 AGL to 9,000 MSL	0500-2000 Mon-Sat
Lucin B	100 AGL to 7,500 MSL	0500-2000 Mon-Sat
Lucin C	100 AGL to 6,500 MSL	0500-2000 Mon-Fri
Paradise West and East	14,500 MSL	0730-2200 Mon-Fri
Ranch	500 AGL to 9,000 MSL	0715-2330
Ranch High	9,000 to 13,000 MSL	0715-2245 Mon-Fri 0800-1800 Sat
Reno	13,000 MSL	0800-1800 Mon-Fri
Reveille	100 AGL	Intermittent SR-SS Mon-Sat
Saline	200 AGL	0600-2200 Mon-Fri

¹Altitudes indicate floor of MOA. All MOAs extend to but do not include FL 180 unless otherwise indicated.

- MSL = Mean Sea Level
- AGL = Above Ground Level
- SR = Sunrise
- SS = Sunset

SOURCE: Sectional Aeronautical Charts

2.8.5.4 Controlled Firing Areas

Controlled Firing Areas (CFA) contain activities that, if not conducted in a controlled environment, could be hazardous to nonparticipating aircraft. The distinguishing feature of the Controlled Firing Area, as compared to other special use airspace, is that its activities are suspended immediately when spotter aircraft, radar, or ground lookout positions indicate an aircraft might be approaching the area. These areas are not charted since they do not cause a nonparticipating aircraft to change its flight path.

2.8.5.5 Military Training Routes

Another type of airspace use existing in Nevada is the Military Training Route (MTR). These are not considered special use airspace. These routes are developed jointly by the FAA and the Department of Defense (DOD) for use by the military for the purpose of conducting low-altitude, high-speed training. The routes above 1,500 feet above ground level (AGL) are generally developed to be flown under IFR conditions. The routes at 1,500 feet AGL and below are developed to be flown under VFR conditions. Generally, MTRs are established below 10,000 feet mean sea level (MSL) for operations at speeds in excess of 250 knots. However, route segments may be defined at higher altitudes for purposes of route continuity or sensitive area avoidance. Nonparticipating aircraft are not prohibited from flying within an MTR; however, extreme vigilance should be exercised when conducting flights through or near these routes. These routes are depicted on IFR Low Altitude En Route Charts and VFR Sectional and Planning Charts.

Over 30 MTRs exist throughout the State of Nevada and are shown in Table 2-14.

2.8.5.6 Military Use Airspace Impacts

The total amount of military use airspace in Nevada has not grown appreciably in recent years and has reduced in size in some areas. However, the utilization has increased and is likely to increase even further in the near future. The military airspace, depicted on Figure 2-8, covers approximately the same 40 percent of the total airspace that was covered in 1985.

Comparison of current and past IFR En Route Low Level and Sectional Charts indicates little change over approximately the last two years in the number of Military Training Routes within the State. It appears that the routes identified are more heavily used currently than they were in previous years. The airspace restrictions imposed by Military Operations Areas, Restricted Areas, Alert Areas, and Military Training Routes do not pose a great inconvenience to the scheduled airlines because of routes and altitudes they fly. However, in some cases, military special use airspace does limit the efficiency of general aviation aircraft. As a result, general aviation pilots are forced to fly

Table 2-14

NEVADA MILITARY TRAINING ROUTES
Nevada Airport System Plan

Military Training Route (MTR)	Altitude Range	Military Training Route (MTR)	Altitude Range
IR-126	Surface to FL 200	IR-282	100 AGL to 17,000 MSL
IR-200	500 AGL to 12,000 MSL	IR-286	Surface to 14,000 MSL
IR-206	500 AGL to 14,000 MSL	IR-293	100 AGL to 14,000 MSL
IR-207	500 AGL to 15,000 MSL	IR-300	100 AGL to 15,000 MSL
IR-234	Surface to 11,500 MSL	IR-302	100 AGL to 13,000 MSL
IR-235	Surface to 11,500 MSL	IR-303	100 AGL to FL 190
IR-237	500 AGL to 14,000 MSL	IR-305	100 AGL to 14,000 MSL
IR-238	500 AGL to 14,000 MSL	IR-310	Surface to 13,000 MSL
IR-264	Surface to 17,000 MSL	IR-425	500 AGL to 12,000 MSL
IR-266	400 AGL to 17,000 MSL	VR-201	200 AGL to 12,000 MSL
IR-275	Surface to FL 200	VR-202	200 AGL to 8,000 MSL
IR-279	Surface to 12,000 MSL	VR-208	200 AGL to 13,000 MSL
IR-280	100 AGL to 17,000 MSL	VR-209	200 AGL to 3,000 MSL
IR-281	100 AGL to 17,000	VR-222	100 AGL to 1,500 AGL

MSL = Mean Sea Level

AGL = Above Ground Level

FL 200 = Flight Level (20,000 MSL approximately)

SOURCE: IFR En Route Low Altitude and Sectional Aeronautical Charts

circuitous routes to avoid active Restricted Areas incurring time delays and additional costs.

2.8.6 Navigational Aids

Navigational aids can best be classified into two categories: electronic navigational aids and visual navigational aids. Electronic navigational aids transmit signals from ground-based stations or space-based satellite global positioning system (GPS), operated by the U. S. Department of Defense (DOD), which can be decoded by the aircraft equipment for purposes of navigating. Visual navigational aids are exclusively related to providing assistance to pilots on or near a particular airport.

2.8.6.1 Electronic Navigational Aids

Electronic navigational aids currently in use in Nevada include a number of different types of devices/facilities, each providing a special purpose to the system of air navigation. Monitoring radio navigational aids, such as the VOR stations, falls under the responsibility of Flight Service Stations (FSS). The FSS is the air traffic service facility within the National Airspace System. They have several responsibilities, two of which include monitoring radio navigational aids and communications with VFR flights. In Nevada, the only FSS is located in Reno with several Remote Communications Outlets (RCO) throughout the State. The RCO is an unmanned air/ground communications facility, remotely controlled, providing UHF or VHF communications capability to extend the service range of the Reno FSS.

A brief discussion of each type of navigational aid and their uses in Nevada is included in the following paragraphs.

Very High Frequency Omni-directional Range Stations

Very high frequency omni-directional range (VOR) stations form the present existing basic element of the en route electronic navigation system in the United States. The VOR station transmits a VHF signal providing azimuth information to the pilot. Since the signal is VHF, it is subject to line-of-sight restrictions, and the range varies proportionately with the altitude of the receiving equipment. The VOR is classified according to its operational use. The terminal class VOR (TVOR), is located on or near an airport providing azimuth information for non-precision instrument approaches to a particular runway or airport. The low altitude class VOR is used for en route navigation below 18,000 feet providing information to and from a particular airport. The high altitude class VOR is also used for point-to-point navigation and provides the azimuth information to altitudes up to 60,000 feet.

Tactical Air Navigation

Tactical air navigation (TACAN) was developed primarily for the military. TACAN stations transmit UHF signals providing azimuth and distance information. Civil aircraft are usually not equipped with TACAN receivers; however, civil DME receivers (see DME below) can receive DME signals from a TACAN station. Where VOR and TACAN stations are collocated, they are called a VORTAC station.

Distance Measuring Equipment

Distance measuring equipment (DME) is usually located as an adjunct to other types of navigational aids, primarily with the VOR or ILS facilities. The DME operates on frequencies in the UHF spectrum, thus operating on the line-of-sight principle. The DME provides distance information (nautical miles) from the aircraft to the DME station. This distance information received from DME equipment is *slant range* distance and not actual horizontal distance. When the DME equipment is collocated with an existing VOR, the station is then referred to as a VOR/DME station. When an aircraft is equipped with both VOR and DME equipment, a more precise navigation aid is provided for the pilot.

Nondirectional Radio Beacon Transmitters

Nondirectional radio beacon (NDB) transmitters is the least complicated and least expensive (in terms of both initial installation cost and routine maintenance cost) of the types of electronic navigation aids available, but it is not as accurate as VOR or TACAN. Transmitting in the *low frequency* and *medium frequency* portions of the spectrum (190 kHz to 535 kHz), the NDB antenna radiates a *nondirectional* signal identical to that of a commercial AM radio broadcast station. This signal is received by a directional sensing antenna on the aircraft. Aircraft instruments present the pilot with an indication of direction to *home* to the station. The NDB is disappearing in some parts of the country. There are only two in Nevada. One is a privately-owned station at Desert Rock Airport in Mercury. The other facility exists as the locator middle marker (LMM) for the ILS approach to Runway 16R at Reno/Tahoe International. This beacon, identified as (NO), is located approximately 1/2 mile north of the approach end of Runway 16R.

Global Positioning System

Global positioning system (GPS) is a United States satellite-based radio navigational, positioning, and time transfer system operated by the Department of Defense (DOD). The system provides highly accurate position and velocity information and precise time on a continuous global basis to an unlimited number of properly-equipped users, both civil and military. The system is unaffected by weather and provides worldwide

common grid reference system based on earth-fixed coordinate system. For its earth model, GPS uses the World Geodetic System of 1984 (WGS-84) datum.

GPS operation is based on the concept of ranging and triangulation from a group of satellites in space which act as precise reference points. A GPS receiver measures distance from a satellite using the travel of time of a radio signal. Each satellite transmits a specific code that contains information on the satellite's position, the GPS system time, and the health and accuracy of the transmitted data. Knowing the speed at which the signal traveled and the exact broadcast time, the distance traveled by the signal can be computed from the arrival time.

Using the calculated distance and position information supplied by the satellite, the GPS receiver mathematically determines its position by triangulation. The GPS receiver needs at least four satellites to yield a three-dimensional position (latitude, longitude and altitude) and time solution.

GPS coverage is essentially worldwide. Therefore, GPS navigational information is available to navigate anywhere within the State of Nevada for those users who are properly equipped.

Instrument Landing System

Instrument landing system (ILS) is a precision instrument approach system that provides an approach path for exact alignment and descent of an aircraft on final approach to a runway. The system may be divided functionally into three parts:

- Guidance information
- Range information
- Visual information

Guidance Information

Guidance information in an ILS system is provided by two highly directional transmitting systems, the localizer and the glide slope. The localizer transmitter is located at the opposite end of the approach end of the runway in line with the extended runway centerline. This transmitter emits signals toward the approach end of the runway that provides the aircraft pilot with course guidance to the runway centerline. The glide slope transmitter emits a signal beam toward the approaching aircraft providing a descent angle of approximately 3 degrees. The glide slope transmitter is located between 750 feet and 1,250 feet down from the approach end of the runway and offset 400 to 600 feet from the runway centerline. When these two transmitters are used in simultaneous operation, the place where these signals intersect is termed the *glide path* for the approaching aircraft.

Range Information

The range information consists of marker beacons located in the approach path to the approach end of the runway or, as at McCarran International Airport DME, located at the Las Vegas VORTAC near the far end of the runway. The marker beacon located at Reno/Tahoe International for Runway 16R is a middle marker. The marker beacons emit an elliptical signal to indicate particular points within the approach path. DME fixes determine the final approach fixes at McCarran International and Reno/Tahoe International. An aircraft at the appropriate altitude on the localizer course will intercept the ILS glide path near the final approach fix. At this point, the aircraft begins the descent following the glide path. A DME can be used as a substitute for the outer marker for precision approaches. The middle marker indicates a position at which the descending aircraft is approximately 3,500 feet from the landing threshold and when the altitude is approximately 200 feet above the elevation of the touchdown zone. This is the decision height for either visual contact of the runway or exercising a missed approach. The inner marker, when installed, indicates a point at which an aircraft on the glide path is at a designated decision height between the landing threshold and the middle marker.

2.8.6.2 Visual Navigational Aids

Visual navigational aids assist an aircraft pilot when landing an aircraft and after landing with lights to visually determine position and location relative to the airport and associated runways and taxiways. Lighted visual aids are used during both daylight and nighttime conditions, along with adverse weather conditions, and many are pilot-controlled. Visual aids currently in use in Nevada include a number of devices providing a particular use to the system of visual navigation and are discussed in the following paragraphs.

Approach Lighting Systems

Approach lighting systems (ALS) are configurations of lights positioned symmetrically along the extended runway centerline. They begin at the runway threshold and extend toward the approach. The FAA recognizes several ALS configurations for precision and nonprecision approaches:

- ALSF-1: a high intensity ALS with sequenced flashing lights.
- MALS: a medium intensity ALS (Runway 25L at McCarran International).
- MALSR: a medium intensity ALS with runway alignment indicator lights (Runway 27R at McCarran International and Runway 16R at Reno/Tahoe International).
- MALSF: a medium intensity ALS identical to the MALS except sequenced flashing lights are added to the outer three light bars.

- SSALR: a simplified short ALS, very similar to MALSR, with the exception being a higher light intensity.

Runway End Identifier Lights

Runway end identifier lights (REIL) provide rapid and positive identification of the approach end of a particular runway. These lights consists of a pair of synchronized flashing lights located on each side of the runway threshold facing the approach.

Precision Approach Path Indicator

The precision approach path indicator (PAPI) is a system of lights arranged to provide visual approach to a runway. This system provides a visual glide path that allows for safe obstruction clearance within plus or minus 10 degrees of the extended runway centerline and to 4 NM from the runway threshold. The PAPI system consists of four light units located at the approach end of a runway, placed side by side, in a row perpendicular to the runway.

2.8.7 Navigational Aids Summary

Table 2-15 depicts each airport that currently has some type of navigational aid and the type of navigational aid that exists. This table depicts the navigational aids located on the airport, as well as the navigational aids used for published instrument approaches to the airport.

Table 2-15

AIRPORTS AND ASSOCIATED NAVIGATIONAL AIDS
Nevada Airport System Plan

Airport	GPS	VOR	VOR/ DME	NDB	ILS		VASI (Runway)	PAPI (Runway)	REIL (Runway)	OTHER
					RUNWAY	ALS				
Austin									18 & 36	
Battle Mountain	X	X	X				3			
Beatty									16 & 34	
Boulder City								9R & 27L	9R & 27L	
Carson (Carson City)							9 & 27			PVASI-RW 9
Derby Field/Lovelock	X		X				1 & 19		1 & 19	
Elko Regional	X	X	X				MALSR 5 & 23		23	LDA/DME-RW 23
Ely/Yelland Field	X	(X)	(X)				18 & 36			
Eureka								35		
Fallon Municipal	X		X				3 & 21 33			
Jackpot/Hayden Field										
McCarran International	X	X			25L 25R	MALSF MALSR		1L&R, 7L&R 19L&R, 25L&R 1 & 19	1L&R, 7R 19L&R 1 & 19	
Mesquite Municipal										
Minden-Tahoe	X						16 & 34			
North Las Vegas	X							7 & 25, 12L&R 21L&R, 30L&R		PVASI-RW 30
Reno Stead	X							8, 26, 14, 32	8, 26, 14, 32	
Reno/Tahoe International	X	X		X ¹	16R	MALSR	34L & 16R	7, 25, 34L&R 16L&R	16L & 34R	LOC/DME BC RW 34L LOC-2 RW 16R
Tonopah	X	X						33	15	
Winnemucca Municipal	X		(X)					14		
Yerington Municipal								1	19	

X = indicates a published instrument approach; (X) = indicates the facility is located on the airport

1. Locator Middle Marker

SOURCE: U.S. Terminal Procedures and Airport Facility Directory; Southwest U.S.

Chapter 3

Forecasts of Aviation Demand

Chapter 3

FORECASTS OF AVIATION DEMAND

3.1 INTRODUCTION

Forecasts of aviation demand are a key element in airport planning. Reflecting the desires and needs of the air service area population and economy, aviation demand forecasting provides a basis for determining the type, size, and timing of aviation facilities development. In addition, forecasts of aviation demand serve as the basis for comparison against airfield and landside capacities to determine the overall need for facility improvements. This chapter focuses on the expected growth in aviation demand to the year 2020 at the system airports. The following are discussed in this chapter:

- Forecast Methodologies
- Commercial Air Service Activity
- General Aviation Activity
- Aircraft Instrument Operations
- Military Aviation Activity
- Air Cargo Activity
- Summary of Forecast Aviation Activity

The forecasts presented in these sections are based upon historical data and trends for airports in the State of Nevada tempered with professional judgment. This method of forecasting does not consider whether the existing or historical statistics represent effective utilization of air transportation facilities and services in the State. For example, air service or facility deficiencies may have caused air travelers to by pass their local airports to use other more convenient airports to begin the air portion of their trips. Therefore, the projections calculated in this chapter are the results of statistical projections performed on historically factual information when available or the best estimates of knowledgeable people. Accurate historical data is generally not available for most of the general aviation airports. In selecting a preferred forecast from the available projections, professional judgment was used to provide insights concerning outside influences that might affect the forecasts but are likely to be subjective in nature.

3.2 FORECAST METHODOLOGIES

This section describes the primary forecasting techniques used to develop projections of aviation demand. Forecasts of aviation demand for the six commercial service airports were taken directly from either the existing airport master plan or system plan for that airport or the Federal Aviation Administration (FAA) Terminal Area Forecasts. No new individual forecasting was performed for these airports.

For the general aviation airports, forecasts from recent airport master plans or system plans were used to the extent they were available and considered appropriate. For the projections of general aviation demand at other airports several factors were considered.

This chapter includes tables of historical and forecast aviation activity obtained from various available sources, including individual airports, Airport Master Plans, Aviation System Plans and the FAA Terminal Area Forecasts. Forecasts from airport master and aviation system plans prepared since 2000 have been included. Forecasts from earlier airport master plans and the 1995 *Nevada Airport System Plan* have been updated for the general aviation and non-scheduled air taxi activity.

Some airports would have the same level of aviation activity forecast throughout the planning period based on the FAA Terminal Area Forecasts as the FAA Terminal Area Forecasts generally do not include projections for general aviation airports and just assume the continuation of the current level of activity. For these airports the forecasts have been updated as part of this study. The forecasts were also related to the most recent FAA projections of aviation activity on the national level and adjusted to reflect comparable trends in aviation activity in Nevada. For some airports the forecasts may appear high in light of recent events or because they were prepared several years ago under different socioeconomic and aviation conditions. The forecasts were reviewed with the Nevada Aviation Technical Advisory Committee (NATAC) and refined as appropriate based on the comments received.

3.3 COMMERCIAL AIR SERVICE ACTIVITY

Forecasts of commercial air service activity were incorporated for the six commercial service airports. The *Southern Nevada Regional Airport System Plan* forecasts were used for McCarran International, Henderson Executive and North Las Vegas Airports. The most recent planning forecasts of air service demand were used for the Reno/Tahoe International Airport. FAA Terminal Area Aviation Forecasts were used for the Elko Regional and Ely Airports. No independent forecasts of demand for air carrier airports were performed. Forecasts for the following demand activities are included in this study:

- Passenger Enplanements - defined as an air traveler boarding a departing aircraft.
- Aircraft Operations - An operation is either a takeoff or landing. A touch-and-go takeoff and landing is counted as two operations.
- Annual Aircraft Operations - Annual operations are the number of aircraft operations conducted on an airfield within a one-year time period.

The planning horizon for this study is 2020. Forecasts were developed for the short-range (2000-2005), intermediate-range (2006-2010), and long-range (2010-2020) time frames. Therefore, activity forecasts are shown for 2000, 2005, 2010, 2015 and 2020.

At the time the forecasts were prepared six airports in Nevada received some type of scheduled commercial service. Those airports are:

- McCarran International Airport
- Reno/Tahoe International Airport
- Elko Regional Airport (J. C. Harris Field)
- Ely Airport/Yelland Field
- Henderson Executive Airport
- North Las Vegas Airport

The following sections briefly discuss each airport's historical and forecast air carrier passenger enplanements and aircraft operations.

3.3.1 McCarran International Airport

The forecasts for McCarran International Airport are unconstrained forecasts prepared in 2001 by the Clark County Department of Aviation for the Southern Nevada Regional Airport System. The historical and forecast commercial air service activity is presented in Table 3-1.

3.3.1.1 Passenger Enplanements

Passenger enplanement activity at the McCarran International Airport has approximately doubled from 1990 through 2000 with 9,578,510 passenger enplanements in 1990 and 18,443,481 passenger enplanements in 2000. The economy of Clark County appears to be strong enough that airline traffic should continue to increase substantially in the future.

The number of passenger enplanements is forecast to increase from 18,443,481 passengers in 2000 to 37,850,000 passengers in 2020, an average annual increase of 3.7 percent. Passenger enplanements are forecast to increase at an average annual rate of 3.9 percent from 2000 to 2005; at an average annual rate of 4.1 percent between 2005 and 2010; at an average annual rate of 3.4 percent from 2010 to 2015; and at an average annual rate of 3.2 percent from 2015 to 2020.

Table 3-1

**McCARRAN INTERNATIONAL AIRPORT COMMERCIAL AIR SERVICE
ACTIVITY
Nevada Airport System Plan**

<u>Year</u>	<u>Passenger¹</u>	<u>Air Carrier²</u>	<u>Air Taxi³</u>
<u>Historical</u>	<u>Enplanements</u>	<u>Operations</u>	<u>Operations</u>
1990	9,578,510	203,450	81,326
1991	10,085,778	210,127	81,904
1992	10,452,084	199,591	96,908
1993	11,246,078	211,472	105,474
1994	13,425,243	238,518	107,374
1995	14,035,400	258,516	104,221
1996	15,229,933	281,214	71,998
1997	15,152,911	294,845	52,896
1998	15,113,644	297,000	40,374
1999	16,857,565	326,872	66,706
2000	18,443,481	336,682	57,633
Forecast¹			
2005	22,383,450	404,610	64,890
2010	27,375,260	485,110	73,060
2015	32,330,310	552,320	82,260
2020	37,850,000	621,620	92,610

1. Southern Nevada Regional Airport System Plan, Clark County Department of Aviation, 2001
2. Air carrier includes passenger and cargo aircraft operations.
3. Air taxi includes scheduled commuter, sightseeing air tour and non-scheduled air taxi aircraft operations.

3.3.1.2 Air Carrier and Air Taxi Operations

Air carrier aircraft operations increased from 203,450 operations in 1990 to 336,682 operations in 2000, a 65 percent increase. Air carrier aircraft operations are forecast to increase from 336,682 operations in 2000 to 621,620 operations in 2020, an average annual increase of 3.1 percent.

Air taxi aircraft operations, that include scheduled commuter, sightseeing air tour and non-scheduled air taxi aircraft operations, decreased from 81,326 operations in 1990 to 57,633 operations in 2000, a decrease of 29 percent. This decrease reflects a shift in some of the air taxi operations to other airports in the area. Air taxi operations are forecast to increase from 57,633 operations in 2000 to 92,610 operations in 2020, an average annual increase of 2.4 percent.

3.3.2 Reno/Tahoe International Airport

The forecasts for the Reno/Tahoe International Airport are based on the 2000 Reno/Tahoe International Aviation Forecasts Update and the 2001 Report No. ST0205 prepared by the Airport Authority of Washoe County. The historical and forecast commercial air service activity is presented in Table 3-2.

3.3.2.1 Passenger Enplanements

Passenger enplanements at the Reno/Tahoe International Airport grew steadily from 1,548,022 enplaned passengers in 1990 to 3,346,658 enplaned passengers in 1997. From 1997 to 2000, enplanements experienced a downturn, decreasing to 2,812,862 enplaned passengers in 2000. Between 1990 and 2000 passenger enplanements increased by 82 percent.

The number of passenger enplanements is forecast to increase from 2,812,862 passengers in 2000 to 5,992,000 passengers in 2020, an average annual increase of 3.9 percent. Passenger enplanements are forecast to increase at an average annual rate of 5.3 percent from 2000 to 2005; at an average annual rate of 3.8 percent between 2005 and 2010; at an average annual rate of 3.4 percent from 2010 to 2015; and at an average annual rate of 2.9 percent from 2015 to 2020.

3.3.2.2 Air Carrier and Air Taxi Aircraft Operations

Air carrier aircraft operations increased from 45,550 operations in 1990 to 67,353 operations in 2000, a 48 percent increase. Air carrier aircraft operations are forecast to increase from 67,353 operations in 2000 to 130,200 operations in 2020, an average annual increase of 3.4 percent. Air taxi operations are forecast to increase from 18,884

Table 3-2

**RENO/TAHOE INTERNATIONAL AIRPORT COMMERCIAL AIR SERVICE
ACTIVITY
Nevada Airport System Plan**

<u>Year</u>	<u>Passenger</u>	<u>Air Carrier⁴</u>	<u>Air Taxi⁵</u>
<u>Historical</u>	<u>Enplanements</u>	<u>Operations</u>	<u>Operations</u>
1990 ¹	1,548,022	45,550	18,967
1991 ¹	1,697,027	49,726	18,577
1992 ¹	1,912,140	51,724	20,410
1993 ¹	2,390,822	60,837	27,694
1994 ¹	2,660,236	61,871	32,437
1995 ¹	2,894,184	66,872	28,974
1996 ¹	3,287,752	83,280	16,409
1997 ¹	3,346,658	88,659	15,630
1998 ¹	3,295,108	83,181	14,997
1999 ²	3,007,049	76,391	16,108
2000 ²	2,812,862	67,353	18,884
Forecast			
2005 ¹	3,633,000	88,000	19,500
2010 ¹	4,374,000	101,800	22,600
2015 ³	5,183,000	116,000	25,600
2020 ¹	5,992,000	130,200	28,700

1. Reno/Tahoe International Airport Aviation Forecasts Update 2000
2. Airport Authority of Washoe County; 2001 Report No. ST0205
3. Interpolated by Aries Consultants Ltd.
4. Air carrier includes passenger and cargo aircraft operations.
5. Air taxi includes scheduled commuter, sightseeing air tour and non-scheduled air taxi aircraft operations.

operations in 2000 to 28,700 operations in 2020, an average annual increase of 2.1 percent.

3.3.3 Elko Regional Airport (J. C. Harris Field)

The forecasts for Elko Regional Airport were based on the FAA Terminal Area Forecasts for 2001 to 2015. The historical and forecast commercial air service activity is presented in Table 3-3.

3.3.3.1 Passenger Enplanements

There was a total of 125,273 enplaned passengers at the Elko Regional Airport in 2000, an increase of 66 percent over the 75,600 enplaned passengers in 1990.

Forecast passenger enplanements for the Elko Regional Airport were based on the FAA Terminal Area Forecasts for the Airport. Passenger enplanements are forecast to increase from 125,273 passengers in 2000 to 153,840 passengers by 2015, an average annual increase of 1.4 percent. Passenger enplanements are expected to increase from 153,840 passengers in 2015 to 163,400 passengers by 2020, an average annual increase of 1.2 percent.

3.3.3.2 Air Carrier and Air Taxi Aircraft Operations

Air carrier aircraft operations at Elko Regional Airport totaled approximately 2,184 operations in 2000, an increase of 99 percent over 1,100 operations in 1990. In 1990, commuter/air taxi operations accounted for an estimated 6,000 operations and 10,247 operations in 2000 an increase of 71 percent over the 10-year period.

Forecasts of air carrier and air taxi activity are included in the FAA Terminal Area Forecasts for the Airport. Air carrier operations are forecast to be only 2,053 operations by 2020, a 6 percent decrease from the 2000 operations. Commuter/air taxi activity operations are forecast to increase from 10,247 operations in 2000 to 11,657 operations by 2020, an increase of 14 percent.

3.3.4 Ely Airport/Yelland Field

The forecasts for Ely Airport/Yelland Field were obtained from the 1996 Airport Master Plan. The historical and forecast commercial air service activity is presented in Table 3-4.

Table 3-3

ELKO REGIONAL AIRPORT COMMERCIAL AIR SERVICE ACTIVITY
Nevada Airport System Plan

<u>Year</u>	<u>Passenger¹</u>	<u>Air Carrier^{1,3}</u>	<u>Air Taxi^{1,4}</u>
<u>Historical</u>	<u>Enplanements</u>	<u>Operations</u>	<u>Operations</u>
1990	75,600	1,100	6,000
1991	85,493	703	10,000
1992	98,501	1,000	10,000
1993	134,269	2,180	13,058
1994	133,465	2,300	11,317
1995	136,650	2,042	10,725
1996	139,149	2,000	10,700
1997	141,578	1,628	8,138
1998	131,180	1,878	9,637
1999	113,363	1,882	9,670
2000	125,273	2,184	10,247
Forecast			
2005	134,730	1,978	10,562
2010	144,280	2,003	10,927
2015	153,840	2,028	11,292
2020 ²	163,400	2,053	11,657

1. FAA Terminal Area Forecast Fiscal Years 2001-2015 (forecasts prepared before 9/11/01 and are under revision).
2. Extrapolated by Aries Consultants Ltd.
3. Air carrier includes passenger and cargo aircraft operations.
4. Air taxi includes scheduled commuter, sightseeing air tour and non-scheduled air taxi aircraft operations.

Table 3-4

ELY AIRPORT/YELLAND FIELD COMMERCIAL AIR SERVICE ACTIVITY
Nevada Airport System Plan

<u>Year</u> <u>Historical</u>	<u>Passenger</u> <u>Enplanements</u>	<u>Air Taxi²</u> <u>Operations</u>
1990 ¹	1,860	3,640
1991 ¹	1,675	3,296
1992 ¹	2,094	3,274
1993 ³	1,992	3,400
1994 ³	1,977	3,400
1995 ³	2,672	3,400
1996 ³	1,006	3,400
1997 ³	774	3,400
1998 ³	637	4,000
1999 ³	924	3,400
2000 ³	2,382	3,400
Forecast		
2005 ¹	2,630	4,110
2010 ¹	2,806	4,384
2015 ¹	2,949	4,608
2020 ⁴	3,092	4,832

1. Ely Airport /Yelland Field Master Plan, 1996.
2. Air taxi includes scheduled commuter, sightseeing air tours and non-scheduled air taxi aircraft operations.
3. FAA Terminal Area Forecast Fiscal Years 2001-2015
4. Interpolated by Aries Consultants Ltd.

3.3.4.1 Passenger Enplanements

Since 1982, Ely Airport/Yelland Field has been served solely by the smaller regional/commuter airlines. A total of 2,382 passengers were enplaned at Ely Airport in 2000. This is an increase of 28 percent over the 1,860 passengers enplaned in 1990.

Forecast passenger enplanements for the Ely Airport/Yelland Field were obtained from the 1996 Airport Master Plan. Enplaned passenger activity at Ely Airport is forecast to increase from 2,382 enplaned passengers in 2000 to 2,630 enplaned passengers in 2005; to 2,806 enplaned passengers in 2010; to 2,949 enplaned passengers in 2015; and to 3,092 enplaned passengers in 2020. These increases represent an average annual increase of 1.3 percent. It is expected that all passenger traffic will continue to be carried by regional/commuter carriers throughout the study period.

3.3.4.2 Air Carrier and Air Taxi Aircraft Operations

There are no air carrier aircraft operations at the Airport. Estimated commuter/air taxi activity has remained fairly constant between 1990 and 2000, ranging from a low 3,274 aircraft operations in 1992 to a high of 4,000 aircraft operations in 1998.

According to the Airport Master Plan forecasts, commuter/air taxi activity is projected to increase from 3,400 aircraft operations in 2000 to 4,832 aircraft operations in 2020, an average annual increase of 1.8 percent.

The continuation of scheduled air service to the Ely Airport/Yelland Field is dependent on the Essential Air Service (EAS) program. The EAS program emerged from the Airline Deregulation Act of 1978 that established a subsidy program to ensure that small communities will continue to receive “essential air service” through subsidies to the airline providing the service. Service to the Ely Airport/Yelland Field is 100 percent subsidized by the Federal Government as an eligible essential air service point. The funding levels for the EAS program have fluctuated in recent years, and several essential air service points have been deleted from the program. If the EAS program funding should be eliminated or if the Ely Airport/Yelland Field should be deleted from the program, alternative sources of subsidies will be required to continue scheduled air service to the area.

3.3.5 Henderson Executive Airport

The forecasts for Henderson Executive Airport were obtained from the 2001 *Southern Nevada Regional Airport System Plan* prepared by the Clark County Department of Aviation. The historical and forecast commercial air service activity is presented in Table 3-5.

Table 3-5

**HENDERSON EXECUTIVE AIRPORT COMMERCIAL AIR SERVICE ACTIVITY
Nevada Airport System Plan**

<u>Year</u> <u>Historical</u>	<u>Passenger</u> <u>Enplanements</u>	<u>Air Taxi³</u> <u>Operations</u>
1990		
1991		
1992		
1993 ²	11,256	
1994 ²	54,200	
1995 ¹	88,580	
1996 ²	74,959	22,500
1997 ²	69,564	23,601
1998 ²	53,780	19,457
1999 ²	71,507	26,005
2000 ¹	104,887	23,484
Forecast		
2005 ¹	118,630	24,910
2010 ¹	134,170	26,410
2015 ¹	151,750	28,010
2020 ¹	171,630	29,710

1. Southern Nevada Regional Airport System Plan prepared for Clark County Department of Aviation 2001
2. FAA Terminal Area Forecast, Fiscal Years 2001-2015
3. Air taxi includes scheduled commuter, sightseeing air tours and non-scheduled air taxi aircraft operations.

3.3.5.1 Passenger Enplanements

Enplaned passenger data has only been available in recent years. There were a total of 104,887 enplaned passengers in 2000 on scenic air tours compared to 88,580 enplaned passengers in 1995, an increase of 18 percent.

Passenger enplanements are forecast to increase from 104,887 passengers in 2000 to 171,630 passengers by 2020, an overall increase of 64 percent or an average annual increase of 2.5 percent.

The air tour/passenger air taxi forecasts reflect policy changes in 2000 affecting commercial air tour operations over National Parks and, specifically, the Grand Canyon National Park.

3.3.5.2 Air Carrier and Air Taxi Aircraft Operations

There are no air carrier aircraft operations at the Airport. There were 23,484 air taxi aircraft operations in 2002.

Air taxi aircraft operations, including scheduled commuter, sightseeing and tours and non-scheduled air taxi operations, are forecast to increase from 23,484 operations in 2000 to 29,710 operations by 2020, an overall increase of 26 percent.

3.3.6 North Las Vegas Airport

The forecasts for North Las Vegas Airport were obtained from the 2001 *Southern Nevada Regional Airport System Plan* prepared by the Clark County Department of Aviation. The historical and forecast commercial air service activity is presented in Table 3-6.

3.3.6.1 Passenger Enplanements

Enplaned passenger data has only been available in recent years. There were a total of 212,352 enplaned passengers in 2000, primarily on scenic air tours and limited scheduled service compared to 46,020 enplaned passengers in 1995, an increase of 366 percent.

Passenger enplanements are forecast to increase from 212,352 passengers in 2000 to 347,400 passengers by 2020, an overall increase of 64 percent or an average annual increase of 2.5 percent.

Table 3-6

**NORTH LAS VEGAS AIRPORT COMMERCIAL AIR SERVICE ACTIVITY
Nevada Airport System Plan**

<u>Year</u> <u>Historical</u>	<u>Passenger</u> <u>Enplanements</u>	<u>Air Carrier²</u> <u>Operations</u>	<u>Air Taxi^{2,3}</u> <u>Operations</u>
1990 ¹	11,290	0	5,849
1991		0	8,295
1992		0	7,851
1993		0	7,178
1994		0	11,004
1995 ¹	46,620	0	25,048
1996	106,644	0	62,713
1997	154,504	2	77,430
1998	140,648	18	64,597
1999	33,013	0	37,426
2000 ¹	212,352	7	51,042
Forecast			
2005 ¹	240,160	0	54,290
2010 ¹	271,070	0	57,720
2015 ¹	307,180	0	61,360
2020 ¹	347,400	0	65,230

1. Southern Nevada Regional Airport System Plan prepared for Clark County Department of Aviation 2001
2. FAA Air Traffic Activity Data System
3. Air taxi includes scheduled commuter, sightseeing air tours and non-scheduled air taxi aircraft operations.

The air tour/air taxi passenger forecasts reflect policy changes in 2000 affecting commercial air tour operations over National Parks and, specifically, the Grand Canyon National Park.

3.3.6.2 Air Carrier and Air Taxi Aircraft Operations

There are essentially no air carrier aircraft operations at the Airport (only 7 operations were reported in 2000). There were 51,042 air taxi operations in 2000 compared to 25,048 operations in 1995, a 104 percent increase.

Air taxi aircraft operations, including scheduled commuter, sightseeing and tours and non-scheduled air taxi operations, are forecast to increase from 51,042 operations in 2000 to 65,230 operations by 2020, an overall increase of 28 percent.

3.3.7 COMMERCIAL AIR SERVICE DEMAND SUMMARY

When the individual enplaned passenger forecasts for the six commercial service airports are combined, as in Table 3-7, it indicates that passenger enplanements in Nevada are expected to more than double over the planning period. Table 3-8 presents the air carrier and air taxi aircraft operations forecasts for the six commercial service airports and indicates that, when combined, air carrier and air taxi aircraft operations are expected to increase significantly as well.

3.4 GENERAL AVIATION ACTIVITY

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

To project the State's future general aviation facility needs, activity in this important part of aviation must be forecast. Facilitation of the forecast is made through identification of several elements of general aviation demand which, when forecast, serve as a gauge by which future activity can be measured. These activities include:

- Registered Aircraft
- Based Aircraft

Table 3-7

ENPLAINED PASSENGER FORECAST SUMMARY
Nevada Airport System Plan

<u>Airport</u>	<u>Historical</u>	<u>Forecast</u>			
	<u>2000</u>	<u>2005</u>	<u>2010</u>	<u>2015</u>	<u>2020</u>
McCarran International	18,443,481	22,383,450	27,375,260	32,330,310	37,850,000
Reno/Tahoe International	2,812,862	3,633,000	4,374,000	5,183,000	5,992,000
Elko Regional	125,273	134,730	144,280	153,840	163,400
Ely Airport/Yelland Field	2,418	2,630	2,806	2,949	3,092
Henderson Executive	104,887	118,630	134,170	151,750	171,630
North Las Vegas	212,352	240,160	271,070	307,180	347,400
TOTALS	21,701,273	26,512,600	32,301,586	38,129,029	44,527,522

SOURCE: Tables 3-1 through 3-6

Table 3-8

AIR CARRIER AND AIR TAXI AIRCRAFT OPERATIONS FORECAST SUMMARY
Nevada Airport System Plan

<u>Airport</u>	<u>Historical</u>	<u>Forecast</u>			
	<u>2000</u>	<u>2005</u>	<u>2010</u>	<u>2015</u>	<u>2020</u>
McCarran International	394,315	469,500	558,170	634,580	714,230
Reno/Tahoe International	86,237	107,500	124,400	141,600	158,900
Elko Regional	12,431	12,540	12,930	13,320	13,710
Ely Airport/Yelland Field	3,778	4,110	4,384	4,608	4,832
Henderson Executive	23,484	24,910	26,410	28,010	29,170
North Las Vegas	51,049	54,290	57,720	61,360	65,230
TOTALS	571,294	672,850	784,014	883,478	986,072

SOURCE: Tables 3-1 through 3-6

- Registered and Based Aircraft Fleet Mixes
- General Aviation Aircraft Operations
 - Annual Operations
 - Local versus Itinerant Operations

Registered aircraft were forecast for each county in the State. In addition, aircraft fleet mix, based aircraft, and aircraft operations were forecast for the State of Nevada on an airport-by-airport basis. Each element is discussed in the following sections.

3.4.1 Registered Aircraft

A registered aircraft is defined as being either fixed or rotary wing, operated in non-airline service with a current registration. Much of the historical information used to develop the registered aircraft forecast is based on data compiled by the FAA and published in the *Census of U.S. Civil Aircraft*. Registered aircraft include all aircraft that are registered in the State, including those aircraft that are registered in Nevada and based elsewhere. It should be noted that there are a significant number of aircraft that are registered in Nevada that are not actually based at a State airport.

Forecasts of registered aircraft were developed on a county basis based on historical and forecast estimates of population provided by the Nevada Department of Transportation. The historical and forecast registered aircraft are summarized in Table 3-9.

3.4.2 Based Aircraft

Based aircraft are those aircraft that are hangared or on tiedowns at a State airport and include those aircraft based on leaseholder sites. The number of aircraft based at an airport is a function of many factors, including the number of active aircraft registered in an airport's service area, aircraft registered elsewhere but used in the area (e.g., corporate or government aircraft), and the existence and location of other airports in the area. Based aircraft data were collected from the FAA Form 5010-1, *Airport Master Record*. The FAA Form 5010-1 classifies based aircraft into the following categories:

- | | |
|-----------------|---------------|
| - Single Engine | - Helicopters |
| - Multi-Engine | - Gliders |
| - Jet Aircraft | - Military |
| | - Ultralight |

In addition, based aircraft information was obtained from the airport sponsors including recent airport master plans and the *Southern Nevada Regional Airport System Plan* data. The airport sponsors were also asked to verify or update the information included on the FAA Form 5010-1 for their airport.

Table 3-9

FORECAST OF REGISTERED AIRCRAFT BY COUNTY
Nevada Airport System Plan

COUNTY	Historical			Forecast			
	1990	1994	2000	2005	2010	2015	2020
Carson City ¹	229	300	391	439	492	552	619
Churchill	82	75	98	110	123	138	155
Clark	1,182	1,404	1,828	2,050	2,300	2,579	2,892
Douglas	214	258	336	377	423	474	532
Elko	99	102	133	149	167	187	210
Esmeralda	8	9	12	13	15	17	19
Eureka	6	4	5	6	7	7	8
Humboldt	58	53	69	77	87	97	109
Lander	23	20	26	29	33	37	41
Lincoln	4	6	8	9	10	11	12
Lyon	84	111	145	162	182	204	229
Mineral	9	15	20	22	25	28	31
Nye	77	76	99	111	125	140	157
Pershing	17	12	16 0	18 0	20 0	22 0	25
Storey	1	0	0 0	0 0	0 0	0 0	0
Washoe	796	871	1,134 0	1,272 0	1,427 0	1,600 0	1,794
White Pine	17	19	24	27	30	34	38
TOTAL	2,906	3,335	4,342	4,870	5,462	6,125	6,870

1. Carson City includes former Ormsby County.

SOURCE: FAA Census of U.S. Civil Aircraft 1980-1994 and Goldmine 1995-2000, Aries Consultants Ltd. 2005-2020.

Table 3-10 presents the forecasts of based aircraft for each of the system airports and summarizes these forecasts by planning periods through 2020. Based aircraft forecasts from airport master plans and aviation system plans prepared since 2000 were used for several airports. For other airports, based aircraft were initially forecast based on national and State trends. These forecasts were then reviewed with the Nevada Aviation Technical Advisory Committee and revised based on the comments received.

In addition to the forecasts prepared for individual airports, the forecasts were totaled for the State. The number of based aircraft in the State is forecast to increase from 2,534 in 2000 to 3,447 in 2020, an average annual increase of 1.6 percent.

3.4.3 Aircraft Fleet Mix

Aircraft have different physical and operating characteristics and require varying types of airport facilities. These facilities include runway length and strength, approach procedures and navigational aids, aircraft parking, aircraft storage facilities and types of fuel. It is important to estimate the type of aircraft that will be operated in Nevada.

Historical and forecast aircraft percentages by type were analyzed for the State and compared to the percentages of total U.S. aircraft as shown in Table 3-11. These percentages were then used to forecast the aircraft fleet mix for the State as presented in Table 3-12. Aircraft type are classified as single-engine, multiengine, turboprop, jet, rotorcraft and other that includes experimental, sport aircraft, balloons, dirigibles, gliders and other types.

Single-engine aircraft are forecast to increase from 1,680 in 2000 to 2,127 by 2020, an average annual increase of 1.2 percent over the 20-year planning period but will decrease as a percent of the total aircraft from 66 percent in 2000 to 62 percent by 2020. Multiengine aircraft are forecast to increase from 319 in 2000 to 344 by 2020, an average annual increase of 0.4 percent over the 20-year planning period and will decrease as a percent of the total aircraft from 13 percent in 2000 to 10 percent in 2020. Turboprop and jet aircraft are forecast to increase from 258 in 2000 to 562 by 2020, an average annual increase of 3.9 percent over the 20-year planning period and will increase as a percent of the total aircraft from 10 percent in 2000 to 16 percent in 2020. The increase in the higher-performance aircraft is a reflection of the nationwide trend of the increase in use of general aviation aircraft for corporate and business use.

Rotorcraft aircraft are forecast to increase from 180 in 2000 to 245 by 2020, an average annual increase of 1.6 percent and continue to account for about 7 percent of the aircraft fleet. Other types of aircraft are forecast to increase from 97 percent in 2000 to 169 by 2020, an average annual increase of 2.8 percent and increase from 4 percent of the total aircraft mix in 2000 to 5 percent in 2020. The other type of aircraft include aircraft in the new sport aircraft category.

Table 3-10

FORECAST OF BASED AIRCRAFT BY AIRPORT
Nevada Airport System Plan

<u>AIRPORT NAME</u>	Base	Forecast			
	Year [*]	<u>2005</u>	<u>2010</u>	<u>2015</u>	<u>2020</u>
Alamo Landing Field ¹	0	5	6	7	7
Austin Airport ¹	3	3	3	4	4
Battle Mountain Airport ¹	16	17	18	19	21
Beatty Airport ¹	4	4	5	5	5
Boulder City Municipal Airport ¹	156	168	180	193	206
Carson Airport (Carson City) ²	253	303	335	372	407
Currant Ranch Airport	0	0	0	0	0
Dayton Valley Airpark ¹	14	15	16	18	19
Denio Junction Airport ¹	0	0	0	0	0
Derby Field (Lovelock) ¹	6	6	7	8	8
Duckwater Airport ¹	0	0	0	0	0
Dyer Airport ¹	6	6	7	7	8
Echo Bay Airstrip ¹	0	0	0	0	0
Elko Regional Airport/JC Harris Field ³	50	53	56	59	62
Ely Airport/Yelland Field ¹	26	27	28	29	30
Empire Airport ¹	2	2	2	2	3
Eureka Airport ¹	4	4	4	5	5
Fallon Municipal Airport ⁴	57	60	62	64	67
Ft. Ruby Ranch Airstrip (Ruby Valley) ¹	0	0	0	0	0
Gabbs Airport ¹	4	4	5	5	5
Goldfield Airport ¹	2	2	2	2	3
Hadley Airport (Round Mountain) ¹	3	3	3	4	4
Harriet Field/Wells Municipal Airport ¹	11	12	12	13	14
Hawthorne Municipal Airport ⁵	7	9	10	11	12
Henderson Executive Airport (Las Vegas) ⁶	149	180	218	248	278
Hidden Hills Airport (Pahrump) ¹	0	0	0	0	0
Jackass Aeropark (Amargosa Valley)	5	5	6	6	6
Jackpot Airport/Hayden Field ¹	1	1	1	1	1
Jean Airport ¹	23	25	26	28	30
Kidwell Airport (Cal Nev Ari) ¹	16	17	18	19	21
Kingston Airport ¹	1	1	1	1	1
Lida Junction Airport (Goldfield) ¹	0	0	0	0	0
Lincoln County Airport (Panaca) ¹	3	3	3	4	4

FORECAST OF BASED AIRCRAFT BY AIRPORT**Nevada Airport System Plan**

<u>AIRPORT NAME</u>	Base	Forecast			
	Year*	2005	2010	2015	2020
McCarran International Airport ⁶	220	220	220	220	220
Mesquite Municipal Airport ⁶	19	27	38	49	63
Mina Airport ¹	4	4	4	4	4
Minden-Tahoe Airport ¹	261	281	303	326	352
North Las Vegas Airport ⁶	575	604	635	668	702
Owyhee Airport ⁷	6	7	8	9	10
Pahrump Valley Airport (New) ¹	0	0	30	40	50
Parker Carson Stolport (Carson City) ¹	12	13	14	15	16
Perkins Field (Overton) ¹	20	21	23	25	27
Reno Stead Airport ¹	231	243	256	270	284
Reno/Tahoe International Airport ¹	168	177	186	196	207
Rosaschi Air Park ¹	10	11	12	13	14
Searchlight Airport ⁶	1	1	1	1	1
Silver Springs Airport ¹	17	24	28	32	36
Sky Ranch Estates Airport (Sandy Valley) ¹	45	48	52	55	60
Spanish Springs Airport ¹	23	25	30	35	40
Stevens/Crosby Field (North Fork) ¹	0	0	0	0	0
Tiger Field (Fernley) ¹	10	11	12	13	14
Tonopah Airport ¹	10	10	11	12	13
Winnemucca Municipal Airport ¹	42	45	48	51	54
Yerington Municipal Airport ¹	44	47	51	55	59
TOTALS	2,540	2,754	2,996	3,223	3,457

* FAA Form 5010-1 Airport Master Record and individual airports

1. Aries Consultants Ltd.
2. Carson City Airport Master Plan, 2001
3. Elko Regional Airport Master Plan, 2003
4. Fallon Municipal Airport Master Plan Update, 2001
5. Hawthorne Municipal Airport Master Plan, 2001
6. Southern Nevada Regional Airport System Plan, Clark County Department of Aviation, 2001
7. Owyhee Airport Master Plan and Site Selection Study, 2004

Table 3-11

HISTORICAL AND FORECAST AIRCRAFT FLEET MIX
Nevada Airport System Plan

	<u>Year</u>	<u>Single Engine</u>	<u>Multi Engine</u>	<u>Turbo Prop</u>	<u>Jet</u>	<u>Rotor Craft</u>	<u>Other¹</u>
Nevada	1980	72.3%	18.1%	1.9%	1.5%	3.4%	2.8%
U.S.	1980	80.0%	11.9%	1.7%	1.3%	2.8%	2.3%
Nevada	1985	71.6%	14.0%	3.0%	2.3%	4.5%	4.6%
U.S.	1985	77.8%	11.5%	2.7%	1.9%	3.2%	2.9%
Nevada	1990	70.6%	12.4%	3.2%	2.6%	5.5%	5.7%
U.S.	1990	78.0%	10.5%	2.6%	2.0%	3.4%	3.5%
Nevada	1991	70.1%	12.9%	2.9%	3.0%	5.4%	5.7%
U.S.	1991	78.0%	10.6%	2.5%	2.1%	3.5%	3.3%
Nevada	1992	69.7%	13.0%	2.7%	3.2%	5.4%	6.0%
U.S.	1992	77.8%	10.7%	2.3%	2.2%	3.2%	3.8%
Nevada	1993	68.7%	12.9%	3.3%	3.7%	5.3%	6.1%
U.S.	1993	78.1%	9.9%	2.5%	2.1%	3.1%	4.3%
Nevada	1994	68.9%	13.7%	4.2%	4.3%	5.5%	3.4%
U.S.	1994	73.7%	8.6%	2.4%	2.2%	2.7%	10.4%
Nevada	1995	69.5%	13.1%	4.2%	4.0%	5.8%	3.4%
U.S.	1995	72.9%	8.4%	2.7%	2.4%	3.1%	10.5%
Nevada	1996	69.1%	13.3%	4.2%	4.2%	5.7%	3.5%
U.S.	1996	71.9%	8.5%	3.0%	2.3%	3.4%	10.9%
Nevada	1997	68.6%	12.8%	4.3%	4.5%	6.2%	3.6%
U.S.	1997	72.8%	8.4%	2.9%	2.7%	3.5%	9.7%
Nevada	1998	67.9%	12.2%	4.6%	5.5%	6.3%	3.5%
U.S.	1998	70.5%	9.1%	3.0%	3.0%	3.6%	10.8%
Nevada	1999	67.4%	11.9%	4.6%	5.8%	6.7%	3.6%
U.S.	1999	68.8%	9.6%	2.6%	3.2%	3.4%	12.4%
Nevada	2000	66.3%	12.6%	4.2%	6.0%	7.1%	3.8%
U.S.	2000	68.7%	9.7%	2.6%	3.2%	3.3%	12.5%
Nevada	2005	65.2%	11.2%	4.8%	7.5%	7.0%	4.3%
U.S.	2005	67.5%	8.4%	3.2%	4.1%	3.2%	13.6%
Nevada	2010	63.9%	10.8%	5.1%	8.8%	6.9%	4.5%
U.S.	2010	66.2%	8.1%	3.4%	4.8%	3.1%	14.4%
Nevada	2015	62.8%	10.4%	5.2%	9.9%	7.0%	4.7%
U.S.	2015	65.2%	7.8%	3.5%	5.4%	3.2%	14.9%
Nevada	2020	61.7%	10.0%	5.3%	11.0%	7.1%	4.9%
U.S.	2020	64.1%	7.5%	3.6%	6.0%	3.3%	15.5%

1. Other includes Experimental, Sport Aircraft, Balloons, Dirigibles, Gliders and others.

SOURCE: FAA Aerospace Forecasts Fiscal Year 2003-2014. 2015-2020 extrapolated by Aries Consultants Ltd.

Table 3-12

**FORECAST OF AIRCRAFT FLEET MIX
Nevada Airport System Plan**

<u>Year</u>	<u>Single Engine</u>	<u>Multi Engine</u>	<u>Turbo Prop</u>	<u>Jet</u>	<u>Rotor Craft</u>	<u>Other¹</u>	<u>Total</u>
2000	1,684	320	106	152	180	98	2,540
2005	1,796	309	132	206	192	119	2,754
2010	1,916	323	152	263	206	136	2,996
2015	2,025	336	167	318	225	152	3,223
2020	2,135	345	182	380	245	170	3,457

1. Other includes Experimental, Sport Aircraft, Balloons, Dirigibles, Gliders and others.

SOURCE: FAA Form 5010-01 Airport Master Records and Individual Airports for 2000. Aries Consultants Ltd. and individual Airport Master Plans 2005 to 2020.

3.4.4 General Aviation Aircraft Operations

The forecast of general aviation aircraft operations by airport are presented in Table 3-13. An aircraft operation is defined as either a takeoff or landing of an aircraft. A touch-and-go operation is counted as two operations.

Base year 2000 annual general aviation aircraft operations were obtained from recent airport master plans, the *Southern Nevada Regional Airport System Plan* and the FAA Forms 5010-1, *Airport Master Record*. Aircraft operations counts from the State's acoustical counting program were also used to augment data when available.

General aviation aircraft operations forecasts from airport master plans and aviation system plans prepared since 2000 were used for several airports. For other airports general aviation aircraft operations were forecast based on national and State trend levels. This also assumed greater utilization of aircraft, in terms of operations per based aircraft (OPBA) and approximately a 2 percent average annual increase. The forecasts were then reviewed with the Nevada Aviation Technical Advisory Committee and revised based on the comments received.

3.5 AIRCRAFT INSTRUMENT OPERATIONS

The review of the levels of aircraft instrument operations at system airports presently equipped for instrument operations is an important input in determining the need for new or improved landing aids. Historical aircraft instrument operations tabulated by the FAA were used in developing forecasts of instrument activity.

For this study it was assumed that almost all the aircraft operations at McCarran International and Reno/Tahoe International Airports would be counted as instrument operations.

Instrument operations at Henderson Executive, North Las Vegas and Ely Airports are forecast to increase from between 2 and 5 percent at present to 10 percent of the total aircraft operations by 2020. At the other general aircraft airports that have, or might be expected to have, instrument approach procedures, aircraft instrument operations are forecast to reach 5 percent of the total aircraft operations by 2020.

Table 3-14 presents the forecast of aircraft instrument operations for each of the forecast periods for those airports that currently have an approved instrument approach procedure as well as these that might reasonably be expected to have an instrument approach procedure in the future because of the potential for GPS approaches.

Table 3-13

**GENERAL AVIATION AIRCRAFT OPERATIONS FORECAST
Nevada Airport System Plan**

AIRPORT NAME	GA Base Year OPBA Totals	BASE YEAR			FORECAST											
		2000			2005			2010			2015			2020		
		Local	Itinerant	Total	Local	Itinerant	Total	Local	Itinerant	Total	Local	Itinerant	Total	Local	Itinerant	Total
Alamo Landing Field ^d	0	20	80	100	560	2,240	2,800	875	2,625	3,500	920	3,380	4,300	920	3,380	4,300
Austin Airport ¹	433	800	500	1,300	880	570	1,450	970	620	1,590	1,070	680	1,750	1,180	750	1,930
Battle Mountain Airport ¹	626	6,420	3,600	10,020	7,080	3,980	11,060	7,800	4,400	12,200	8,600	4,900	13,500	9,530	5,360	14,890
Beatty Airport ¹	225	100	800	900	110	880	990	120	980	1,100	130	1,080	1,210	150	1,190	1,340
Boulder City Municipal Airport ¹	227	15,000	15,000	30,000	16,560	16,560	33,120	18,280	18,290	36,570	20,190	20,190	40,380	22,290	22,290	44,580
Carson Airport (Carson City) ²	294	35,000	35,000	70,000	43,800	43,800	87,600	49,300	49,300	98,600	55,700	55,700	111,400	62,100	62,100	124,200
Currant Ranch Airport ¹	0	0	160	160	0	180	180	0	190	190	0	210	210	0	230	230
Dayton Valley Airpark ¹	86	1,000	200	1,200	1,110	220	1,330	1,220	240	1,460	1,350	270	1,620	1,490	300	1,790
Denio Junction Airport ¹	0	0	500	500	0	550	550	0	610	610	0	670	670	0	740	740
Derby Field (Lovelock) ¹	225	110	1,240	1,350	120	1,370	1,490	130	1,520	1,650	150	1,670	1,820	160	1,850	2,010
Duckwater Airport ¹	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Dyer Airport ¹	7	0	40	40	0	40	40	0	50	50	0	60	60	0	60	60
Echo Bay Airstrip ¹	0	0	750	750	0	830	830	0	920	920	0	1,010	1,010	0	1,120	1,120
Elko Regional Airport (J.C. Harris Field) ³	292	5,823	8,784	14,607	6,200	9,300	15,500	6,500	9,800	16,300	6,900	10,400	17,300	7,200	10,900	18,100
Ely Airport/Yelland Field ^d	254	600	6,000	6,600	680	6,610	7,290	750	7,300	8,050	830	8,050	8,880	910	8,900	9,810
Empire Airport ¹	75	150	0	150	170	0	170	180	0	180	200	0	200	220	0	220
Eureka Airport ¹	350	400	1,000	1,400	440	1,110	1,550	490	1,210	1,700	540	1,350	1,890	600	1,480	2,080
Fallon Municipal Airport ^d	213	2,045	10,105	12,150	2,250	10,500	12,750	2,500	11,000	13,500	2,750	11,500	14,250	3,000	12,000	15,000
Ft. Ruby Ranch Airstrip (Ruby Valley) ¹	0	0	10	10	0	10	10	0	10	10	0	10	10	0	10	10
Gabbs Airport ¹	500	1,800	200	2,000	1,990	220	2,210	2,200	240	2,440	2,420	270	2,690	2,670	300	2,970
Goldfield Airport ¹	150	275	25	300	300	30	330	340	30	370	370	40	410	410	40	450
Hadley Airport (Round Mountain) ¹	730	1,095	1,095	2,190	1,210	1,210	2,420	1,335	1,335	2,670	1,475	1,475	2,950	1,630	1,630	3,260
Harriet Field/Wells Municipal ¹	500	2,500	3,000	5,500	2,430	3,640	6,070	2,680	4,030	6,710	2,960	4,440	7,400	3,270	4,900	8,170
Hawthorne Municipal Airport ⁵	1,814	2,540	10,160	12,700	3,210	12,840	16,050	3,320	13,300	16,620	3,700	14,800	18,500	4,080	16,330	20,410
Henderson Executive Airport (Las Vegas) ⁶	363	32,732	21,343	54,075	41,470	27,050	68,520	52,560	34,280	86,840	66,590	43,450	110,040	84,400	55,040	139,440
Hidden Hills Airport (Pahrump) ¹	0	0	200	200	0	220	220	0	250	250	0	270	270	0	300	300

GENERAL AVIATION AIRCRAFT OPERATIONS FORECAST, Nevada Airport System Plan

AIRPORT NAME	GA	FORECAST														
	Base Year	BASE YEAR			2005			2010			2015			2020		
	OPBA	2000			2005			2010			2015			2020		
	Totals	Local	Itinerant	Total	Local	Itinerant	Total	Local	Itinerant	Total	Local	Itinerant	Total	Local	Itinerant	Total
Jackass Aeropark (Amargosa Valley) ¹	120	100	500	600	110	550	660	120	610	730	130	680	810	150	740	890
Jackpot Airport/Hayden Field ¹	5,500	300	5,200	5,500	330	5,740	6,070	370	6,340	6,710	400	7,000	7,400	440	7,730	8,170
Jean Airport ¹	870	5,000	15,000	20,000	5,520	16,560	22,080	6,090	18,290	24,380	6,730	20,190	26,920	7,430	22,290	29,720
Kidwell Airport (Cal Nev Ari) ¹	219	3,000	500	3,500	3,320	550	3,870	3,660	610	4,270	4,040	670	4,710	4,460	740	5,200
Kingston Airport ¹	250	50	200	250	60	220	280	70	240	310	80	260	340	90	290	380
Lida Junction Airport (Goldfield) ¹	0	0	10	10	0	10	10	0	10	10	0	10	10	0	10	10
Lincoln County Airport (Panaca) ¹	800	900	1,500	2,400	1,000	1,650	2,650	1,100	1,850	2,950	1,200	2,050	3,250	1,300	2,300	3,600
McCarran International Airport ⁶	478	2,994	102,061	105,055	3,000	102,000	105,000	3,000	102,000	105,000	3,000	102,000	105,000	3,000	102,000	105,000
Mesquite Municipal Airport ⁶	789	2,000	13,000	15,000	2,220	14,340	16,560	2,450	15,840	18,290	2,950	19,160	22,110	3,870	25,180	29,050
Mina Airport ¹	67	100	100	200	110	110	220	125	125	250	135	135	270	150	150	300
Minden-Tahoe Airport ¹	295	42,000	35,000	77,000	51,900	43,100	95,000	58,300	48,600	106,900	65,900	54,800	120,700	73,500	61,200	134,700
North Las Vegas Airport ⁶	344	116,264	81,479	197,743	124,200	87,100	211,300	125,450	87,970	213,420	126,710	88,850	215,560	127,980	89,740	217,720
Owyhee Airport ⁷	250	360	1,140	1,500	650	2,070	2,720	940	3,000	3,940	1,240	3,910	5,150	1,530	4,840	6,370
Pahrump Valley Airport (New) ¹	0	0	0	0	0	0	0	4,000	7,000	11,000	5,500	11,000	16,500	7,000	15,000	22,000
Parker Carson Stolport (Carson City) ¹	125	1,000	500	1,500	1,100	550	1,650	1,220	610	1,830	1,350	670	2,020	1,490	740	2,230
Perkins Field (Overton) ¹	170	3,200	2,000	5,200	3,530	2,210	5,740	3,900	2,440	6,340	4,300	2,700	7,000	4,750	2,980	7,730
Reno Stead Airport ¹	234	35,000	19,000	54,000	36,370	23,250	59,620	40,160	25,670	65,830	44,330	28,350	72,680	48,950	31,290	80,240
Reno/Tahoe International Airport ¹	301	6,794	43,830	50,624	8,100	47,790	55,890	8,950	52,760	61,710	9,880	58,260	68,140	10,910	64,320	75,230
Rosaschi Air Park ¹	582	5,000	820	5,820	5,520	910	6,430	6,100	1,000	7,100	6,730	1,100	7,830	7,430	1,220	8,650
Searchlight Airport ¹	300	0	300	300	0	330	330	0	370	370	0	400	400	0	450	450
Silver Springs Airport ¹	282	2,100	2,700	4,800	4,000	5,300	9,300	4,700	6,600	11,300	5,500	8,000	13,500	6,100	9,000	15,100
Sky Ranch Estates Airport (Sandy Valley) ¹	52	1,755	585	2,340	1,945	645	2,590	2,135	715	2,850	2,360	790	3,150	2,600	870	3,470
Spanish Springs Airport ¹	200	3,600	1,000	4,600	5,720	1,580	7,300	5,865	1,635	7,500	6,265	1,735	8,000	6,660	1,840	8,500
Stevens/Crosby Field (North Fork) ¹	0	0	25	25	0	30	30	0	30	30	0	30	30	0	40	40
Tiger Field (Fernley) ¹	240	1,200	1,200	2,400	1,325	1,325	2,650	1,465	1,465	2,930	1,615	1,615	3,230	1,785	1,785	3,570
Tonopah Airport ¹	937	7,832	1,540	9,372	8,640	1,710	10,350	9,540	1,890	11,430	10,540	2,080	12,620	11,630	2,300	13,930
Winnemucca Municipal Airport ¹	571	16,000	8,000	24,000	17,730	8,770	26,500	19,570	9,690	29,260	21,610	10,690	32,300	23,860	11,800	35,660
Yerington Municipal Airport ¹	545	7,000	17,000	24,000	7,690	18,810	26,500	8,480	20,780	29,260	9,370	22,930	32,300	10,340	25,320	35,660
TOTAL		371,959	473,982	845,941	424,660	531,170	955,830	469,310	580,670	1,049,980	518,710	635,940	1,154,650	573,615	697,365	1,270,980

1. Aries Consultants Ltd.
2. Carson City Airport Master Plan, 2001
3. Elko Regional Airport Master Plan, 2003
4. Fallon Municipal Airport Master Plan Update, 2001
5. Hawthorne Industrial Airport Master Plan, 2001
6. Southern Nevada Regional Airport System Plan, Clark County Department of Aviation, 2001
7. Owyhee Airport Master Plan and Site Selection Study, 2004

GA = General Aviation
 OPBA = Operations Per Based Aircraft

SOURCE: FAA Form 5010-01 Airport Master Record, and individual airports.

Table 3-14

AIRCRAFT INSTRUMENT OPERATIONS FORECAST
Nevada Airport System Plan

Airport	Historical	Forecast			
	2000	2005	2010	2015	2020
Battle Mountain Airport	-	260	440	640	880
Boulder City Municipal Airport	-	730	1,210	1,780	2,450
Carson Airport (Carson City)	-	1,830	3,090	4,650	6,480
Derby Field (Lovelock)	-	30	50	80	100
Elko Regional Airport(J.C. Harris Field)	13,153	14,070	14,670	15,360	15,960
Ely Airport/Yelland Field	-	460	750	1,090	1,470
Fallon Municipal Airport	-	260	410	570	760
Hawthorne Municipal Airport	-	340	520	770	1,110
Henderson Executive Airport	1,713 ¹	3,740	6,800	11,050	16,920
McCarran International Airport	510,952	579,800	666,700	741,600	819,600
Mesquite Municipal Airport	-	330	550	880	1,450
Minden-Tahoe Airport	-	1,970	3,320	5,000	6,970
North Las Vegas Airport	6,375	15,950	19,000	22,170	28,320
Pahrump Valley Airport (New)	-	-	330	660	1,100
Reno Stead Airport	-	1,410	2,310	3,360	4,590
Reno/Tahoe International Airport	139,415	165,200	187,700	208,100	235,200
Silver Springs Airport	-	190	340	540	760
Tonopah Airport	-	280	460	680	940
Winnemucca Municipal Airport	-	540	900	1,320	1,820
Yerington Municipal Airport	-	540	890	1,310	1,810

1. 2001

SOURCE: FAA Air Traffic Control Tower Data for 2000 and Aries Consultants Ltd. for 2005 to 2020

3.6 MILITARY AVIATION ACTIVITY

Military aircraft operations at airports within the State of Nevada are related to Department of Defense policy and Congressional spending. Therefore, forecasts of military aircraft operations for the Nevada airports were developed by extending the military aircraft operations reported on the most current FAA Form 5010-1 *Airport Master Record*, or data available from individual airports, into the future.

3.7 AIR CARGO ACTIVITY

Table 3-15 presents historical and projected air cargo activity for the McCarran International Airport and Reno/Tahoe International Airport. Data from McCarran International Airport and the Reno/Tahoe International Airport indicate that the amount of air cargo handled at each airport has steadily increased over the past several years. At the McCarran International Airport air freight increased by 223 percent from 1990 to 2000 while at the Reno/Tahoe International Airport air freight increased by 185 percent from 1990 to 2000. The national trend also shows a steady increase over this same time frame. Air cargo at the McCarran International Airport is projected to increase by 613 percent from 2000 to 2020. At the Reno/Tahoe International Airport air cargo is projected to increase 343 percent during the same time period.

3.8 SUMMARY OF FORECAST AVIATION ACTIVITY

In summary, Nevada's aviation growth will be at a much faster pace than that experienced in the rest of the United States. Commercial air service activity in Nevada will also grow much faster than will general aviation activity. Table 3-16 summarizes each airport's forecast aviation activity levels for each of the planning phases in the planning period.

Air carrier enplanements in Nevada are expected to more than double over the next 20 years from 21.7 million passenger enplanements in 2000 to approximately 44.5 million passenger enplanements by 2020. Air carrier and air taxi operations are not expected to grow as quickly due to more efficient use and larger sizes of aircraft. As a result, air carrier and air taxi operations are forecast to increase over 72 percent during the next 20 years from 571,294 aircraft operations in 2000 to 986,072 aircraft operations by the year 2020.

General aviation based aircraft are anticipated to grow approximately 36 percent during the planning period from 2,534 aircraft in 2000 to 3,447 aircraft in 2020 which is greater than FAA's predictions of 15 percent growth for Nevada from 2,511 aircraft to 2,890 aircraft. (See Table 3-17). This is because, as noted earlier, FAA does not

Table 3-15

AIR CARGO FORECAST
Nevada Airport System Plan

<u>Historical</u> (Thousands of Pounds)	<u>McCarran¹</u> <u>International</u>	<u>Reno/Tahoe²</u> <u>International</u>
<u>1990</u>		
Freight/Express	37,276	19,834
Mail	31,909	7,776
Total	69,185	27,610
<u>1995</u>		
Freight/Express	68,684	40,000
Mail	44,685	11,800
Total	113,369	51,800
<u>2000</u>		
Freight/Express	140,715	64,000
Mail	82,399	14,800
Total	223,114	78,800
<u>Forecast</u>		
<u>2005</u>		
Freight/Express	238,396	144,000
Mail	140,011	32,000
Total	378,407	176,000
<u>2010</u>		
Freight/Express	420,000	194,000
Mail	180,000	40,000
Total	600,000	234,000
<u>2015</u>		
Freight/Express	740,000	242,000
Mail	230,000	48,000
Total	970,000 ³	290,000 ³
<u>2020</u>		
Freight/Express	1,300,000	292,000
Mail	290,000	56,000
Total	1,590,000 ³	348,000

1. Southern Nevada Regional Airport System Plan, Clark County Department of Aviation, 2001
2. Reno/Tahoe International Airport Aviation Forecast Update, 2000
3. Interpolated by Aries Consultants Ltd.

Table 3-16

SUMMARY OF FORECAST AVIATION ACTIVITY
Nevada Airport System Plan

<u>AIRPORT/ACTIVITY</u>	Historical	Forecast			
	2000	2005	2010	2015	2020
<u>Alamo Landing Field</u>					
Based Aircraft	0	5	6	7	7
Aircraft Operations					
General Aviation	100	2,800	3,500	4,300	4,300
<u>Austin Airport</u>					
Based Aircraft	3	3	3	4	4
Aircraft Operations					
General Aviation	1,300	1,450	1,590	1,750	1,930
Military	100	100	100	100	100
Total Operations	1,400	1,550	1,690	1,850	2,030
<u>Battle Mountain Airport</u>					
Based Aircraft	16	17	18	19	21
Aircraft Operations					
Air Taxi	1,800	1,970	2,190	2,430	2,670
General Aviation	10,020	11,060	12,200	13,500	14,890
Military	120	120	120	120	120
Total Operations	11,940	13,150	14,510	16,050	17,680
Instrument Operations	0	260	440	640	880
<u>Beatty Airport</u>					
Based Aircraft	4	4	5	5	5
Aircraft Operations					
Air Taxi	75	80	90	100	110
General Aviation	900	990	1,100	1,210	1,340
Military	30	30	30	30	30
Total Operations	1,005	1,100	1,220	1,340	1,480
<u>Boulder City Municipal Airport</u>					
Based Aircraft	156	168	180	193	206
Aircraft Operations					
Air Taxi	3,000	3,300	3,700	4,100	4,500
General Aviation	30,000	33,120	36,570	40,380	44,580
Total Operations	33,000	36,420	40,270	44,480	49,080
Instrument Operations	0	730	1,210	1,780	2,450
<u>Carson Airport (Carson City)</u>					
Based Aircraft:	253	303	335	372	407
Aircraft Operations					
Air Taxi	4,000	3,700	4,100	4,600	5,200
General Aviation	70,000	87,600	98,600	111,400	124,200
Military	190	190	190	190	190
Total Operations	74,190	91,490	102,890	116,190	129,590
Instrument Operations	0	1,830	3,090	4,650	6,480

SUMMARY OF FORECAST AVIATION ACTIVITY**Nevada Airport System Plan**

<u>AIRPORT/ACTIVITY</u>	Historical	Forecast			
	<u>2000</u>	<u>2005</u>	<u>2010</u>	<u>2015</u>	<u>2020</u>
<u>Currant Ranch Airport</u>					
Based Aircraft	0	0	0	0	0
Aircraft Operations					
General Aviation	160	180	190	210	230
<u>Dayton Valley Airpark</u>					
Based Aircraft	14	15	16	18	19
Aircraft Operations					
General Aviation	1,200	1,330	1,460	1,620	1,790
Military	20	20	20	20	20
Total Operations	1,220	1,350	1,480	1,640	1,810
<u>Denio Junction Airport</u>					
Based Aircraft	0	0	0	0	0
Aircraft Operations					
General Aviation	500	550	610	670	740
<u>Derby Field (Lovelock)</u>					
Based Aircraft	6	6	7	8	8
Aircraft Operations					
General Aviation	1,350	1,490	1,650	1,820	2,010
Military	80	80	80	80	80
Total Operations	1,430	1,570	1,730	1,900	2,090
Instrument Operations	0	30	50	80	100
<u>Duckwater Airport</u>					
Based Aircraft	0	0	0	0	0
Aircraft Operations					
General Aviation	0	0	0	0	0
<u>Dyer Airport</u>					
Based Aircraft	6	6	7	7	8
Aircraft Operations					
General Aviation	40	40	50	60	60
<u>Echo Bay Airstrip</u>					
Based Aircraft	0	0	0	0	0
Aircraft Operations					
General Aviation	750	830	920	1,010	1,120

SUMMARY OF FORECAST AVIATION ACTIVITY**Nevada Airport System Plan**

<u>AIRPORT/ACTIVITY</u>	Historical	Forecast			
	2000	2005	2010	2015	2020
<u>Elko Regional Airport (J. C. Harris Field)</u>					
Passenger Enplanements	125,273	134,730	144,280	153,840	163,400
Based Aircraft	50	53	56	59	62
Aircraft Operations					
Air Carrier	2,184	1,978	2,003	2,028	2,053
Air Taxi	10,247	10,562	10,927	11,292	11,657
General Aviation	14,607	15,500	16,300	17,300	18,100
Military	103	103	103	103	103
Total Operations	27,141	28,143	29,333	30,723	31,913
Instrument Operations	13,153	14,070	14,670	15,360	15,960
<u>Ely Airport/Yelland Field</u>					
Passenger Enplanements	2,382	2,630	2,806	2,949	3,092
Based Aircraft	26	27	28	29	30
Aircraft Operations					
Air Taxi	3,400	4,110	4,384	4,608	4,832
General Aviation	6,600	7,290	8,050	8,880	9,810
Military	100	100	100	100	100
Total Operations:	10,100	11,500	12,534	13,588	14,742
Instrument Operations	0	460	750	1,090	1,470
<u>Empire Airport</u>					
Based Aircraft	2	2	2	2	3
Aircraft Operations					
General Aviation	150	170	180	200	220
<u>Eureka Airport</u>					
Based Aircraft	4	4	4	5	5
Aircraft Operations					
General Aviation	1,400	1,550	1,700	1,890	2,080
<u>Fallon Municipal Airport</u>					
Based Aircraft	57	60	62	64	67
Aircraft Operations					
General Aviation	12,150	12,750	13,500	14,250	15,000
Military	100	100	100	100	100
Total Operations	12,250	12,850	13,600	14,350	15,100
Instrument Operations	0	260	410	570	760
<u>Ft. Ruby Ranch Airstrip (Ruby Valley)</u>					
Based Aircraft	0	0	0	0	0
Aircraft Operations					
General Aviation	10	10	10	10	10

SUMMARY OF FORECAST AVIATION ACTIVITY**Nevada Airport System Plan**

<u>AIRPORT/ACTIVITY</u>	Historical	Forecast			
	2000	2005	2010	2015	2020
<u>Gabbs Airport</u>					
Based Aircraft	4	4	5	5	5
Aircraft Operations					
General Aviation	2,000	2,210	2,440	2,690	2,970
<u>Goldfield Airport</u>					
Based Aircraft	2	2	2	2	3
Aircraft Operations					
General Aviation	300	330	370	410	450
<u>Hadley Airport (Round Mountain)</u>					
Based Aircraft	3	3	3	4	4
Aircraft Operations					
General Aviation	2,190	2,420	2,670	2,950	3,260
<u>Harriet Field/Wells Municipal Airport</u>					
Based Aircraft	11	12	12	13	14
Aircraft Operations					
General Aviation	5,500	6,070	6,710	7,400	8,170
<u>Hawthorne Municipal Airport</u>					
Based Aircraft	7	9	10	11	12
Aircraft Operations					
Air Taxi	400	400	400	400	400
General Aviation	12,700	16,050	16,620	18,500	20,410
Military	300	300	300	300	300
Total Operations	13,400	16,750	17,320	19,200	21,110
Instrument Operations	0	340	520	770	1,110
<u>Henderson Executive Airport (Las Vegas)</u>					
Passenger Enplanements	104,887	118,630	134,170	151,750	171,630
Based Aircraft	149	180	218	248	278
Aircraft Operations					
Air Taxi	23,484	24,910	26,410	28,010	29,710
General Aviation	54,075	68,520	86,840	110,040	139,440
Military	26	26	26	26	26
Total Operations	77,585	93,456	113,276	138,076	169,176
Instrument Operations	1,713	3,740	6,800	11,050	16,920
<u>Hidden Hills Airport (Pahrump)</u>					
Based Aircraft	0	0	0	0	0
Aircraft Operations					
General Aviation	200	220	250	270	300
<u>Jackass Aeropark (Amargosa Valley)</u>					
Based Aircraft	5	5	6	6	6
Aircraft Operations					
General Aviation	600	660	730	810	890
Military	4	4	4	4	4
Total Operations	604	664	734	814	894

SUMMARY OF FORECAST AVIATION ACTIVITY**Nevada Airport System Plan**

<u>AIRPORT/ACTIVITY</u>	Historical	Forecast			
	<u>2000</u>	<u>2005</u>	<u>2010</u>	<u>2015</u>	<u>2020</u>
<u>Jackpot Airport/Hayden Field</u>					
Based Aircraft	1	1	1	1	1
Aircraft Operations					
General Aviation	5,500	6,070	6,710	7,400	8,170
<u>Jean Airport</u>					
Based Aircraft	23	25	26	28	30
Aircraft Operations					
General Aviation	20,000	22,080	24,380	26,920	29,720
<u>Kidwell Airport (Cal Nev Ari)</u>					
Based Aircraft	16	17	18	19	21
Aircraft Operations					
General Aviation	3,500	3,870	4,270	4,710	5,200
<u>Kingston Airport</u>					
Based Aircraft	1	1	1	1	1
Aircraft Operations					
General Aviation	250	280	310	340	380
<u>Lida Junction Airport (Goldfield)</u>					
Based Aircraft	0	0	0	0	0
Aircraft Operations					
General Aviation	10	10	10	10	10
<u>Lincoln County Airport (Panaca)</u>					
Based Aircraft	3	3	3	4	4
Aircraft Operations					
Air Taxi	100	110	120	140	150
General Aviation	2,400	2,650	2,950	3,250	3,600
Total Operations	2,500	2,760	3,070	3,390	3,750
<u>McCarran International Airport</u>					
Passenger Enplanements	18,443,481	22,383,450	27,375,260	32,330,310	37,850,000
Based Aircraft	220	220	220	220	220
Aircraft Operations					
Air Carrier	336,682	404,610	485,110	552,320	621,620
Air Taxi	57,633	64,890	73,060	82,260	92,610
General Aviation	105,055	105,000	105,000	105,000	105,000
Military	21,930	17,000	17,000	17,000	17,000
Total Operations	521,300	591,500	680,170	756,580	836,230
Instrument Operations	510,952	579,800	666,700	741,600	819,600
<u>Mesquite Municipal Airport</u>					
Based Aircraft	19	27	38	49	63
Aircraft Operations					
General Aviation	15,000	16,560	18,290	22,110	29,050
Instrument Operations	0	330	550	880	1,450

SUMMARY OF FORECAST AVIATION ACTIVITY**Nevada Airport System Plan**

<u>AIRPORT/ACTIVITY</u>	Historical	Forecast			
	<u>2000</u>	<u>2005</u>	<u>2010</u>	<u>2015</u>	<u>2020</u>
<u>Mina Airport</u>					
Based Aircraft	4	4	4	4	4
Aircraft Operations					
General Aviation	200	220	250	270	300
<u>Minden-Tahoe Airport</u>					
Based Aircraft	261	281	303	326	352
Aircraft Operations					
Air Taxi	2,500	3,100	3,500	3,900	4,400
General Aviation	77,000	95,000	106,900	120,700	134,700
Military	300	300	300	300	300
Total Operations	79,800	98,400	110,700	124,900	139,400
Instrument Operations	0	1,970	3,320	5,000	6,970
<u>North Las Vegas Airport</u>					
Passenger Enplanements	212,352	240,160	271,070	307,180	347,400
Based Aircraft	575	604	635	668	702
Aircraft Operations					
Air Carrier	7	0	0	0	0
Air Taxi	51,042	54,290	57,720	61,360	65,230
General Aviation	197,743	211,300	213,420	215,560	217,720
Military	32	250	250	250	250
Total Operations	248,824	265,840	271,390	277,170	283,200
Instrument Operations	6,375	15,950	19,000	22,170	28,320
<u>Owyhee Airport</u>					
Based Aircraft	6	7	8	9	10
Aircraft Operations					
General Aviation	1,500	2,720	3,940	5,150	6,370
<u>Pahrump Valley Airport (New)</u>					
Based Aircraft	0	0	30	40	50
Aircraft Operations					
General Aviation	0	0	11,000	16,500	22,000
Instrument Operations	0	0	330	660	1,100
<u>Parker Carson Stolport (Carson City)</u>					
Based Aircraft	12	13	14	15	16
Aircraft Operations					
General Aviation	1,500	1,650	1,830	2,020	2,230
<u>Perkins Field (Overton)</u>					
Based Aircraft	20	21	23	25	27
Aircraft Operations					
General Aviation	5,200	5,740	6,340	7,000	7,730

SUMMARY OF FORECAST AVIATION ACTIVITY**Nevada Airport System Plan**

<u>AIRPORT/ACTIVITY</u>	Historical	Forecast			
	<u>2000</u>	<u>2005</u>	<u>2010</u>	<u>2015</u>	<u>2020</u>
<u>Reno Stead Airport</u>					
Based Aircraft	231	243	256	270	284
Aircraft Operations					
Air Taxi	1,000	1,100	1,200	1,300	1,500
General Aviation	54,000	59,620	65,830	72,680	80,240
Military	10,000	10,000	10,000	10,000	10,000
Total Operations	65,000	70,720	77,030	83,980	91,740
Instrument Operations	0	1,410	2,310	3,360	4,590
<u>Reno/Tahoe International Airport</u>					
Passenger Enplanements	2,812,862	3,633,000	4,374,000	5,183,000	5,992,000
Based Aircraft	168	177	186	196	207
Aircraft Operations					
Air Carrier	67,353	88,000	101,800	116,000	130,200
Air Taxi	18,884	19,500	22,600	22,600	28,700
General Aviation	50,624	55,890	61,710	68,140	75,230
Military	3,441	3,441	3,441	3,441	3,441
Total Operations	140,302	166,831	189,551	210,181	237,571
Instrument Operations	139,415	165,200	187,700	208,100	235,200
<u>Rosaschi Air Park</u>					
Based Aircraft	10	11	12	13	14
Aircraft Operations					
General Aviation	5,820	6,430	7,100	7,830	8,650
Military	20	20	20	20	20
Total Operations	5,840	6,450	7,120	7,850	8,670
<u>Searchlight Airport</u>					
Based Aircraft	1	1	1	1	1
Aircraft Operations					
General Aviation	300	330	370	400	450
<u>Silver Springs Airport</u>					
Based Aircraft	17	24	28	32	36
Aircraft Operations					
General Aviation	4,800	9,300	11,300	13,500	15,100
Instrument Operations	0	190	340	540	760
<u>Sky Ranch Estates Airport (Sandy Valley)</u>					
Based Aircraft	45	48	52	55	60
Aircraft Operations					
General Aviation	2,340	2,590	2,850	3,150	3,470

SUMMARY OF FORECAST AVIATION ACTIVITY**Nevada Airport System Plan**

<u>AIRPORT/ACTIVITY</u>	Historical	Forecast			
	2000	2005	2010	2015	2020
<u>Spanish Springs Airport</u>					
Based Aircraft	23	25	30	35	40
Aircraft Operations					
General Aviation	4,600	7,300	7,500	8,000	8,500
Military	50	50	50	50	50
Total Operations	4,650	7,350	7,550	8,050	8,550
<u>Stevens/Crosby Field (North Fork)</u>					
Based Aircraft	0	0	0	0	0
Aircraft Operations					
General Aviation	25	30	30	30	40
<u>Tiger Field (Fernley)</u>					
Based Aircraft	10	11	12	13	14
Aircraft Operations					
General Aviation	2,400	2,650	2,930	3,230	3,570
<u>Tonopah Airport</u>					
Based Aircraft	10	10	11	12	13
Aircraft Operations					
Air Taxi	3,135	3,460	3,820	4,220	4,660
General Aviation	9,372	10,350	11,430	12,620	13,930
Military	220	220	220	220	220
Total Operations	12,727	14,030	15,470	17,060	18,810
Instrument Operations	0	280	460	680	940
<u>Winnemucca Municipal Airport</u>					
Based Aircraft:	42	45	48	51	54
Aircraft Operations					
Air Taxi	370	410	450	500	550
General Aviation	24,000	26,500	29,260	32,300	35,660
Military	150	150	150	150	150
Total Operations	24,520	27,060	29,860	32,950	36,360
Instrument Operations	0	540	900	1,320	1,820
<u>Yerington Municipal Airport</u>					
Based Aircraft	44	47	51	55	59
Aircraft Operations					
Air Taxi	100	110	120	130	150
General Aviation	24,000	26,500	29,260	32,300	35,660
Military	300	300	300	300	300
Total Operations	24,400	26,910	29,680	32,730	36,110
Instrument Operations	0	540	890	1,310	1,810

SOURCE: Aries Consultants Ltd.

Table 3-17

**COMPARISON OF HISTORICAL AND FORECAST BASED AIRCRAFT
Nevada Airport System Plan**

Year	State of Nevada		FAA Western-Pacific Region			United States		
	Based Aircraft	Average Annual Increase	Based Aircraft	Average Annual Increase	Nevada Share	Based Aircraft	Average Annual Increase	Nevada Share
Historical								
1990	1,393		37,634		3.7%	169,494		0.8%
1991	1,433	2.9%	36,329	-3.5%	3.9%	166,683	-1.7%	0.9%
1992	1,511	5.4%	36,070	-0.7%	4.2%	165,915	-0.5%	0.9%
1993	1,511	0.0%	35,969	-0.3%	4.2%	161,449	-2.7%	0.9%
1994	1,570	3.9%	34,116	-5.2%	4.6%	162,732	0.8%	1.0%
1995	1,606	2.3%	34,913	2.3%	4.6%	165,025	1.4%	1.0%
1996	2,110	31.4%	36,247	3.8%	5.8%	167,324	1.4%	1.3%
1997	2,199	4.2%	36,418	0.5%	6.0%	175,595	4.9%	1.3%
1998	2,180	-0.9%	36,396	-0.1%	6.0%	182,136	3.7%	1.2%
1999	2,264	3.9%	36,610	0.6%	6.2%	183,961	1.0%	1.2%
2000	2,511	10.9%	37,223	1.7%	6.8%	187,934	2.2%	1.3%
2001	2,545	1.4%	38,008	2.1%	6.7%	195,454	4.0%	1.3%
Forecast								
2005	2,611	0.6%	39,483	1.0%	6.6%	200,889	0.7%	1.3%
2010	2,701	0.7%	41,421	1.0%	6.5%	208,415	0.7%	1.3%
2015	2,792	0.7%	43,376	0.9%	6.4%	216,176	0.7%	1.3%
2020	2,890	0.7%	45,455	0.9%	6.4%	224,805	0.8%	1.3%
2000-2020		0.7%		1.0%			0.9%	

SOURCE: FAA Terminal Area Forecasts, 2001

forecast general aviation activity for most airports. Most of the growth will occur in the larger, more sophisticated aircraft categories. General aviation aircraft operations are anticipated to grow by about 50 percent over the same period from 844,491 aircraft operations in 2000 to 1,264,680 aircraft operations in 2020.

Military aircraft operations are forecast to remain constant throughout the planning period as noted earlier and as presented in Table 3-16.

Chapter 4

Airport Capacity Analysis

AIRPORT CAPACITY ANALYSIS

4.1 INTRODUCTION

Critical to any airport system is its ability to satisfy current and projected aviation demand. Airfield capacity, when compared to forecast levels of aircraft operational activity, provides the foundation from which facility deficiencies or surpluses can be identified and, therefore, becomes the basis of formulating recommendations for future airfield facilities. This chapter outlines the process by which airfield capacity was obtained and presents the results of the analysis.

4.2 DEFINITION OF AIRFIELD CAPACITY

Airfield capacity, as it applies to the Nevada Airport System Plan, is a measure of terminal area airspace and airfield use. It does not refer to aircraft or vehicular parking capacity, passenger processing capacity, or cargo handling capacity. Rather, airfield capacity is defined as the maximum rate at which aircraft can arrive and depart an airfield with an acceptable level of delay.

The hourly capacity of an airfield is defined as a measure of the maximum number of aircraft operations (landings and takeoffs) that can be accommodated on the airfield in one hour. This definition contains no assumptions regarding “acceptable” levels of delay to aircraft; it simply expresses the maximum physical capability of an airfield or any one of its components under a set of specified conditions. The hourly capacity of an airfield depends on a number of conditions, including ceiling and visibility, runway use, aircraft mix, percent arrivals, percent touch-and-go and exit taxiway location.

Annual service volume (ASV) is often used as a reference point in airport planning. It is an estimate of the number of aircraft operations that can be accommodated at an airfield over the course of a year with an average annual aircraft delay on the order of one to four minutes. If the number of annual operations exceeds the annual service volume, moderate or severe congestion may occur.

The purpose of performing an airfield capacity analysis is to determine where potential constraints are likely to develop in an airport system. These airport locations, under high aircraft operational volumes, are likely to limit airfield system capacity. If no airfield capacity problems are foreseen, there is likely to be less of a need to examine and identify potential new airport sites.

The following factors impact the availability of airfield capacity in Nevada:

- Meteorological Conditions
- Airfield Layout and Runway Use
- Navigational Aids
- Aircraft Operational Fleet Mix
- Touch-and-Go Operations

Each of these factors are discussed below.

4.2.1 Meteorological Conditions

Weather conditions at an airport affect runway utilization due to variations in wind direction and velocity together with changes in visibility and ceiling conditions. The prevailing wind and visibility and ceiling conditions serve to determine the directions in which takeoffs and landings may be conducted, and the frequency of use for each operating configuration. The decision to use a particular runway is typically made by air traffic control at a towered airport although the pilot has the option to request another runway. At a non-towered airport, the pilot will use a wind indicator or air to ground communications with airport personnel to determine the direction of take-offs or landings.

The terms visual flight rules (VFR) and instrument flight rules (IFR) are used as measures of ceiling and visibility. VFR conditions occur when the ceiling is at least 1,000 feet and visibility is three miles or greater. During these conditions, pilots fly on a see-and-be-seen basis. IFR conditions occur when the ceiling is less than 1,000 feet or visibility drops below three miles. In IFR weather, the air traffic control (ATC) system assumes responsibility for the safe separation between aircraft.

The total wind coverage of an airfield has a direct relationship with the annual capacity, or annual service volume (ASV), of an airfield. Generally, as the wind coverage of an airfield increases, the ASV increases. Good wind coverage coupled with instrument approach facilities will ensure a fairly high ASV. Conversely, poor wind coverage and lack of instrumentation will produce a low ASV.

Weather plays an important role with dirt/gravel airfields. In this regard, snow, rain, and muddy conditions can reduce the utilization of dirt/gravel runways up to 30 percent annually.

4.2.2 Airfield Layout and Runway Use

The airfield refers to the location and orientation of runways, taxiways, and terminal area. For airports with more than one runway, the airfield layout is important since simultaneous use of more than one runway affords greater arrival and departure capacity than the use of a single runway. Simultaneous use of a multi-runway airport is possible, but requires greater caution on the part of pilots at airports without an operational air traffic control tower. Thus, the runway usage of airports with more than one runway is significant to the capacity calculations.

With a single runway, there are only two operating configurations. Depending upon the location of the exit taxiways, the operating direction may or may not be significant. The operating direction is predicated primarily on the prevailing winds at the airport.

The runway use configurations of an airport can have either a complementary or adverse impact on total airfield capacity. For example, if an airport operates two parallel runways simultaneously, the impact on annual capacity would be to nearly double the capacity generated from a single runway configuration. However, if the airport operates with two runways intersecting at a particular point, or the clearance between parallel runways negate the simultaneous use of both runways, a much reduced annual capacity could be expected. The annual capacity will decrease as the intersection between runways increase, although overall wind coverage will increase.

Another airfield layout factor that affects overall airfield capacity is the location of the exit taxiways. The number and configuration of exit taxiways will affect the capacity by either reducing or increasing runway occupancy time.

4.2.3 Navigational Aids

A significant input to the airfield capacity calculation is the availability of an instrument approach capability, that is, the airport's ability to operate during IFR weather conditions. Without this capability, the airport can only operate during VFR weather, and as a result, will have a lower annual service volume than a similar instrument-equipped airport.

4.2.4 Aircraft Operational Fleet Mix

The airfield capacity analysis requires that total annual aircraft operations at an airport be converted to annual operations by aircraft classification category. The capacity and delay model used for the analysis, as described in FAA Advisory Circular (AC) 150/5060-5, *Airport Capacity and Delay*, defines aircraft fleet mix in terms of four classes of aircraft as presented in Table 4-1.

Table 4-1

AIRCRAFT OPERATIONAL FLEET MIX CLASSIFICATIONS ¹

Class A: Small single-engine, gross weight 12,500 pounds or less:

Examples:	Cessna 172/182	Mooney 201
	Beech Bonanza	Piper Cherokee

Class B: Small twin-engine, gross weight 12,500 pounds or less:

Examples:	Beech Baron	Mitsubishi MU-2
	Cessna 402	Piper Navajo
	Cessna Citation I	Rockwell Shrike
	Beechcraft 99	Lear 25

Class C: Large aircraft, gross weight 12,500 pounds to 300,000 pounds:

Examples:	Airbus A-320	DeHavilland DH-8
	Douglas DC-9	Gulfstream III
	Boeing 737	Lear 35/55
	Boeing 727	Swearingen Metro

Class D: Heavy aircraft, gross weight more than 300,000 pounds:

Examples:	Airbus A-300/310	Douglas DC-10
	Boeing 747	McDonnell Douglas MD-11
	Boeing 767	Lockheed L-1011
	Boeing 777	Lockheed C-5B

AIRCRAFT CLASSES ²
For Wake Turbulence Separation Minima

Heavy Aircraft – Aircraft capable of takeoff weights of more than 255,000 pounds (e.g., B-757).

Large Aircraft – Aircraft of more than 41,000 pounds maximum certificated takeoff weight, up to 255,000 pounds.

Small Aircraft – Aircraft of 41,000 pounds or less maximum certificated takeoff weight.

SOURCE: 1. FAA Advisory Circular 150/5060-5, *Airport Capacity and Delay*
 2. FAA Order 7110.65N *Air Traffic Control*.

The effect the aircraft operational fleet mix has upon the capacity of an airport follows the generalization that as more class C and D aircraft occur in the aircraft fleet, the weighted hourly capacity decreases while a homogeneous fleet mix of smaller class A and B aircraft tends to yield a greater weighted hourly capacity. These generalizations are made since there is a greater separation distance required between large and small aircraft due to differing approach speeds and wake turbulence, or vortices, that are produced by large aircraft as they travel through the air. When the fleet is made up entirely of class C and D aircraft, the separation distances can be somewhat reduced because large aircraft have more tolerance for residual wake turbulence. It should be noted that there are more recent aircraft classifications developed for wake turbulence separation minima, and these are also presented in Table 4-1.

4.2.5 Touch-and-Go Operations

A touch-and-go operation refers to an aircraft landing and an immediate takeoff without an intermediate full stop. These operations are normally associated with training, and tend to occur in higher percentages at smaller airports. Generally, a higher level of touch-and-go operations, all other factors remaining equal, will increase the overall capacity of the airport since a large number of touch-and-go operations can be processed in a relatively short period of time.

4.3 METHODOLOGY USED

This section examines the methodology used to calculate capacities at each of the public-use airports in Nevada. A variety of techniques have been developed for the analysis of airfield capacity. The current technique accepted by the FAA, and used in this study, is described in the FAA AC 150/5060-5, *Airport Capacity and Delay*. The airport capacity and delay model (ACDM) uses the airfield layout, meteorology, runway use, aircraft operational fleet mix, percent arrivals, percent touch-and-go operations, and exit taxiway locations as specific inputs. The product of the ACDM is the VFR and IFR hourly runway capacity for the most used runway use configuration. In addition, airfield capacity information available from recent airport master plan or system planning efforts at Nevada airports has been utilized.

The overall capacity of an airfield is expressed in the aviation industry in terms of its weighted hourly capacity and annual service volume (ASV). The weighted hourly capacity combines the input data to determine an hourly capacity base for each VFR and IFR operational runway use configuration. Each hourly capacity base is assigned a proportionate weight (based on the time each is used) in order to determine the weighted hourly capacity of the entire airfield.

Once the weighted hourly capacity of an airfield is computed, the results are then multiplied by daily and hourly operation ratios in order to compute the annual service

volume. If the airport's average month, design day, and design hour operations are particularly low, this results in significantly lower daily and hourly operations ratios, consequently, a very low ASV. If operational ratios are high, a high ASV will occur. In this way, the annual capacity of the airfield is influenced by the operational characteristics of the airport.

4.4 AIRFIELD CAPACITY CALCULATIONS

Table 4-2 presents a summary of airfield capacity for the airports in Nevada. Airfield capacity exceeds the forecast aviation demand for the year 2020, as presented in Chapter 3, at virtually every airport in Nevada. Only one airport, McCarran International Airport, will require additional airfield capacity by the year 2020 due to the demand exceeding the capacity. Aircraft operations at McCarran International Airport are projected to reach 591,500 aircraft operations by the year 2005 with the capacity of the airfield estimated to be 592,000 aircraft operations. This would result in the airport being at capacity. It is estimated that by the year 2020, McCarran International Airport will be over capacity with a demand for 836,230 aircraft operations and an estimated capacity of only 530,000 aircraft operations due to changes in the aircraft fleet mix.

The ASV for Reno/Tahoe International Airport is estimated at 315,000 aircraft operations by the year 2020, as stated in the current airport master plan. Using the latest projections of aircraft operations prepared in 2000, total operations are expected to reach 238,341 by the year 2020. Therefore, according to the current airport master plan, Reno/Tahoe International Airport will be at 76 percent of capacity by the year 2020.

Planning for additional runway capacity should begin when total aircraft operations reach 60 percent of capacity, and the design and construction of additional capacity should start by the time total aircraft operations reach at least 80 percent of capacity. For McCarran International Airport, the planning and design of additional airfield capacity should have already begun with the implementation before the year 2005. For Reno/Tahoe International Airport, planning for additional airfield capacity should begin before 2020 with the design and construction soon after the year 2020.

One other airport, the Minden-Tahoe Airport, is expected to be at 60 percent of the airfield capacity by 2020 with a forecast 139,400 aircraft operations and estimated ASV of 200,000 aircraft operations and should then start planning for additional airfield facilities.

According to the Southern Nevada Regional Airport System Plan, it is likely that the average delay per operation will begin to increase rapidly after 2005 if steps are not taken to relieve demand from McCarran International Airport. This relief could be

Table 4-2

NEVADA AIRFIELD CAPACITY SUMMARY
Nevada Airport System Plan

<u>Airport Name</u>	<u>Hourly Capacity</u>		<u>Annual Service Volume</u>
	<u>VFR</u>	<u>IFR</u>	
Alamo Landing Field	50	--	44,000
Austin Airport	70	--	96,000
Battle Mountain Airport	85	20	115,000
Beatty Airport	50	--	68,000
Boulder City Municipal Airport ¹	98	--	180,000
Carson Airport (Carson City) ²	98	--	230,000
Currant Ranch Airport	50	--	44,000
Dayton Valley Airpark	50	--	68,000
Denio Junction Airport	50	--	44,000
Derby Field (Lovelock)	85	20	115,000
Duckwater Airport	50	--	44,000
Dyer Airport	50	--	44,000
Echo Bay Airstrip	70	--	96,000
Elko Regional Airport (J.C. Harris Field) ³	98	20	165,500
Ely Airport/Yelland Field	100	20	185,000
Empire Airport	70	--	65,000
Eureka Airport	70	--	96,000
Fallon Municipal Airport ⁴	98	20	165,500
Ft. Ruby Ranch Airstrip (Ruby Valley)	50	--	44,000
Gabbs Airport	70	--	65,000
Goldfield Airport	50	--	44,000
Hadley Airport (Round Mountain)	70	--	96,000
Harriet Field/Wells Municipal Airport	70	--	96,000
Hawthorne Municipal Airport ⁵	100	10	215,000
Henderson Executive Airport (Las Vegas) ^{1,6}	135	--	329,000
Hidden Hills Airport (Pahrump)	70	--	65,000
Jackass Aeropark (Amargosa Valley)	70	--	65,000
Jackpot Airport/Hayden Field	50	--	68,000
Jean Airport	120	--	230,000
Kidwell Airport (Cal Nev Ari)	98	--	86,000
Kingston Airport	50	--	44,000
Lida Junction Airport (Goldfield)	50	--	44,000
Lincoln County Airport (Panaca)	70	--	96,000
McCarran International Airport ¹	150	60	530,000
Mesquite Municipal Airport ¹	98	20	158,000
Mina Airport	50	--	44,000
Minden-Tahoe Airport ¹	110	20	200,000

NEVADA AIRFIELD CAPACITY SUMMARY
Nevada Airport System Plan

<u>Airport Name</u>	<u>Hourly Capacity</u>		<u>Annual Service Volume</u>
	<u>VFR</u>	<u>IFR</u>	
North Las Vegas Airport ^{1,8}	210	20	490,000
Owyhee Airport	50	--	68,000
Parker Carson Stolport (Carson City)	70	--	65,000
Perkins Field (Overton)	98	--	158,000
Reno Stead Airport ⁹	103	20	205,700
Reno/Tahoe International Airport ¹⁰	122	51	315,000
Rosaschi Air Park	50	--	68,000
Searchlight Airport	50	--	68,000
Silver Springs Airport	70	--	96,000
Sky Ranch Estates Airport (Sandy Valley)	50	--	68,000
Spanish Springs Airport (Reno)	98	--	86,000
Stevens/Crosby Field (North Fork)	50	--	44,000
Tiger Field (Fernley)	98	--	133,000
Tonopah Airport	98	20	165,500
Winnemucca Municipal Airport	98	20	195,000
Yerington Municipal Airport	98	--	150,000

1. Southern Nevada Regional Airport System Plan, August 2001
2. Carson City Airport Master Plan, 2001
3. Elko Regional Airport Master Plan, 2003
4. Fallon Municipal Airport Master Plan Update, 2001
5. Hawthorne Municipal Airport Master Plan, 2001
6. Henderson Executive Airport Master Plan Report, April 1997
7. Minden-Tahoe (Douglas County) Airport Master Plan, 1993
8. North Las Vegas Airport Master Plan Update, April 1998
9. Reno-Stead Airport Development Plan, 1994
10. Reno/Tahoe International Airport Master Plan, 1991

SOURCE: Aries Consultants Ltd.

provided by either a shift in some of the demand from McCarran International Airport to other airports or, for larger and heavier aircraft that cannot be accommodated at the other commercial, reliever and general aviation airports, development of a new air carrier airport. In addition, there are ongoing efforts to develop new technologies to reduce delay at commercial service airports (e.g., Center-TRACON Automated System [CTAS]) that may reduce separations between aircraft and thus increase runway capacity in the future. In addition, reinstatement of land and hold-short operations whereby arrivals can operate independently by holding short of the intersecting runway or airfield improvements to remove runway intersections can also increase the ASV by approximately 10 percent.

According to the Southern Nevada Regional Airport System Plan, it should be noted that the airfield capacity for the North Las Vegas Airport is based on the assumption that airspace would be available for operations at North Las Vegas Airport and does not consider potential changes to arrival and departure routes to and from McCarran International Airport that have been proposed by the FAA. Also, the airfield capacity for the Henderson Executive Airport is based on the assumption that airspace would be available for operations at Henderson Executive Airport and did not consider potential changes to arrival and departure routes to and from McCarran International Airport that have been proposed by the FAA.

The following conclusions were made regarding airfield capacity constraints at airports within the Southern Nevada Regional Airport System:

- Forecast demand is already approaching the annual airfield capacity at McCarran International Airport and should reach the ASV in about 2005. If steps are not taken to relieve demand from McCarran International Airport prior to 2005, aircraft delays could begin to increase significantly. Although, in the short-term, demand reduction strategies could provide some delay reduction based on forecast air carrier demand in the region, development of a new air carrier airport will ultimately be required.
- Planning for additional airfield capacity at North Las Vegas Airport should not be required through 2020. This may change if the role of North Las Vegas Airport is modified through the addition of general aviation, air tour or commuter operations currently served at McCarran International Airport, and development of additional airfield capacity may be required by 2020.
- Following the recent completion of Runways 17L-35R and 17R-35L at Henderson Executive Airport, no additional capacity planning should be required through 2020. This situation could change if the role of Henderson Executive Airport is modified through the addition of general aviation, air tour or commuter operations currently served at McCarran International Airport.

4.5 DEVELOPMENT OF NEW AIRPORT FACILITIES

Development of several new airport facilities is being planned to provide additional airport and airfield capacity in Southern Nevada.

4.5.1 New Ivanpah Valley Airport

The Clark County Department of Aviation is planning to develop a supplemental air carrier airport in the Ivanpah Valley. The Ivanpah Valley Airport would be expected to accommodate a significant portion of the air carrier activity in Clark County.

With the potential development of a new air carrier airport in the Ivanpah Valley, sport aviation activities currently accommodated at Jean Airport would likely need to be relocated due to airspace considerations. Sport aviation activities, including skydiving, glider, ultralight and aerobatic activity, could be accommodated at other airports in the region. Potential alternatives to Jean Airport for sport aviation users include Boulder City Municipal, Overton Municipal (Perkins Field) and Searchlight Airports or the proposed Pahrump Valley Airport.

4.5.2 New Mesquite Airport

The City of Mesquite is planning to develop commercial air service facilities at a new airport, and a master plan is currently being prepared for the New Mesquite Airport project. The airport would replace the existing Mesquite Municipal Airport and would be expected to accommodate general aviation activity as well as commercial air service.

4.5.3 New Pahrump Valley Airport

The Town of Pahrump is preparing an airport master plan for a new general aviation airport in Nye County. The proposed site of a future Pahrump Valley airport is intended to serve the business, personal, and recreational aviation requirements of Southern Nye County, as well as the potential relocation of some sport aviation activities from the Jean Airport.

4.5.4 New Southern Nevada Regional Heliport

The Clark County Department of Aviation is planning to develop a Southern Nevada Regional Airport near Jean in Clark County. The proposed heliport would serve sightseeing helicopter air taxi activity.

Chapter 5

Airport Facility Requirements

AIRPORT FACILITY REQUIREMENTS

5.1 INTRODUCTION

This chapter presents the requirements for airport system facilities, and when compared to the demand/capacity relationships, identifies potential deficiencies in the Nevada Airport System Plan. In order to determine the requirements, minimum standards were developed using the Issues, Goals and Objectives in Chapter 1 of this report, published Federal Aviation Administration (FAA) standards, proposed airport categories and requirements for the administration of the Nevada Aviation Trust Fund, and discussions with Nevada Department of Transportation (NDOT), Office of Aviation Planning, personnel and Nevada Aviation Technical Advisory Committee (NATAC) members.

These minimum standards are compared to the existing facilities at each system airport and an evaluation of the ability of each airport to meet these standards was performed. This chapter focuses on the comparison of the minimum standards with the existing facilities at each system airport as a way of determining the physical deficiencies of the Nevada airport system. The physical deficiencies determined for each system airport become the facility needs for that airport. The level of detail may not be sufficient to indicate the precise facility improvements needed, but provides an indication of the general areas where airport deficiencies exist.

5.2 AIRPORT CATEGORIES

To identify individual airport facility requirements, Airport Reference Codes (ARC) that relate design criteria to operational and physical characteristics of aircraft were assigned to each airport in the Nevada Airport System Plan. The assigned ARC is in part based upon the 1995 Nevada Airport System Plan categories as defined in Section 2.6 and updated to reflect airfield improvements since then at certain airports. The Airport Reference Codes, as defined in FAA Advisory Circular (AC) 150/5300-13, *Airport Design*, are based on the following:

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

- Airplane Design Group (wingspan)
 - Group I: Up to but not including 49 feet
 - Group II: 49 feet up to but not including 79 feet
 - Group III: 79 feet up to but not including 118 feet
 - Group IV: 118 feet up to but not including 171 feet
 - Group V: 171 feet up to but not including 214 feet
 - Group VI: 214 feet up to but not including 262 feet

For the purposes of administration of the Nevada Aviation Trust Fund, the NDOT Office of Aviation Planning divides all airports into Primary and Secondary airport categories as follows:

1. **Primary Airport System:** This includes all public-use airports in Nevada categorized as:
 - A. Commercial Service, Reliever and/or General Aviation airports.
 - B. Airports that have 10 or more based aircraft, or
 - C. Airports with 2,000 or more annual aircraft operations, or
 - D. Airports projected to meet any of the above criteria within 10 years.
2. **Secondary Airport System:** This includes the State’s public-use airports and heliports that do not qualify for inclusion in the Primary Airport System. (It should be noted that, based on the above criteria, 23 of the 53 airports included in the Nevada Airport System Plan would be categorized as Secondary Airports.)

The following definitions are applicable to the State Primary and Secondary system categories:

1. **Commercial Service Airport:** A publicly-owned airport, which enplanes 2,500 or more passengers annually and receives scheduled passenger air service. (A Commercial Service-Primary Airport enplanes 10,000 or more passengers annually.)
2. **Reliever Airport:** An airport that serves as a “reliever” of general aviation traffic congestion for a Commercial Service airport, providing more general aviation access to the overall community. The Reliever airport should have a current or forecast activity level of 50 based aircraft and a minimum of 25,000 annual itinerant aircraft operations (or 35,000 local aircraft operations).
3. **General Aviation Airport:** The remaining airports that do not fall into either the Commercial Service or Reliever status are referred to as General Aviation airports. This category includes Community, Rural, Basic and Private airports.

The General Aviation airport category includes publicly-owned and privately-owned, public-use and/or private-use airports. For system planning purposes, the General Aviation airports may be divided into the following types:

- A. **Community Airport:** A public-use airport within the State of Nevada with a paved runway serving a community or number of communities in the immediate vicinity of said airport with a total population of more than 1,500 people.
 - B. **Rural Airport:** A public-use airport within the State of Nevada with a paved runway serving a community with less than 1,500 people.
 - C. **Basic Airport:** A public-use airport/facility or area within the State of Nevada with an unpaved runway serving a community of less than 1,500 people.
 - D. **Private Airport:** A privately-owned, privately-used airport/facility or area within the State of Nevada that restricts usage to select aircraft operators.
4. **New Urban Airport:** The construction of a new airport within 24 statute miles of the Urbanized Area Boundary of Clark or Washoe Counties requires the approval of the State Transportation Board and legislative approval to revise the State Aviation Trust Fund before the airport is eligible to compete for trust fund monies.

The State categories generally follow the FAA National Plan of Integrated Airport Systems (NPIAS) service levels, except the State further categorizes general aviation airports into Community, Rural, Basic and Private Airports. The State airport categories reflect the operational role that individual airports serve in the Nevada Airport System Plan and can generally accommodate a range of ARCs as listed below:

State of Nevada Airport Category	FAA Airport Reference Codes Accommodated
Commercial Service Airport (CM)	C-II through D-V
Reliever Airport (RL)	B-II through C-III
Community Airport (CA)	B-I through B-II
Rural Airport (RA)	A-I through B-I
Basic Airport (BA)	A-I

It should be noted that an aircraft in a lower ARC can be accommodated at an airport with a higher ARC (i.e., A-I aircraft can be accommodated at a B-I or C-III airport).

In order to appropriately assign an ARC to each airport, a determination was made on the types of aircraft that the airport would safely accommodate, taking into consideration existing and potential physical characteristics of the airport, forecast aviation demand and other pertinent factors.

The location of the recommended Nevada Airport System Plan airports is illustrated on Figure 5-1. Table 5-1 lists the airports in the Nevada Airport System Plan with the critical design aircraft, current airport category and the corresponding ARC for that airport. Airport categories and planning guidelines have been established by the Nevada Department of Transportation, Office of Aviation Planning, in the Administrative Policies and Procedures for the Nevada Aviation Trust Fund, as noted earlier, and the categories are included in Table 5-1.

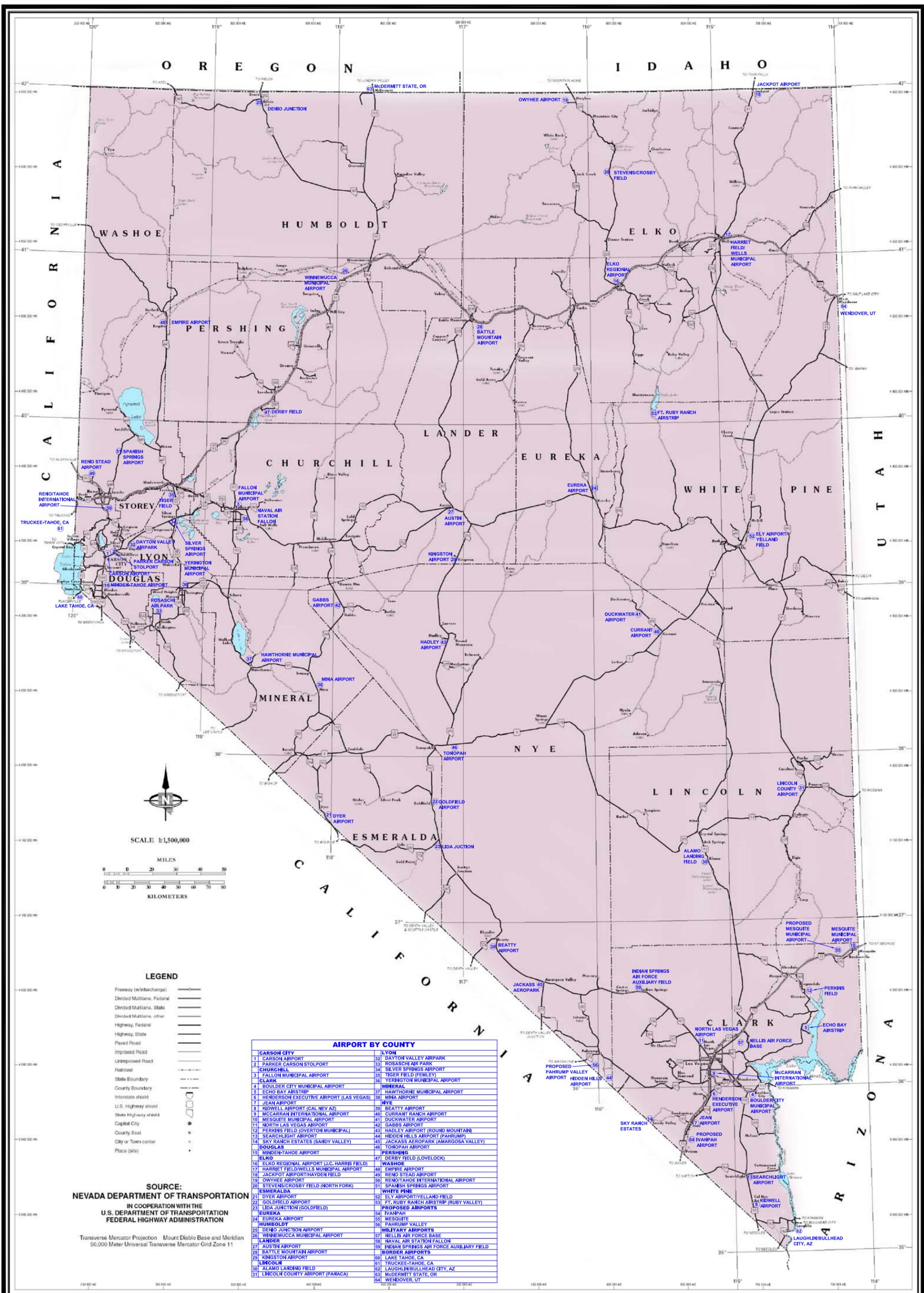
5.3 COMPARING AIRPORT REQUIREMENTS WITH EXISTING FACILITIES

In order to identify the requirements for each system airport, each facility has been assigned one of the categories as described above. These categories were based on runway length, width, surface type, current activity, the critical aircraft assumed to operate out of the airport and the ability to meet FAA airport design standards. For each of the categories, minimum requirements for airport facilities were determined. The airport facilities for which individual airport requirements are identified include:

- Land Area
- Runways and Taxiways
- Navigational Aids
- Terminal Buildings
- Aircraft Parking Apron Areas
- Aircraft Storage Hangar Areas
- Vehicular Parking
- Fuel Storage
- Fencing

Airport facility requirements were then compared to the existing facilities information, obtained through the analysis of the existing system, to determine the physical deficiencies and, therefore, the facility needs for each airport. Minimum airport facility development standards used in this study for each airport category are presented in Table 5-2.

The minimum development standards presented in Table 5-2 attempt to combine the old FAA and NDOT airport classifications and development standards used in the 1995 report with the new FAA and NDOT airport classifications and development standards. The new FAA classifications and development standards are documented in FAA AC



NEVADA AIRPORT SYSTEM PLAN



Nevada Department of Transportation

**FIGURE 5-1
RECOMMENDED SYSTEM AIRPORTS**

VARIES CONSULTANTS LTD.
NAME: NDOT-II-13-LOC NO: 4200-05
DATE: 09-03-2004 | PLOT SCALE: 1" = 200'

Table 5-1

AIRPORT REFERENCE CODE DESIGNATIONS
Nevada Airport System Plan

Airport Name	Critical Aircraft	Airport Category	Airport Reference Code (ARC)
Alamo Landing Field	Cessna 172	BA	A-I
Austin Airport	Beech Baron	RA	B-I
Battle Mountain Airport	Cessna Citation III	CA	B-II
Beatty Airport	Beech King Air	RA	B-II
Boulder City Municipal Airport	Cessna Citation II	CA	B-II
Carson Airport (Carson City)	Beech King Air	RL	B-II
Currant Ranch Airport	Cessna 172	BA	A-I
Dayton Valley Airpark	Beech King Air	CA	B-II
Denio Junction Airport	Cessna 172	BA	A-I
Derby Field (Lovelock)	Beech King Air	CA	B-II
Duckwater Airport	Cessna 172	BA	A-I
Dyer Airport	Cessna 172	BA	A-I
Echo Bay Airstrip	Beech Baron	RA	B-I
Elko Regional Airport/J.C. Harris Field	Boeing 737	CM-PR	C-III
Ely Airport/Yelland Field	Fairchild Metro	CA	B-II
Empire Airport	Cessna 172	BA	A-I
Eureka Airport	Beech Baron	RA	B-I
Fallon Municipal Airport	Beech King Air	CA	B-II
Ft. Ruby Ranch Airstrip (Ruby Valley)	Cessna 172	BA	A-I
Gabbs Airport	Beech Baron	BA	B-I
Goldfield Airport	Cessna 172	BA	A-I
Hadley Airport (Round Mountain)	Beech King Air	RA	B-II
Harriet Field (Wells Municipal Airport)	Cessna Citation II	CA	B-II
Hawthorne Municipal Airport	Beech Baron	CA	B-I
Henderson Executive Airport (Las Vegas)	Cessna Citation III	CM	B-II
Hidden Hills Airport (Pahrump)	Beech Baron	BA	B-I
Jackass Aeropark (Amargosa Valley)	Beech Baron	BA	B-I
Jackpot Airport/Hayden Field	Cessna Citation II	RA	B-II
Jean Airport	Beech Baron	CA	B-I
Kidwell Airport (Cal Nev Ari)	Beech Baron	BA	B-I
Kingston Airport	Cessna 172	BA	A-I
Lida Junction Airport (Goldfield)	Cessna 172	BA	A-I
Lincoln County Airport (Panaca)	Beech Baron	RA	B-I
McCarran International Airport	Boeing 747	CM-PR	D-V
Mesquite Municipal Airport	Cessna Citation III	CA	B-II
Mina Airport	Cessna 172	BA	A-I
Minden-Tahoe Airport	Cessna Citation III	CA	B-II

AIRPORT REFERENCE CODE DESIGNATIONS
Nevada Airport System Plan

Airport Name	Critical Aircraft	Airport Category	Airport Reference Code (ARC)
North Las Vegas Airport	Cessna Citation II	CM	B-II
Owyhee Airport	Beech King Air	RA	B-II
Parker Carson Stolport (Carson City)	Cessna 150	BA	A-I
Perkins Field (Overton)	Cessna Citation II	CA	B-II
Reno Stead Airport	Boeing 727	RL	C-III
Reno/Tahoe International Airport	Boeing 777	CM-PR	D-V
Rosaschi Air Park	Beech King Air	RA	B-II
Searchlight Airport	Beech King Air	RA	B-II
Silver Springs Airport	Beech King Air	RA	B-II
Sky Ranch Estates Airport (Sandy Valley)	Beech Baron	RA	B-I
Spanish Springs Airport (Reno)	Beech Baron	BA	B-I
Stevens/Crosby Field (North Fork)	Cessna 172	BA	A-I
Tiger Field (Fernley)	Beech Baron	CA	B-I
Tonopah Airport	Cessna Citation III	CA	B-II
Winnemucca Municipal Airport	Cessna Citation III	CA	B-II
Yerington Municipal Airport	Cessna Citation II	CA	B-II

CM-PR = Commercial Service Airport-Primary (over 10,000 annual enplaned passengers)

CM = Commercial Service Airport (over 2,500 enplaned passengers)

RL = Reliever Airport

CA = Community Airport

BA = Basic Airport

RA = Rural Airport

SOURCE: Nevada Department of Transportation and Aries Consultants Ltd.

Table 5-2

AIRPORT CLASSIFICATION MINIMUM DEVELOPMENT STANDARDS
Nevada Airport System Plan

Factor	Measure	AIRPORT CATEGORY				
		Commercial Service Airport C-II to D-V	Reliever Airport B-II to C-III	Community Airport B-I to B-II	Rural Airport A-I to B-I	Basic Airport A-I
Land Area	Acres	500 & over	200-499	150-199	100-149	Less than 100
Primary Runway Length	Feet	75% of aircraft over 12,500 lbs. @ 90% load	75% of aircraft over 12,500 lbs. @ 60% load	100% of aircraft under 12,500 lbs.	75% of aircraft under 12,500 lbs.	1,800 ft. base plus 20% for ea. 1,000 ft. elevation
Primary Runway Width	Feet	100 to 200	75 to 100	60 to 75	60	50 to 100
Primary Runway Strength	Pounds	over 90,000	Less than 90,000	Less than 25,000	Less than 12,500	Less than 12,500
Runway Safety Area						
-- Beyond Runway End	Feet	1,000	600 to 1,000	240 to 600	240	240
-- Width	Feet	500	300 to 500	120 to 300	120	120
Runway Lighting	Lighting	HIRL	MIRL	MIRL	MIRL	Reflectors
Taxiway System	Type	Parallel and connect taxiways	Parallel and connect taxiways	Parallel/partial and connect taxiways	Partial parallel and turnaround	Turnarounds
Taxiway Width	Feet	35 to 100	35 to 50	25 to 35	25	None
Taxiway Lighting	Lighting	MITL	MITL	MITL	Reflectors	None
Approach/Landing Aids	Type	ILS, VOR/DME/ RNAV (GPS)	VOR, GPS	NDB, GPS	None or GPS	None
Visual Approach Aids	Type	MALS/MALSF/ MALSR/PAPI/VASI/ REIL/Beacon	MALSF/VASI/PAPI/ REIL/Beacon	VASI/PAPI/ REIL/Beacon	REIL/Beacon	None
Weather Data	Type	AWOS/ASOS Segmented Circle/ Wind Indicator	AWOS/ASOS Segmented Circle/ Wind Indicator	AWOS/ASOS Segmented Circle/ Wind Indicator	Segmented Circle/ Wind Indicator	Wind Indicator
Fencing	Type	Security and Perimeter Chain Link	Security and Perimeter Chain Link	Perimeter Chain Link	Perimeter Chain Link	Perimeter Barbed Wire

AIRPORT CLASSIFICATION MINIMUM DEVELOPMENT STANDARDS
Nevada Airport System Plan

Factor	Measure	AIRPORT CATEGORY				
		Commercial Service Airport	Reliever Airport	Community Airport	Rural Airport	Basic Airport
		C-II to D-V	B-II to C-III	B-I to B-II	A-I to B-I	A-I
Aircraft Parking Apron Area --Air Carrier	Sq. Feet	30,000 to 60,000 x 0.5 peak hour operations	None	None	None	None
--General Aviation	Sq. Feet	0 to 0.25 x based A/C & itinerant operations x 5,000 to 10,000 sq. ft.	0 to 0.25 x based A/C & itinerant operations x 4,000 to 8,000 sq. ft.	0 to 0.50 x based A/C & 6 itinerant operations x 3,000 to 5,000 sq. ft.	0 to 0.75 x based A/C & 2 itinerant operations x 2,700 to 3,300 sq. ft.	0 to 1.00 x based A/C & 2 itinerant operations x 2,700 to 3,300 sq. ft.
Aircraft Storage Hangar Area	Sq. Feet	75 to 100% based aircraft	75 to 100% based aircraft	50 to 100% based aircraft	25 to 100% based aircraft	0 to 100% based aircraft
Fuel Availability	Type	Jet A and 100LL	Jet A and 100LL	100LL	No fuel	No fuel
Terminal Building --Air Carrier	Sq. Feet	Varying enplanements per sq. foot	None	None	None	None
--General Aviation*		4,000	2,000	1,000	0 to 500	None
Vehicular Parking	Spaces	Design day itinerant ops x 2.8 (pilot/ passenger level)/1.5 passengers per vehicle + space per 2 based aircraft	Design day itinerant ops x 2.8 (pilot/ passenger level)/1.5 passengers per vehicle + space per 2 based aircraft	Design day itinerant ops x 2.8 (pilot/ passenger level)/1.5 passengers per vehicle + space per 2 based aircraft	Design day itinerant ops x 2.8 (pilot/ passenger level)/1.5 passengers per vehicle + space per 2 based aircraft	Less than 10

*General Aviation Terminal/Pilots Lounge (to include access to weather data and FAA FSS, waiting area, telephone, restroom, vending machines, fire extinguishers, posted local procedures) recommended if operations exceed 5,000 annually. Square footages shown are recommended minimums.

SOURCE: Nevada Department of Transportation and Aries Consultants Ltd.

150/5300-13, *Airport Design*, and other FAA Advisory Circulars and documents. The new NDOT classifications and development standards are included in the Administrative Policies and Procedures for the Nevada Aviation Trust Fund.

In order to recommend the maintenance and rehabilitation needs of runway, taxiway and aircraft parking apron pavements, Pavement Evaluation Reports are used. Updated individual Pavement Evaluation Reports for the 32 airports located in the state and included in the NPIAS were prepared for the Nevada Department of Transportation in 2000. Contained in each of these reports are capital improvement alternatives which list optional actions for the maintenance and rehabilitation of runway, taxiway and aircraft parking apron pavements at the respective airport based on pavement evaluations and a Pavement Condition Index (PCI).

5.4 AIRSPACE AND AIR TRAFFIC CONTROL

This section discusses airspace, air traffic control (ATC) facilities and operations in the State of Nevada. Navigational aids, landing aids and visual aids are also considered.

5.4.1 Airspace and Air Traffic Control

In general, existing airspace procedures and ATC facilities provide safe, orderly and expeditious flow of air traffic and do not limit the capacity of aviation activity in the State. The aviation demand forecasts indicate that activity levels will remain below airfield capacity levels for essentially all of the Nevada Airport System Plan airports.

Approximately 40 percent of the airspace within the State is military special use airspace (SUA), as discussed in Chapter 2. The restrictions imposed by Restricted Areas, Alert Areas and Military Training Routes (MTRs) do not pose a great inconvenience to the air carrier airlines. However, in some cases, SUA does limit the efficiency of general aviation flying. SUA is a joint effort by the FAA and the Department of Defense (DOD), and there is a continuing effort by these two groups to increase the level of safety and convenience for both civil and military users of the airspace over the State.

5.4.2 Navigational Aids

The existing en route navigational aids are basically adequate for existing aviation activity. The airway system based on Very High Frequency Omnidirectional Range (VORs) and Tactical Air Navigation Facility (TACANs) is in the process of being replaced by a global positioning system (GPS). It had been expected that removal of part of the VOR/TACAN system would have started by now. However, it is expected that the transition will take longer than previously planned.

Those airports with published IFR approach procedures are listed in Table 2-6. Most of the airports in the Nevada Airport System Plan do not have published IFR approach procedures. As time and money permits, the FAA is developing GPS procedures for additional airports throughout the State and the country. Many of the general aviation airports are in need of other landing and visual navigational aids. Table 5-2 lists approach/landing aids and visual approach aids by airport category, among other development standards.

Navigational aids are generally classified by two functional types:

- En route navigational aids, which primarily assist en route navigation, and
- Terminal navigational aids, which assist operations (landings and departures) in and around airports.

Navigational aids included in the minimum terminal standards consist of the following:

- **Runway end identifier lights (REIL):** Consists of a pair of synchronized flashing lights located laterally on each side of the runway threshold. REILs are installed at many airfields to provide rapid and positive identification of the approach end of a particular runway.
- **Precision approach path indicator (PAPI):** A system of lights that indicate the proper approach slope to a runway.
- **Non-directional beacon (NDB):** A radio beacon transmitting a signal that is used by pilots to provide guidance to or from the transmitting antenna. NDBs can be used as a component of, or the main basis for, IFR approach procedures.
- **Instrument landing system (ILS):** A precision instrument approach system consisting of a localizer, glide slope, outer marker, inner marker and approach lights. Distance Measuring Equipment (DME) may be substituted for the old standard low frequency outer and inner markers.
- **Localizer (LOC):** A component of an ILS which provides, by means of radio signals from a transmitter located within the physical boundaries of an airport and a specialized airborne receiver, lateral course guidance to the runway and can be used without the other components to provide a nonprecision instrument approach aligned within 3 degrees of the runway alignment.

- **Localizer-type directional array (LDA):** Similar to LOC above, this aid provides, by means of radio signals from a transmitter located within the physical boundaries of an airport and a specialized airborne receiver, lateral course guidance for aircraft descending to land. The primary distinction between an LOC and an LDA is that the final approach course provided by the LDA is not aligned within 3 degrees of the runway centerline. Glide slope information is never provided in conjunction with an LDA.
- **Global positioning system (GPS):** A series of standardized, predetermined, and published aerial maneuvers which are based on navigational data received from earth-orbiting satellites and which enable aircraft to descend toward an airport with the intention of landing when meteorological conditions are such that a safe approach cannot be made solely through the use of visual information. A typical nonprecision GPS approach permits aircraft to descend to within 400 to 500 feet of the surface solely on the basis of satellite navigation aids.
- **VHF Omnidirectional range (VOR):** A ground-based electronic navigation aid that transmits very high frequency navigation signals and provides azimuth guidance to or from the station. Used as the basis for navigation in the National Airspace System. Although the VOR is a standard for en route navigation, they are sometimes used as the basis of IFR approach procedures.
- **VOR/DME:** A ground station that provides both azimuth and slant distance information to the station with an approach procedure from the station to the airport.
- **Distance measuring equipment (DME):** Used to measure the slant range nautical mile distance of an aircraft from the DME navigational aid. The ground-based DME equipment is co-located with other ground-based equipment such as VOR, LOC, etc. When DME is required for an IFR procedure, it appears in the identification (i.e., VOR/DME or LOC/DME). When it is required for an ILS, it is stated in text on the face of the procedure. DME ground stations are not usually used with GPS procedure because of its inherent distance information. GPS distance information can be substituted for required DME identified positions or fixes.

When installing a precision ILS, it is desirable to install an approach lighting system along with high intensity runway lights (HIRL) to enhance the approach, particularly during night or reduced visibility operations. However, for the purposes of this report, it is recommended that a medium intensity approach lighting system with runway alignment indicator lights (MALSR) be installed in conjunction with an ILS.

Minimum airfield lighting and terminal navigational aids for the Nevada Airport System Plan were determined for each airport based on the standards identified in Table 5-2.

5.5 DESCRIPTION OF RECOMMENDED AIRPORT SYSTEM

The location of all recommended Nevada Airport System Plan airports is illustrated on Figure 5-1. Airport development figures and tables following this discussion provide a detailed description of the recommended airport system. Each figure presents an airport within the system, along with information describing its current conditions and facilities. New facility improvements contained in the recommended system for each airport are then presented by phase in order to meet the established minimum standards, or those improvements contained in the most current individual airport master plan, where available, are utilized. The following phases have been established for this study:

- Phase I - 2002-2005
- Phase II - 2006-2010
- Phase III - 2011-2020

In addition, the costs for developing the recommended system, estimated in 2002 dollars, are presented by improvement and by phase for each airport.

5.5.1 New Airports

In addition to improvements at the existing publicly-owned and privately-owned public-use airports, the recommended system plan includes at least three new airports and one heliport planned for development during the 2020 planning period. Additional information on planned improvements and the costs of these new airports will be added to this report as it becomes available. These new airports are as follows:

Ivanpah Valley Airport – A commercial service airport to accommodate some of the air carrier passenger and cargo activity in the Las Vegas area.

Mesquite Airport – A new commercial service airport to serve both air carrier and general aviation activity in the Mesquite area. This airport would replace the existing Mesquite Municipal Airport.

Pahrump Valley Airport – A new general aviation airport to serve the business, personal and recreational aviation needs of Southern Nye County.

Southern Nevada Regional Heliport – A new heliport to serve sightseeing helicopter air taxi activity in Clark County.

5.5.2 Privately-Owned, Public-Use Airports

The recommended airport system identifies eight privately-owned, public-use airports to be included as part of the Nevada Airport System Plan. Since privately-owned airports are currently ineligible for federal funding, recommended improvements and their associated costs will likely be impossible to promote or fund at the local level. Even though a relatively small number of privately-owned airports are included, the significance of these facilities may make it desirable to adopt legislation enabling these facilities to become eligible for funding provided that an operating agreement between the airport and the local governing body be reached to insure that the airport will remain open for public use. This agreement should be established for a minimum specified time, such as 20 years, in order to provide a reasonable return on public investment. Otherwise, privately-owned airports have historically tended to periodically enter and/or leave the airport system because of various reasons; e.g., use of land for other development, encroachment, financial considerations, and interest or lack of interest on the part of the airport owner.

5.5.3 Military Airports

The military, and military airports play a significant role in aviation in Nevada. This includes military aviation activity and airspace and air traffic control considerations. The major military airports are identified on Figure 5-1. There are also other military and government airports in Nevada that are not identified on Figure 5-1 but are shown earlier on Figure 2-3. It is assumed that any needed improvements at these airports will be funded by the Department of Defense or other appropriate government agency.

5.5.4 Recommended Facility Improvements

Facility improvements are based on the minimum development standards outlined in Table 5-2. FAA and other planning standards and development assumptions impacted some of these standards and are briefly discussed below.

- **Existing Facilities and Activity Data** – These data are compiled primarily from individual airport sponsors, the Nevada Department of Transportation, Office of Aviation Planning, and FAA. They were then reviewed with the individual airport sponsors.
- **Primary Runway Length** – The recommended runway length is based on the computer model contained in FAA AC 150/5300-13, *Airport Design*. The computed runway lengths are rounded to the nearest 100 feet.

- **Secondary or Crosswind Runway Length** – This runway length is computed as 80 percent of the primary runway length. The computed length is rounded to the nearest 100 feet.
- **Taxiway System** – The total area of required taxiways is computed from the requirements contained in FAA AC 150/5300-13, *Airport Design*, for appropriate separation and width standards. These standards are based on assumed ARC designations and the critical aircraft.
- **Visual Approach Aids** – For the Commercial Service airports, a MALSR is used as the requirement if no other approach lighting system is present, along with a VASI or PAPI. For the Reliever and Community airports, a VASI or PAPI on both of the primary runway ends is the requirement if no other system is present. For Rural airports, REILs are the requirement.
- **Aircraft Storage Hangars** – It is suggested that due to the weather in Nevada, the minimum standards should ideally provide for hangar storage of all based aircraft. However, because of economic considerations and depending upon individual airport needs, some space for based and itinerant aircraft tiedowns is also provided. It is assumed that a higher percentage of based aircraft would be in hangars at the Commercial Service and Reliever airports than at the General Aviation airports.
- **Fuel Systems** – If new fuel systems are deemed necessary, either as replacements or initial installations, it is recommended that Community airports provide one 10,000-gallon tank for 100 low lead (LL) and Reliever or Commercial Service airports provide a minimum of two 10,000-gallon tanks, one for 100LL and the other for Jet A fuel. The recommendations regarding fuel systems are for installation only and do not address the need or costs associated with removing any existing tanks. In addition, it is recommended that future fuel systems be installed above ground in order to be more cost efficient with respect to environmental regulations regarding fuel tanks. They should also be installed with 24-hour automated credit card systems.
- **Weather Data** – An Automated Weather Observing System (AWOS) or Automated Surface Observing System (ASOS) should be installed at each Commercial Service, Reliever and Community airport. Segmented circles and lighted wind indicators should be installed at these and Rural airports and wind indicators at Basic airports.
- **Fencing** – Security and perimeter fencing and access controls should be installed to meet FAA and Transportation Security Administration (TSA) requirements.

- **General Aviation Terminal Buildings** – The minimum standards for these buildings vary from 4,000 square feet for Commercial Service airports to a minimum of 1,000 square feet for Community airports. General aviation terminal buildings are only recommended if aircraft operations exceed 5,000 annually; otherwise, smaller pilot lounges should be provided.
- **Vehicular Parking** – For all airport categories, a minimum number of vehicular parking spaces is identified for general aviation users based on the number of itinerant aircraft operations and based aircraft.

Figures 5-2 through 5-54, presented in the following pages, illustrate the existing airport information and the recommended 20-year capital improvement program for each of the system airports. The recommended capital improvement programs for the airports are based on available airport master plans and the most recent airport capital improvement plans submitted to the FAA. The NDOT Office of Aviation Planning provided the most recent capital development projects for several airports. Representatives of the privately-owned, public use-airports were contacted for input to the capital improvement projects for those airports.

Table 5-3 presents a description of the unit costs used for each type of improvement in determining the recommended development costs. A summary of the airport capital improvement program costs for each airport is presented in Table 5-4.

In addition to the individual airport capital improvement programs, there are three new airports being planned in the State including Ivanpah (Las Vegas), Mesquite and the Pahrump Valley Airports and a new Southern Nevada Regional Heliport.

Figure 5-2 Airport Information and Capital Improvement Program

Airport: Alamo Landing Field
Associated City: Alamo
County: Lincoln, NV
Ownership: Public
Airport-ID: L92

NPIAS No.:
Site Number: 13021.A
Service Level: GA
Airport Category: BA
Airport Reference Code: A-I

<u>Annual Activity</u>	<u>Current (Year)</u>		<u>Forecast (Year)</u>		<u>Based Aircraft Fleet Mix</u>	
Passenger Enplanements:					Single Engine: 0	Helicopter: 0
Aircraft Operations:	100	2000	4,300	2020	Multi -Engine: 0	Military: 0
Based Aircraft:	0	2000	7	2020	Jet: 0	Glanders: 0
Critical Aircraft: Cessna 172						Ultra-Lights: 0

Existing Facilities

Land Area: 640 Acres

Elevation: 3,719 MSL

Primary Runway 14-32

Surface Type: Dirt
 Condition: Poor
 Length: 5,000'
 Width: 120'
 Lighting: None

Secondary Runway 15-33

Surface Type: Dirt
 Condition: Poor
 Length: 2,500'
 Width: 70'
 Lighting: None

Taxiway

Surface Type:
 Condition:
 Area:
 Lighting:

Apron Areas

Commercial Service:
 Condition:
 General Aviation:
 Condition:

Vehicular Parking

Commercial Service:
 General Service:

Approach/Landing Aids

None

Visual Approach Aids

None

Weather Reporting

None

Terminal Building Area

Commercial Service:
 General Aviation:

Aircraft Storage

Conventional:
 T-hangar:
 Plane Port:

Fuel Available

None

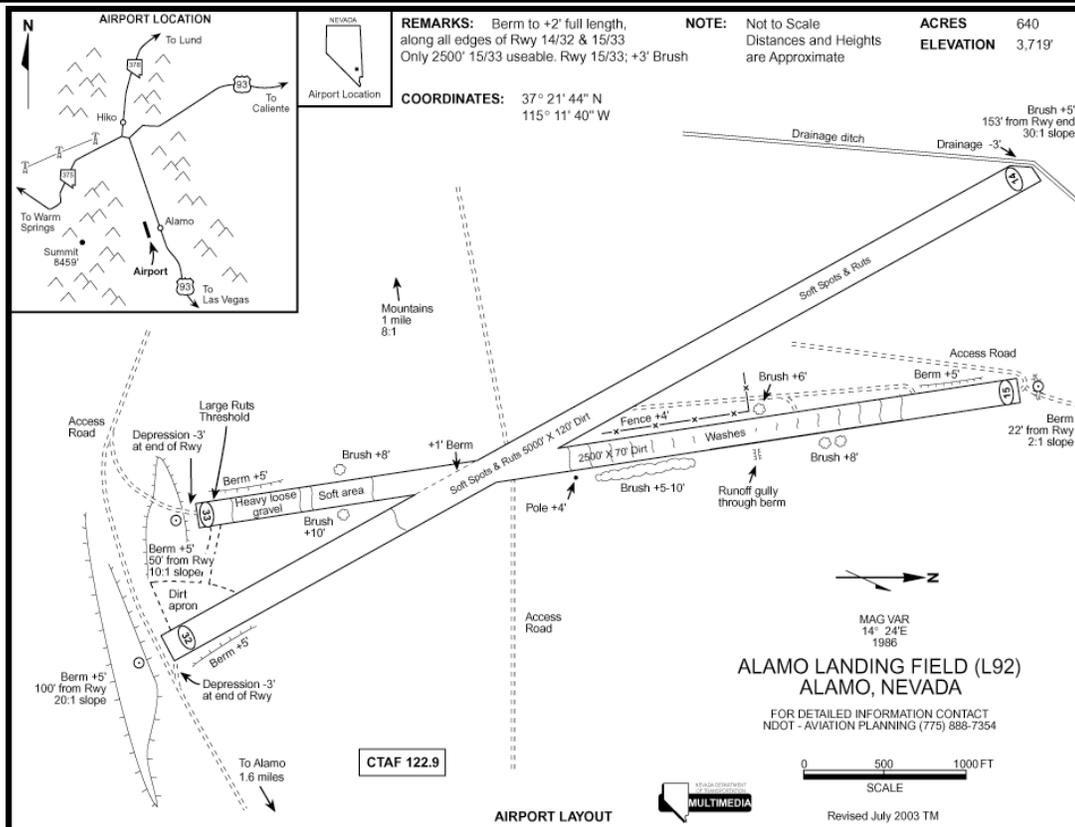


Figure 5-2 -- continued

CAPITAL IMPROVEMENT PROGRAM				
Airport Name: Alamo Landing Field		Associated City: Alamo		
Project Description	Phase I			
	Total Costs	Federal	Local	Private
Construct Access Road	500,000	468,750	31,250	0
Rehabilitate Runway 14-32	1,012,000	948,750	63,250	0
Extend Runway 14-32 (Site Preparation Fencing)	600,000	562,500	37,500	0
Extend Runway 14-32, Phase 2	500,000	468,750	31,250	0
Install Runway 14-32 PAPI	80,000	75,000	5,000	0
Expand Apron	350,000	328,125	21,875	0
Install Weather Reporting Equipment (ASOS)	80,000	75,000	5,000	0
Total Phase I 2002-2005	3,122,000	2,926,875	195,125	0

Figure 5-3 Airport Information and Capital Improvement Program

Airport: Austin
Associated City: Austin
County: Lander, NV
Ownership: Public
Airport-ID: 9U3

NPIAS No.: 32-0026
Site Number: 13012.A
Service Level: GA
Airport Category: RA
Airport Reference Code: B-1

<u>Annual Activity</u>	<u>Current (Year)</u>		<u>Forecast (Year)</u>		<u>Based Aircraft Fleet Mix</u>	
Passenger Enplanements:					Single Engine: 2	Helicopter: 0
Aircraft Operations:	1,400	2000	2030	2020	Multi -Engine: 1	Military: 0
Based Aircraft:	3	2000	4	2020	Jet: 0	Gliders: 0
Critical Aircraft: Beech Baron						Ultra-Lights: 0

Existing Facilities

Land Area 1,205 Acres

Elevation: 5,730 MSL

Primary Runway 18-36

Surface Type: Asphalt
 Condition: Good
 Length: 6,000'
 Width: 75'
 Lighting: MIRL (NSTD)

Secondary Runway

Surface Type:
 Condition:
 Length:
 Width:
 Lighting:

Taxiway

Surface Type:
 Condition:
 Area:
 Lighting:

Apron Areas

Commercial Service:
 Condition:
 General Aviation:
 Condition:

Vehicular Parking

Commercial Service:
 General Service:

Approach/Landing Aids

None

Visual Approach Aids

REIL, PAPI, Beacon

Weather Reporting

None

Terminal Building Area

Commercial Service:
 General Aviation:

Aircraft Storage

Conventional:
 T-hangar:
 Plane Port:

Fuel Available

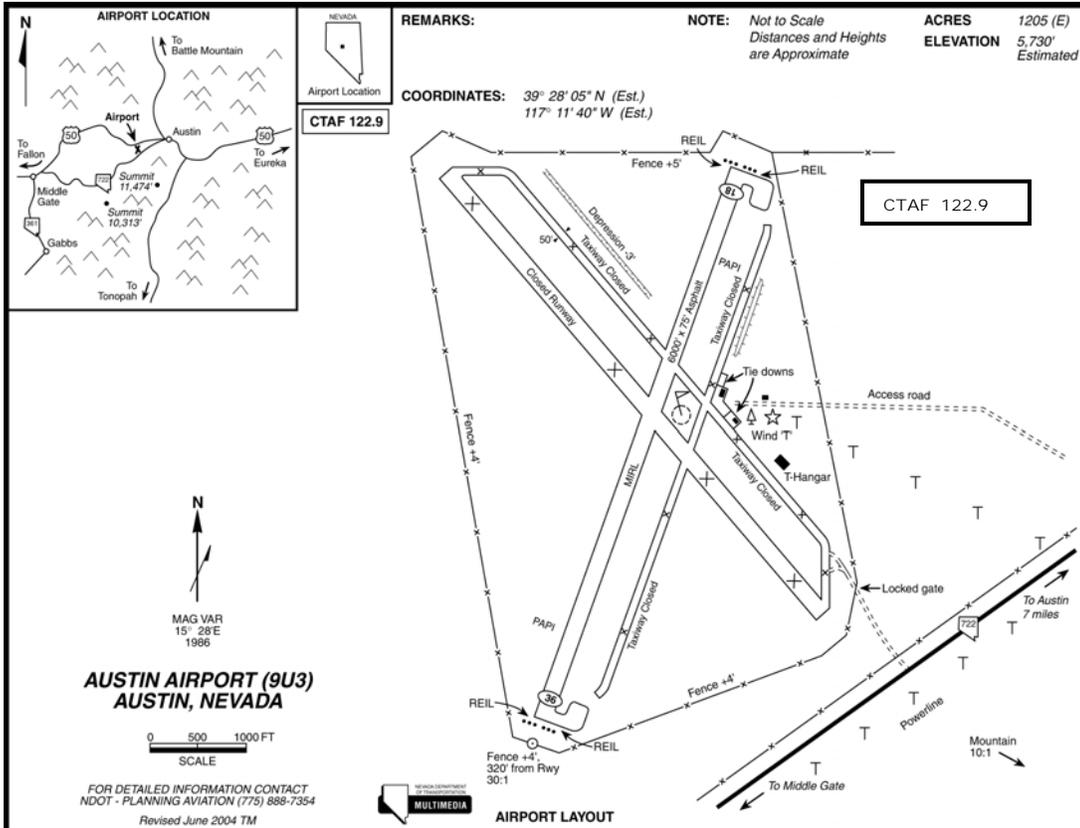


Figure 5-3 -- continued

CAPITAL IMPROVEMENT PROGRAM				
Airport Name: Austin		Associated City: Austin		
Project Description	Phase I			
	Total Costs	Federal	Local	Private
Rehabilitate Taxiway	822,843	771,415	51,428	0
Extend Runway 18-36	636,824	597,022	39,802	0
Pavement Maintenance	1,675,048		1,675,048	0
Total Phase I 2002-2005	2,311,872	597,022	1,714,850	0

Figure 5-4 Airport Information and Capital Improvement Program

Airport: Battle Mountain
Associated City: Battle Mountain
County: Lander, NV
Ownership: Public
Airport-ID: BAM

NPIAS No.: 32-0001
Site Number: 13016.A
Service Level: GA
Airport Category: CA
Airport Reference Code: B-II

<u>Annual Activity</u>	<u>Current (Year)</u>		<u>Forecast (Year)</u>		<u>Based Aircraft Fleet Mix</u>	
Passenger Enplanements:					Single Engine: 16	Helicopter: 0
Aircraft Operations:	11,940	2000	17,680	2020	Multi -Engine: 0	Military: 0
Based Aircraft:	16	2000	21	2020	Jet: 0	Gliders: 0
Critical Aircraft: Cessna Citation III						Ultra-Lights: 0

Existing Facilities

Land Area 1,066 Acres

Elevation: 4,532 MSL

Primary Runway 03-21

Surface Type: Asphalt
 Condition: Fair
 Length: 7,299'
 Width: 150'
 Lighting: MIRL (NSTD)

Secondary Runway 12-30

Surface Type: Asphalt
 Condition: Good
 Length: 7,300'
 Width: 100'
 Lighting: MIRL

Taxiway

Surface Type:
 Condition:
 Area:
 Lighting:

Apron Areas

Commercial Service:
 Condition:
 General Aviation:
 Condition:

Vehicular Parking

Commercial Service:
 General Service:

Approach/Landing Aids

VOR, GPS

Visual Approach Aids

VASI-4, Beacon

Weather Reporting

AWOS

Terminal Building Area

Commercial Service:
 General Aviation:

Aircraft Storage

Conventional:
 T-hangar:
 Plane Port:

Fuel Available

Jet A, 100LL

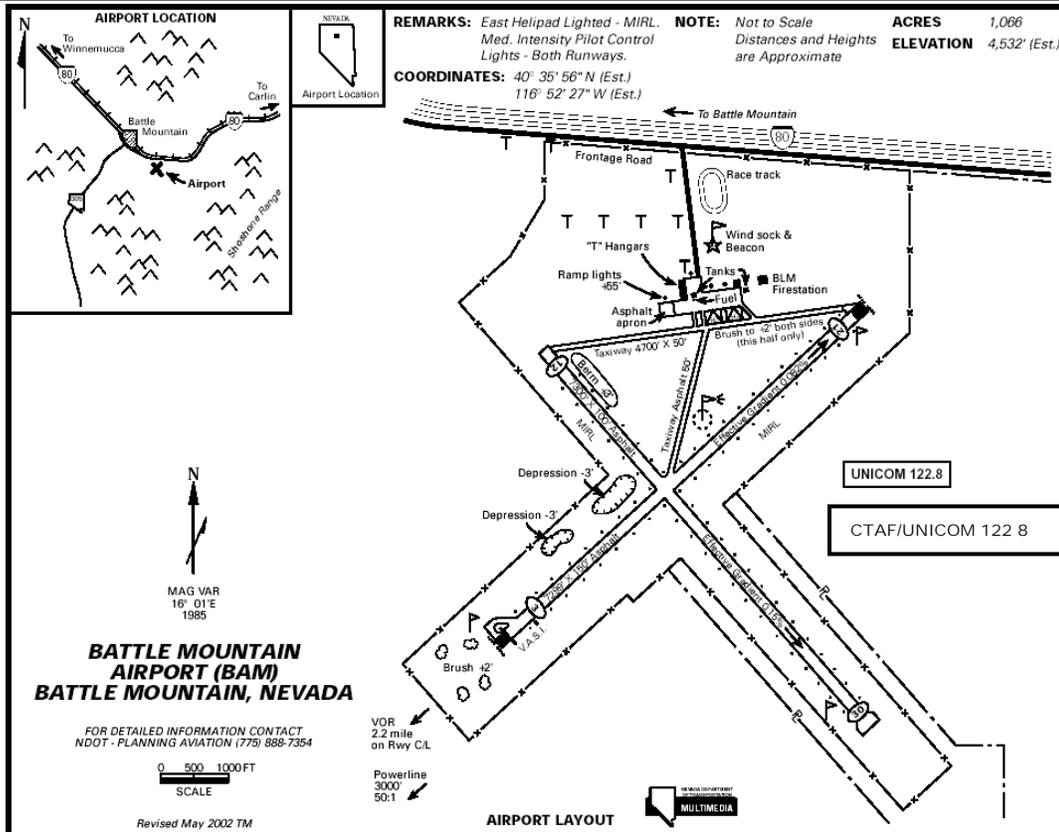


Figure 5-4 -- continued

CAPITAL IMPROVEMENT PROGRAM				
Airport Name: Battle Mountain		Associated City: Battle Mountain		
Project Description	Phase I			
	Total Costs	Federal	Local	Private
Install Security Fencing, Relocate Fence from RSA	55,200	51,750	3,450	0
Construct Parallel Taxiway (Runway 3-21)	1,987,200	1,863,000	124,200	0
Rehabilitate Taxiway Lighting	220,752	206,955	13,797	0
Install Runway Lighting for Runway 3-21	554,400	519,750	34,650	0
Acquire Land/Easement for Approaches (List Parcels)	9,900	9,281	619	0
Expand Apron	803,880	753,638	50,242	0
Construct Rehabilitate Parking Lot (Non Revenue Producing-Non Hub/Map)	43,470	40,753	2,717	0
Construct Parallel Taxiway (Runway 12-30)	3,406,250	3,193,359	212,891	0
Pavement Maintenance	21,441		21,441	0
Total Phase I 2002-2005	7,102,493	6,638,486	464,007	0
Project Description	Phase II			
	Total Costs	Federal	Local	Private
Construct Taxiway for Hangar Area	430,920	403,988	26,932	0
Pavement Maintenance	84,474		84,474	0
Total Phase II 2006-2010	515,394	403,988	111,406	0
Project Description	Phase III			
	Total Costs	Federal	Local	Private
Pavement Maintenance	27,590		27,590	0
Total Phase III 2011-2020	27,590		27,590	0
Grand Total	7,645,477	7,042,474	603,003	0

Figure 5-5 Airport Information and Capital Improvement Program

Airport: Beatty
Associated City: Beatty
County: Nye, NV
Ownership: Public
Airport-ID: BTY

NPIAS No.: 32-0002
Site Number: 13020.1A
Service Level: GA
Airport Category: RA
Airport Reference Code: B-II

<u>Annual Activity</u>	<u>Current (Year)</u>		<u>Forecast (Year)</u>		<u>Based Aircraft Fleet Mix</u>	
Passenger Enplanements:					Single Engine: 4	Helicopter: 0
Aircraft Operations:	1,005	2000	1,480	2020	Multi -Engine: 0	Military: 0
Based Aircraft:	4	2000	5	2020	Jet: 0	Glanders: 0
Critical Aircraft: Beech King Air						Ultra-Lights: 0

Existing Facilities

Land Area 440 Acres

Elevation: 3,170 MSL

Primary Runway 16-34

Surface Type: Asphalt
 Condition: Good
 Length: 5,600'
 Width: 60'
 Lighting: MIRL

Secondary Runway

Surface Type:
 Condition:
 Length:
 Width:
 Lighting:

Taxiway

Surface Type:
 Condition:
 Area:
 Lighting:

Apron Areas

Commercial Service:
 Condition:
 General Aviation: 11 spaces
 Condition:

Vehicular Parking

Commercial Service:
 General Service:

Approach/Landing Aids

None

Visual Approach Aids

Beacon

Weather Reporting

HIWAS

Terminal Building Area

Commercial Service:
 General Aviation:

Aircraft Storage

Conventional:
 T-hangar:
 Plane Port:

Fuel Available

None

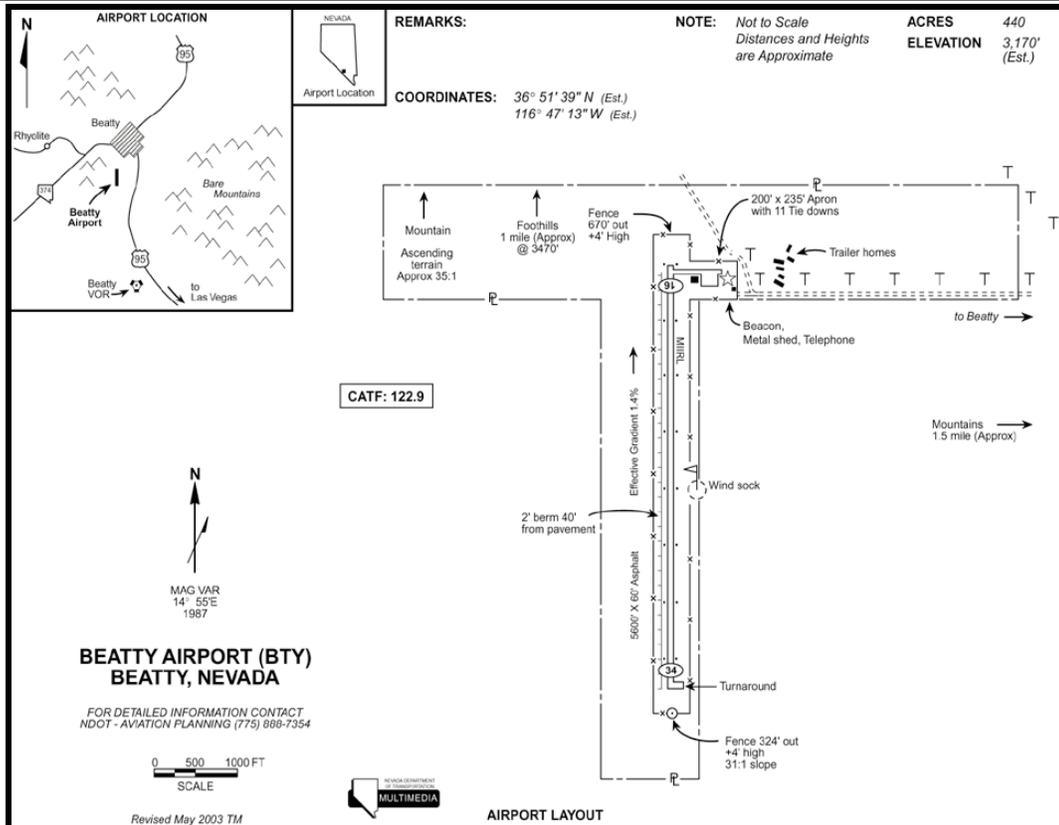


Figure 5-5 -- continued

CAPITAL IMPROVEMENT PROGRAM				
Airport Name: Beatty		Associated City: Beatty		
Project Description	Phase I			
	Total Costs	Federal	Local	Private
Rehabilitate Runway 16-34	269,000	252,188	16,812	0
Install Security Fencing	430,000	408,500	21,500	0
Install Security Lighting	50,000	47,500	2,500	0
Update ALP and Exhibit "A" Property Map	50,000	47,500	2,500	0
Total Phase I 2002-2005	799,000	755,688	43,312	0
Project Description	Phase II			
	Total Costs	Federal	Local	Private
Expand Tiedown Apron (Approx. 200' x 250')	200,000	190,000	10,000	0
Provide Segmented Circle and Windcone AWOS	35,000	33,250	1,750	0
100,000	95,000	5,000	0	
Environmental Assessment to Construct Crosswind Runway 7-25 and Parallel Taxiway to Runway 16-34	120,000	114,000	6,000	0
Construct Parallel Taxiway to Runway 16-34 with MITL	750,000	712,500	37,500	0
Relocate Power Lines Underground	120,000	114,000	6,000	0
Remove Barbed Wire Fence	10,000	9,500	500	0
Road Relocation	60,000	57,000	3,000	0
Construct Crosswind Runway 7-25	1,200,000	1,140,000	60,000	0
Total Phase II 2006-2010	2,595,000	2,465,250	129,750	0
Grand Total	3,394,000	3,220,938	173,062	0

Figure 5-6 Airport Information and Capital Improvement Program

Airport: Boulder City Municipal
Associated City: Boulder City
County: Clark, NV
Ownership: Public
Airport-ID: 61B

NPIAS No.: 32-0003
Site Number: 13027.11A
Service Level: GA
Airport Category: CA
Airport Reference Code: B-II

<u>Annual Activity</u>	<u>Current (Year)</u>		<u>Forecast (Year)</u>		<u>Based Aircraft Fleet Mix</u>	
Passenger Enplanements:					Single Engine: 130	Helicopter: 5
Aircraft Operations:	33,000	2003	49,080	2020	Multi -Engine: 15	Military: 0
Based Aircraft:	156	2003	206	2020	Jet: 1	Gliders: 0
Critical Aircraft: Cessna Citation I						Ultra-Lights: 5

Existing Facilities

Land Area 530 Acres

Elevation: 2,201 MSL

Primary Runway 9R-27L

Surface Type: Asphalt
 Condition: Good
 Length: 4,800'
 Width: 75'
 Lighting: MIRL

Secondary Runway 15-33

Surface Type: Asphalt
 Condition: Good
 Length: 3,850'
 Width: 75'
 Lighting: MIRL

Taxiway

Surface Type:
 Condition:
 Area:
 Lighting:

Apron Areas

Commercial Service:
 Condition:
 General Aviation:
 Condition:

Vehicular Parking

Commercial Service:
 General Service:

Approach/Landing Aids

None

Visual Approach Aids

REIL, PAPI-4, Beacon

Weather Reporting

Super Unicom

Terminal Building Area

Commercial Service:
 General Aviation:

Aircraft Storage

Conventional:
 T-hangar:
 Plane Port:

Fuel Available

Jet A, 100LL

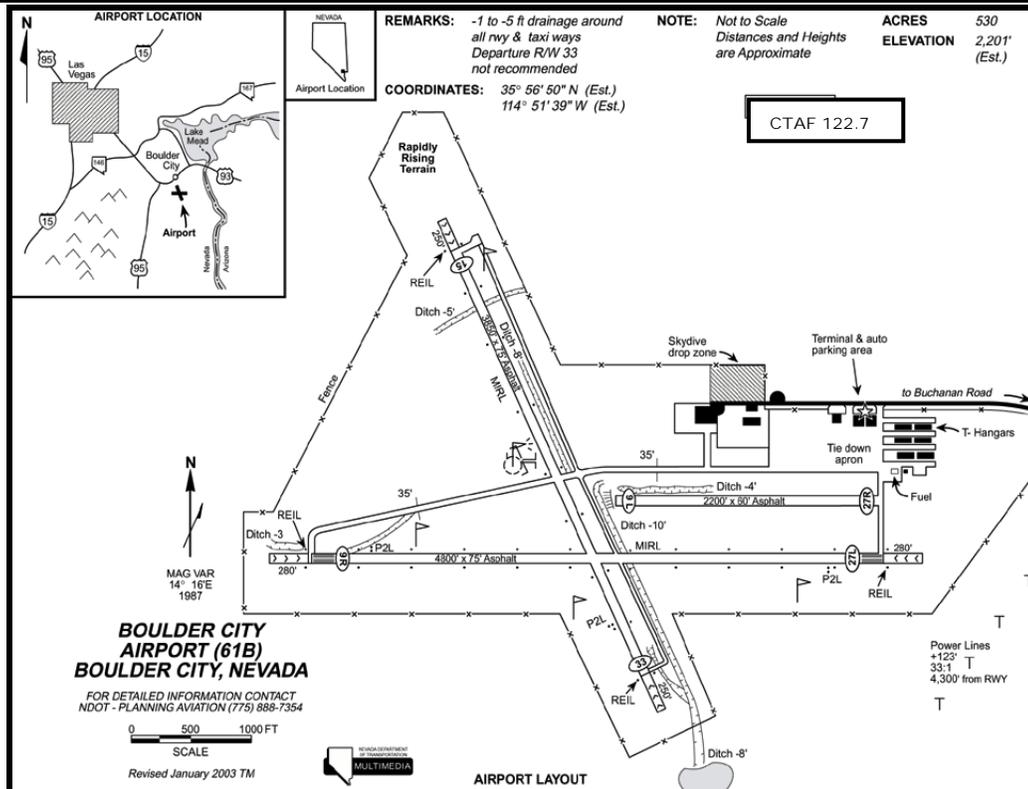


Figure 5-6 -- continued

CAPITAL IMPROVEMENT PROGRAM				
Airport Name: Boulder City Municipal		Associated City: Boulder City		
Project Description	Phase I			
	Total Costs	Federal	Local	Private
Construct Access Road (North). Phase I	408,000	382,500	25,500	0
Expand Access Road	300,000	281,250	18,750	0
Apron Firewater Protection	225,000	210,938	14,062	0
Emergency Generator	150,000	140,625	9,375	0
Improve Airport Drainage/Erosion (Control Miscellaneous Improvements)	150,000	140,625	9,375	0
Total Phase I 2002-2005	1,233,000	1,155,938	77,062	0
Project Description	Phase II			
	Total Costs	Federal	Local	Private
Construct Helipads (5, 1 Lighted)	57,600	54,000	3,600	0
Total Phase II 2006-2010	57,600	54,000	3,600	0
Grand Total	1,290,600	1,209,938	80,662	0

Figure 5-7 Airport Information and Capital Improvement Program

Airport: Carson
Associated City: Carson City
County: Carson City, NV
Ownership: Public
Airport-ID: CXP

NPIAS No.: 32-0004
Site Number: 13042.A
Service Level: RL
Airport Category: RL
Airport Reference Code: B-II

Annual Activity	Current (Year)		Forecast (Year)		Based Aircraft Fleet Mix	
Passenger Enplanements:					Single Engine: 219	Helicopter: 3
Aircraft Operations:	74,190	2000	129,590	2020	Multi -Engine: 19	Military: 0
Based Aircraft:	253	2000	407	2020	Jet: 7	Gliders: 0
Critical Aircraft: Beech King Air						Ultra-Lights: 5

Existing Facilities

Land Area 570 Acres

Elevation: 4,697 MSL

Primary Runway 9-27

Surface Type: Asphalt
 Condition: Poor
 Length: 5,900'
 Width: 75'
 Lighting: MIRL

Secondary Runway

Surface Type:
 Condition:
 Length:
 Width:
 Lighting:

Taxiway

Surface Type: Asphalt-concrete
 Condition: Poor
 Area:
 Lighting:

Apron Areas

Commercial Service:
 Condition:
 General Aviation: 166 spaces
 Condition: Poor

Vehicular Parking

Commercial Service:
 General Service: 120 spaces

Approach/Landing Aids

None

Visual Approach Aids

PLASI, VASI, Beacon

Weather Reporting

AWOS

Terminal Building Area

Commercial Service:
 General Aviation:

Aircraft Storage

Conventional: 100
 T-hangar: 61
 Plane Port: 31

Fuel Available

Jet A, 100, 100LL

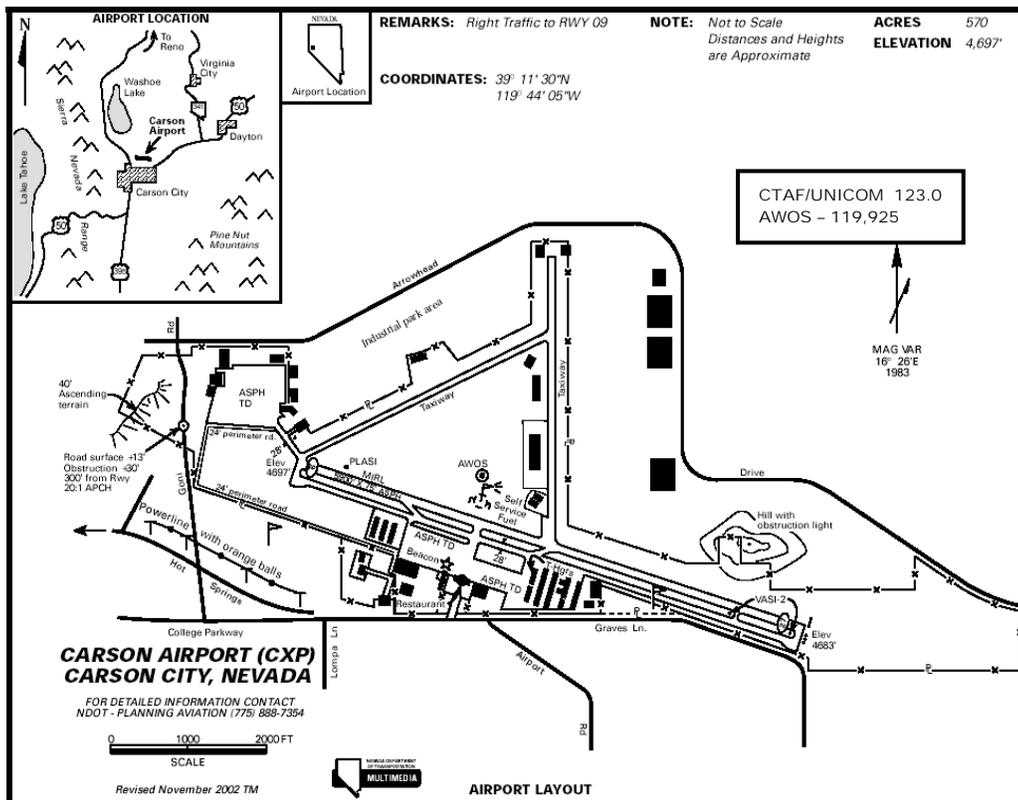


Figure 5-7 -- continued

CAPITAL IMPROVEMENT PROGRAM				
Airport Name: Carson		Associated City: Carson City		
Project Description	Phase I			
	Total Costs	Federal	Local	Private
Environmental Assessment	150,000	140,625	9,375	0
Acquire Property for Runway Reconstruction	3,500,000	3,281,250	218,750	0
Annual Pavement Maintenance	20,000	18,750	1,250	0
Realign Runway 9-27	10,125,000	9,492,000	633,000	0
Construct Partial Parallel Taxiways (North)	1,000,000	937,500	62,500	0
Rehabilitate Main Apron	336,000	315,000	21,000	0
Annual Pavement Maintenance	20,000	18,750	1,250	0
Rehabilitate Taxiway A	180,000	168,750	11,250	0
Rehabilitate Northwest Apron/Drainage Improvements	464,000	435,000	29,000	0
Annual Pavement Maintenance	20,000	18,750	1,250	0
Total Phase I 2002-2005	15,815,000	14,826,375	988,625	0
Project Description	Phase II			
	Total Costs	Federal	Local	Private
Install REILs on Runways 9 and 27	130,000	121,875	8,125	0
Install Helipad Perimeter Lighting	50,000	46,875	3,125	0
Expand Main Apron	145,600	136,500	9,100	0
Construct South Access Road/Extend Utilities	73,500	68,906	4,594	0
North Drainage Improvements (Per Drainage Master Plan)	300,000	281,250	18,750	0
Construct North Entrance Roads/Extend Utilities	440,700	413,156	27,544	0
Reconstruct Taxiway A	2,280,800	2,138,250	142,550	0
Extend North Parallel Taxiway	836,600	784,313	52,287	0
Construct Hangar Access Taxilanes (Phase I)	562,250	527,109	35,141	0
Construct North Apron (Phase I)	1,100,000	1,031,250	68,750	0
Pavement Maintenance	500,000	468,750	31,250	0
Total Phase II 2006-2010	6,419,450	6,018,234	401,216	0

Figure 5-7 -- continued

CAPITAL IMPROVEMENT PROGRAM				
Airport Name: Carson		Associated City: Carson City		
Project Description	Phase III			
	Total Costs	Federal	Local	Private
Construct Hangar Access Taxilane (Phase II)	724,800	679,500	45,300	0
Construct North Apron (Phase II)	773,500	725,156	48,344	0
Construct Hangar Access Taxilanes	143,000	134,062	8,938	0
Obtain RPZ Easements	135,000	126,562	8,438	0
Extend Runway 9-27 600 Feet East	543,400	509,438	33,962	0
Widen Runway 9-27 to 100 Feet	1,215,500	1,139,531	75,969	0
Install PAPI - 4 to Runways 9 and 27	130,000	121,875	8,125	0
Pavement Maintenance	1,000,000	937,500	62,500	0
Total Phase III 2011-2020	4,665,200	4,373,624	291,576	0
Grand Total	26,899,650	25,218,233	1,681,417	0

Figure 5-8 Airport Information and Capital Improvement Program

Airport: Currant Ranch
Associated City: Currant
County: Nye, NV
Ownership: Public
Airport-ID: 9U7

NPIAS No.:
Site Number: 13044.4A
Service Level: GA
Airport Category: BA
Airport Reference Code: A-I

<u>Annual Activity</u>	<u>Current (Year)</u>		<u>Forecast (Year)</u>		<u>Based Aircraft Fleet Mix</u>	
Passenger Enplanements:					Single Engine: 0	Helicopter: 0
Aircraft Operations:	160	2000	230	2020	Multi -Engine: 0	Military: 0
Based Aircraft:	0	2000	0	2020	Jet: 0	Gliders: 0
Critical Aircraft: Cessna 172						Ultra-Lights: 0

Existing Facilities

Land Area 15 Acres

Elevation: 5,181 MSL

Primary Runway 03-21

Surface Type: Turf-Dirt
 Condition: Fair
 Length: 5,100'
 Width: 80'
 Lighting: None

Secondary Runway

Surface Type:
 Condition:
 Length:
 Width:
 Lighting:

Taxiway

Surface Type:
 Condition:
 Area:
 Lighting:

Apron Areas

Commercial Service:
 Condition:
 General Aviation:
 Condition:

Vehicular Parking

Commercial Service:
 General Service:

Approach/Landing Aids

None

Visual Approach Aids

None

Weather Reporting

None

Terminal Building Area

Commercial Service:
 General Aviation:

Aircraft Storage

Conventional:
 T-hangar:
 Plane Port:

Fuel Available

None

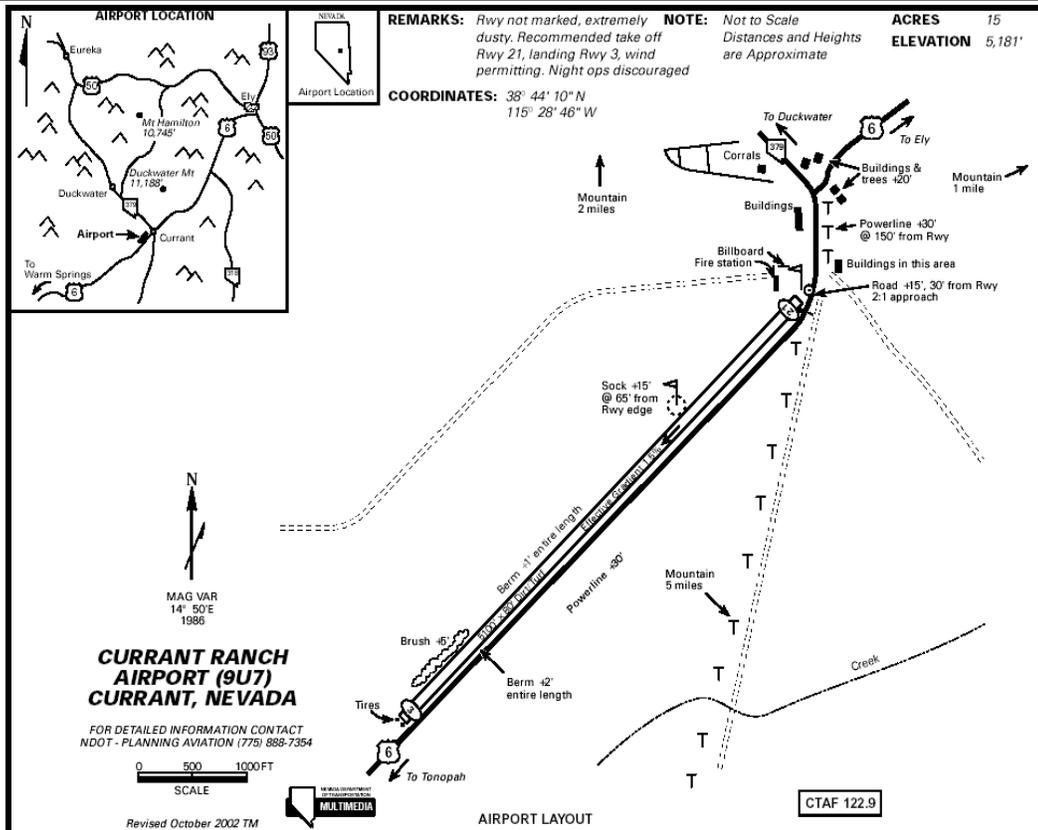


Figure 5-8 -- continued

CAPITAL IMPROVEMENT PROGRAM				
Airport Name: Currant Ranch		Associated City: Currant		
Project Description	Phase I			
	Total Costs	Federal	Local	Private
	0	0	0	0
Total Phase I 2002-2005	0	0	0	0

Figure 5-9 Airport Information and Capital Improvement Program

Airport: Dayton Valley Airpark
Associated City: Dayton/Carson City
County: Lyon, NV
Ownership: Private
Airport-ID: A34

NPIAS No.:
Site Number: 13044.8A
Service Level: GA
Airport Category: CA
Airport Reference Code: B-II

<u>Annual Activity</u>	<u>Current (Year)</u>		<u>Forecast (Year)</u>		<u>Based Aircraft Fleet Mix</u>	
Passenger Enplanements:					Single Engine: 11	Helicopter: 0
Aircraft Operations:	1,220	2000	1,810	2020	Multi -Engine: 3	Military: 0
Based Aircraft:	14	2000	19	2020	Jet: 0	Gliders: 0
Critical Aircraft: Beech King Air						Ultra-Lights: 0

Existing Facilities

Land Area 260 Acres

Elevation: 4,412 MSL

Primary Runway 05-23

Surface Type: Asphalt
 Condition: Poor
 Length: 5,351'
 Width: 75'
 Lighting: None

Secondary Runway

Surface Type:
 Condition:
 Length:
 Width:
 Lighting:

Taxiway

Surface Type:
 Condition:
 Area:
 Lighting:

Apron Areas

Commercial Service:
 Condition:
 General Aviation:
 Condition:

Vehicular Parking

Commercial Service:
 General Service:

Approach/Landing Aids

None

Visual Approach Aids

None

Weather Reporting

Terminal Building Area

Commercial Service:
 General Aviation:

Aircraft Storage

Conventional:
 T-hangar:
 Plane Port:

Fuel Available

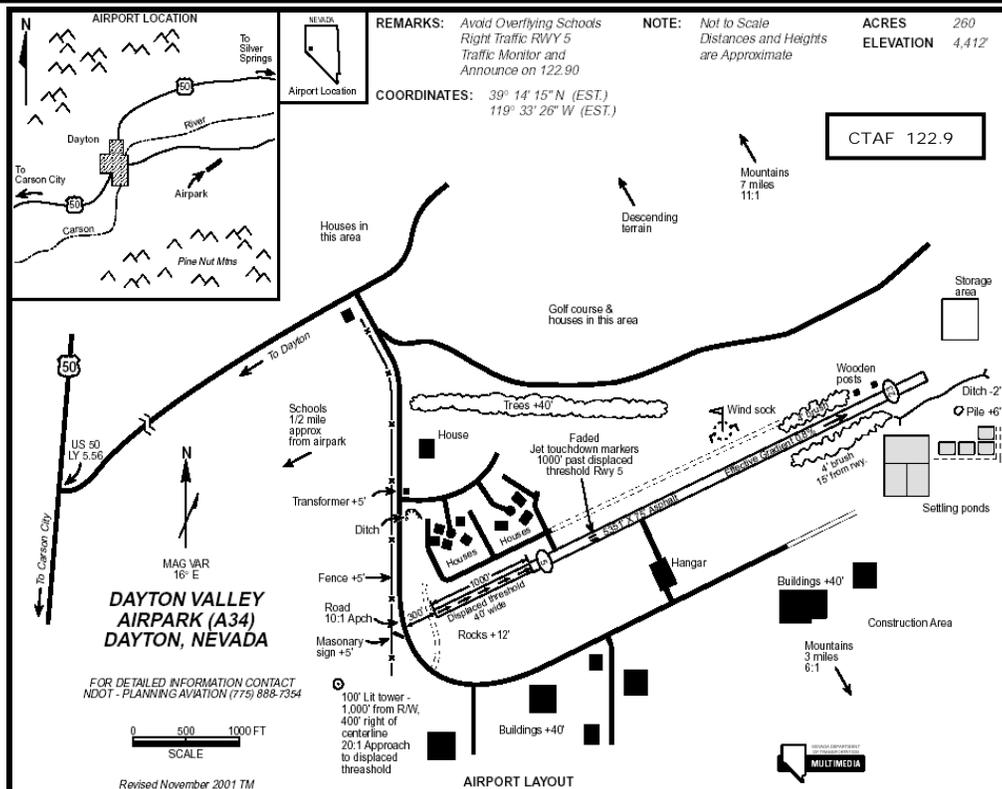


Figure 5-9 -- continued

CAPITAL IMPROVEMENT PROGRAM				
Airport Name: Dayton Valley Airpark		Associated City: Dayton/Carson City		
Project Description	Phase I			
	Total Costs	Federal	Local	Private
Pavement Maintenance	46,918		46,918	0
Total Phase I 2002-2005	46,918		46,918	0
Project Description	Phase II			
	Total Costs	Federal	Local	Private
Pavement Maintenance	3,933		3,933	0
Total Phase II 2006-2010	3,933		3,933	0
Grand Total	50,851		50,851	0

Figure 5-10 Airport Information and Capital Improvement Program

Airport: Denio Junction
Associated City: Denio Junction
County: Humboldt, NV
Ownership: Public
Airport-ID: E85

NPIAS No.:
Site Number:
Service Level: GA
Airport Category: BA
Airport Reference Code: A-1

<u>Annual Activity</u>	<u>Current (Year)</u>		<u>Forecast (Year)</u>		<u>Based Aircraft Fleet Mix</u>	
Passenger Enplanements:					Single Engine: 0	Helicopter: 0
Aircraft Operations:	500	2000	740	2020	Multi -Engine: 0	Military: 0
Based Aircraft:	0	2000	0	2020	Jet: 0	Gliders: 0
Critical Aircraft: Cessna 172						Ultra-Lights: 0

Existing Facilities

Land Area 100 Acres

Elevation: 4,202 MSL

Primary Runway 07-25

Surface Type: Dirt
 Condition: Good
 Length: 3,100'
 Width: 150'
 Lighting: None

Secondary Runway 13-31

Surface Type: Dirt
 Condition: Good
 Length: 3,430'
 Width: 130'
 Lighting: None

Taxiway

Surface Type:
 Condition:
 Area:
 Lighting:

Apron Areas

Commercial Service:
 Condition:
 General Aviation:
 Condition:

Vehicular Parking

Commercial Service:
 General Service:

Approach/Landing Aids

None

Visual Approach Aids

None

Weather Reporting

None

Terminal Building Area

Commercial Service:
 General Aviation:

Aircraft Storage

Conventional:
 T-hangar:
 Plane Port:

Fuel Available

MOGAS

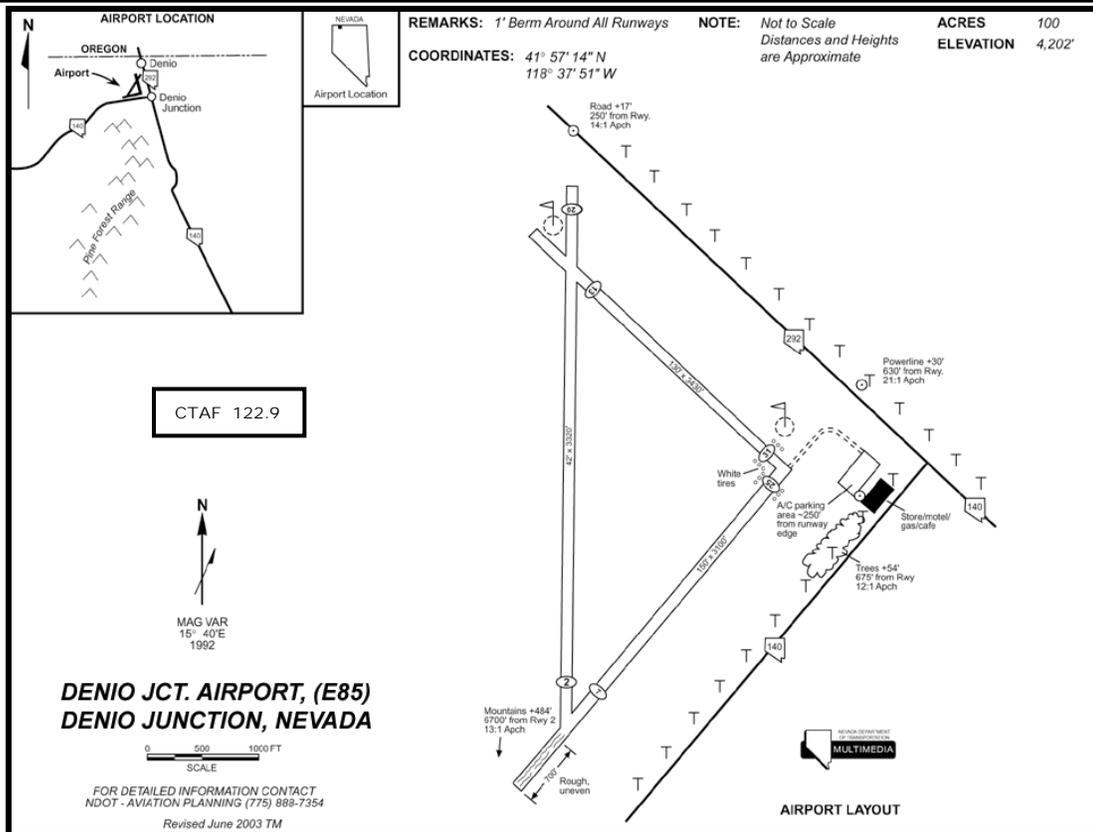


Figure 5-10 -- continued

CAPITAL IMPROVEMENT PROGRAM				
Airport Name: Denio Junction		Associated City: Denio Junction		
Project Description	Phase I			
	Total Costs	Federal	Local	Private
	0	0	0	0
Total Phase I 2002-2005	0	0	0	0

Figure 5-11 Airport Information and Capital Improvement Program

Airport: Derby Field
Associated City: Lovelock
County: Pershing, NV
Ownership: Public
Airport-ID: LOL

NPIAS No.: 32-0011
Site Number: 13085.A
Service Level: GA
Airport Category: CA
Airport Reference Code: B-II

<u>Annual Activity</u>	<u>Current (Year)</u>		<u>Forecast (Year)</u>		<u>Based Aircraft Fleet Mix</u>	
Passenger Enplanements:					Single Engine: 4	Helicopter: 0
Aircraft Operations:	1,430	2000	2,090	2020	Multi -Engine: 2	Military: 0
Based Aircraft:	6	2000	8	2020	Jet: 0	Gliders: 0
Critical Aircraft: Beech King Air						Ultra-Lights: 0

Existing Facilities

Land Area 550 Acres

Elevation: 3,904 MSL

Primary Runway 01-19

Surface Type: Asphalt
 Condition: Fair
 Length: 5,529'
 Width: 75'
 Lighting: MIRL

Secondary Runway 07-25

Surface Type: Asphalt
 Condition: Good
 Length: 4,900'
 Width: 75'
 Lighting: None

Taxiway

Surface Type:
 Condition:
 Area:
 Lighting:

Apron Areas

Commercial Service:
 Condition:
 General Aviation:
 Condition:

Vehicular Parking

Commercial Service:
 General Service:

Approach/Landing Aids

VOR/DME, GPS

Visual Approach Aids

VASI-2, Beacon

Weather Reporting

ASOS, HIWAS

Terminal Building Area

Commercial Service:
 General Aviation:

Aircraft Storage

Conventional:
 T-hangar:
 Plane Port:

Fuel Available

None

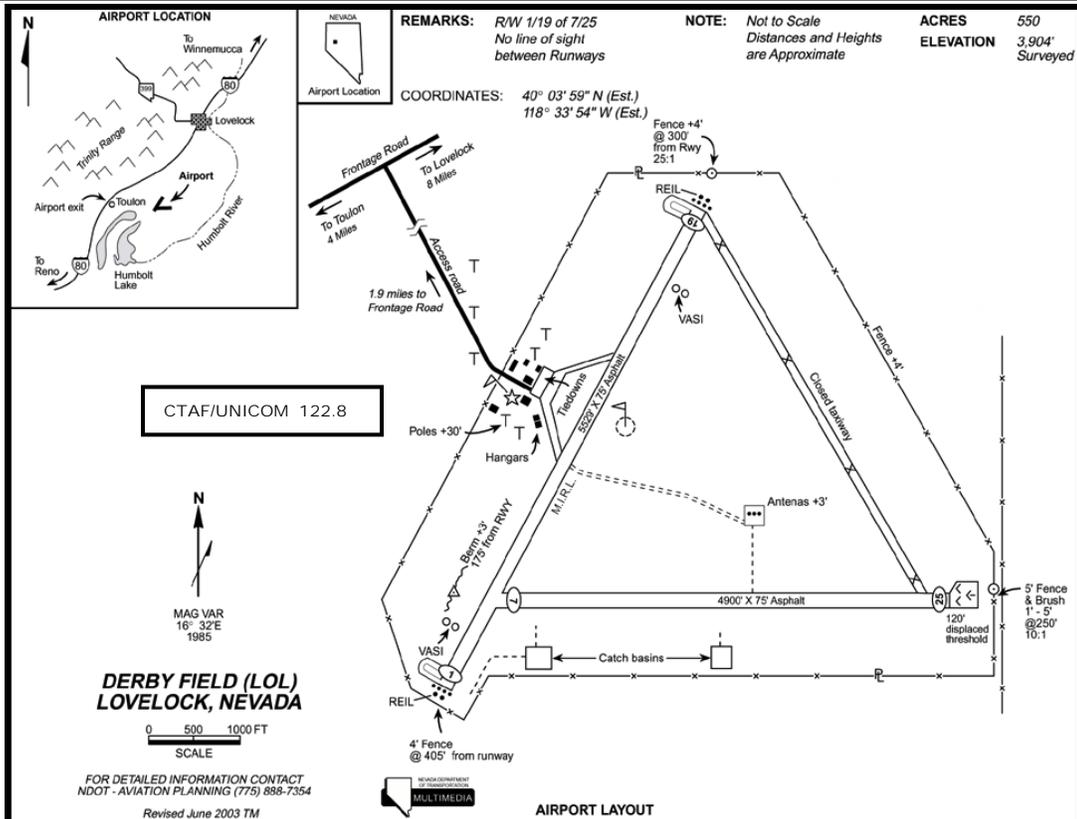


Figure 5-11 -- continued

CAPITAL IMPROVEMENT PROGRAM				
Airport Name: Derby Field		Associated City: Lovelock		
		Phase I		
Project Description	Total Costs	Federal	Local	Private
Extend Runway 1-19	1,326,144	1,243,260	82,884	0
Rehabilitate Runway 1-19 (Sealcoat)	100,000	93,750	6,250	0
Total Phase I 2002-2005	1,426,144	1,337,010	89,134	0

Figure 5-12 Airport Information and Capital Improvement Program

Airport: Duckwater
Associated City: Duckwater
County: Nye, NV
Ownership: Public
Airport-ID: 01U

NPIAS No.:
Site Number: 13047.01A
Service Level: GA
Airport Category: BA
Airport Reference Code: A-1

<u>Annual Activity</u>	<u>Current (Year)</u>		<u>Forecast (Year)</u>		<u>Based Aircraft Fleet Mix</u>	
Passenger Enplanements:					Single Engine: 0	Helicopter: 0
Aircraft Operations:	0	2000	0	2020	Multi -Engine: 0	Military: 0
Based Aircraft:	0	2000	0	2020	Jet: 0	Gliders: 0
Critical Aircraft: Cessna 172						Ultra-Lights: 0

Existing Facilities

Land Area 275 Acres

Elevation: 5,124 MSL

Primary Runway 15-33

Surface Type: Dirt
 Condition: Fair
 Length: 3,400'
 Width: 80'
 Lighting: None

Secondary Runway 03-21

Surface Type: Dirt
 Condition: Fair
 Length: 2,700'
 Width: 75'
 Lighting: None

Taxiway

Surface Type:
 Condition:
 Area:
 Lighting:

Apron Areas

Commercial Service:
 Condition:
 General Aviation:
 Condition:

Vehicular Parking

Commercial Service:
 General Service:

Approach/Landing Aids

None

Visual Approach Aids

None

Weather Reporting

None

Terminal Building Area

Commercial Service:
 General Aviation:

Aircraft Storage

Conventional:
 T-hangar:
 Plane Port:

Fuel Available

None

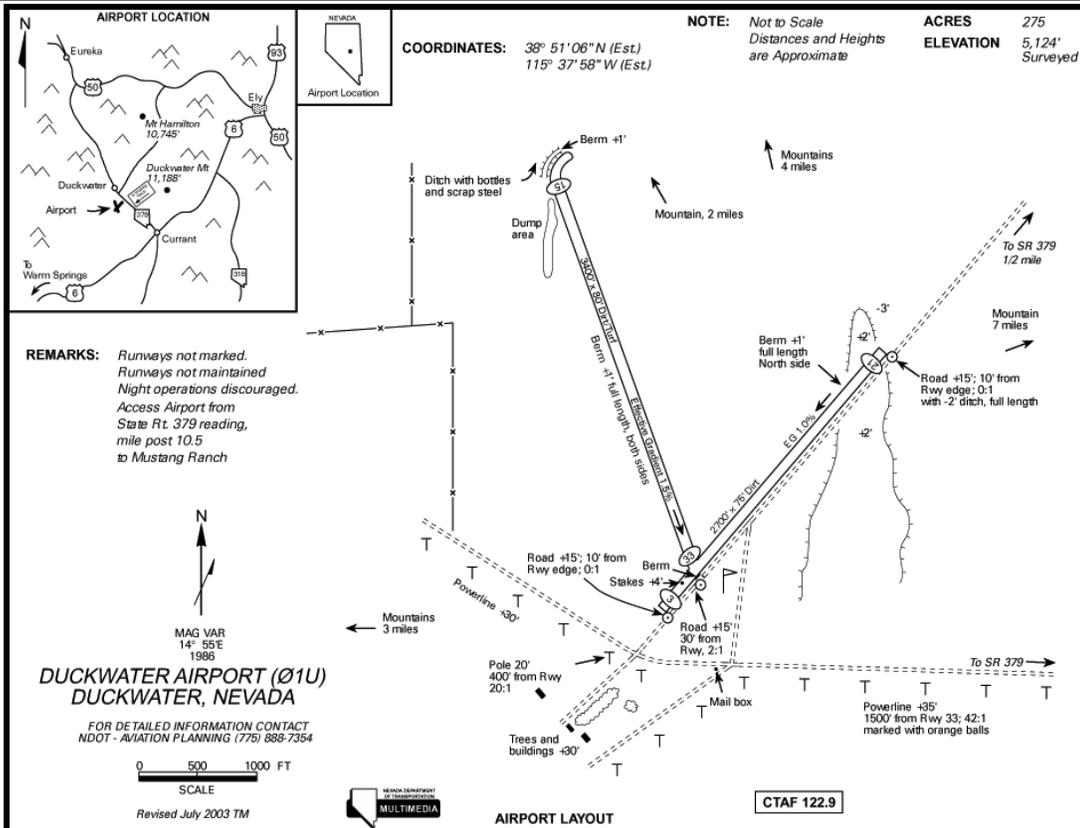


Figure 5-12 -- continued

CAPITAL IMPROVEMENT PROGRAM				
Airport Name: Duckwater		Associated City: Duckwater		
Project Description	Phase I			
	Total Costs	Federal	Local	Private
	0	0	0	0
Total Phase I 2002-2005	0	0	0	0

Figure 5-13 Airport Information and Capital Improvement Program

Airport: Dyer
Associated City: Dyer
County: Esmeralda, NV
Ownership: Public
Airport-ID: 2Q9

NPIAS No.:
Site Number: 13047.3A
Service Level: GA
Airport Category: BA
Airport Reference Code: A-1

<u>Annual Activity</u>	<u>Current (Year)</u>		<u>Forecast (Year)</u>		<u>Based Aircraft Fleet Mix</u>	
Passenger Enplanements:					Single Engine: 6	Helicopter: 0
Aircraft Operations:	40	2000	60	2020	Multi -Engine: 0	Military: 0
Based Aircraft:	6	2000	8	2020	Jet: 0	Glidors: 0
Critical Aircraft: Cessna 172						Ultra-Lights: 0

Existing Facilities

Land Area 156 Acres

Elevation: 4,899 MSL

Primary Runway 12-30

Surface Type: Dirt
 Condition: Good
 Length: 2,870'
 Width: 60'
 Lighting: None

Secondary Runway

Surface Type:
 Condition:
 Length:
 Width:
 Lighting:

Taxiway

Surface Type:
 Condition:
 Area:
 Lighting:

Apron Areas

Commercial Service:
 Condition:
 General Aviation:
 Condition:

Vehicular Parking

Commercial Service:
 General Service:

Approach/Landing Aids

None

Visual Approach Aids

None

Weather Reporting

Terminal Building Area

Commercial Service:
 General Aviation:

Aircraft Storage

Conventional:
 T-hangar:
 Plane Port:

Fuel Available

None

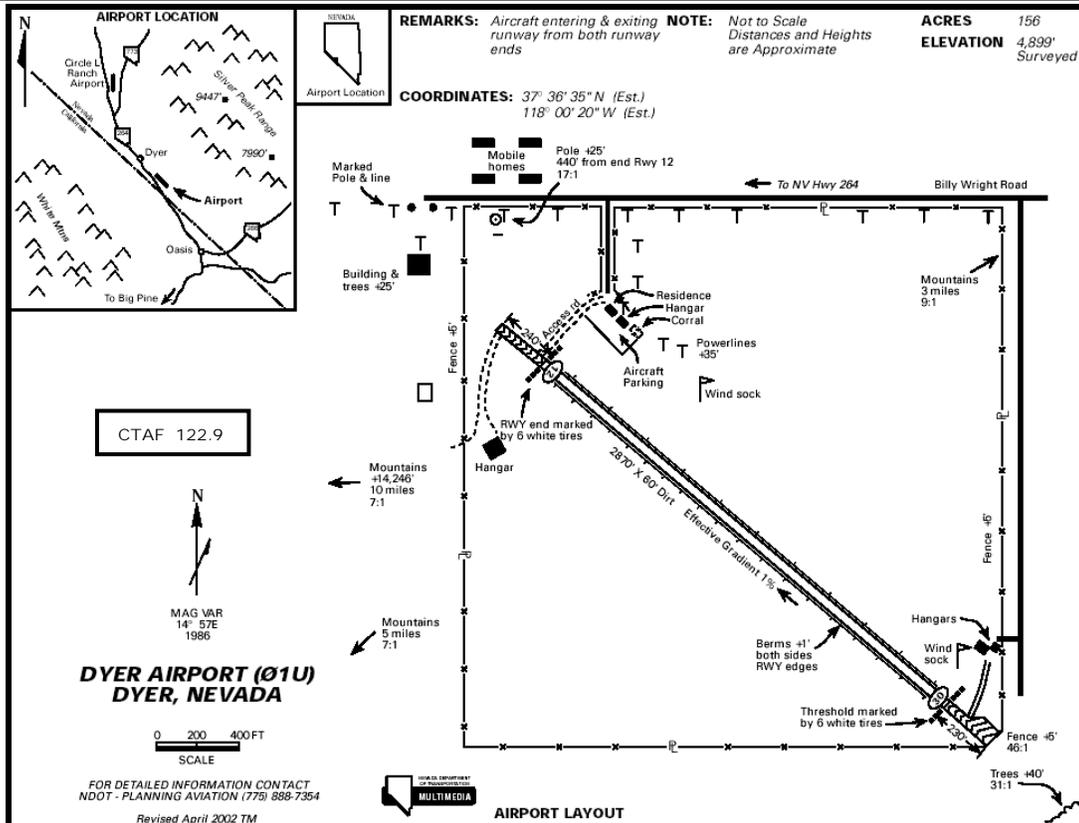


Figure 5-13 -- continued

CAPITAL IMPROVEMENT PROGRAM				
Airport Name: Dyer		Associated City: Dyer		
Project Description	Phase I			
	Total Costs	Federal	Local	Private
	0	0	0	0
Total Phase I 2002-2005	0	0	0	0

Figure 5-14 Airport Information and Capital Improvement Program

Airport: Echo Bay
Associated City: Overton
County: Clark, NV
Ownership: Public
Airport-ID: 0L9

NPIAS No.: 32-0015
Site Number: 13104.1A
Service Level: GA
Airport Category: RA
Airport Reference Code: B-I

<u>Annual Activity</u>	<u>Current (Year)</u>		<u>Forecast (Year)</u>		<u>Based Aircraft Fleet Mix</u>	
Passenger Enplanements:					Single Engine: 0	Helicopter: 0
Aircraft Operations:	750	2000	1,120	2020	Multi -Engine: 0	Military: 0
Based Aircraft:	0	2000	0	2020	Jet: 0	Glidors: 0
Critical Aircraft: Beech Baron						Ultra-Lights: 0

Existing Facilities

Land Area 11 Acres

Elevation: 1,535 MSL

Primary Runway 06-24

Surface Type: Asphalt
 Condition: Poor
 Length: 3,400'
 Width: 50'
 Lighting: None

Secondary Runway

Surface Type:
 Condition:
 Length:
 Width:
 Lighting:

Taxiway

Surface Type:
 Condition:
 Area:
 Lighting:

Apron Areas

Commercial Service:
 Condition:
 General Aviation:
 Condition:

Vehicular Parking

Commercial Service:
 General Service:

Approach/Landing Aids

None

Visual Approach Aids

None

Weather Reporting

None

Terminal Building Area

Commercial Service:
 General Aviation:

Aircraft Storage

Conventional:
 T-hangar:
 Plane Port:

Fuel Available

None

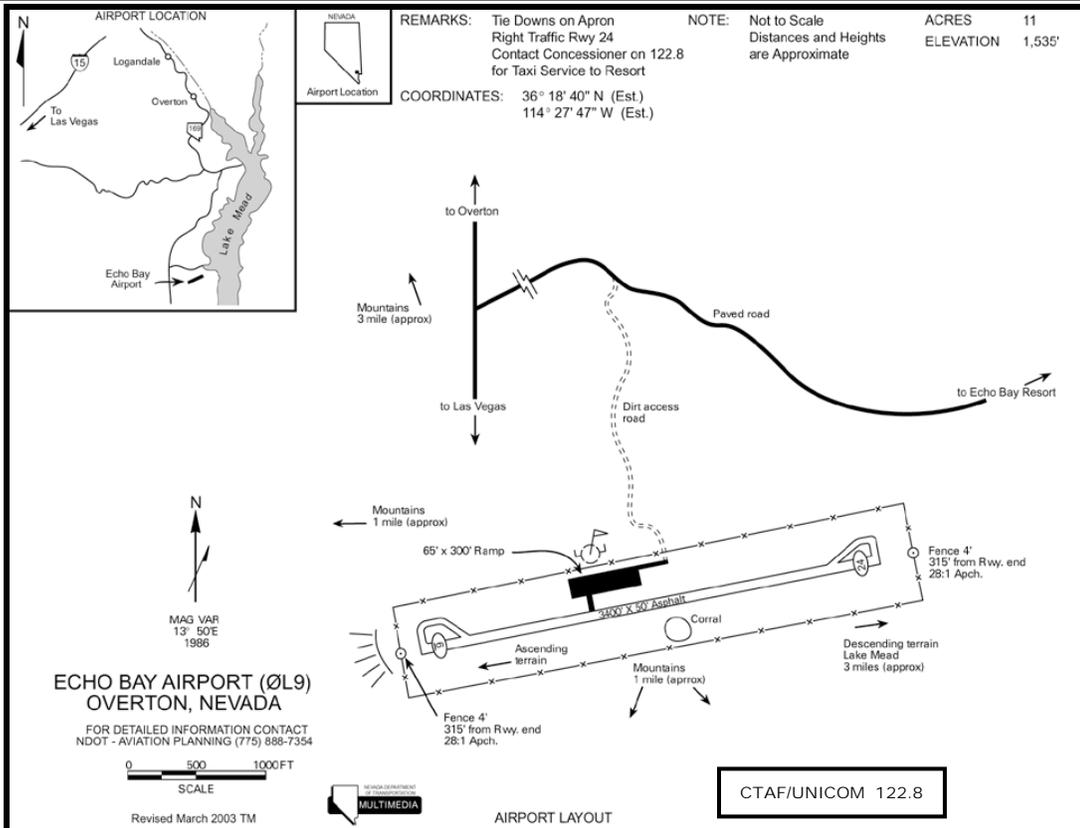


Figure 5-14 -- continued

CAPITAL IMPROVEMENT PROGRAM				
Airport Name: Echo Bay		Associated City: Overton		
Project Description	Phase I			
	Total Costs	Federal	Local	Private
	0	0	0	0
Total Phase I 2002-2005	0	0	0	0

Figure 5-15 Airport Information and Capital Improvement Program

Airport: Elko Regional (J.C. Harris Field)
Associated City: Elko
County: Elko, NV
Ownership: Public
Airport-ID: EKO

NPIAS No.: 32-0005
Site Number: 13048.A
Service Level: PR
Airport Category: CM-PR
Airport Reference Code: C-III

<u>Annual Activity</u>	<u>Current (Year)</u>		<u>Forecast (Year)</u>		<u>Based Aircraft Fleet Mix</u>	
Passenger Enplanements:	125,273	2000	163,400	2020	Single Engine: 35	Helicopter: 3
Aircraft Operations:	27,141	2000	31,913	2020	Multi-Engine: 11	Military: 0
Based Aircraft:	50	2000	62	2020	Jet: 1	Gliders: 0
Critical Aircraft: Boeing 737						Ultra-Lights: 0

Existing Facilities

Land Area 700 Acres

Elevation: 5,135 MSL

Primary Runway 05-23

Surface Type: Asphalt
 Condition: Good
 Length: 7,211'
 Width: 150'
 Lighting: MIRL

Secondary Runway 12-30

Surface Type: Asphalt
 Condition: Good
 Length: 2,871'
 Width: 60'
 Lighting: None

Taxiway

Surface Type:
 Condition:
 Area:
 Lighting:

Apron Areas

Commercial Service:
 Condition:
 General Aviation:
 Condition:

Vehicular Parking

Commercial Service:
 General Service:

Approach/Landing Aids

LDA, VOR, DME, GPS

Visual Approach Aids

VASI-4, MALSR, Beacon

Weather Reporting

ASOS

Terminal Building Area

Commercial Service:
 General Aviation:

Aircraft Storage

Conventional:
 T-hangar:
 Plane Port:

Fuel Available

Jet A, 100LL

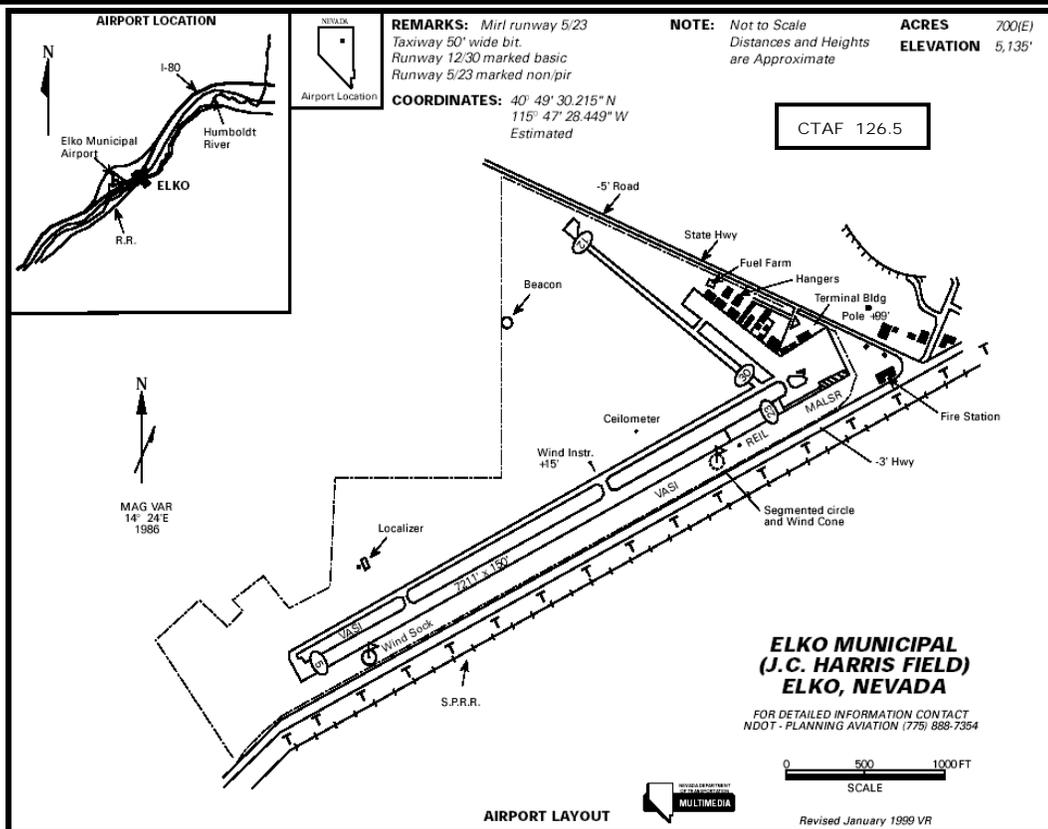


Figure 5-15 -- continued

CAPITAL IMPROVEMENT PROGRAM				
Airport Name: Elko Regional (J.C. Harris Field)		Associated City: Elko		
Project Description	Phase I			
	Total Costs	Federal	Local	Private
Security Enhancements	757,333	710,000	47,333	0
Pave Runway Shoulders (to Meet Standards)	1,593,692	1,494,086	99,606	0
Install Runway (Name) Sensors	330,000	309,375	20,625	0
Acquire Land for Approaches	525,001	492,188	32,813	0
Improve Airport Drainage/Erosion Control	2,220,000	2,081,250	138,750	0
Acquire Aircraft Rescue and Fire Fighting Vehicle (Required by Part 139 only) and Vacuum Truck	781,001	732,188	48,813	0
Extend Runway and Taxiway 1,000 Feet Including Land Acquisition	5,292,000	4,961,250	330,750	0
Expand Commercial and General Aviation Apron Including ASOS Relocation	3,336,000	3,127,500	208,500	0
Total Phase I 2002-2005	14,835,027	13,907,837	927,190	0
Project Description	Phase II			
	Total Costs	Federal	Local	Private
Construct Parallel Taxiway to Runway 5-23	4,320,000	4,050,000	270,000	0
Rehabilitate Airfield Pavements	2,482,200	2,327,062	155,138	0
Total Phase II 2006-2010	6,802,200	6,377,062	425,138	0
Grand Total	21,637,227	20,284,899	1,352,328	0

Figure 5-16 Airport Information and Capital Improvement Program

Airport: Ely Airport/Yelland Field
Associated City: Ely
County: White Pine, NV
Ownership: Public
Airport-ID: ELY

NPIAS No.: 32-0006
Site Number: 13051.A
Service Level: GA
Airport Category: CA
Airport Reference Code: B-II

<u>Annual Activity</u>	<u>Current (Year)</u>		<u>Forecast (Year)</u>		<u>Based Aircraft Fleet Mix</u>	
Passenger Enplanements:	2,382	2000	3,092	2020	Single Engine: 12	Helicopter: 2
Aircraft Operations:	10,100	2000	14,742	2020	Multi -Engine: 2	Military: 0
Based Aircraft:	26	2000	30	2020	Jet: 0	Gliders: 0
Critical Aircraft: Fairchild Metro						Ultra-Lights: 10

Existing Facilities

Land Area 1,123 Acres

Elevation: 6,255 MSL

Primary Runway 18-36

Surface Type: Asphalt
 Condition: Good
 Length: 5,998'
 Width: 150'
 Lighting: MIRL

Secondary Runway 12-30

Surface Type: Asphalt
 Condition: Fair
 Length: 4,900'
 Width: 60'
 Lighting: None

Taxiway

Surface Type:
 Condition:
 Area:
 Lighting:

Apron Areas

Commercial Service:
 Condition:
 General Aviation:
 Condition:

Vehicular Parking

Commercial Service:
 General Service:

Approach/Landing Aids

VOR/DME, GPS

Visual Approach Aids

VASI-2, Beacon

Weather Reporting

ASOS

Terminal Building Area

Commercial Service:
 General Aviation:

Aircraft Storage

Conventional:
 T-hangar:
 Plane Port:

Fuel Available

Jet A, 100LL

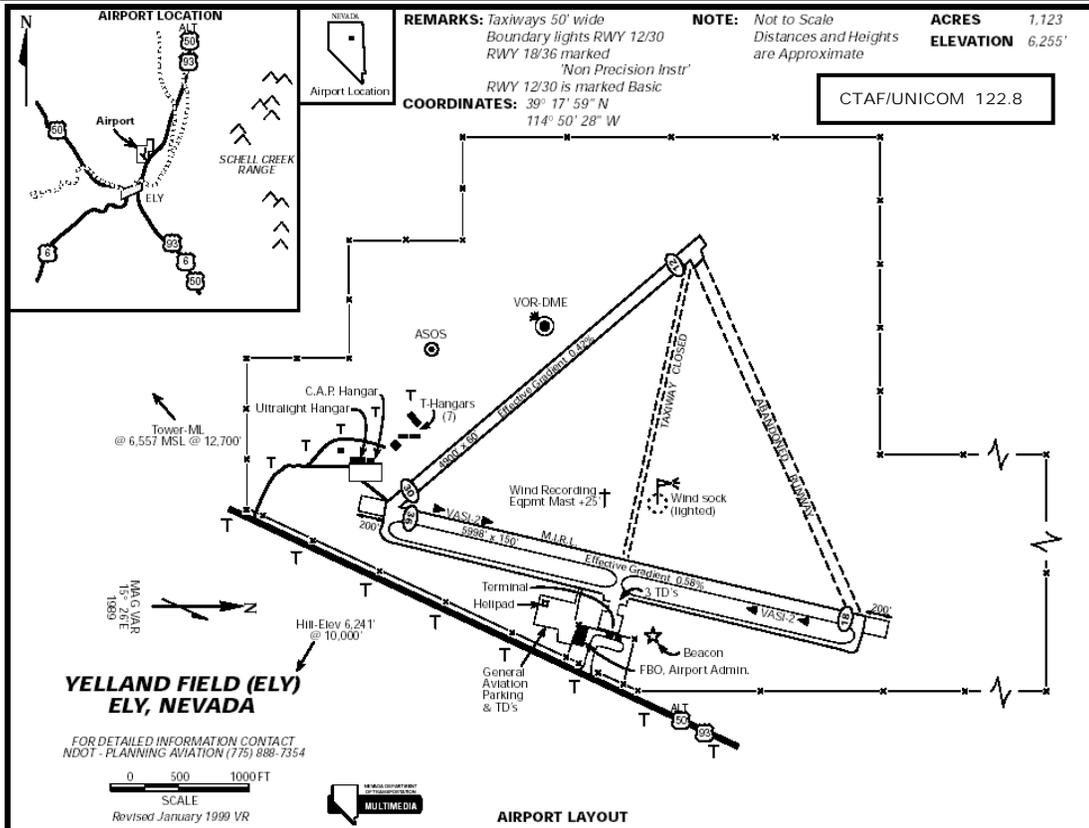


Figure 5-16 -- continued

CAPITAL IMPROVEMENT PROGRAM				
Airport Name: Ely Airport/Yelland Field		Associated City: Ely		
Project Description	Phase I			
	Total Costs	Federal	Local	Private
Install Runway 18-36 PAPI	235,843	221,103	14,740	0
Construct Taxiways	450,000	421,875	28,125	0
Construct General Aviation Apron	700,000	656,250	43,750	0
Rehabilitate Runway 18-36 and 12-30 (Sealcoat)	180,000	168,750	11,250	0
Install Perimeter Fencing	400,000	375,000	25,000	0
Rehabilitate Taxiway A and Commercial Apron	60,000	56,250	3,750	0
Acquire Equipment (Sweepers)	150,000	140,625	9,375	0
Improve Airport Drainage (Flood Dike)	500,000	468,750	31,250	0
Total Phase I 2002-2005	2,675,843	2,508,603	167,240	0
Project Description	Phase II			
	Total Costs	Federal	Local	Private
Extend Runway 18-36 with Associated Taxiway	400,000	375,000	25,000	0
Install Runway PAPI - 2 Runway 12-30	84,000	78,750	5,250	0
Construct Helipads	50,000	46,875	3,125	0
Install Instrument Approach Aid MALSR	300,000	281,250	18,750	0
Improve/Modify/Rehabilitate Terminal Building	300,000		300,000	0
Total Phase II 2006-2010	1,134,000	781,875	352,125	0
Grand Total	3,809,843	3,290,478	519,365	0

Figure 5-17 Airport Information and Capital Improvement Program

Airport: Empire
Associated City: Empire
County: Washoe, NV
Ownership: Public
Airport-ID: 1A8

NPIAS No.:
Site Number: 13052.A
Service Level: GA
Airport Category: BA
Airport Reference Code: A-I

<u>Annual Activity</u>	<u>Current (Year)</u>		<u>Forecast (Year)</u>		<u>Based Aircraft Fleet Mix</u>	
Passenger Enplanements:					Single Engine: 2	Helicopter: 0
Aircraft Operations:	150	2000	220	2020	Multi -Engine: 0	Military: 0
Based Aircraft:	2	2000	3	2020	Jet: 0	Gliders: 0
Critical Aircraft: Cessna 172						Ultra-Lights: 0

Existing Facilities

Land Area 75 Acres

Elevation: 3,990 MSL

Primary Runway 07-25

Surface Type: Dirt
 Condition: Good
 Length: 3,170'
 Width: 48'
 Lighting: None

Secondary Runway 18-36

Surface Type: Dirt
 Condition: Good
 Length: 3,770'
 Width: 42'
 Lighting: None

Taxiway

Surface Type:
 Condition:
 Area:
 Lighting:

Apron Areas

Commercial Service:
 Condition:
 General Aviation:
 Condition:

Vehicular Parking

Commercial Service:
 General Service:

Approach/Landing Aids

None

Visual Approach Aids

None

Weather Reporting

None

Terminal Building Area

Commercial Service:
 General Aviation:

Aircraft Storage

Conventional:
 T-hangar:
 Plane Port:

Fuel Available

None

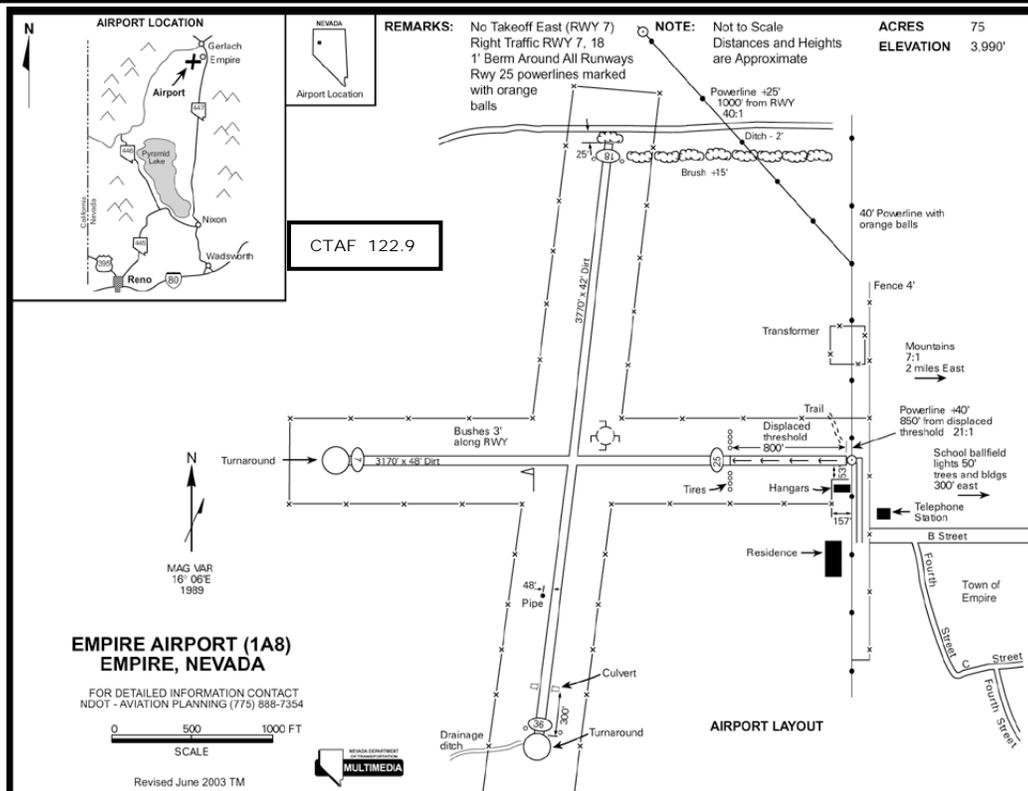


Figure 5-17 -- continued

CAPITAL IMPROVEMENT PROGRAM				
Airport Name: Empire		Associated City: Empire		
Project Description	Phase I			
	Total Costs	Federal	Local	Private
	0	0	0	0
Total Phase I 2002-2005	0	0	0	0

Figure 5-18 Airport Information and Capital Improvement Program

Airport: Eureka
Associated City: Eureka
County: Eureka, NV
Ownership: Public
Airport-ID: 05U

NPIAS No.: 32-0007
Site Number: 13054.A
Service Level: GA
Airport Category: RA
Airport Reference Code: B-1

<u>Annual Activity</u>	<u>Current (Year)</u>		<u>Forecast (Year)</u>		<u>Based Aircraft Fleet Mix</u>	
Passenger Enplanements:					Single Engine: 3	Helicopter: 1
Aircraft Operations:	1,400	2000	2,080	2020	Multi -Engine: 0	Military: 0
Based Aircraft:	4	2000	5	2020	Jet: 0	Gliders: 0
Critical Aircraft: Beech Baron						Ultra-Lights: 0

Existing Facilities

Land Area 800 Acres

Elevation: 5,954 MSL

Primary Runway 17-35

Surface Type: Asphalt
 Condition: Good
 Length: 7,300'
 Width: 60'
 Lighting: MIRL

Secondary Runway

Surface Type:
 Condition:
 Length:
 Width:
 Lighting:

Taxiway

Surface Type:
 Condition:
 Area:
 Lighting:

Apron Areas

Commercial Service:
 Condition:
 General Aviation:
 Condition:

Vehicular Parking

Commercial Service:
 General Service:

Approach/Landing Aids

None

Visual Approach Aids

Beacon, PAPI-2

Weather Reporting

None

Terminal Building Area

Commercial Service:
 General Aviation:

Aircraft Storage

Conventional:
 T-hangar:
 Plane Port:

Fuel Available

100LL

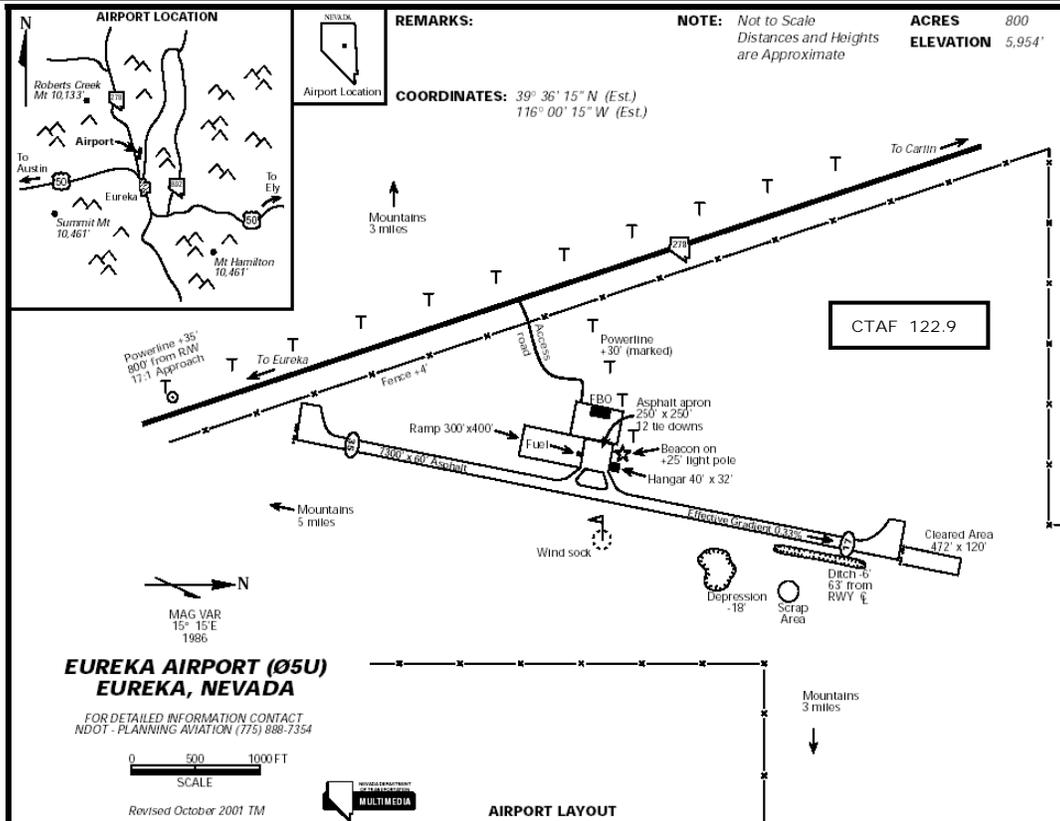


Figure 5-18 -- continued

CAPITAL IMPROVEMENT PROGRAM				
Airport Name: Eureka		Associated City: Eureka		
Project Description	Phase I			
	Total Costs	Federal	Local	Private
Construct Parallel Taxiway	336,000	315,000	21,000	0
Construct Main Apron	121,000	113,438	7,562	0
Construct Crosswind Runway	671,667	629,688	41,979	0
Construct 2 Helipads	18,000	16,875	1,125	0
Construct Parallel Taxiway	605,000	567,188	37,812	0
Widen Runway 17-35	965,000	904,688	60,312	0
Total Phase I 2002-2005	2,716,667	2,546,877	169,790	0
Project Description	Phase II			
	Total Costs	Federal	Local	Private
Rehabilitate Runway 8-26	238,000	223,125	14,875	0
Total Phase II 2006-2010	238,000	223,125	14,875	0
Grand Total	2,954,667	2,770,002	184,665	0

Figure 5-19 Airport Information and Capital Improvement Program

Airport: Fallon Municipal
Associated City: Fallon
County: Churchill, NV
Ownership: Public
Airport-ID: FLX

NPIAS No.: 32-0008
Site Number: 13057.1A
Service Level: GA
Airport Category: CA
Airport Reference Code: B-II

<u>Annual Activity</u>	<u>Current (Year)</u>		<u>Forecast (Year)</u>		<u>Based Aircraft Fleet Mix</u>	
Passenger Enplanements:					Single Engine: 48	Helicopter: 2
Aircraft Operations:	12,250	2000	15,100	2020	Multi -Engine: 5	Military: 0
Based Aircraft:	57	2000	67	2020	Jet: 0	Gliders: 0
Critical Aircraft: Beech King Air						Ultra-Lights: 2

Existing Facilities

Land Area 440 Acres

Elevation: 3,963 MSL

Primary Runway 03-21

Surface Type: Asphalt
 Condition: Fair
 Length: 5,703'
 Width: 75'
 Lighting: MIRL

Secondary Runway 13-31

Surface Type: Dirt (Graded)
 Condition: Good
 Length: 3,650
 Width: 100'
 Lighting: None

Taxiway

Surface Type:
 Condition:
 Area:
 Lighting:

Apron Areas

Commercial Service:
 Condition:
 General Aviation:
 Condition:

Vehicular Parking

Commercial Service:
 General Service:

Approach/Landing Aids

VOR/DME, GPS

Visual Approach Aids

VASI-2, Beacon

Weather Reporting

None

Terminal Building Area

Commercial Service:
 General Aviation:

Aircraft Storage

Conventional:
 T-hangar:
 Plane Port:

Fuel Available

Jet A, 100, 80

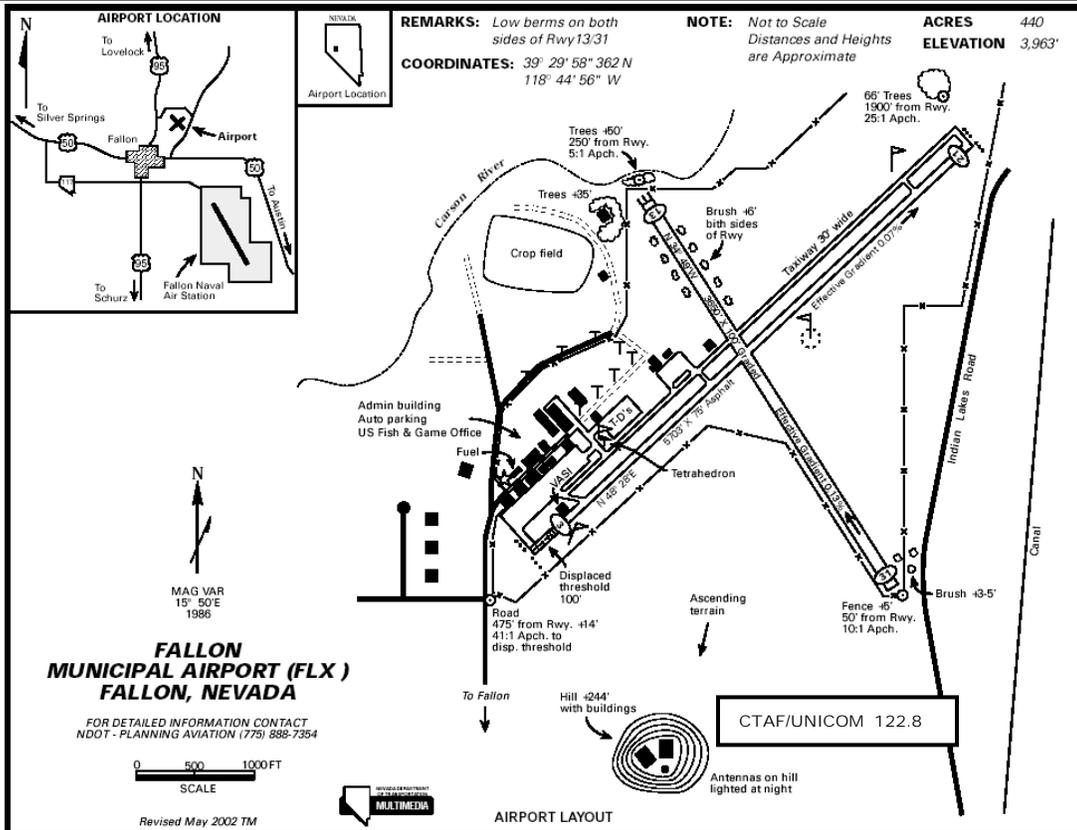


Figure 5-19 -- continued

CAPITAL IMPROVEMENT PROGRAM				
Airport Name: Fallon Municipal		Associated City: Fallon		
Project Description	Phase I			
	Total Costs	Federal	Local	Private
Conduct Environmental Assessment Study	96,000	90,000	6,000	0
Improve Airport Miscellaneous Improvements	233,298	218,715	14,583	0
Extend Runway 3-21	1,500,000	1,406,250	93,750	0
Total Phase I 2002-2005	1,829,298	1,714,965	114,333	0

Figure 5-20 Airport Information and Capital Improvement Program

Airport: Fort Ruby Ranch Airstrip
Associated City: Ruby
County: White Pine, NV
Ownership: Private
Airport-ID: NV24

NPIAS No.:
Site Number: 13126.91A
Service Level: GA
Airport Category: BA
Airport Reference Code: A-1

<u>Annual Activity</u>	<u>Current (Year)</u>		<u>Forecast (Year)</u>		<u>Based Aircraft Fleet Mix</u>	
Passenger Enplanements:					Single Engine: 0	Helicopter: 0
Aircraft Operations:	10	2000	10	2020	Multi -Engine: 0	Military: 0
Based Aircraft:	0	2000	0	2020	Jet: 0	Gliders: 0
Critical Aircraft: Cessna 172						Ultra-Lights: 0

Existing Facilities

Land Area 8 Acres

Elevation: 6,006 MSL

Primary Runway 09-27

Surface Type: Dirt
 Condition: Fair
 Length: 4,500'
 Width: 60'
 Lighting: None

Secondary Runway

Surface Type:
 Condition:
 Length:
 Width:
 Lighting:

Taxiway

Surface Type:
 Condition:
 Area:
 Lighting:

Apron Areas

Commercial Service:
 Condition:
 General Aviation:
 Condition:

Vehicular Parking

Commercial Service:
 General Service:

Approach/Landing Aids

Visual Approach Aids

Weather Reporting

Terminal Building Area

Commercial Service:
 General Aviation:

Aircraft Storage

Conventional:
 T-hangar:
 Plane Port:

Fuel Available

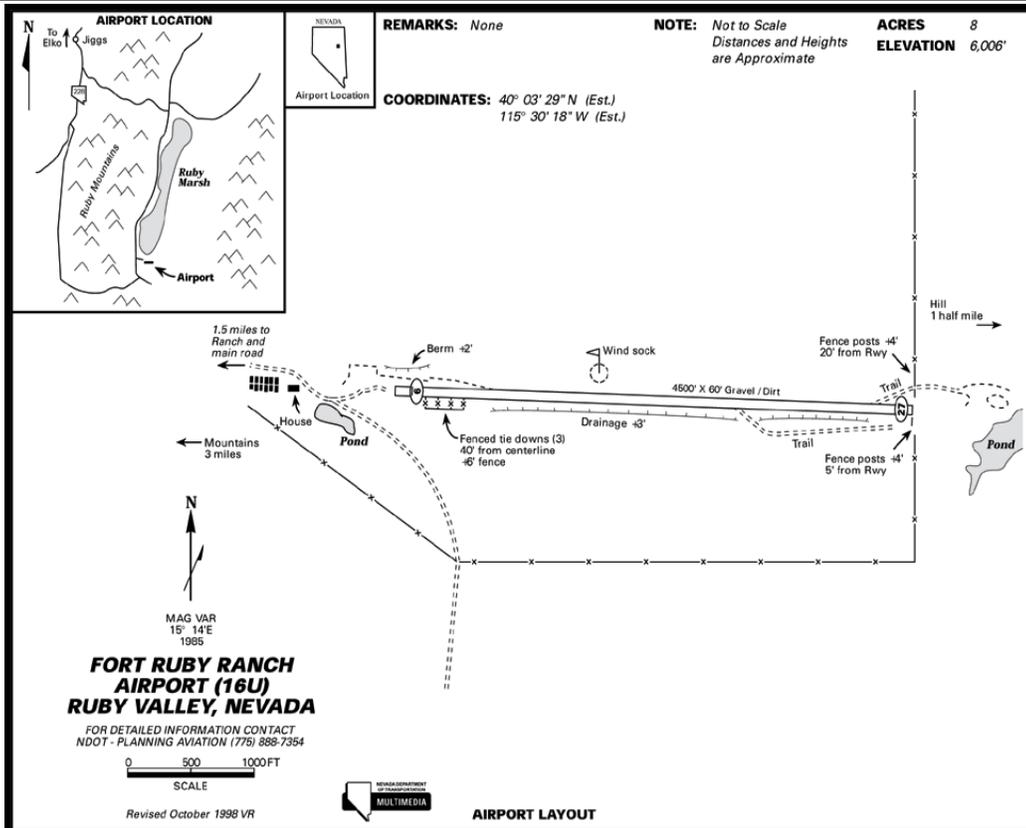


Figure 5-20 -- continued

CAPITAL IMPROVEMENT PROGRAM				
Airport Name: Ft. Ruby Ranch Airstrip		Associated City: Ruby		
Project Description	Phase I			
	Total Costs	Federal	Local	Private
	0	0	0	0
Total Phase I 2002-2005	0	0	0	0

Figure 5-21 Airport Information and Capital Improvement Program

Airport: Gabbs
Associated City: Gabbs
County: Nye, NV
Ownership: Public
Airport-ID: GAB

NPIAS No.: 32-0029
Site Number: 13062.A
Service Level: GA
Airport Category: BA
Airport Reference Code: B-1

<u>Annual Activity</u>	<u>Current (Year)</u>		<u>Forecast (Year)</u>		<u>Based Aircraft Fleet Mix</u>	
Passenger Enplanements:					Single Engine: 4	Helicopter: 0
Aircraft Operations:	2,000	2000	2,970	2020	Multi -Engine: 0	Military: 0
Based Aircraft:	4	2000	5	2020	Jet: 0	Gliders: 0
Critical Aircraft: Beech Baron						Ultra-Lights: 0

Existing Facilities

Land Area 880 Acres

Elevation: 4,700 MSL

Primary Runway 08-26

Surface Type: Dirt
 Condition: Good
 Length: 5,900'
 Width: 80'
 Lighting: MIRL (NSTD)

Secondary Runway 16-34

Surface Type: Dirt
 Condition: Good
 Length: 2,800'
 Width: 90'
 Lighting: MIRL (NSTD)

Taxiway

Surface Type:
 Condition:
 Area:
 Lighting:

Apron Areas

Commercial Service:
 Condition:
 General Aviation:
 Condition:

Vehicular Parking

Commercial Service:
 General Service:

Approach/Landing Aids

None

Visual Approach Aids

Beacon

Weather Reporting

None

Terminal Building Area

Commercial Service:
 General Aviation:

Aircraft Storage

Conventional:
 T-hangar:
 Plane Port:

Fuel Available

None

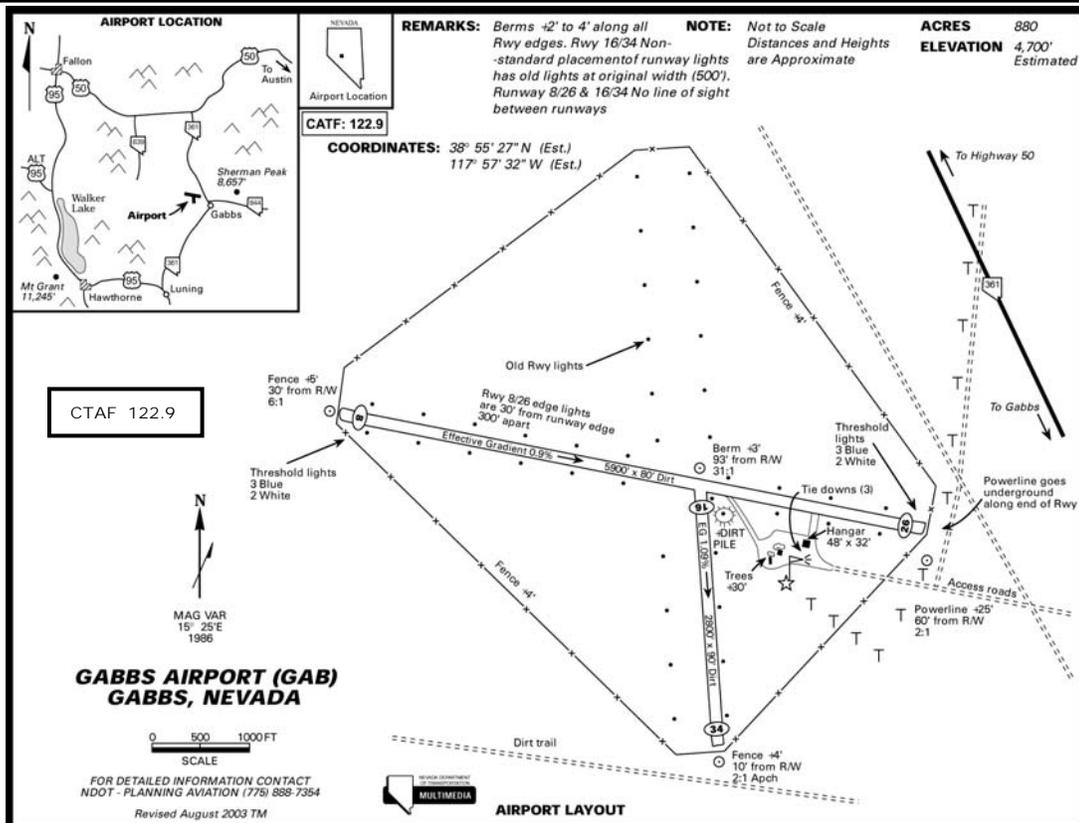


Figure 5-21 -- continued

CAPITAL IMPROVEMENT PROGRAM				
Airport Name: Gabbs		Associated City: Gabbs		
Project Description	Phase I			
	Total Costs	Federal	Local	Private
Grade Runways and 120' Runway Safety Areas	860,000	817,000	43,000	0
Update Airport Layout Plan and Exhibit "A" Property Map	55,000	52,250	2,750	0
Total Phase I 2002-2005	915,000	869,250	45,750	0
Project Description	Phase II			
	Total Costs	Federal	Local	Private
Stabilize Runway Surfaces	200,000	190,000	10,000	0
Establish RPZ's for Runway 8 and Runway 34	25,000	23,750	1,250	0
Relocate Existing Fences and Underground Power Lines	20,000	19,000	1,000	0
Extend Runway 16 2,000' North	120,000	114,000	6,000	0
Clear and Grub Vegetation within RSA's	40,000	38,000	2,000	0
Provide Pilot Activation for Runway Lights	20,000	19,000	1,000	0
Install Segmented Circle with new Windcone	35,000	33,250	1,750	0
Provide 54' x 100' Paved Runup Apron	20,000	19,000	1,000	0
Clear and Grub Vegetation within RSA's	40,000	38,000	2,000	0
Total Phase II 2006-2010	520,000	494,000	26,000	0
Grand Total	1,435,000	1,363,250	71,750	0

Figure 5-22 Airport Information and Capital Improvement Program

Airport: Goldfield
Associated City: Goldfield
County: Esmeralda, NV
Ownership: Public
Airport-ID: 0L5

NPIAS No.: 32-0033
Site Number: 13070.11A
Service Level: GA
Airport Category: BA
Airport Reference Code: A-1

<u>Annual Activity</u>	<u>Current (Year)</u>		<u>Forecast (Year)</u>		<u>Based Aircraft Fleet Mix</u>	
Passenger Enplanements:					Single Engine: 2	Helicopter: 0
Aircraft Operations:	300	2000	450	2020	Multi -Engine: 0	Military: 0
Based Aircraft:	2	2000	3	2020	Jet: 0	Gliders: 0
Critical Aircraft: Cessna 172						Ultra-Lights: 0

Existing Facilities

Land Area 145 Acres

Elevation: 5,680 MSL

Primary Runway 17-35

Surface Type: Gravel
 Condition: Fair
 Length: 3,150'
 Width: 37'
 Lighting:

Secondary Runway

Surface Type:
 Condition:
 Length:
 Width:
 Lighting:

Taxiway

Surface Type:
 Condition:
 Area:
 Lighting:

Apron Areas

Commercial Service:
 Condition:
 General Aviation:
 Condition:

Vehicular Parking

Commercial Service:
 General Service:

Approach/Landing Aids

None

Visual Approach Aids

None

Weather Reporting

None

Terminal Building Area

Commercial Service:
 General Aviation:

Aircraft Storage

Conventional:
 T-hangar:
 Plane Port:

Fuel Available

None

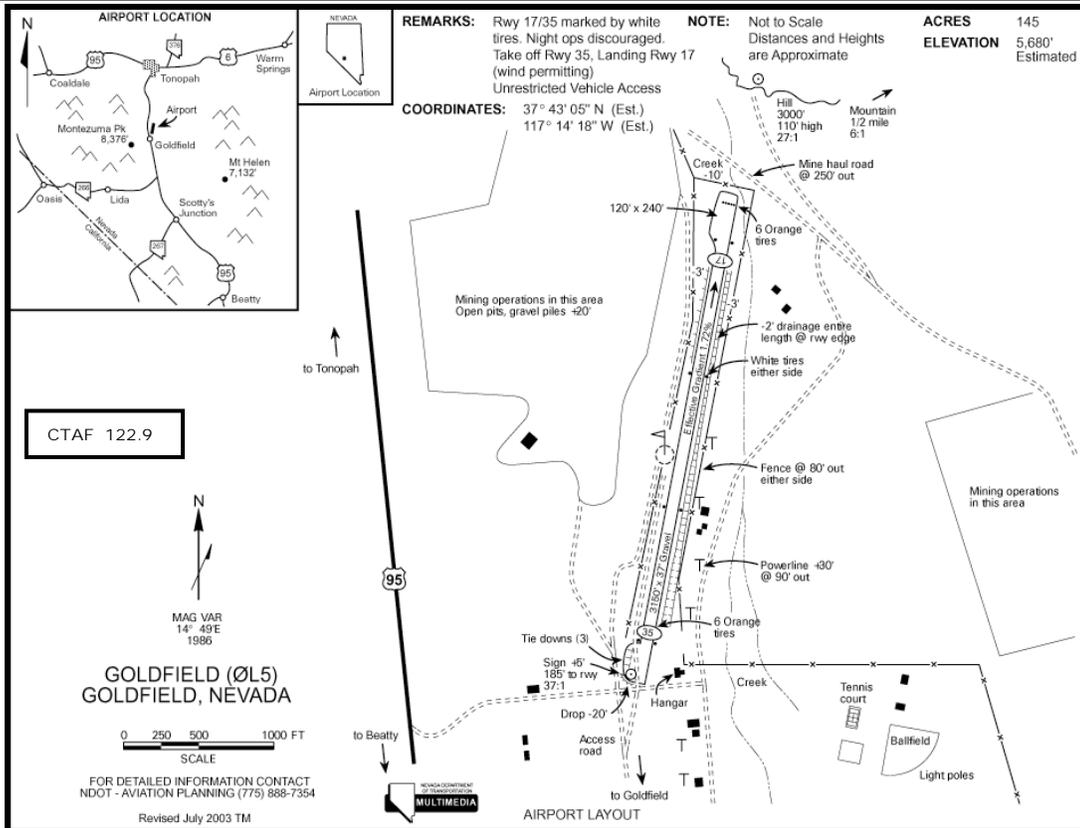


Figure 5-22 -- continued

CAPITAL IMPROVEMENT PROGRAM				
Airport Name: Goldfield		Associated City: Goldfield		
Project Description	Phase I			
	Total Costs	Federal	Local	Private
	0	0	0	0
Total Phase I 2002-2005	0	0	0	0

Figure 5-23 Airport Information and Capital Improvement Program

Airport: Hadley
Associated City: Round Mountain
County: Nye, NV
Ownership: Public
Airport-ID: A36

NPIAS No.:
Site Number: 13126.2A
Service Level: GA
Airport Category: RA
Airport Reference Code: B-II

<u>Annual Activity</u>	<u>Current (Year)</u>		<u>Forecast (Year)</u>		<u>Based Aircraft Fleet Mix</u>	
Passenger Enplanements:					Single Engine: 3	Helicopter: 0
Aircraft Operations:	2,190	2000	3,260	2020	Multi -Engine: 0	Military: 0
Based Aircraft:	3	2000	4	2020	Jet: 0	Glidors: 0
Critical Aircraft: Beech King Air						Ultra-Lights: 0

Existing Facilities

Land Area 35 Acres

Elevation: 5,744 MSL

Primary Runway 17-35

Surface Type: Asphalt
 Condition: Good
 Length: 6,776'
 Width: 60'
 Lighting: None

Secondary Runway

Surface Type:
 Condition:
 Length:
 Width:
 Lighting:

Taxiway

Surface Type:
 Condition:
 Area:
 Lighting:

Apron Areas

Commercial Service:
 Condition:
 General Aviation:
 Condition:

Vehicular Parking

Commercial Service:
 General Service:

Approach/Landing Aids

None

Visual Approach Aids

None

Weather Reporting

None

Terminal Building Area

Commercial Service:
 General Aviation:

Aircraft Storage

Conventional:
 T-hangar:
 Plane Port:

Fuel Available

None

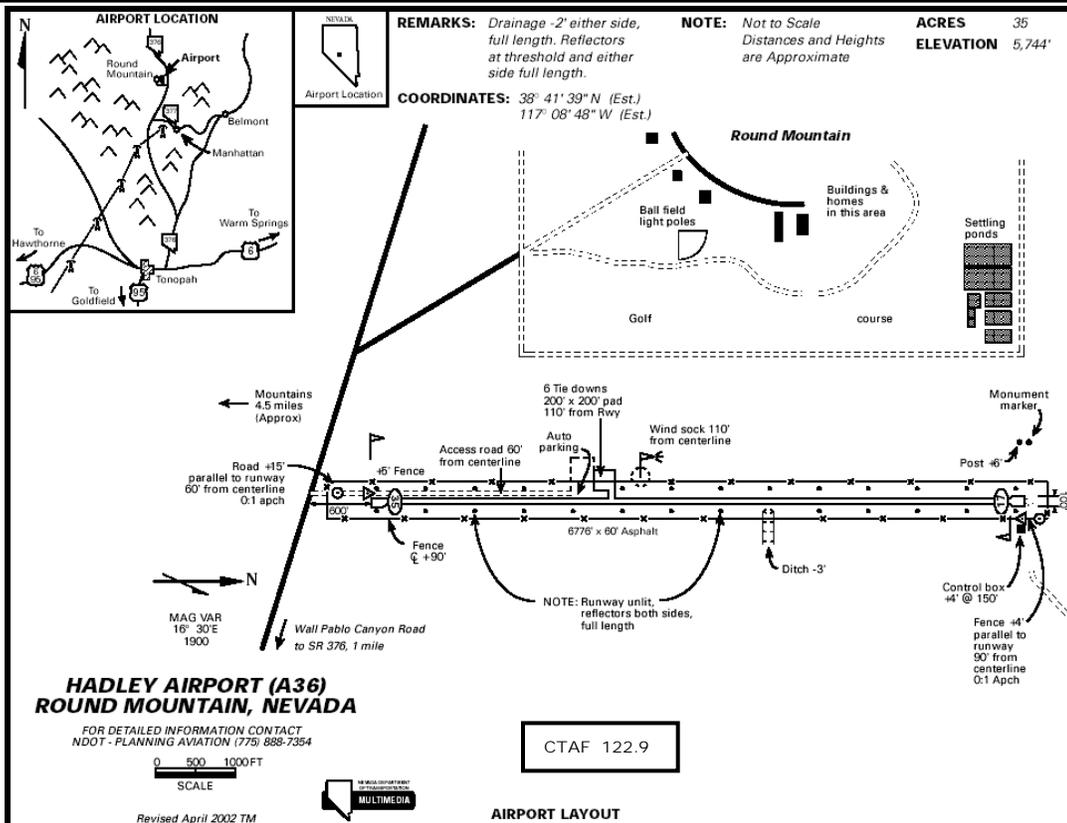


Figure 5-23 -- continued

CAPITAL IMPROVEMENT PROGRAM				
Airport Name: Hadley		Associated City: Round Mountain		
Project Description	Phase I			
	Total Costs	Federal	Local	Private
	0	0	0	0
Total Phase I 2002-2005	0	0	0	0

Figure 5-24 Airport Information and Capital Improvement Program

Airport: Harriett Field/Wells Municipal
Associated City: Wells
County: Elko, NV
Ownership: Public
Airport-ID: LWL

NPIAS No.: 32-0020
Site Number: 13137.A
Service Level: GA
Airport Category: CA
Airport Reference Code: B-II

<u>Annual Activity</u>	<u>Current (Year)</u>		<u>Forecast (Year)</u>		<u>Based Aircraft Fleet Mix</u>	
Passenger Enplanements:					Single Engine: 10	Helicopter: 0
Aircraft Operations:	5,500	2000	8,170	2020	Multi -Engine: 0	Military: 0
Based Aircraft:	11	2000	14	2020	Jet: 1	Gliders: 0
Critical Aircraft: Cessna Citation II						Ultra-Lights: 0

Existing Facilities

Land Area 708 Acres

Elevation: 5,772 MSL

Primary Runway 08-26

Surface Type: Asphalt
 Condition: Good
 Length: 5,500'
 Width: 150'
 Lighting: MIRL

Secondary Runway 01-19

Surface Type: Gravel-Dirt
 Condition: Good
 Length: 2,680'
 Width: 120'
 Lighting: None

Taxiway

Surface Type:
 Condition:
 Area:
 Lighting:

Apron Areas

Commercial Service:
 Condition:
 General Aviation:
 Condition:

Vehicular Parking

Commercial Service:
 General Service:

Approach/Landing Aids

None

Visual Approach Aids

Beacon

Weather Reporting

None

Terminal Building Area

Commercial Service:
 General Aviation:

Aircraft Storage

Conventional:
 T-hangar:
 Plane Port:

Fuel Available

100LL

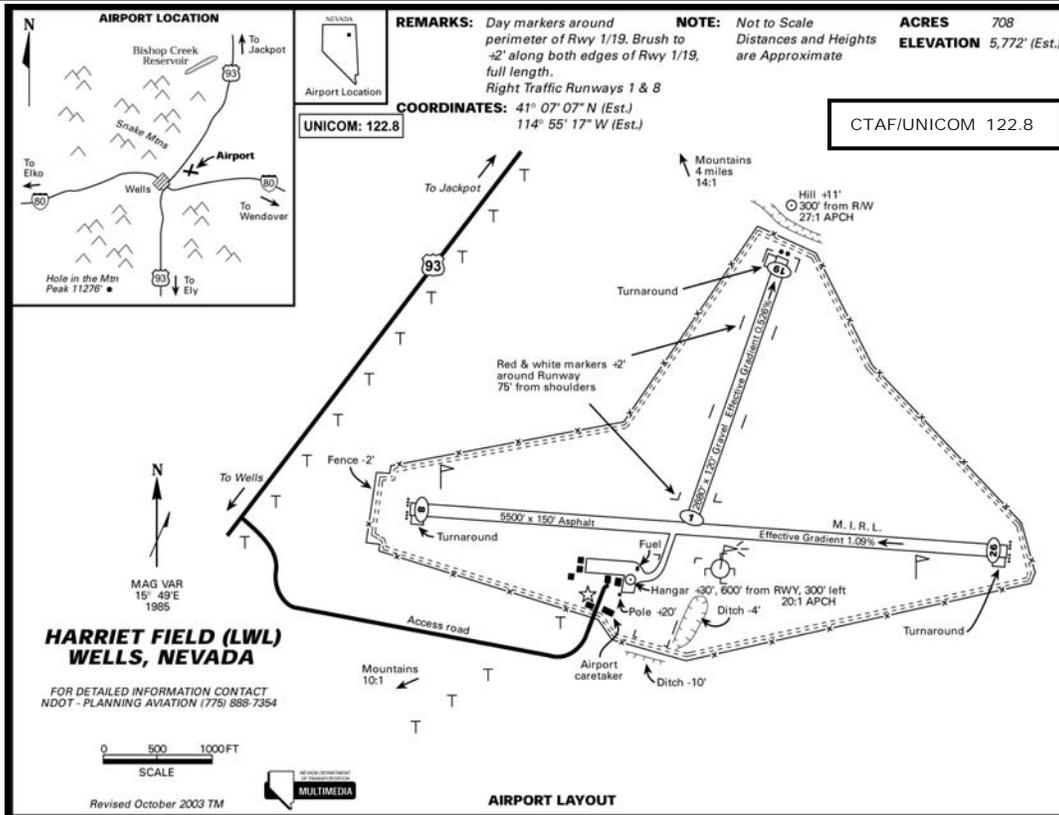


Figure 5-24 -- continued

CAPITAL IMPROVEMENT PROGRAM				
Airport Name: Harriett Field/Wells Municipal		Associated City: Wells		
Project Description	Phase I			
	Total Costs	Federal	Local	Private
Construct Taxilanes	100,610	94,322	6,288	0
Install Runway 8-26 PAPIs and REILs	112,500	105,469	7,031	0
Install Miscellaneous <Nav aids/Approach Aids> (Segmented Circle, Beacon, ETC. not ALS)	6,000	5,625	375	0
Extend Runway 8-26	1,620,000	1,518,750	101,250	0
Construct Taxiway B	1,800,000	1,687,500	112,500	0
Construct Terminal Building	207,000		207,000	0
Extend/Widen/Strengthen Runway (Name) (to Meet Standards)	2,674,350	2,507,203	167,147	0
Total Phase I 2002-2005	6,520,460	5,918,869	601,591	0

Figure 5-25 -- continued

CAPITAL IMPROVEMENT PROGRAM				
Airport Name: Hawthorne Municipal			Associated City: Hawthorne	
Project Description	Phase I			
	Total Costs	Federal	Local	Private
Rehabilitate Apron	300,000	281,250	18,750	0
Install PAPI, Runway 10-28	78,126	73,243	4,883	0
Construct Hangar Taxiway	350,000	328,125	21,875	0
Improve Airport (Fire Water Protection System)	520,833	488,281	32,552	0
Rehabilitate Apron, Phase 2	200,000	187,500	12,500	0
Total Phase I 2002-2005	1,448,959	1,358,399	90,560	0

Figure 5-26 Airport Information and Capital Improvement Program

Airport: Henderson Executive
Associated City: Las Vegas
County: Clark, NV
Ownership: Public
Airport-ID: HND

NPIAS No.: 32-0027
Site Number: 13083.29A
Service Level: RL
Airport Category: CM
Airport Reference Code: B-II

<u>Annual Activity</u>	<u>Current (Year)</u>		<u>Forecast (Year)</u>		<u>Based Aircraft Fleet Mix</u>	
Passenger Enplanements:	104,887	2002	171,630	2020	Single Engine: 127	Helicopter: 0
Aircraft Operations:	77,585	2002	169,176	2020	Multi -Engine: 22	Military: 0
Based Aircraft:	149	2000	278	2020	Jet: 0	Gliders: 0
Critical Aircraft: Cessna Citation III						Ultra-Lights: 0

Existing Facilities

Land Area 570 Acres

Elevation: 2,492 MSL

Primary Runway 17R-35L

Surface Type: Asphalt
 Condition: Good
 Length: 6,500'
 Width: 100'
 Lighting: MIRL

Secondary Runway 17L-35R

Surface Type: Asphalt
 Condition: Good
 Length: 5,000'
 Width: 75'
 Lighting: MIRL

Taxiway

Surface Type: Asphalt
 Condition: Good
 Area:
 Lighting:

Apron Areas

Commercial Service:
 Condition:
 General Aviation:
 Condition:

Vehicular Parking

Commercial Service: 6
 General Service: 50

Approach/Landing Aids

None

Visual Approach Aids

PAPI, Beacon

Weather Reporting

None AWSS Future

Terminal Building Area

Commercial Service: 8,000
 General Aviation:

Aircraft Storage

Conventional: 1
 T-hangar: 10
 Plane Port:
 Shade Hangars: 57

Fuel Available

Jet A, 100LL

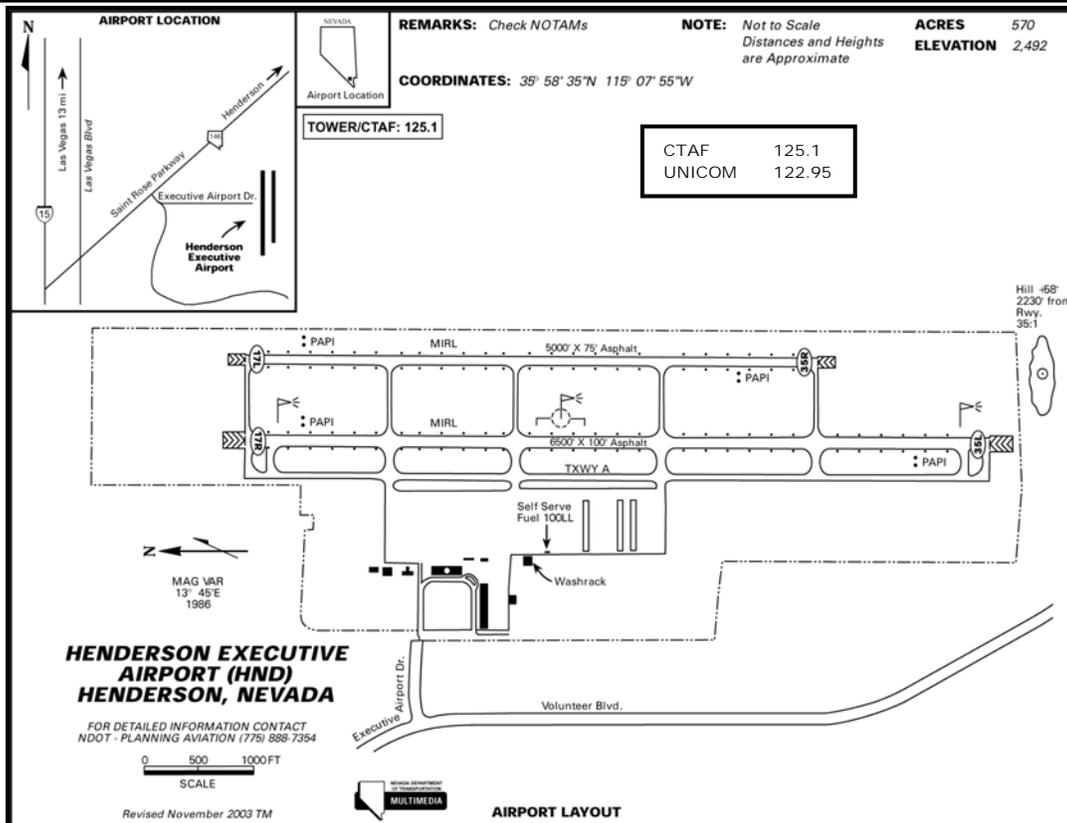


Figure 5-26 -- continued

CAPITAL IMPROVEMENT PROGRAM				
Airport Name: Henderson Executive		Associated City: Las Vegas		
Project Description	Phase I			
	Total Costs	Federal	Local	Private
Taxilane Construction - Taxilane Bravo	2,000,000	1,900,000	100,000	0
Airport Security Fencing	910,000	864,500	45,500	0
Total Phase I 2002-2005	2,910,000	2,764,500	145,500	0
Project Description	Phase II			
	Total Costs	Federal	Local	Private
North Apron Expansion	2,000,000	1,900,000	100,000	0
Land Acquisition	4,000,000	3,800,000	200,000	0
ARFF Station Construction	7,000,000	6,650,000	350,000	0
South Development Area Infrastructure Phase I	5,000,000	4,750,000	250,000	0
Total Phase II 2006-2010	18,000,000	17,100,000	900,000	0
Grand Total	20,910,000	19,864,500	1,045,500	0

Figure 5-27 Airport Information and Capital Improvement Program

Airport: Hidden Hills
Associated City: Pahrump
County: Clark, NV
Ownership: Private
Airport-ID: L57

NPIAS No.:
Site Number: 13106.8A
Service Level: GA
Airport Category: BA
Airport Reference Code: B-1

<u>Annual Activity</u>	<u>Current (Year)</u>		<u>Forecast (Year)</u>		<u>Based Aircraft Fleet Mix</u>	
Passenger Enplanements:					Single Engine: 0	Helicopter: 0
Aircraft Operations:	200	2000	300	2020	Multi -Engine: 0	Military: 0
Based Aircraft:	0	2000	50	2020	Jet: 0	Gliders: 0
Critical Aircraft: Beech Baron						Ultra-Lights: 0

Existing Facilities

Land Area 30 Acres

Elevation: 2,808 MSL

Primary Runway 02-20

Surface Type: Dirt
 Condition: Poor
 Length: 4,050'
 Width: 125'
 Lighting: None

Secondary Runway 12-30

Surface Type: Dirt
 Condition: Poor
 Length: 2,000'
 Width: 110'
 Lighting: None

Taxiway

Surface Type:
 Condition:
 Area:
 Lighting:

Apron Areas

Commercial Service:
 Condition:
 General Aviation:
 Condition:

Vehicular Parking

Commercial Service:
 General Service:

Approach/Landing Aids

None

Visual Approach Aids

None

Weather Reporting

None

Terminal Building Area

Commercial Service:
 General Aviation:

Aircraft Storage

Conventional:
 T-hangar:
 Plane Port:

Fuel Available

None

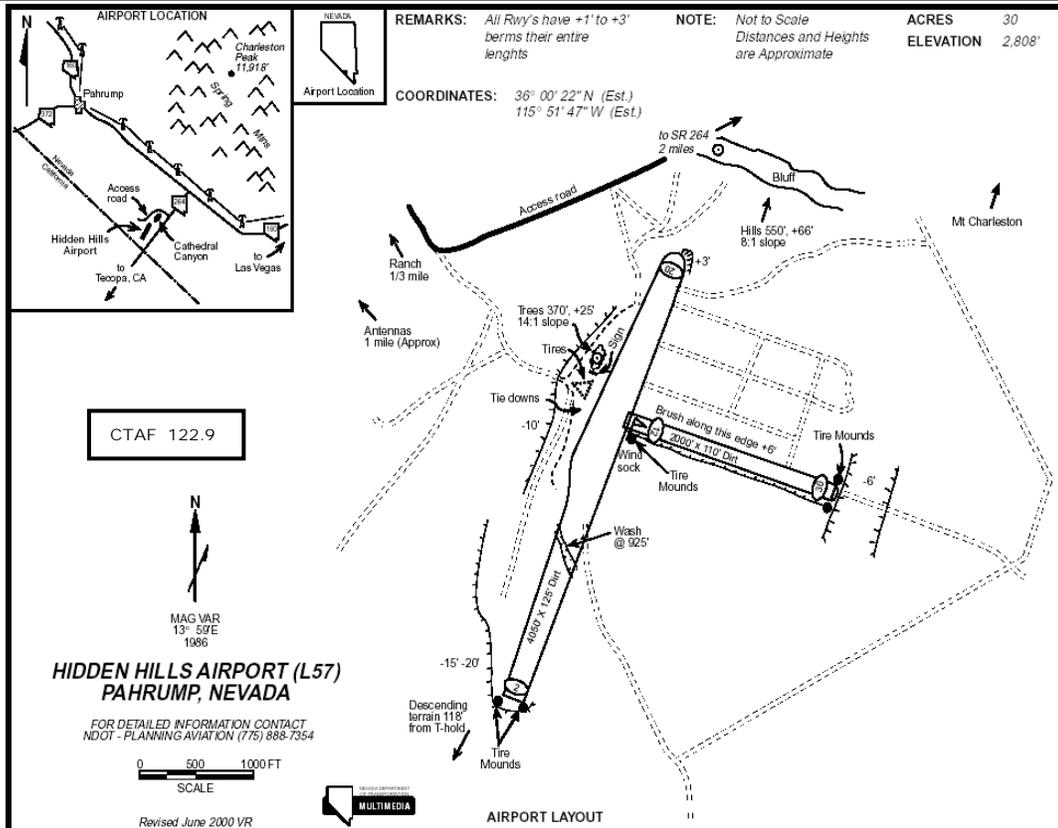


Figure 5-27 -- continued

CAPITAL IMPROVEMENT PROGRAM				
Airport Name: Hidden Hills		Associated City: Pahrump		
Project Description	Phase I			
	Total Costs	Federal	Local	Private
	0	0	0	0
Total Phase I 2002-2005	0	0	0	0

Figure 5-28 Airport Information and Capital Improvement Program

Airport: Jackass Aeropark
Associated City: Amargosa
County: Nye, NV
Ownership: Public
Airport-ID: U75

NPIAS No.:
Site Number: 13011.15A
Service Level: GA
Airport Category: BA
Airport Reference Code: B-I

<u>Annual Activity</u>	<u>Current (Year)</u>		<u>Forecast (Year)</u>		<u>Based Aircraft Fleet Mix</u>	
Passenger Enplanements:					Single Engine: 4	Helicopter: 0
Aircraft Operations:	604	2000	894	2020	Multi -Engine: 1	Military: 0
Based Aircraft:	5	2000	6	2020	Jet: 0	Gliders: 0
Critical Aircraft: Beech Baron						Ultra-Lights: 0

Existing Facilities

Land Area 860 Acres

Elevation: 2,640 MSL

Primary Runway 14-32

Surface Type: Dirt
 Condition: Fair
 Length: 6,200'
 Width: 100'
 Lighting: None

Secondary Runway

Surface Type:
 Condition:
 Length:
 Width:
 Lighting:

Taxiway

Surface Type:
 Condition:
 Area:
 Lighting:

Apron Areas

Commercial Service:
 Condition:
 General Aviation:
 Condition:

Vehicular Parking

Commercial Service:
 General Service:

Approach/Landing Aids

None

Visual Approach Aids

None

Weather Reporting

None

Terminal Building Area

Commercial Service:
 General Aviation:

Aircraft Storage

Conventional:
 T-hangar:
 Plane Port:

Fuel Available

None

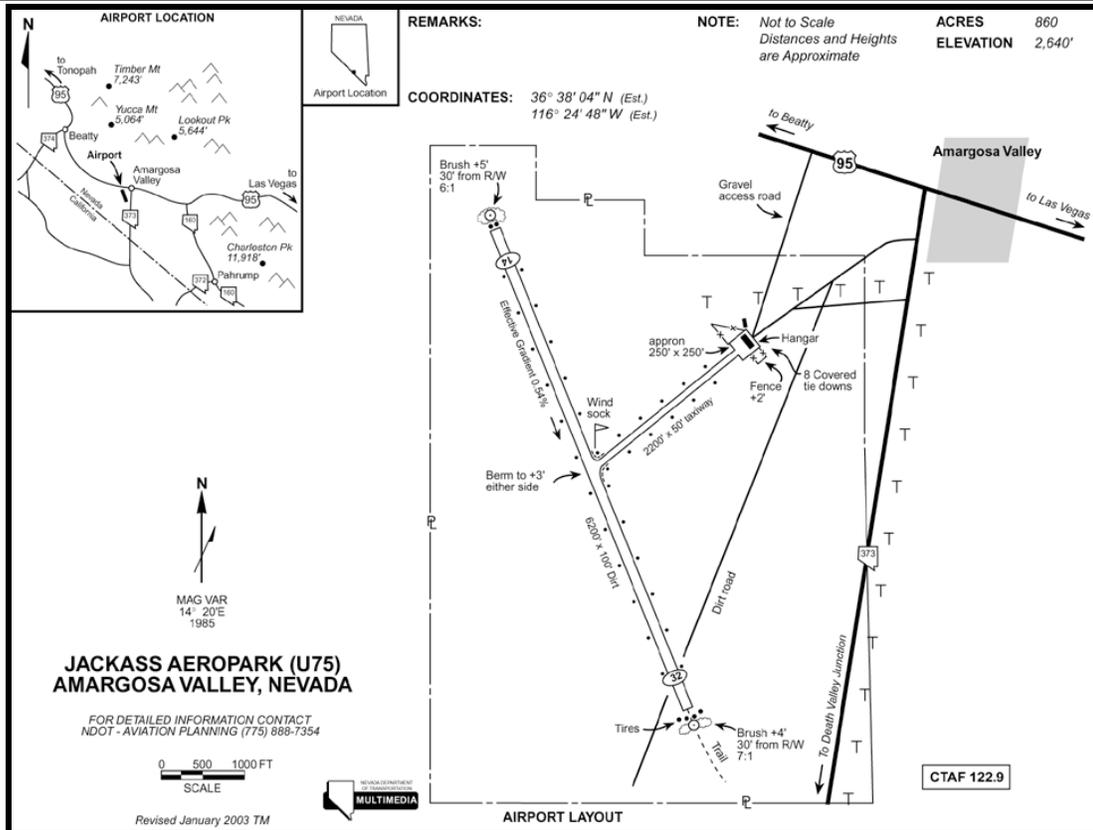


Figure 5-28 -- continued

CAPITAL IMPROVEMENT PROGRAM				
Airport Name: Jackass Aeropark		Associated City: Amargosa		
Project Description	Phase I			
	Total Costs	Federal	Local	Private
	0	0	0	0
Total Phase I 2002-2005	0	0	0	0

Figure 5-29 Airport Information and Capital Improvement Program

Airport: Jackpot Airport/Hayden Field
Associated City: Jackpot
County: Elko, NV
Ownership: Public
Airport-ID: 06U

NPIAS No.: 32-0024
Site Number: 13079.25A
Service Level: GA
Airport Category: RA
Airport Reference Code: B-II

<u>Annual Activity</u>	<u>Current (Year)</u>		<u>Forecast (Year)</u>		<u>Based Aircraft Fleet Mix</u>	
Passenger Enplanements:					Single Engine: 1	Helicopter: 0
Aircraft Operations:	5,500	2000	8,170	2020	Multi-Engine: 0	Military: 0
Based Aircraft:	1	2000	1	2020	Jet: 0	Gliders: 0
Critical Aircraft: Cessna Citation II						Ultra-Lights: 0

Existing Facilities

Land Area 325 Acres

Elevation: 5,213 MSL

Primary Runway 15-33

Surface Type: Asphalt
 Condition: Good
 Length: 6,200'
 Width: 60'
 Lighting: MIRL

Secondary Runway

Surface Type:
 Condition:
 Length:
 Width:
 Lighting:

Taxiway

Surface Type:
 Condition:
 Area:
 Lighting:

Apron Areas

Commercial Service:
 Condition:
 General Aviation:
 Condition:

Vehicular Parking

Commercial Service:
 General Service:

Approach/Landing Aids

None

Visual Approach Aids

VASI-2, Beacon

Weather Reporting

None

Terminal Building Area

Commercial Service:
 General Aviation:

Aircraft Storage

Conventional:
 T-hangar:
 Plane Port:

Fuel Available

100LL

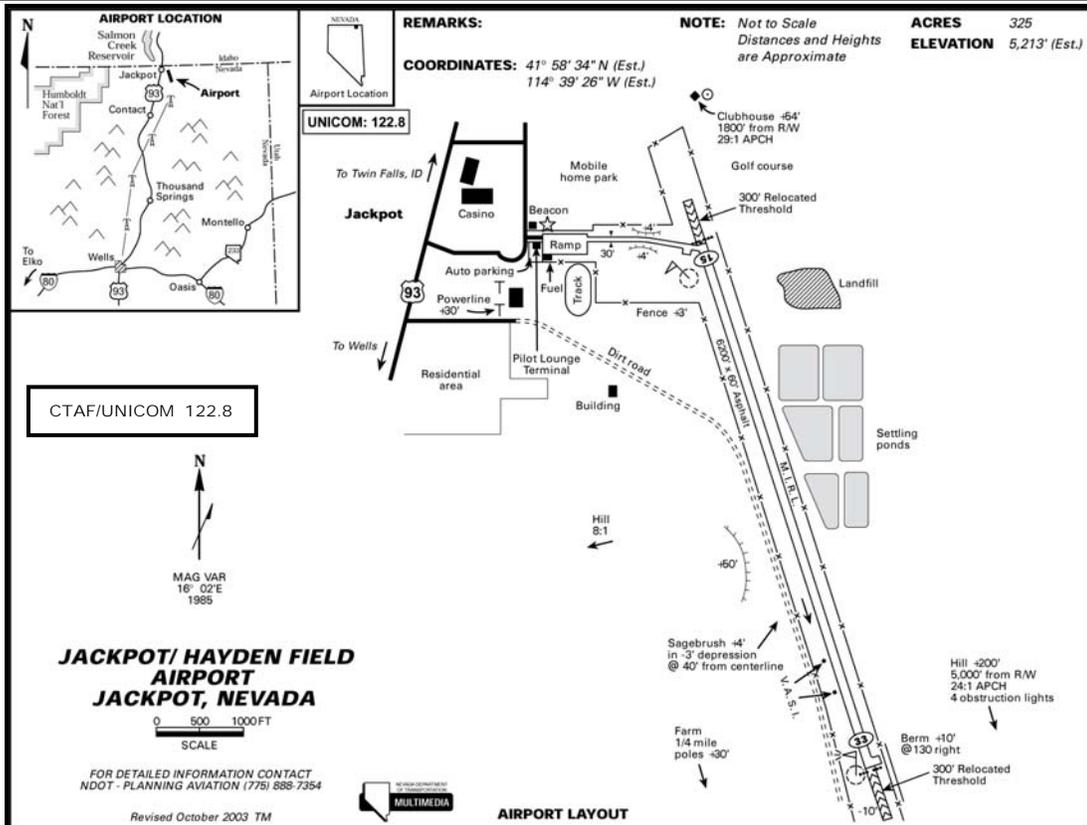


Figure 5-29 -- continued

CAPITAL IMPROVEMENT PROGRAM				
Airport Name: Jackpot Airport/Hayden Field		Associated City: Jackpot		
Project Description	Phase I			
	Total Costs	Federal	Local	Private
Construct Taxiway	800,000	750,000	50,000	0
Construct Emergency Access Road	120,000	112,500	7,500	0
Construct Apron	140,000	131,250	8,750	0
Total Phase I 2002-2005	1,060,000	993,750	66,250	0

Figure 5-30 Airport Information and Capital Improvement Program

Airport: Jean
Associated City: Jean
County: Clark, NV
Ownership: Public
Airport-ID: 0L7

NPIAS No.: 32-0032
Site Number: 13079.5A
Service Level: GA
Airport Category: CA
Airport Reference Code: B-1

<u>Annual Activity</u>	<u>Current (Year)</u>		<u>Forecast (Year)</u>		<u>Based Aircraft Fleet Mix</u>	
Passenger Enplanements:					Single Engine: 8	Helicopter: 0
Aircraft Operations:	20,000	2000	29,720	2020	Multi -Engine: 0	Military: 0
Based Aircraft:	23	2000	30	2020	Jet: 0	Gliders: 12
Critical Aircraft: Beech Baron						Ultra-Lights: 3

Existing Facilities

Land Area 232 Acres

Elevation: 2,832 MSL

Primary Runway 02L-20R

Surface Type: Asphalt
 Condition: Good
 Length: 4,600'
 Width: 75'
 Lighting: MIRL

Secondary Runway 02R-20L

Surface Type: Asphalt
 Condition: Good
 Length: 3,700'
 Width: 60'
 Lighting: None

Taxiway

Surface Type: Asphalt
 Condition: Good
 Area:
 Lighting:

Apron Areas

Commercial Service:
 Condition:
 General Aviation: 175,000
 Condition: Good

Vehicular Parking

Commercial Service:
 General Service: 30

Approach/Landing Aids

None

Visual Approach Aids

Beacon

Weather Reporting

None

Terminal Building Area

Commercial Service: 6,500
 General Aviation:

Aircraft Storage

Conventional: 1
 T-hangar:
 Plane Port: 1

Fuel Available

Jet A, 100LL

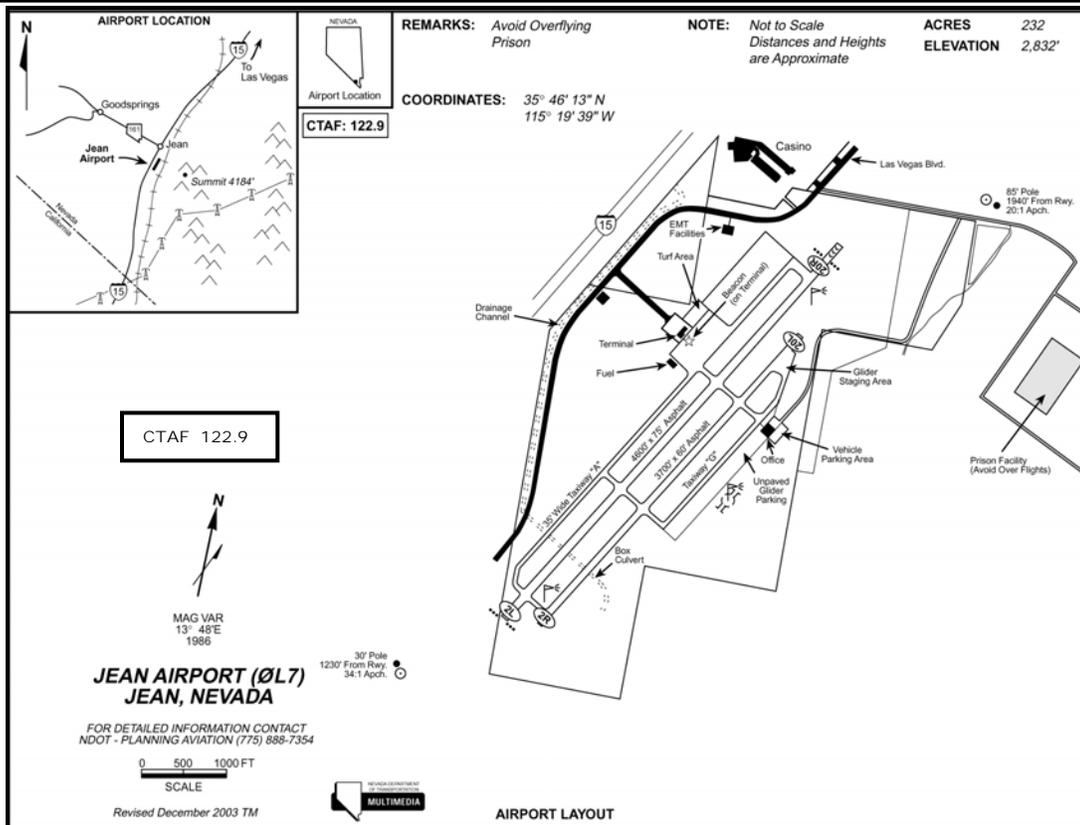


Figure 5-30 -- continued

CAPITAL IMPROVEMENT PROGRAM				
Airport Name: Jean		Associated City: Jean		
Project Description	Phase I			
	Total Costs	Federal	Local	Private
Improve Access Road (East Side)	312,444	292,916	19,528	0
Improve Airport Drainage	311,667	292,188	19,479	0
Install Security Fencing	208,333	195,312	13,021	0
Acquire Equipment Water Protection System	300,000	281,250	18,750	0
Total Phase I 2002-2005	1,132,444	1,061,666	70,778	0

Figure 5-31 Airport Information and Capital Improvement Program

Airport: Kidwell
Associated City: Cal Nev Ari
County: Clark, NV
Ownership: Private
Airport-ID: 1L4

NPIAS No.:
Site Number: 13000.A
Service Level: GA
Airport Category: BA
Airport Reference Code: B-1

<u>Annual Activity</u>	<u>Current (Year)</u>		<u>Forecast (Year)</u>		<u>Based Aircraft Fleet Mix</u>	
Passenger Enplanements:					Single Engine: 16	Helicopter: 0
Aircraft Operations:	3,500	2000	5,200	2020	Multi -Engine: 0	Military: 0
Based Aircraft:	16	2000	21	2020	Jet: 0	Gliders: 0
Critical Aircraft: Beech Baron						Ultra-Lights: 0

Existing Facilities

Land Area 103 Acres

Elevation: 2,605 MSL

Primary Runway 15-33

Surface Type: Dirt
 Condition: Good
 Length: 4,140'
 Width: 65'
 Lighting: MIRL (NSTD)

Secondary Runway

Surface Type:
 Condition:
 Length:
 Width:
 Lighting:

Taxiway

Surface Type:
 Condition:
 Area:
 Lighting:

Apron Areas

Commercial Service:
 Condition:
 General Aviation:
 Condition:

Vehicular Parking

Commercial Service:
 General Service:

Approach/Landing Aids

None

Visual Approach Aids

None

Weather Reporting

None

Terminal Building Area

Commercial Service:
 General Aviation:

Aircraft Storage

Conventional:
 T-hangar:
 Plane Port:

Fuel Available

100LL

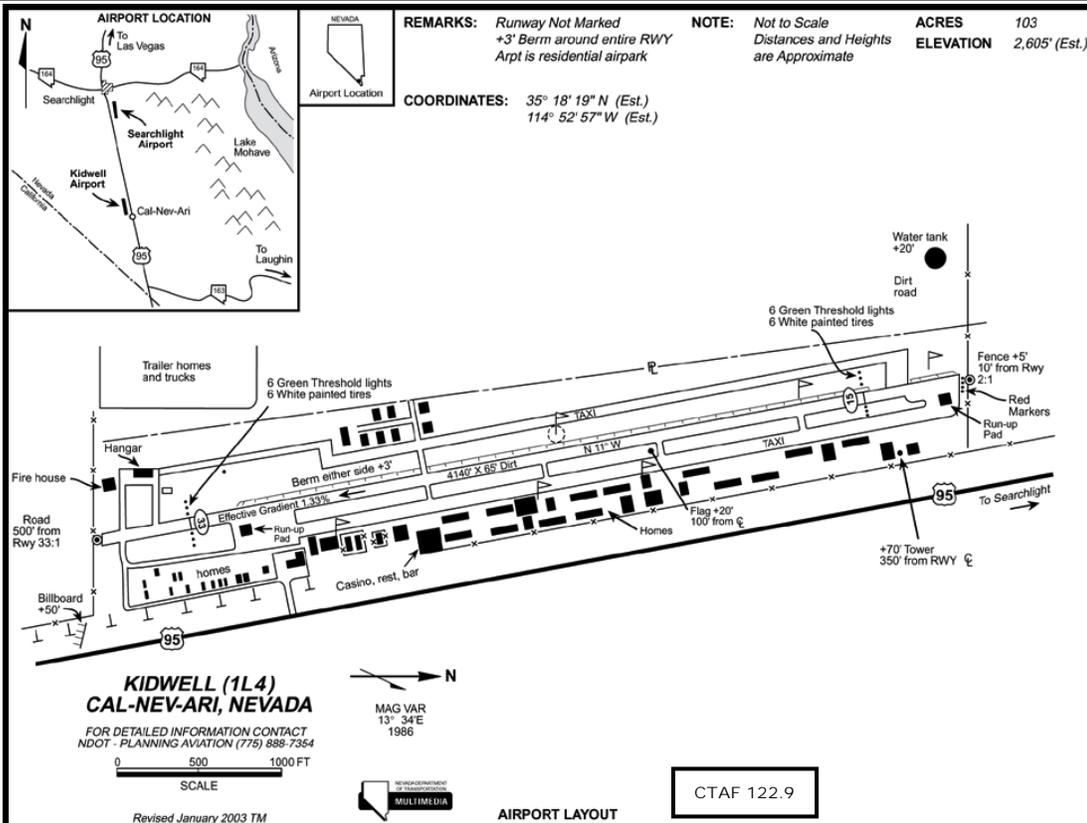


Figure 5-31 -- continued

CAPITAL IMPROVEMENT PROGRAM				
Airport Name: Kidwell		Associated City: Cal Nev Ari		
Project Description	Phase I			
	Total Costs	Federal	Local	Private
	0	0	0	0
Total Phase I 2002-2005	0	0	0	0

Figure 5-32 Airport Information and Capital Improvement Program

Airport: Kingston
Associated City: Kingston
County: Lander, NV
Ownership: Public
Airport-ID: N15

NPIAS No.:
Site Number: 13080.A
Service Level: GA
Airport Category: BA
Airport Reference Code: A-I

<u>Annual Activity</u>	<u>Current (Year)</u>		<u>Forecast (Year)</u>		<u>Based Aircraft Fleet Mix</u>	
Passenger Enplanements:					Single Engine: 1	Helicopter: 0
Aircraft Operations:	250	2000	380	2020	Multi -Engine: 0	Military: 0
Based Aircraft:	1	2000	1	2020	Jet: 0	Gliders: 0
Critical Aircraft: Cessna 172						Ultra-Lights: 0

Existing Facilities

Land Area 144 Acres

Elevation: 5,950 MSL

Primary Runway 07-25

Surface Type: Dirt
 Condition: Fair
 Length: 3,700'
 Width: 80'
 Lighting: None

Secondary Runway 16-34

Surface Type: Dirt
 Condition: Fair
 Length: 3,072'
 Width: 60'
 Lighting: None

Taxiway

Surface Type:
 Condition:
 Area:
 Lighting:

Apron Areas

Commercial Service:
 Condition:
 General Aviation:
 Condition:

Vehicular Parking

Commercial Service:
 General Service:

Approach/Landing Aids

None

Visual Approach Aids

None

Weather Reporting

None

Terminal Building Area

Commercial Service:
 General Aviation:

Aircraft Storage

Conventional:
 T-hangar:
 Plane Port:

Fuel Available

100LL

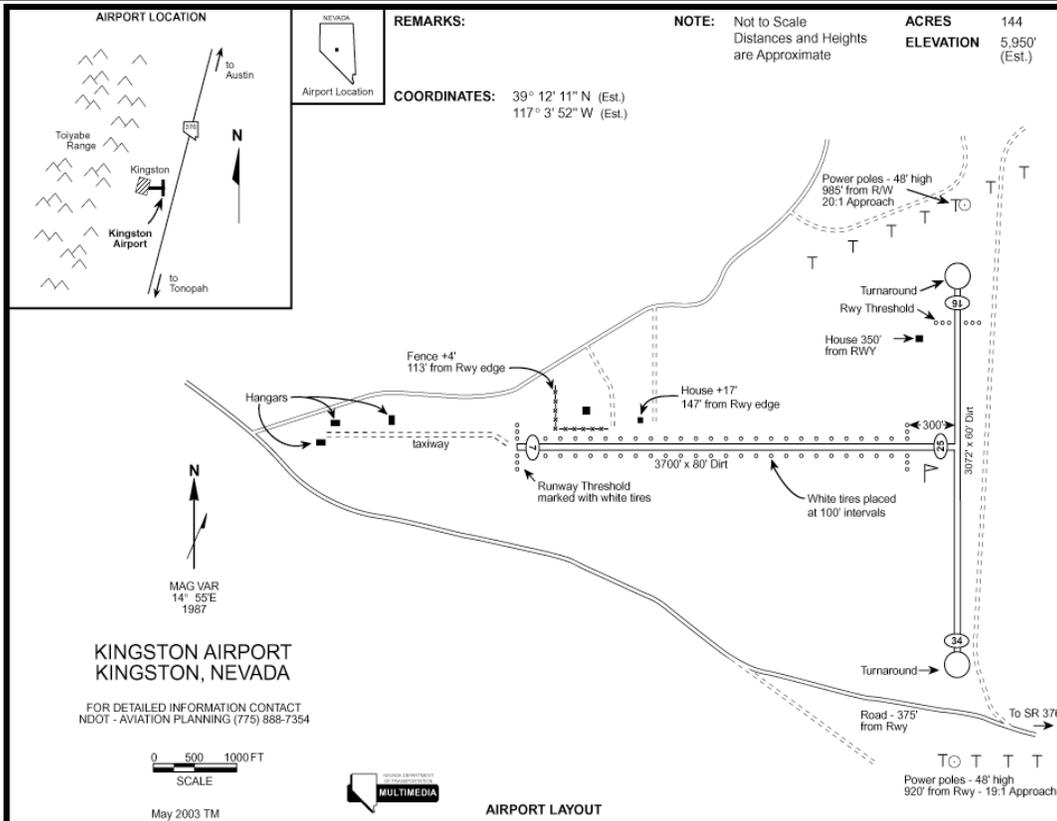


Figure 5-32 -- continued

CAPITAL IMPROVEMENT PROGRAM				
Airport Name: Kingston		Associated City: Kingston		
Project Description	Phase I			
	Total Costs	Federal	Local	Private
	0	0	0	0
Total Phase I 2002-2005	0	0	0	0

Figure 5-33 Airport Information and Capital Improvement Program

Airport: Lida Junction
Associated City: Goldfield
County: Esmeralda, NV
Ownership: Public
Airport-ID: 0L4

NPIAS No.:
Site Number: 13070.A
Service Level: GA
Airport Category: BA
Airport Reference Code: A-I

<u>Annual Activity</u>	<u>Current (Year)</u>		<u>Forecast (Year)</u>		<u>Based Aircraft Fleet Mix</u>	
Passenger Enplanements:					Single Engine: 0	Helicopter: 0
Aircraft Operations:	10	2000	10	2020	Multi -Engine: 0	Military: 0
Based Aircraft:	0	2000	0	2020	Jet: 0	Glanders: 0
Critical Aircraft: Cessna 172						Ultra-Lights: 0

Existing Facilities

Land Area 180 Acres

Elevation: 4,684 MSL

Primary Runway 18-36

Surface Type: Dirt
 Condition: Good
 Length: 6,800'
 Width: 80'
 Lighting: None

Secondary Runway

Surface Type:
 Condition:
 Length:
 Width:
 Lighting:

Taxiway

Surface Type:
 Condition:
 Area:
 Lighting:

Apron Areas

Commercial Service:
 Condition:
 General Aviation:
 Condition:

Vehicular Parking

Commercial Service:
 General Service:

Approach/Landing Aids

None

Visual Approach Aids

None

Weather Reporting

None

Terminal Building Area

Commercial Service:
 General Aviation:

Aircraft Storage

Conventional:
 T-hangar:
 Plane Port:

Fuel Available

None

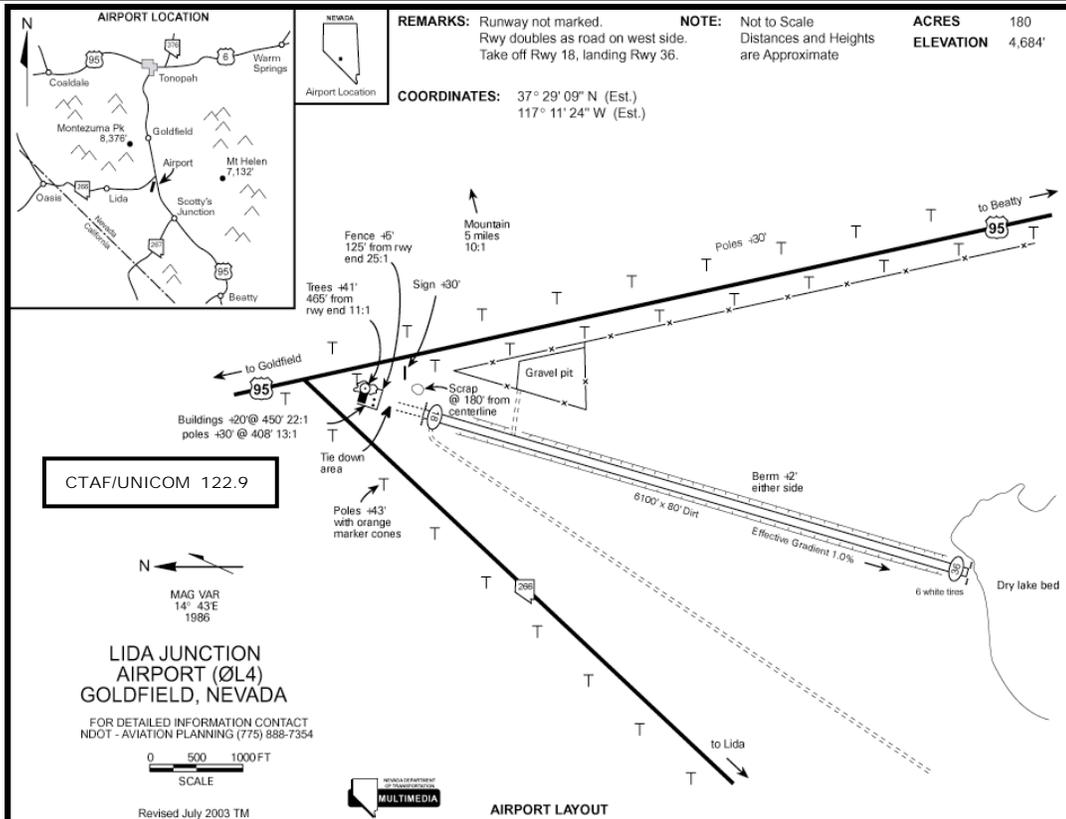


Figure 5-33 -- continued

CAPITAL IMPROVEMENT PROGRAM				
Airport Name: Lida Junction		Associated City: Goldfield		
Project Description	Phase I			
	Total Costs	Federal	Local	Private
	0	0	0	0
Total Phase I 2002-2005	0	0	0	0

Figure 5-34 Airport Information and Capital Improvement Program

Airport: Lincoln County
Associated City: Panaca
County: Lincoln, NV
Ownership: Public
Airport-ID: 1L1

NPIAS No.: 32-0016
Site Number: 13108.A
Service Level: GA
Airport Category: RA
Airport Reference Code: B-1

<u>Annual Activity</u>	<u>Current (Year)</u>		<u>Forecast (Year)</u>		<u>Based Aircraft Fleet Mix</u>	
Passenger Enplanements:					Single Engine: 2	Helicopter: 0
Aircraft Operations:	2,500	2000	3,750	2020	Multi -Engine: 0	Military: 0
Based Aircraft:	3	2000	4	2020	Jet: 0	Gliders: 0
Critical Aircraft: Beech Baron						Ultra-Lights: 1

Existing Facilities

Land Area 190 Acres

Elevation: 4,828 MSL

Primary Runway 17-35

Surface Type: Asphalt
 Condition: Good
 Length: 4,620'
 Width: 60'
 Lighting: MIRL

Secondary Runway

Surface Type:
 Condition:
 Length:
 Width:
 Lighting:

Taxiway

Surface Type:
 Condition:
 Area:
 Lighting:

Apron Areas

Commercial Service:
 Condition:
 General Aviation:
 Condition:

Vehicular Parking

Commercial Service:
 General Service:

Approach/Landing Aids

None

Visual Approach Aids

Beacon

Weather Reporting

None

Terminal Building Area

Commercial Service:
 General Aviation:

Aircraft Storage

Conventional:
 T-hangar:
 Plane Port:

Fuel Available

None

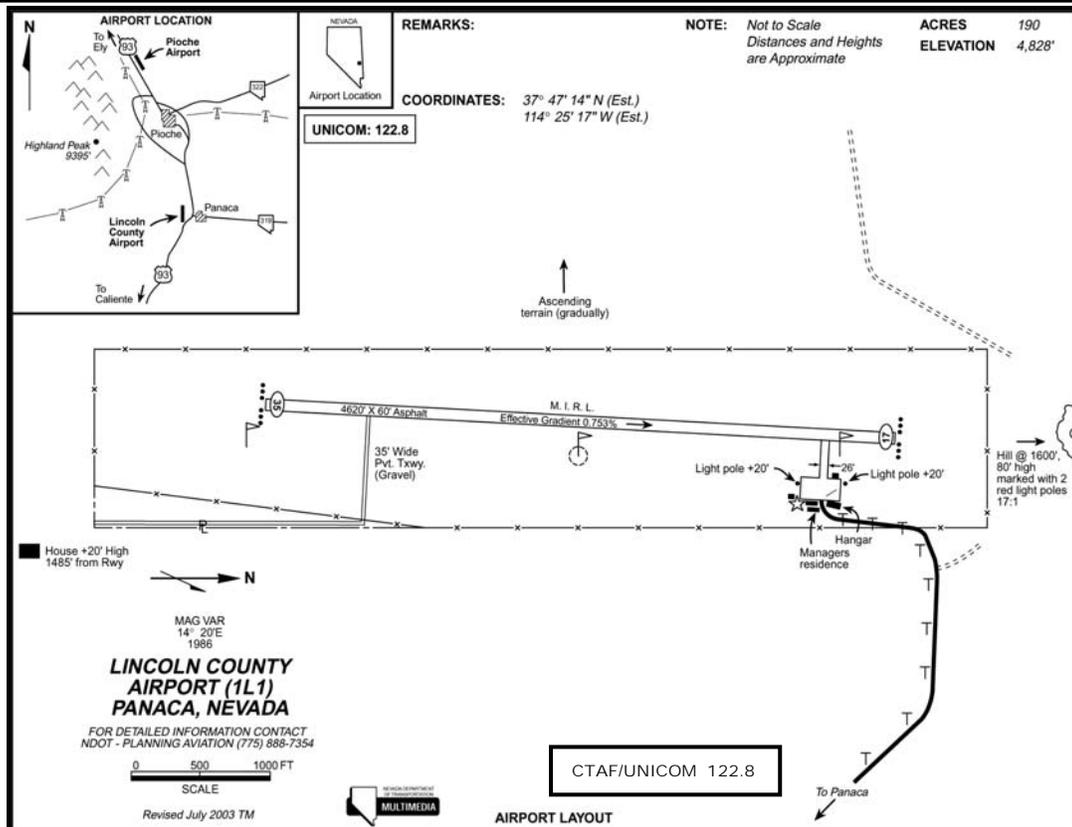


Figure 5-34 -- continued

CAPITAL IMPROVEMENT PROGRAM				
Airport Name: Lincoln County		Associated City: Panaca		
Project Description	Phase I			
	Total Costs	Federal	Local	Private
Acquire Approach Land (70 Acres)	32,000	30,000	2,000	0
Construct Parallel Taxiway	400,000	375,000	25,000	0
Extend/Widen/Strengthen Runway 17-35	1,015,000	951,562	63,438	0
Pavement Maintenance	422,373		422,373	0
Total Phase I 2002-2005	1,869,373	1,356,562	512,811	0
Project Description	Phase II			
	Total Costs	Federal	Local	Private
Pavement Maintenance	69,749		69,749	0
Total Phase II 2006-2010	69,749		69,749	0
Grand Total	1,939,122	1,356,562	582,560	0

Figure 5-35 Airport Information and Capital Improvement Program

Airport: McCarran International
Associated City: Las Vegas
County: Clark, NV
Ownership: Public
Airport-ID: LAS

NPIAS No.: 32-0012
Site Number: 13083.A
Service Level: PR
Airport Category: CM-PR
Airport Reference Code: D-V

<u>Annual Activity</u>	<u>Current (Year)</u>		<u>Forecast (Year)</u>		<u>Based Aircraft Fleet Mix</u>	
Passenger Enplanements:	18,443,481	2000	37,850,000	2020	Single Engine: 78	Helicopter: 34
Aircraft Operations:	521,300	2000	836,230	2020	Multi -Engine: 64	Military: 0
Based Aircraft:	220	2000	220	2020	Jet: 44	Gliders: 0
Critical Aircraft: Boeing 747						Ultra-Lights: 0

Existing Facilities

Land Area 2,820 Acres

Elevation: 2,181 MSL

Primary Runway 07L-25R

Surface Type: Asphalt
 Condition: Good
 Length: 14,500'
 Width: 150'
 Lighting: HIRL/MIRL/PAPI

Secondary Runway 7R-25L

Surface Type: Asphalt
 Condition: Good
 Length: 10,525'
 Width: 150'
 Lighting: HIRL/MIRL/PAPI

Taxiway

Surface Type: Asphalt
 Condition: Good
 Area:
 Lighting:

Apron Areas

Commercial Service:
 Condition:
 General Aviation:
 Condition:

Vehicular Parking

Commercial Service: 9,500
 General Service:

Approach/Landing Aids

ILS, VOR/DME, GPS

Visual Approach Aids

PAPI-4, MALSR, REIL, MALSF, Beacon

Weather Reporting

LLWAS

Terminal Building Area

Commercial Service: 2,316,000
 General Aviation:

Aircraft Storage

Conventional: 41
 T-hangar: 20
 Plane Port:

Fuel Available

Jet A1+, 100LL, 100

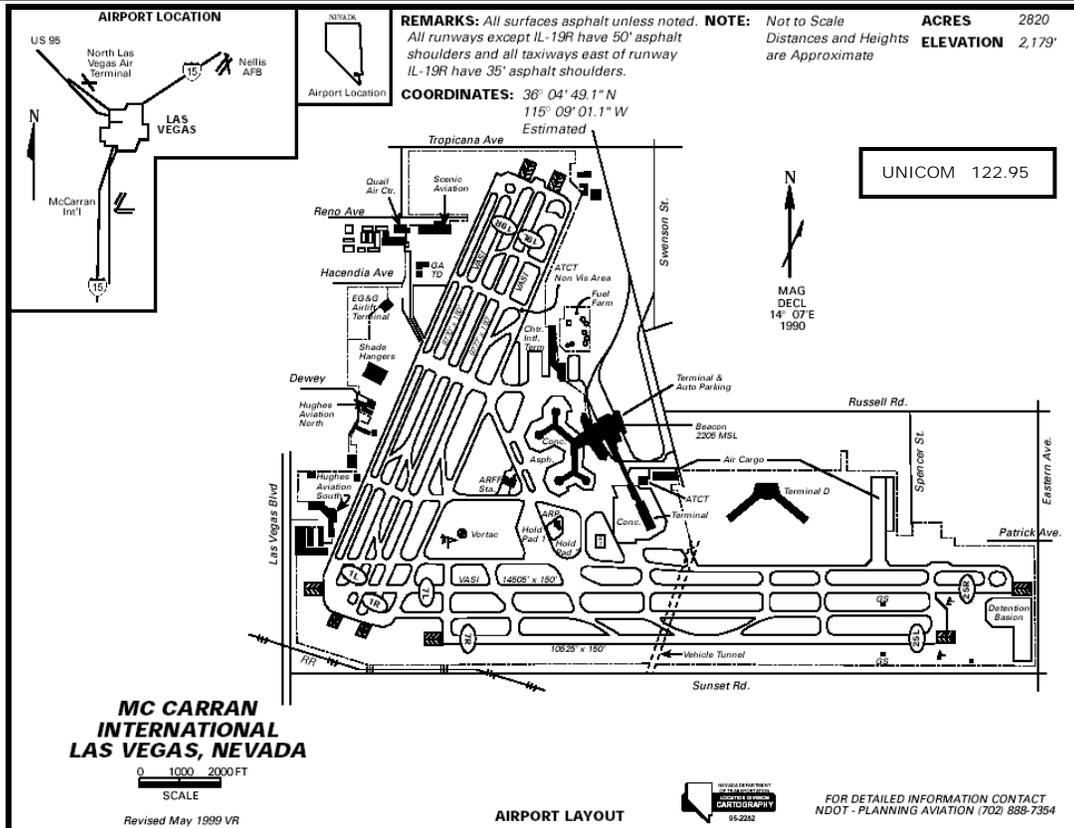


Figure 5-35 -- continued

CAPITAL IMPROVEMENT PROGRAM				
Airport Name: McCarran International		Associated City: Las Vegas		
Project Description	Phase I			
	Total Costs	Federal	Local	Private
Runway 1R/19L - Taxiway D Rehabilitation	20,685,089	15,513,817	5,171,272	0
Terminal 1 Remodel - Restrooms/Gates/ HVAC Upgrade/Asbestos Abatement	8,300,000		8,300,000	0
Terminal 3 - Land Acquisition (Reimbursement)	13,333,333	10,000,000	3,333,333	0
Terminal 3 - Terminal/Central Plant Design Roadway/Garage Design/Russell Road Relocation	41,666,667		41,666,667	0
Terminal 3 - CCFD Station 19 Relocation	2,000,000		2,000,000	0
CCRF Construction	40,000,000		40,000,000	0
Non-Urban Heliport Planning/EA/Design	6,000,000		6,000,000	0
Rehabilitation of ARFF Fire Truck	840,000	652,500	187,500	0
DOA Facilities - Maintenance Building	4,500,000		4,500,000	0
Total Phase I 2002-2005	137,325,089	26,166,317	111,158,772	0
Project Description	Phase II			
	Total Costs	Federal	Local	Private
C/B 4 & Terminal 2 Gates 1 & 2 Apron Rehabilitation	6,000,000	4,500,000	1,500,000	0
Terminal 1 Remodel - 26 Restrooms, A/B Gates Interior	4,300,000		4,300,000	0
Terminal 3 - Land Acquisition (Reimbursement)	13,333,333	10,000,000	3,333,333	0
Terminal 3 - Russell Road Relocation, Terminal/Central Plant Design, Roadway/Garage Design,	48,333,333		48,333,333	0
Terminal 3 - CCFD Station 19 Relocation, CCRF Construction	40,000,000		40,000,000	0
Non-Urban Heliport Design	4,000,000		4,000,000	0
DOA Facilities - Maintenance Building & Parking	7,500,000		7,500,000	0
Surface Access - Paradise/Swenson Realignment - Design	466,666		466,666	0
Subtotal Phase II 2006-2010	125,933,332	14,500,000	111,433,332	0

Figure 5-35 -- continued

CAPITAL IMPROVEMENT PROGRAM				
Airport Name: McCarran International		Associated City: Las Vegas		
Project Description	Phase II -- continued			
	Total Costs	Federal	Local	Private
Taxiway A Rehabilitation	20,000,000	15,000,000	5,000,000	0
Terminal 1 Remodel - A/B Gates Interior	2,500,000		2,500,000	0
Terminal 3 - Russell Road Construction	16,666,666		16,666,666	0
Terminal 3 - Terminal Apron Construction	166,666,666	10,000,000	156,666,666	0
Terminal 3 - Roadway/Garage/Central Plant Construction	33,333,334		33,333,334	0
Surface Access - Paradise/Swenson Realignment/Design	10,466,666		10,466,666	0
Runway Rehabilitation 7L/25R (Phase 1)	20,000,000	15,000,000	5,000,000	0
C/B 2 Apron Rehabilitation	3,759,789	2,514,914	1,244,875	0
Terminal 1 Remodel - A/B Gates Interior	2,500,000		2,500,000	0
Terminal 3 - Terminal Apron Construction	166,666,666	10,000,000	156,666,666	0
Terminal 3 - Roadway/Garage/Construction	33,333,334		33,333,334	0
Non-Urban Heliport Construction	30,000,000		30,000,000	0
Surface Access - Paradise/Swenson Realignment Construction	10,000,000		10,000,000	0
Runway Rehabilitation 7L/25R (Phase 2)	20,000,000	15,000,000	5,000,000	0
C/B 2 Apron Rehabilitation	3,759,789	2,514,914	1,244,875	0
Terminal 1 Remodel - A/B Gates Interior	2,500,000		2,500,000	0
Terminal 3 - Terminal Construction	166,666,667	10,000,000	156,666,667	0
Non-Urban Heliport Construction	10,000,000		10,000,000	0
Ivanpah Airport - Design	30,000,000		30,000,000	0
Total Phase II 2006-2010	874,752,909	94,529,828	780,223,081	0
Grand Total	1,012,077,998	120,696,145	891,381,853	0

Figure 5-36 Airport Information and Capital Improvement Program

Airport: Mesquite Municipal
Associated City: Mesquite
County: Clark, NV
Ownership: Public
Airport-ID: 67L

NPIAS No.: 32-0031
Site Number: 13089.7A
Service Level: GA
Airport Category: CA
Airport Reference Code: B-II

<u>Annual Activity</u>	<u>Current (Year)</u>		<u>Forecast (Year)</u>		<u>Based Aircraft Fleet Mix</u>	
Passenger Enplanements:					Single Engine: 15	Helicopter: 0
Aircraft Operations:	15,000	2000	29,050	2020	Multi -Engine: 3	Military: 0
Based Aircraft:	19	2000	63	2020	Jet: 1	Gliders: 0
Critical Aircraft: Cessna Citation III						Ultra-Lights: 0

Existing Facilities

Land Area: 155 Acres

Elevation: 1,975 MSL

Primary Runway 01-19

Surface Type: Asphalt
 Condition: Good
 Length: 5,100'
 Width: 75'
 Lighting: MIRL

Secondary Runway

Surface Type:
 Condition:
 Length:
 Width:
 Lighting:

Taxiway

Surface Type:
 Condition:
 Area:
 Lighting:

Apron Areas

Commercial Service:
 Condition:
 General Aviation:
 Condition:

Vehicular Parking

Commercial Service:
 General Service:

Approach/Landing Aids

VOR/DME, GPS

Visual Approach Aids

REIL, PAPI-2, Beacon

Weather Reporting

None

Terminal Building Area

Commercial Service:
 General Aviation:

Aircraft Storage

Conventional:
 T-hangar:
 Plane Port:

Fuel Available

Jet A, 100LL

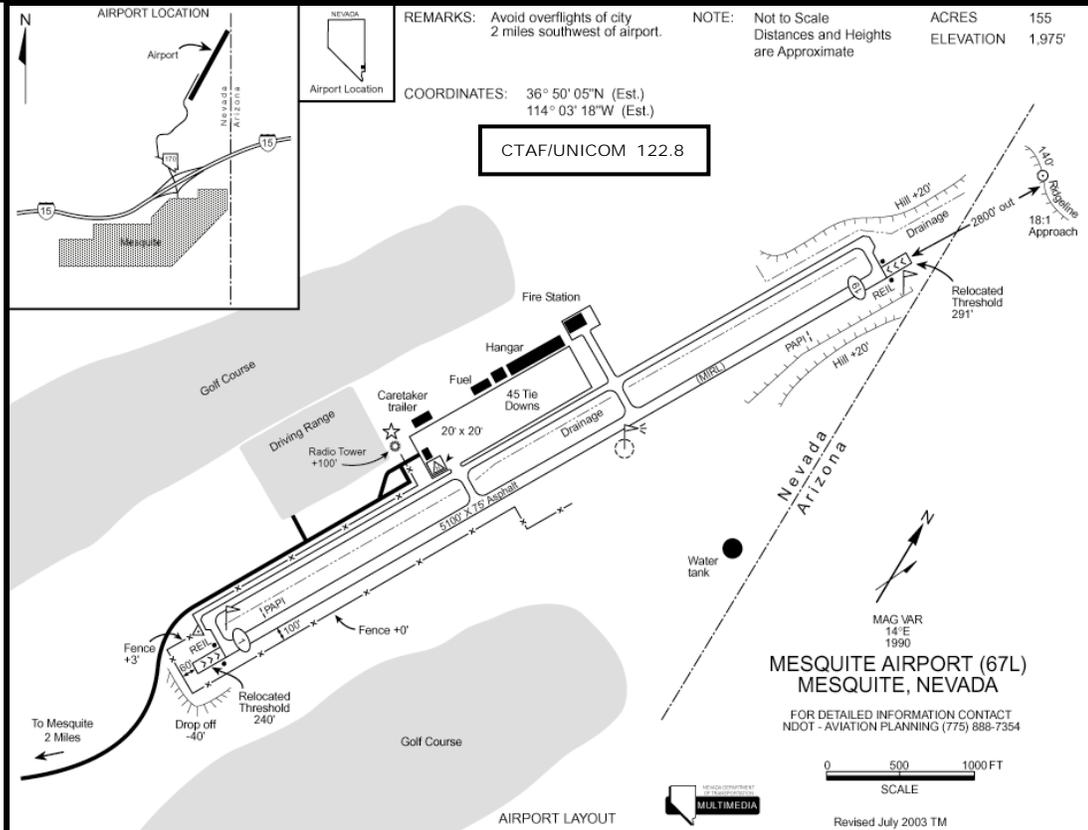


Figure 5-36 -- continued

CAPITAL IMPROVEMENT PROGRAM				
Airport Name: Mesquite Municipal		Associated City: Mesquite		
Project Description	Phase I			
	Total Costs	Federal	Local	Private
Extend Runway	200,000	187,500	12,500	0
Extend Taxiway	138,000	129,375	8,625	0
Acquire Security Fencing (Including Lights)	85,000	79,688	5,312	0
Rehabilitate Runway 1-19	250,000	234,375	15,625	0
Extend Runway 1-19	192,000	180,000	12,000	0
Improve Access Road	42,850	40,172	2,678	0
Install Weather Reporting Equipment (Describe, E.G., AWOS)	85,000	79,688	5,312	0
Install Apron Lighting	43,000	40,312	2,688	0
Acquire Security Equipment (Entrance Gates)	5,500	5,156	344	0
Rehabilitate Runway (Overlay)	743,750	697,266	46,484	0
Rehabilitate Taxiway (Overlay)	350,000	328,125	21,875	0
Construct Apron (Terminal and Exit Overlay)	81,200	76,125	5,075	0
Total Phase I 2002-2005	2,216,300	2,077,782	138,518	0

Figure 5-37 Airport Information and Capital Improvement Program

Airport: Mina
Associated City: Mina
County: Mineral, NV
Ownership: Public
Airport-ID: 3Q0

NPIAS No.:
Site Number: 13090.5A
Service Level: GA
Airport Category: BA
Airport Reference Code: A-1

<u>Annual Activity</u>	<u>Current (Year)</u>		<u>Forecast (Year)</u>		<u>Based Aircraft Fleet Mix</u>	
Passenger Enplanements:					Single Engine: 3	Helicopter: 0
Aircraft Operations:	200	2000	300	2020	Multi -Engine: 0	Military: 0
Based Aircraft:	4	2000	4	2020	Jet: 0	Gliders: 0
Critical Aircraft: Cessna 172						Ultra-Lights: 1

Existing Facilities

Land Area 29 Acres

Elevation: 4,552 MSL

Primary Runway 13-31

Surface Type: Dirt
 Condition: Good
 Length: 4,600'
 Width: 165'
 Lighting: None

Secondary Runway

Surface Type:
 Condition:
 Length:
 Width:
 Lighting:

Taxiway

Surface Type:
 Condition:
 Area:
 Lighting:

Apron Areas

Commercial Service:
 Condition:
 General Aviation:
 Condition:

Vehicular Parking

Commercial Service:
 General Service:

Approach/Landing Aids

None

Visual Approach Aids

None

Weather Reporting

None

Terminal Building Area

Commercial Service:
 General Aviation:

Aircraft Storage

Conventional:
 T-hangar:
 Plane Port:

Fuel Available

None

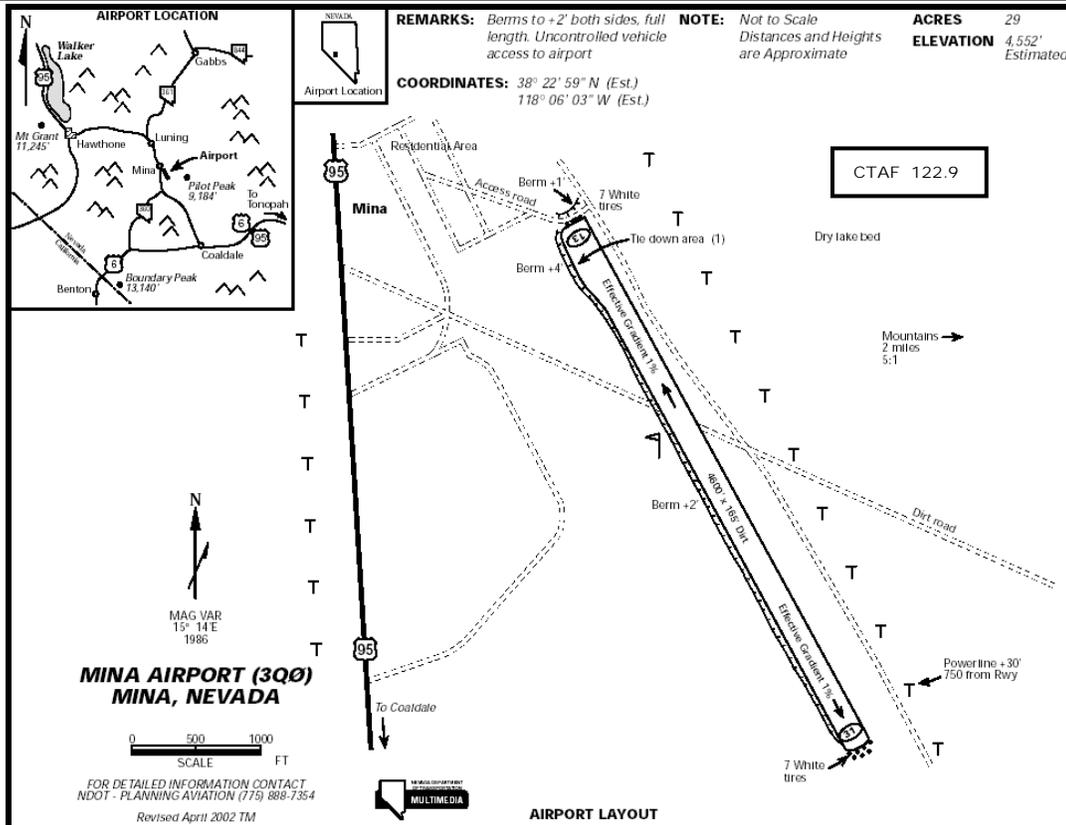


Figure 5-37 -- continued

CAPITAL IMPROVEMENT PROGRAM				
Airport Name: Mina		Associated City: Mina		
Project Description	Phase I			
	Total Costs	Federal	Local	Private
	0	0	0	0
Total Phase I 2002-2005	0	0	0	0

Figure 5-38 Airport Information and Capital Improvement Program

Airport: Minden-Tahoe
Associated City: Minden
County: Douglas, NV
Ownership: Public
Airport-ID: MEV

NPIAS No.: 32-0013
Site Number: 13091.A
Service Level: GA
Airport Category: CA
Airport Reference Code: B-II

<u>Annual Activity</u>	<u>Current (Year)</u>		<u>Forecast (Year)</u>		<u>Based Aircraft Fleet Mix</u>	
Passenger Enplanements:					Single Engine: 156	Helicopter: 6
Aircraft Operations:	79,800	2000	139,400	2020	Multi -Engine: 29	Military: 0
Based Aircraft:	261	2000	352	2020	Jet: 9	Gliders: 60
Critical Aircraft: Cessna Citation III						Ultra-Lights: 1

Existing Facilities

Land Area 99090 Acres

Elevation: 4,718 MSL

Primary Runway 16-34

Surface Type: Asphalt
 Condition: Good
 Length: 7,395'
 Width: 100'
 Lighting: MIRL

Secondary Runway 12-30

Surface Type: Asphalt
 Condition: Good
 Length: 5,289'
 Width: 75'
 Lighting: None

Taxiway

Surface Type:
 Condition:
 Area:
 Lighting:

Apron Areas

Commercial Service:
 Condition:
 General Aviation:
 Condition:

Vehicular Parking

Commercial Service:
 General Service:

Approach/Landing Aids

GPS

Visual Approach Aids

VASI-4, Beacon

Weather Reporting

AWOS

Terminal Building Area

Commercial Service:
 General Aviation:

Aircraft Storage

Conventional:
 T-hangar:
 Plane Port:

Fuel Available

Jet A, 100

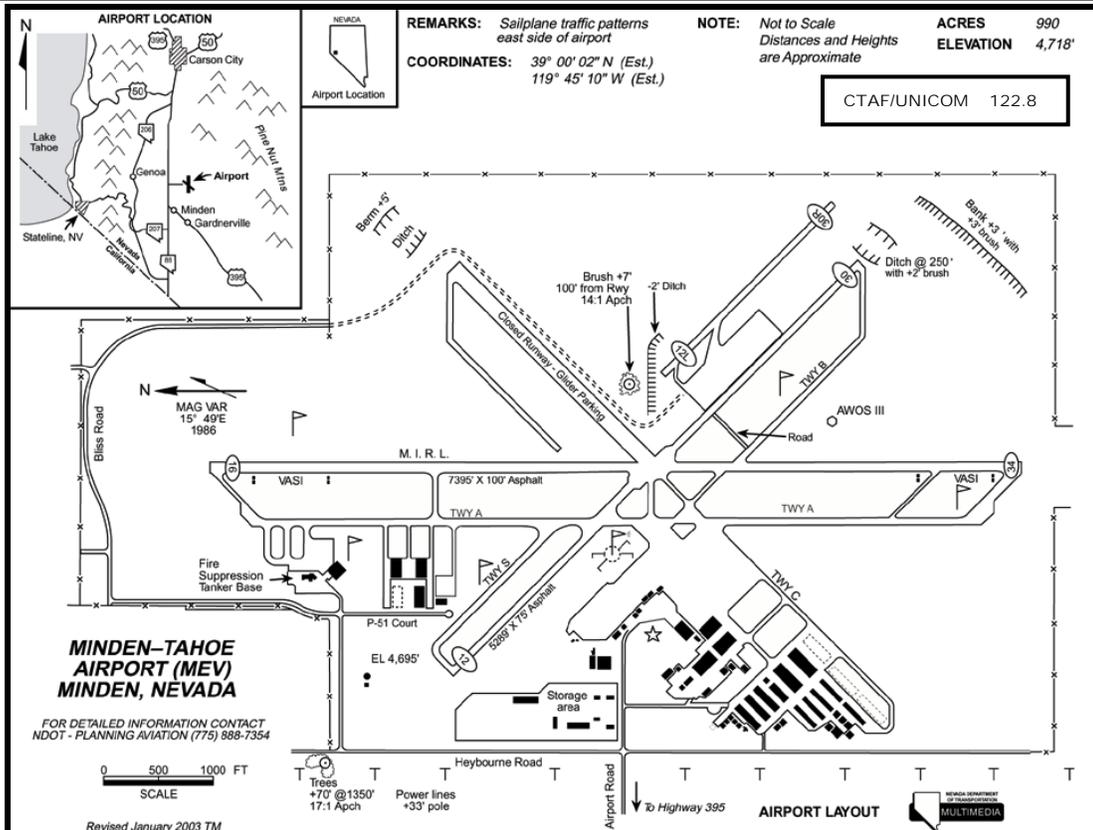


Figure 5-38 -- continued

CAPITAL IMPROVEMENT PROGRAM				
Airport Name: Minden-Tahoe		Associated City: Minden		
Project Description	Phase I			
	Total Costs	Federal	Local	Private
Rehabilitate Main Apron and Taxiway D	520,000	487,500	32,500	0
Construct Taxiway H and I	615,000	576,562	38,438	0
Construct Southwest Access Road	900,000	843,750	56,250	0
Construct Eastside Apron	804,844	754,541	50,303	0
Construct Taxiway S	425,000	398,438	26,562	0
Acquire Land/Easement for Approaches	1,050,000	984,375	65,625	0
Rehabilitate Apron and Taxiway	1,066,667	1,000,000	66,667	0
Update Airport Master Plan	130,000	121,875	8,125	0
Rehabilitate Runway 16R-34L	800,000	750,000	50,000	0
Rehabilitate Runway 12R-30L and Taxiway B	144,000	135,000	9,000	0
Acquire Security Fencing	270,000	253,125	16,875	0
Improve Airport Miscellaneous Improvements				
Washrack	60,000	56,250	3,750	0
Rehabilitate Runway 16-34	1,350,000	1,265,625	84,375	0
Improve Airport (Extend Water and Sewer Line)	600,000	562,500	37,500	0
Acquire Land for Approaches Runway 30L and 30R	165,000	154,688	10,312	0
Construct Taxiway A3	182,000	170,625	11,375	0
Rehabilitate Taxiway	14,000,000	13,125,000	875,000	0
Total Phase I 2002-2005	23,082,511	21,639,854	1,442,657	0

Figure 5-39 Airport Information and Capital Improvement Program

Airport: North Las Vegas
Associated City: Las Vegas
County: Clark, NV
Ownership: Public
Airport-ID: VGT

NPIAS No.: 32-0010
Site Number: 13082.A
Service Level: RL
Airport Category: CM
Airport Reference Code: B-II

<u>Annual Activity</u>	<u>Current (Year)</u>		<u>Forecast (Year)</u>		<u>Based Aircraft Fleet Mix</u>	
Passenger Enplanements:	212,352	2002	347,400	2020	Single Engine: 418	Helicopter: 11
Aircraft Operations:	248,824	2002	283,200	2020	Multi -Engine: 132	Military: 0
Based Aircraft:	575	2000	702	2020	Jet: 14	Gliders: 0
Critical Aircraft: Cessna Citation II						Ultra-Lights: 0

Existing Facilities

Land Area 920 Acres

Elevation: 2,205 MSL

Primary Runway 12R-30L 12L-30R

Surface Type:	Asphalt	Asphalt
Condition:	Good	Good
Length:	5,000'	4,000'
Width:	75'	75'
Lighting:	MIRL	MIRL

Secondary Runway 07-25

Surface Type:	Asphalt
Condition:	Good
Length:	5,005'
Width:	75'
Lighting:	MIRL

Taxiway

Surface Type: Asphalt
 Condition: Good
 Area:
 Lighting:

Apron Areas

Commercial Service:
 Condition:
 General Aviation:
 Condition:

Vehicular Parking

Commercial Service:
 General Service:

Approach/Landing Aids

GPS

Visual Approach Aids

PAPI-4, Beacon

Weather Reporting

ASOS, LAWRS

Terminal Building Area

Commercial Service: 12,000
 General Aviation:

Aircraft Storage

Conventional: 120
 T-hangar: 160
 Plane Port:
 Shade Hangar: 215

Fuel Available

Jet A, 100LL, 80

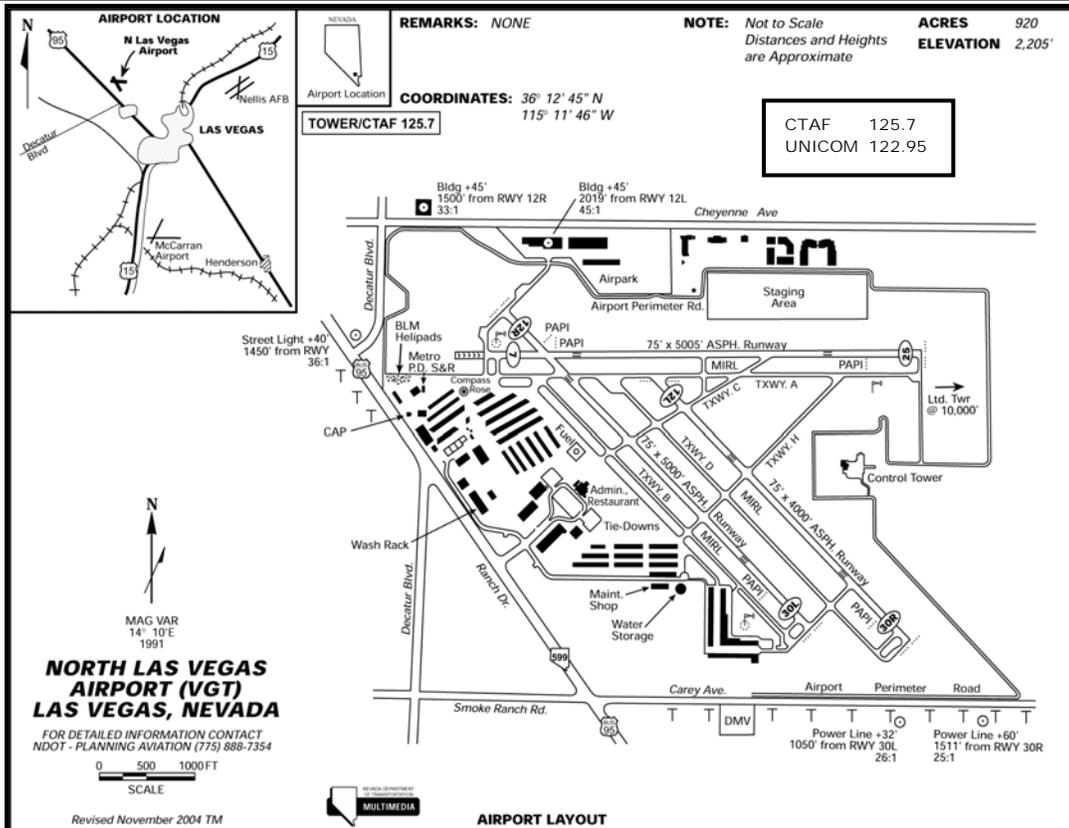


Figure 5-39 -- continued

CAPITAL IMPROVEMENT PROGRAM				
Airport Name: North Las Vegas		Associated City: Las Vegas		
Project Description	Phase I			
	Total Costs	Federal	Local	Private
Powerline Relocation (Move Line Underground)	5,000,000	4,687,500	312,500	0
Blimp Landing and Staging Area	600,000	570,000	30,000	0
Total Phase I 2002-2005	5,600,000	5,257,500	342,500	0
Project Description	Phase II			
	Total Costs	Federal	Local	Private
Taxilane/Apron Pavement Rehabilitation	3,000,000	2,850,000	150,000	0
Rancho/Carey Expansion Construction	5,000,000	4,750,000	250,000	0
Rancho/Carey Expansion Construction	5,000,000	4,750,000	250,000	0
Taxilane/Apron Pavement Rehabilitation	5,000,000	4,750,000	250,000	0
Total Phase II 2006-2010	18,000,000	17,100,000	900,000	0
Grand Total	23,600,000	22,357,500	1,242,500	0

Figure 5-40 Airport Information and Capital Improvement Program

Airport: Owyhee
Associated City: Owyhee
County: Elko, NV
Ownership: Public
Airport-ID: 10U

NPIAS No.: 32-0028
Site Number: 13106.A
Service Level: GA
Airport Category: RA
Airport Reference Code: B-II

<u>Annual Activity</u>	<u>Current (Year)</u>		<u>Forecast (Year)</u>		<u>Based Aircraft Fleet Mix</u>	
Passenger Enplanements:					Single Engine: 4	Helicopter: 0
Aircraft Operations:	1,500	2000	6,370	2020	Multi -Engine: 1	Military: 0
Based Aircraft:	6	2000	10	2020	Jet: 0	Gliders: 1
Critical Aircraft: Beech King Air						Ultra-Lights: 0

Existing Facilities

Land Area 167 Acres

Elevation: 5,374 MSL

Primary Runway 02-20

Surface Type: Asphalt-Gravel
 Condition: Fair
 Length: 6,700'
 Width: 60'
 Lighting: None

Secondary Runway

Surface Type:
 Condition:
 Length:
 Width:
 Lighting:

Taxiway

Surface Type:
 Condition:
 Area:
 Lighting:

Apron Areas

Commercial Service:
 Condition:
 General Aviation:
 Condition:

Vehicular Parking

Commercial Service:
 General Service:

Approach/Landing Aids

None

Visual Approach Aids

None

Weather Reporting

None

Terminal Building Area

Commercial Service:
 General Aviation:

Aircraft Storage

Conventional:
 T-hangar:
 Plane Port:

Fuel Available

None

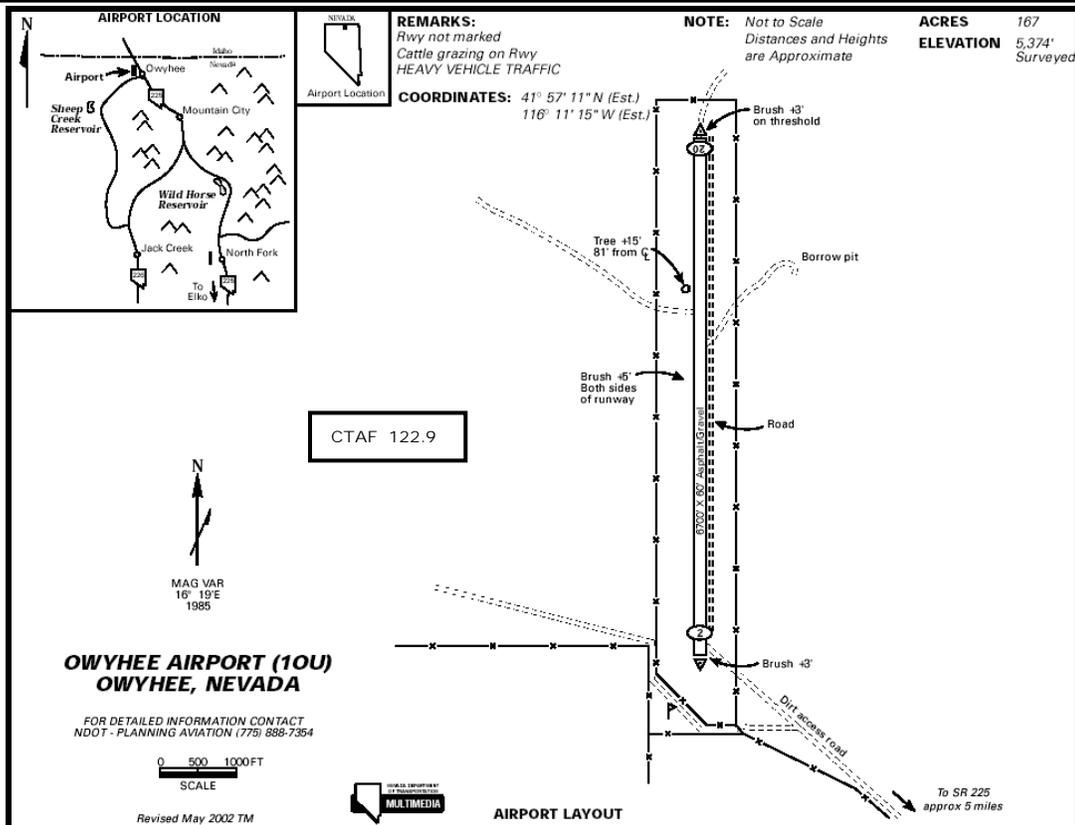


Figure 5-40 -- continued

CAPITAL IMPROVEMENT PROGRAM				
Airport Name: Owyhee		Associated City: Owyhee		
Project Description	Phase I			
	Total Costs	Federal	Local	Private
Conduct Environmental Assessment	150,000	140,625	9,375	0
Construct New Runway	1,000,000	937,500	62,500	0
Construct New Apron	100,000	93,750	6,250	0
Total Phase I 2002-2005	1,250,000	1,171,875	78,125	0

Figure 5-41 Airport Information and Capital Improvement Program

Airport: Parker Carson Stolport
Associated City: Carson City
County: Carson City, NV
Ownership: Private
Airport-ID: 2Q5

NPIAS No.:
Site Number: 13042.01S
Service Level: GA
Airport Category: BA
Airport Reference Code: A-I

<u>Annual Activity</u>	<u>Current (Year)</u>		<u>Forecast (Year)</u>		<u>Based Aircraft Fleet Mix</u>	
Passenger Enplanements:					Single Engine: 2	Helicopter: 0
Aircraft Operations:	1,500	2000	2,230	2020	Multi -Engine: 0	Military: 0
Based Aircraft:	12	2000	16	2020	Jet: 0	Glidors: 0
Critical Aircraft: Cessna 150						Ultra-Lights: 10

Existing Facilities

Land Area 14 Acres

Elevation: 4,950 MSL

Primary Runway 06-24

Surface Type: Gravel
 Condition: Good
 Length: 1,700'
 Width: 60'
 Lighting: None

Secondary Runway

Surface Type:
 Condition:
 Length:
 Width:
 Lighting:

Taxiway

Surface Type:
 Condition:
 Area:
 Lighting:

Apron Areas

Commercial Service:
 Condition:
 General Aviation:
 Condition:

Vehicular Parking

Commercial Service:
 General Service:

Approach/Landing Aids

Visual Approach Aids

Weather Reporting

Terminal Building Area

Commercial Service:
 General Aviation:

Aircraft Storage

Conventional:
 T-hangar:
 Plane Port:

Fuel Available

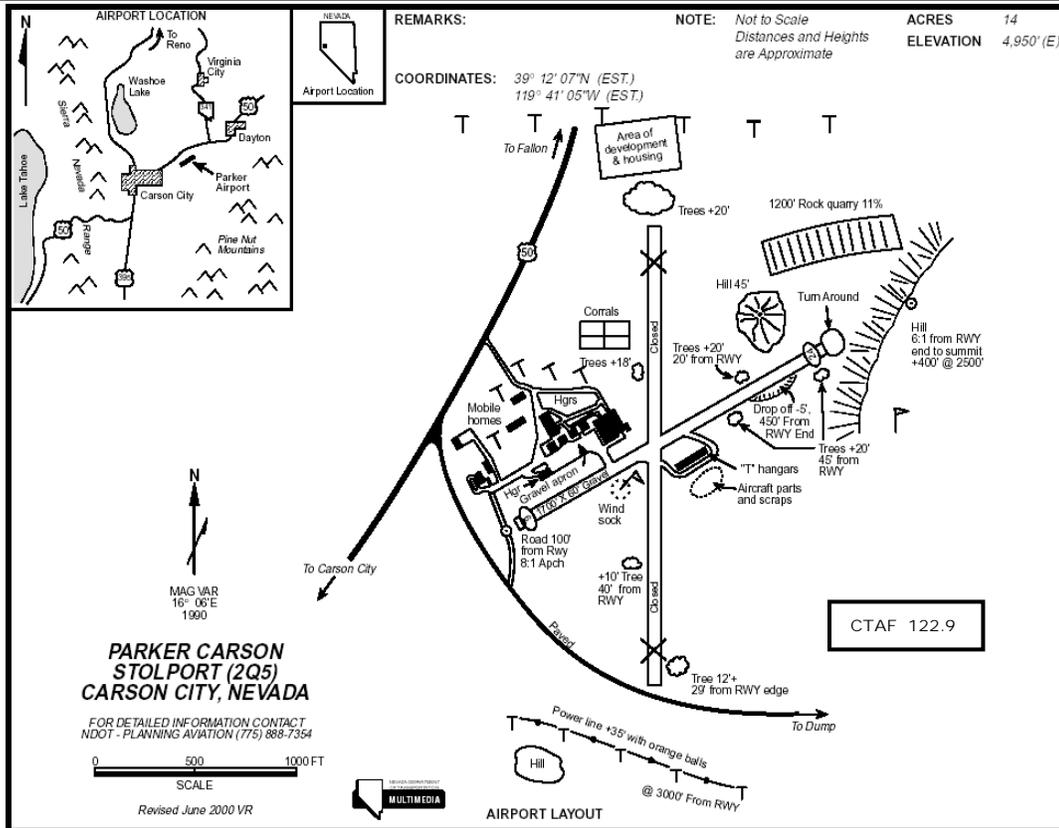


Figure 5-41 -- continued

CAPITAL IMPROVEMENT PROGRAM				
Airport Name: Parker Carson Stolport		Associated City: Carson City		
Project Description	Phase I			
	Total Costs	Federal	Local	Private
	0	0	0	0
Total Phase I 2002-2005	0	0	0	0

Figure 5-42 Airport Information and Capital Improvement Program

Airport: Perkins Field
Associated City: Overton
County: Clark, NV
Ownership: Public
Airport-ID: U08

NPIAS No.: 32-0014
Site Number: 13104.A
Service Level: GA
Airport Category: CA
Airport Reference Code: B-II

<u>Annual Activity</u>	<u>Current (Year)</u>		<u>Forecast (Year)</u>		<u>Based Aircraft Fleet Mix</u>	
Passenger Enplanements:					Single Engine: 18	Helicopter: 0
Aircraft Operations:	5,200	2000	7,730	2020	Multi -Engine: 0	Military: 0
Based Aircraft:	20	2000	27	2020	Jet: 0	Gliders: 0
Critical Aircraft: Cessna Citation II						Ultra-Lights: 2

Existing Facilities

Land Area 250 Acres

Elevation: 1,358 MSL

Primary Runway 13-31

Surface Type: Asphalt
 Condition: Good
 Length: 4,800'
 Width: 75'
 Lighting: MIRL

Secondary Runway

Surface Type:
 Condition:
 Length:
 Width:
 Lighting:

Taxiway

Surface Type:
 Condition:
 Area:
 Lighting:

Apron Areas

Commercial Service:
 Condition:
 General Aviation:
 Condition:

Vehicular Parking

Commercial Service:
 General Service:

Approach/Landing Aids

None

Visual Approach Aids

Beacon

Weather Reporting

None

Terminal Building Area

Commercial Service:
 General Aviation:

Aircraft Storage

Conventional:
 T-hangar:
 Plane Port:

Fuel Available

100

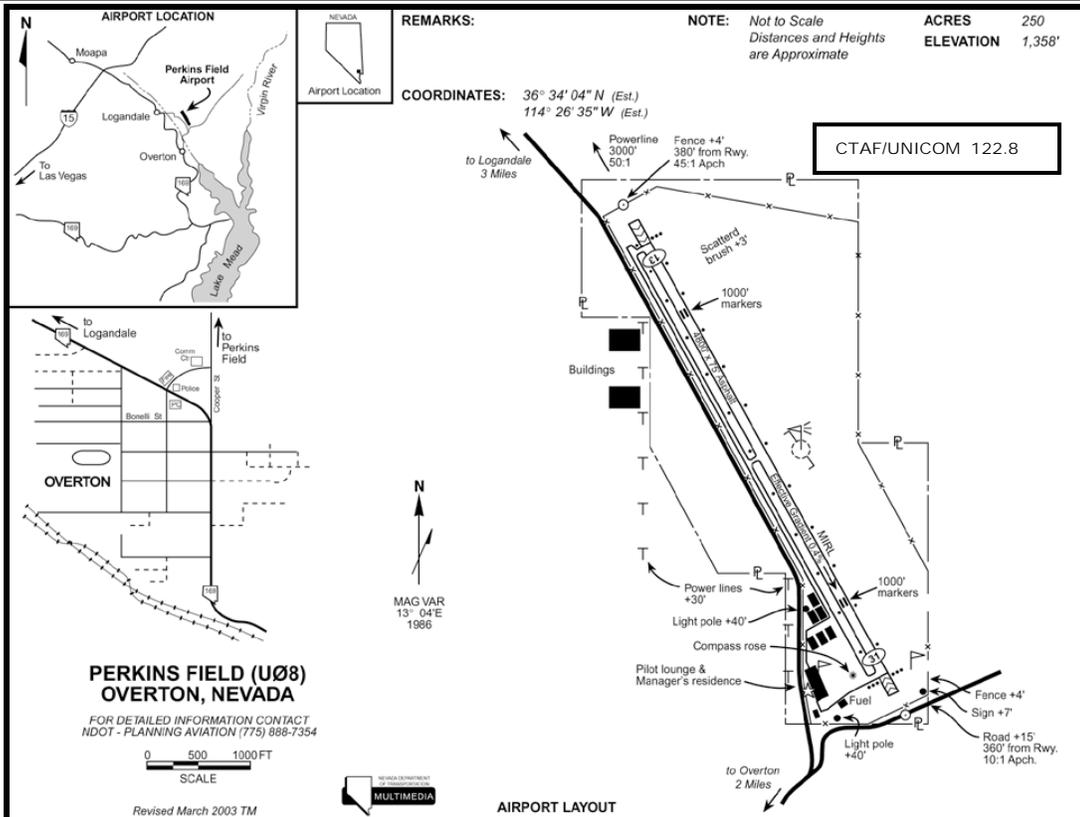


Figure 5-42 -- continued

CAPITAL IMPROVEMENT PROGRAM				
Airport Name: Perkins Field		Associated City: Overton		
Project Description	Phase I			
	Total Costs	Federal	Local	Private
Acquire Land for Approaches	488,012	457,511	30,501	0
Install Perimeter Fencing	192,000	180,000	12,000	0
Slurry Runway/Apron	750,000	712,500	37,500	0
Total Phase I 2002-2005	1,430,012	1,350,011	80,001	0
Project Description	Phase II			
	Total Costs	Federal	Local	Private
East Development Area Infrastructure	1,000,000	950,000	50,000	0
East Development Area Infrastructure	1,000,000	950,000	50,000	0
Total Phase II 2006-2010	2,000,000	1,900,000	100,000	0
Grand Total	3,430,012	3,250,011	180,001	0

Figure 5-43 Airport Information and Capital Improvement Program

Airport: Reno Stead
Associated City: Reno
County: Washoe, NV
Ownership: Public
Airport-ID: 4SD

NPIAS No.: 32-0018
Site Number: 13124.A
Service Level: RL
Airport Category: RL
Airport Reference Code: C-III

<u>Annual Activity</u>	<u>Current (Year)</u>		<u>Forecast (Year)</u>		<u>Based Aircraft Fleet Mix</u>	
Passenger Enplanements:					Single Engine: 175	Helicopter: 16
Aircraft Operations:	65,000	2000	91,740	2020	Multi -Engine: 20	Military: 2
Based Aircraft:	231	2000	284	2020	Jet: 16	Gliders: 2
Critical Aircraft: Boeing 727						Ultra-Lights: 0

Existing Facilities

Land Area 5,000 Acres

Elevation: 5,046 MSL

Primary Runway 08-26

Surface Type: Asphalt
 Condition: Good
 Length: 7,608'
 Width: 150'
 Lighting: HIRL

Secondary Runway 14-32

Surface Type: Asphalt
 Condition: Good
 Length: 9,000'
 Width: 150'
 Lighting: HIRL

Taxiway

Surface Type:
 Condition:
 Area:
 Lighting:

Apron Areas

Commercial Service:
 Condition:
 General Aviation:
 Condition:

Vehicular Parking

Commercial Service:
 General Service:

Approach/Landing Aids

GPS

Visual Approach Aids

REIL, PAPI-4, Beacon

Weather Reporting

AWOS

Terminal Building Area

Commercial Service:
 General Aviation:

Aircraft Storage

Conventional:
 T-hangar:
 Plane Port:

Fuel Available

Jet A, 100LL,
 80, 115

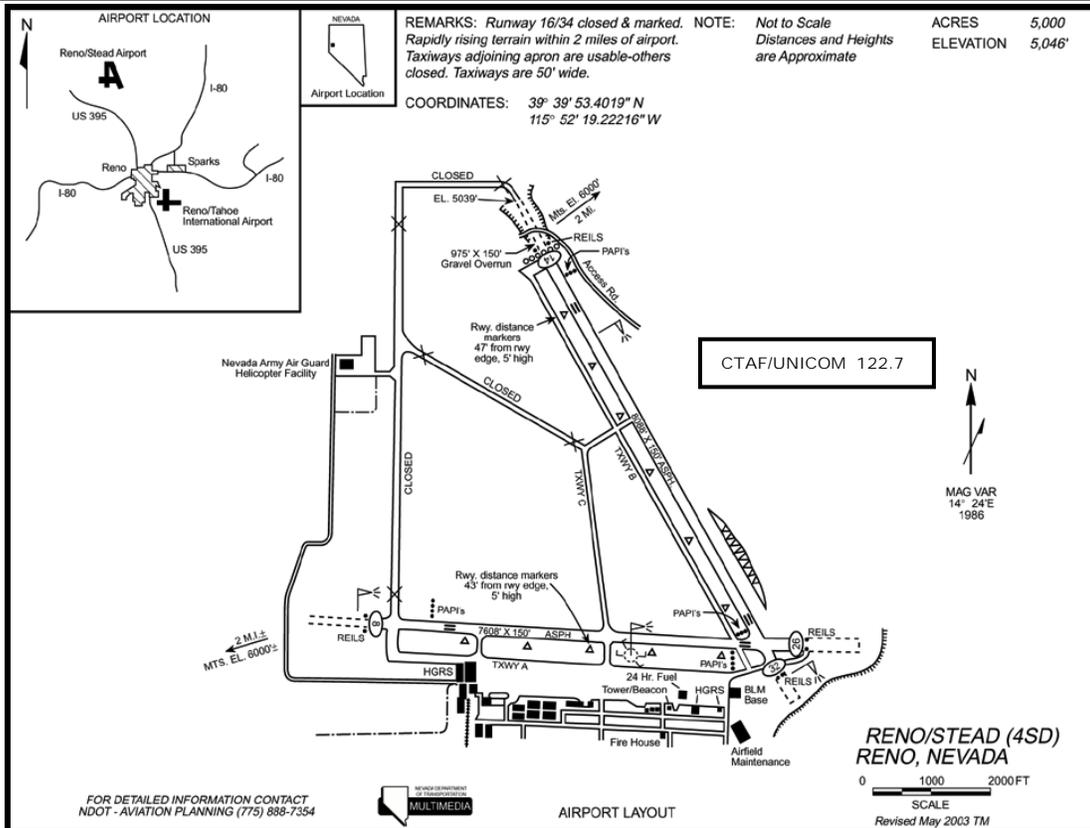


Figure 5-43 -- continued

CAPITAL IMPROVEMENT PROGRAM				
Airport Name: Reno Stead		Associated City: Reno		
Project Description	Phase I			
	Total Costs	Federal	Local	Private
Update Airport Master Plan Study and Drainage Master Plan	320,000	304,000	16,000	0
Ramp Road Reconstruction	725,000	688,750	36,250	0
Security Projects	70,000	66,500	3,500	0
Overlay/Reconstruction of old Runway 01 for Taxiway	2,600,000	2,470,000	130,000	0
Overlay Taxiway C North End	410,000	389,500	20,500	0
Total Phase I 2002-2005	4,125,000	3,918,750	206,250	0
Project Description	Phase II			
	Total Costs	Federal	Local	Private
Airport Access Road Construction (Moya Blvd.)	2,475,000	2,351,250	123,750	0
Existing T-Hangar Taxilane Reconstruction	1,500,000	1,425,000	75,000	0
Extend Airport Access Road (Moya Blvd.) and Utilities - Design/Construction	1,250,000	1,187,500	62,500	0
Terminal Area Development - Phase 1 B (East Side Site Preparation and Utility Install)	1,120,000	1,064,000	56,000	0
Terminal Area Development - Phase 2 (East Side Apron and Taxiway)	896,000	851,200	44,800	0
Install Precision Approach ILS - Runway 26	3,750,000	3,562,500	187,500	0
Overlay of Runway 8/26 - Design/Construction	4,275,000	4,061,250	213,750	0
Terminal Area Development - Phase 3 (West Side Site Preparation and Utility Install)	1,995,000	1,895,250	99,750	0
Terminal Building - Design/Construction	8,576,610	8,147,780	428,830	0
Terminal Area Development - Phase 4 (West Side Apron and Taxiways)	787,500	748,125	39,375	0
Phase 1 Apron Overlay/Reconstruct 1/3 of total	5,975,000	5,676,250	298,750	0
Total Phase II 2006-2010	32,600,110	30,970,105	1,630,005	0
Grand Total	36,725,110	34,888,855	1,836,255	0

Figure 5-44 Airport Information and Capital Improvement Program

Airport: Reno/Tahoe International
Associated City: Reno
County: Washoe, NV
Ownership: Public
Airport-ID: RNO

NPIAS No.: 32-0017
Site Number: 13125.A
Service Level: PR
Airport Category: CM-PR
Airport Reference Code: D-V

<u>Annual Activity</u>	<u>Current (Year)</u>		<u>Forecast (Year)</u>		<u>Based Aircraft Fleet Mix</u>	
Passenger Enplanements:	2,812,862	2000	5,992,000	2020	Single Engine: 109	Helicopter: 3
Aircraft Operations:	140,302	2000	237,571	2020	Multi -Engine: 29	Military: 7
Based Aircraft:	168	2000	207	2020	Jet: 20	Gliders: 0
Critical Aircraft: Boeing 777						Ultra-Lights: 0

Existing Facilities

Land Area 1,400 Acres

Elevation: 4,412 MSL

Primary Runway 16R-34L

Surface Type: Concrete
 Condition: Good
 Length: 11,002'
 Width: 150'
 Lighting: MIRL

Secondary Runway 16L-34R

Surface Type: Concrete
 Condition: Good
 Length: 9,000'
 Width: 150'
 Lighting: MIRL

Taxiway

Surface Type:
 Condition:
 Area:
 Lighting:

Apron Areas

Commercial Service:
 Condition:
 General Aviation:
 Condition:

Vehicular Parking

Commercial Service:
 General Service:

Approach/Landing Aids

ILS, GPS, LOC/DME, BC

Visual Approach Aids

MALS, PAPI-4, REIL,
 Beacon

Weather Reporting

ASOS

Terminal Building Area

Commercial Service:
 General Aviation:

Aircraft Storage

Conventional:
 T-hangar:
 Plane Port:

Fuel Available

Jet A1+, 100LL

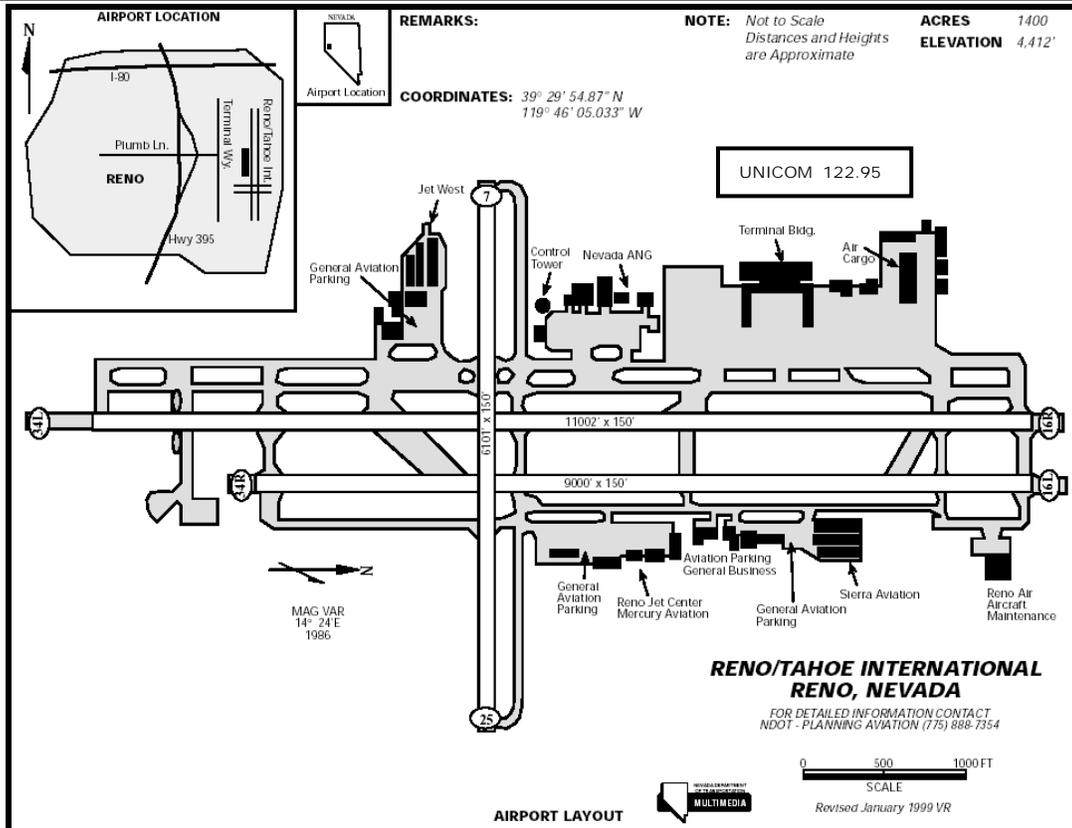


Figure 5-44 -- continued

CAPITAL IMPROVEMENT PROGRAM				
Airport Name: Reno/Tahoe International		Associated City: Reno		
Project Description	Phase I			
	Total Costs	Federal	Local	Private
Terminal Apron Reconstruction Phase 7 (Construction)	4,908,500	4,601,719	306,781	0
Terminal Apron Reconstruction Phase 8 (Construction)	5,002,000	4,689,375	312,625	0
Second Floor Concourse Buildout	4,520,000	4,237,500	282,500	0
Northeast Ramp (Cargo) Reconstruction (Construction)	8,227,084	7,712,891	514,193	0
Wildlife Hazard Assessment	80,000	75,000	5,000	0
Computer Interactive Employee Training Program	210,000	196,875	13,125	0
Mobile Data Terminals for Police Vehicles	30,000	28,125	1,875	0
Access Control Systems	4,290,000	4,021,875	268,125	0
FAR Part 150 Property Acquisition Program	5,333,333	5,000,000	333,333	0
FAR Part 150 Noise Insulation Program	5,333,333	5,000,000	333,333	0
Checked Baggage Security Screening System Installation	24,440,006		24,440,006	0
Second Floor Concourse Restroom Expansion	1,000,000		1,000,000	0
Total Phase I 2002-2005	63,374,256	35,563,360	27,810,896	0
Project Description	Phase II			
	Total Costs	Federal	Local	Private
Terminal Apron Reconstruction - Phase 9 (Design & Construction)	5,801,000	5,438,438	362,562	0
Upgrade Airfield Lighting Controls System	420,000	393,750	26,250	0
Taxiway C Reconstruction (Design and Construction)	1,415,000	1,326,562	88,438	0
Pave East Side Perimeter Road	2,200,000	2,062,500	137,500	0
GSE Area Pavement	2,815,000	2,639,062	175,938	0
Southwest Air Cargo Ramp	24,255,000	22,739,062	1,515,938	0
Subtotal Phase II 2006-2010	36,906,000	34,599,374	2,306,626	

Figure 5-44 -- continued

CAPITAL IMPROVEMENT PROGRAM				
Airport Name: Reno/Tahoe International		Associated City: Reno		
Project Description	Phase II -- continued			
	Total Costs	Federal	Local	Private
FAR Part 150 Property Acquisition Program	5,333,333	5,000,000	333,333	0
FAR Part 150 Noise Insulation Program	5,333,334	5,000,001	333,333	0
Culvert Ditches - North Side of Peckham Lane	1,627,001	1,525,313	101,688	0
Terminal Power Distribution & Emergency Generator - Phase 1 (Design & Construction)	2,000,000	1,875,000	125,000	0
FAR Part 150 Property Acquisition Program	5,333,333	5,000,000	333,333	0
FAR Part 150 Noise Insulation Program	5,333,333	5,000,000	333,333	0
Runway 16L Precision Approach (GPS,TLS,ILS)	2,084,250	1,953,984	130,266	0
North Central Disposal Facility - (Design & Construction)	1,500,000	1,406,250	93,750	0
Terminal Power Distribution & Emergency Generator Upgrade - Phase 2 (Construction)	2,000,000	1,875,000	125,000	0
FAR Part 150 Property Acquisition Program	5,333,333	5,000,000	333,333	0
FAR Part 150 Noise Insulation Program	5,333,333	5,000,000	333,333	0
Taxiway Q Reconstruction - (Design & Construction)	2,200,000	2,062,500	137,500	0
Terminal Power Distribution & Emergency Generator - Phase 3 (Construction)	0			0
Generator - Phase 3 (Construction)	2,000,000	1,875,000	125,000	0
FAR Part 150 Property Acquisition Program	5,333,333	5,000,000	333,333	0
FAR Part 150 Noise Insulation Program	5,333,333	5,000,000	333,333	0
FAR Part 150 Noise Compatibility Study-Update	1,000,000	937,500	62,500	0
Airport Master Plan Update	1,000,000	937,500	62,500	0
FAR Part 150 Property Acquisition Program	5,333,333	5,000,000	333,333	0
FAR Part 150 Noise Insulation Program	5,333,333	5,000,000	333,333	0
Total Phase II 2006-2010	105,650,582	99,047,422	6,603,160	0
Grand Total	169,024,838	134,610,782	34,414,056	0

Figure 5-45 Airport Information and Capital Improvement Program

Airport: Rosaschi Air Park
Associated City: Smith
County: Lyon, NV
Ownership: Private
Airport-ID: N59

NPIAS No.:
Site Number: 13134.1A
Service Level: GA
Airport Category: RA
Airport Reference Code: B-II

<u>Annual Activity</u>	<u>Current (Year)</u>		<u>Forecast (Year)</u>		<u>Based Aircraft Fleet Mix</u>	
Passenger Enplanements:					Single Engine: 7	Helicopter: 0
Aircraft Operations:	5,840	2000	8,670	2020	Multi -Engine: 1	Military: 0
Based Aircraft:	10	2000	14	2020	Jet: 0	Gliders: 0
Critical Aircraft: Beech King Air						Ultra-Lights: 2

Existing Facilities

Land Area 482 Acres

Elevation: 4,809 MSL

Primary Runway 07-25

Surface Type: Asphalt
 Condition: Fair
 Length: 4,800'
 Width: 32'
 Lighting: None

Secondary Runway 17-35

Surface Type: Dirt
 Condition: Good
 Length: 3,700'
 Width: 64'
 Lighting: None

Taxiway

Surface Type:
 Condition:
 Area:
 Lighting:

Apron Areas

Commercial Service:
 Condition:
 General Aviation:
 Condition:

Vehicular Parking

Commercial Service:
 General Service:

Approach/Landing Aids

None

Visual Approach Aids

None

Weather Reporting

None

Terminal Building Area

Commercial Service:
 General Aviation:

Aircraft Storage

Conventional:
 T-hangar:
 Plane Port:

Fuel Available

100LL

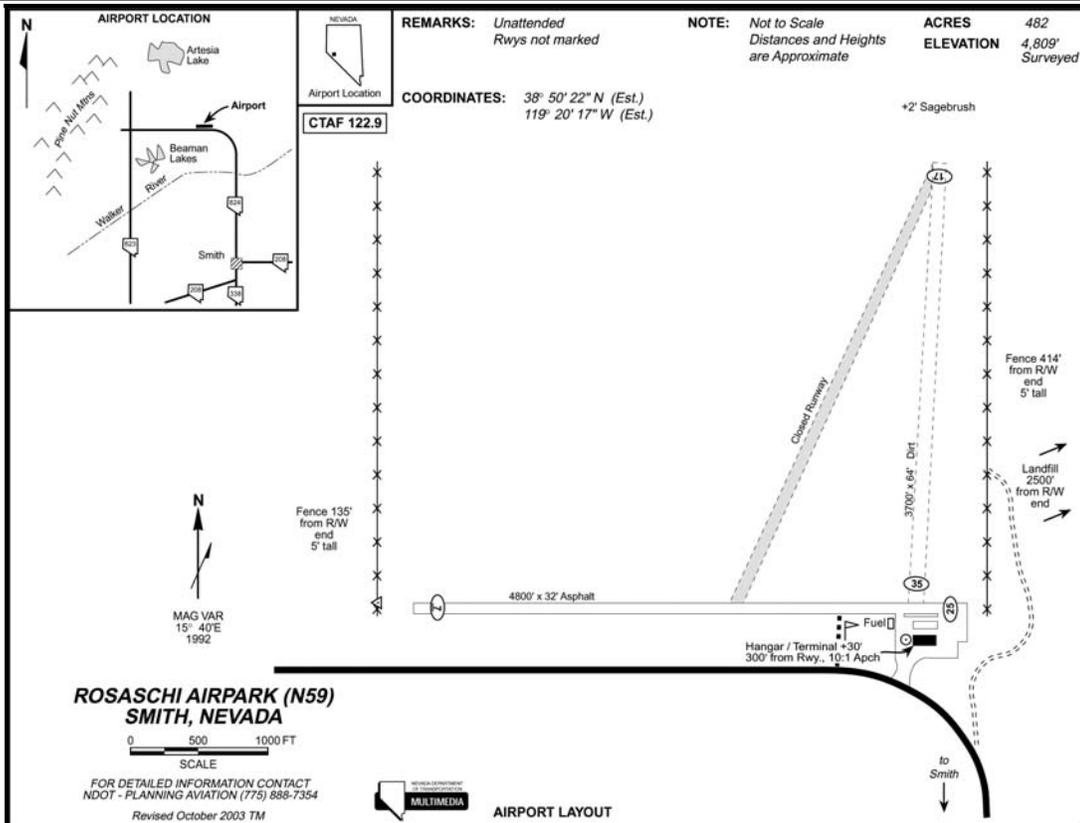


Figure 5-45 -- continued

CAPITAL IMPROVEMENT PROGRAM				
Airport Name: Rosaschi Air Park		Associated City: Smith		
Project Description	Phase I			
	Total Costs	Federal	Local	Private
	0	0	0	0
Total Phase I 2002-2005	0	0	0	0

Figure 5-46 Airport Information and Capital Improvement Program

Airport: Searchlight
Associated City: Searchlight
County: Clark, NV
Ownership: Public
Airport-ID: 1L3

NPIAS No.:
Site Number: 13130.1A
Service Level: GA
Airport Category: RA
Airport Reference Code: B-II

<u>Annual Activity</u>	<u>Current (Year)</u>		<u>Forecast (Year)</u>		<u>Based Aircraft Fleet Mix</u>	
Passenger Enplanements:					Single Engine: 1	Helicopter: 0
Aircraft Operations:	300	2000	450	2020	Multi -Engine: 0	Military: 0
Based Aircraft:	1	2000	1	2020	Jet: 0	Gliders: 0
Critical Aircraft: Beech King Air						Ultra-Lights: 0

Existing Facilities

Land Area 179 Acres

Elevation: 3,410 MSL

Primary Runway 16-34

Surface Type: Asphalt
 Condition: Good
 Length: 5,040'
 Width: 70'
 Lighting: None

Secondary Runway

Surface Type:
 Condition:
 Length:
 Width:
 Lighting:

Taxiway

Surface Type:
 Condition:
 Area:
 Lighting:

Apron Areas

Commercial Service:
 Condition:
 General Aviation:
 Condition:

Vehicular Parking

Commercial Service:
 General Service:

Approach/Landing Aids

None

Visual Approach Aids

None

Weather Reporting

None

Terminal Building Area

Commercial Service:
 General Aviation:

Aircraft Storage

Conventional:
 T-hangar:
 Plane Port:

Fuel Available

None

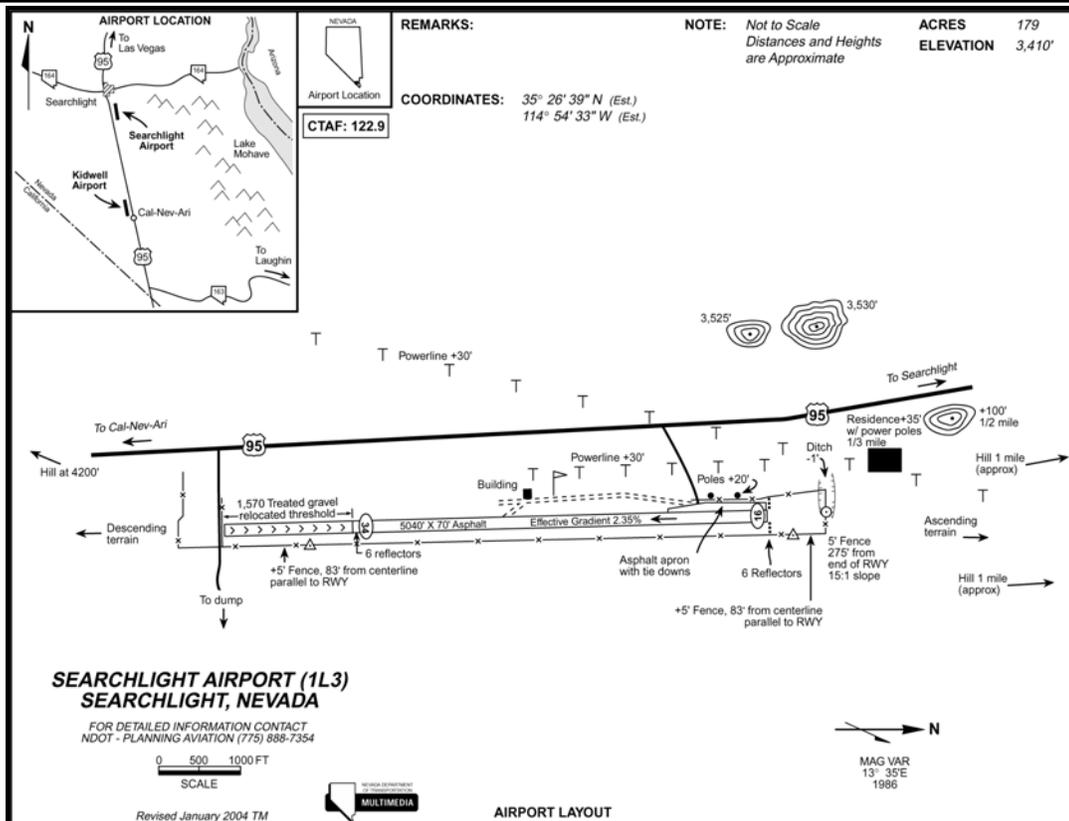


Figure 5-46 -- continued

CAPITAL IMPROVEMENT PROGRAM				
Airport Name: Searchlight		Associated City: Searchlight		
Project Description	Phase I			
	Total Costs	Federal	Local	Private
	0	0	0	0
Total Phase I 2002-2005	0	0	0	0

Figure 5-47 Airport Information and Capital Improvement Program

Airport: Silver Springs
Associated City: Silver Springs
County: Lyon, NV
Ownership: Public
Airport-ID: B08

NPIAS No.:
Site Number: 13133.4A
Service Level: GA
Airport Category: RA
Airport Reference Code: B-II

<u>Annual Activity</u>	<u>Current (Year)</u>		<u>Forecast (Year)</u>		<u>Based Aircraft Fleet Mix</u>	
Passenger Enplanements:					Single Engine: 15	Helicopter: 0
Aircraft Operations:	4,800	2000	15,100	2020	Multi -Engine: 0	Military: 0
Based Aircraft:	17	2000	36	2020	Jet: 0	Gliders: 0
Critical Aircraft: Beech King Air						Ultra-Lights: 2

Existing Facilities

Land Area 400 Acres

Elevation: 4,262 MSL

Primary Runway 05-23

Surface Type: Asphalt
 Condition: Good
 Length: 6,000'
 Width: 75'
 Lighting: MIRL

Secondary Runway

Surface Type:
 Condition:
 Length:
 Width:
 Lighting:

Taxiway

Surface Type: Asphalt Concrete
 Condition: Excellent
 Area:
 Lighting:

Apron Areas

Commercial Service:
 Condition:
 General Aviation: 6 spaces
 Condition:

Vehicular Parking

Commercial Service:
 General Service:

Approach/Landing Aids

None

Visual Approach Aids

None

Weather Reporting

None

Terminal Building Area

Commercial Service:
 General Aviation:

Aircraft Storage

Conventional: 10
 T-hangar:
 Plane Port:

Fuel Available

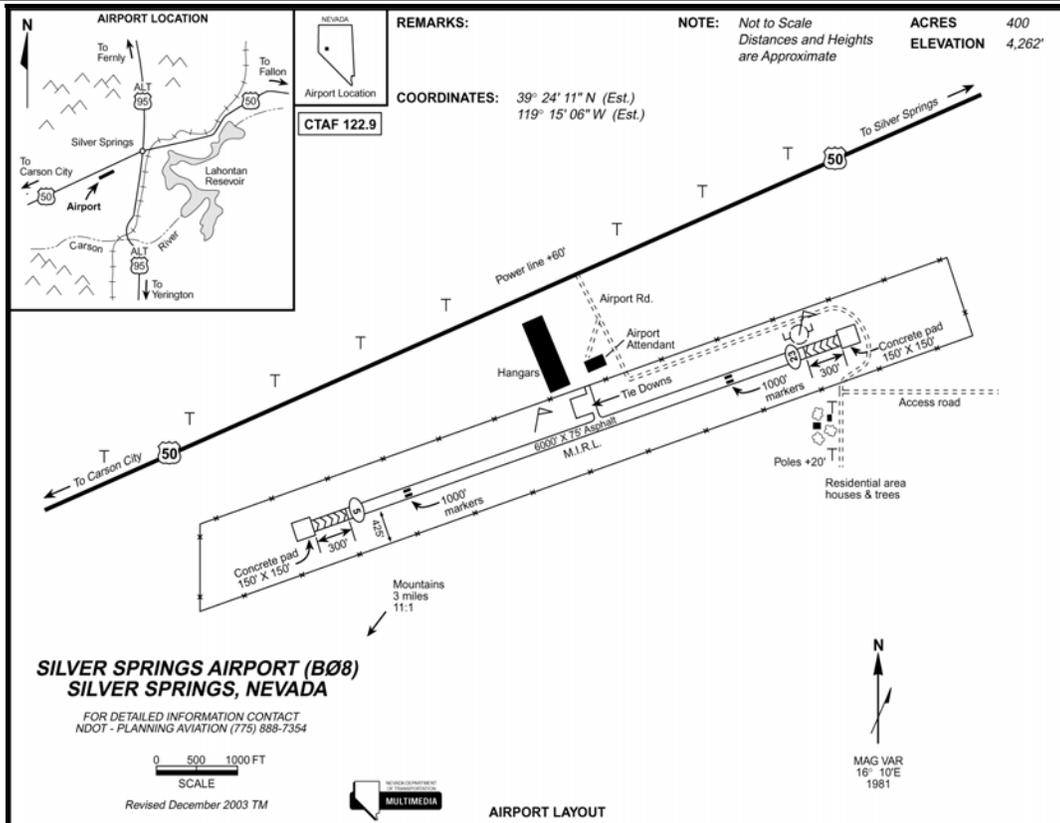


Figure 5-47 -- continued

CAPITAL IMPROVEMENT PROGRAM				
Airport Name: Silver Springs		Associated City: Silver Springs		
Project Description	Phase I			
	Total Costs	Federal	Local	Private
None	0	0	0	0
Total Phase I 2002-2005	0	0	0	0
Project Description	Phase II			
	Total Costs	Federal	Local	Private
Expand Tiedown Apron	400,000	380,000	20,000	0
Construct Paved Access Road	130,000	123,500	6,500	0
AWOS	160,000	152,000	8,000	0
Extend Runway 900' Including MIRL	140,000	133,000	7,000	0
Relocate REIL and PAPI	30,000	28,500	1,500	0
Helipad	124,000	117,800	6,200	0
Land Acquisition (approximately 151.3 acres)	1,513,000	1,437,350	75,650	0
Instrument Landing System	2,300,000	2,185,000	115,000	0
Total Phase I 2006-2010	4,797,000	4,557,150	239,850	0
Grand Total	4,797,000	4,557,150	239,850	0

Figure 5-48 Airport Information and Capital Improvement Program

Airport: Sky Ranch Estates
Associated City: Sandy Valley
County: Clark, NV
Ownership: Private
Airport-ID: 3L2

NPIAS No.:
Site Number: 13128.3A
Service Level: GA
Airport Category: RA
Airport Reference Code: B-I

<u>Annual Activity</u>	<u>Current (Year)</u>		<u>Forecast (Year)</u>		<u>Based Aircraft Fleet Mix</u>	
Passenger Enplanements:					Single Engine: 36	Helicopter: 2
Aircraft Operations:	2,340	2000	3,470	2020	Multi -Engine: 4	Military: 0
Based Aircraft:	45	2000	60	2020	Jet: 0	Gliders: 2
Critical Aircraft: Beech Baron						Ultra-Lights: 1

Existing Facilities

Land Area 158 Acres

Elevation: 2,599 MSL

Primary Runway 03-21

Surface Type: Asphalt
 Condition: Good
 Length: 3,340'
 Width: 45'
 Lighting: Threshold/Socks
 Dusk to Dawn

Secondary Runway 12-30

Surface Type: Dirt
 Condition: Good
 Length: 3,300'
 Width: 105'
 Lighting: None

Taxiway

Surface Type: Paved
 Condition: Good
 Area:
 Lighting: None

Apron Areas

Commercial Service: Paved
 Condition: Good
 General Aviation: Paved
 Condition: Good

Vehicular Parking

Commercial Service: Paved
 General Service: Paved

Approach/Landing Aids

Threshold Lights

Visual Approach Aids

None

Weather Reporting

None

Terminal Building Area

Commercial Service:
 General Aviation: FBO

Aircraft Storage

Conventional: Private - 40
 T-hangar: None
 Plane Port: None

Fuel Available

100LL

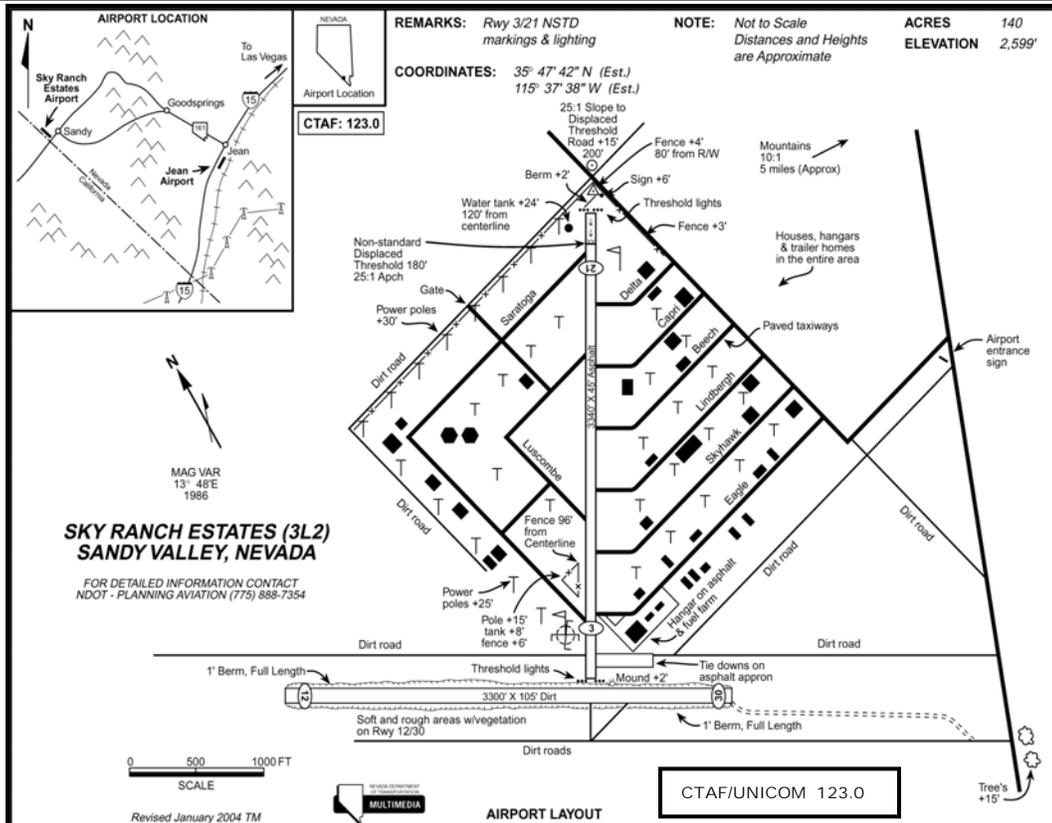


Figure 5-48 -- continued

CAPITAL IMPROVEMENT PROGRAM				
Airport Name: Sky Ranch Estates		Associated City: Sandy Valley		
Project Description	Phase I			
	Total Costs	Federal	Local	Private
	0	0	0	0
Total Phase I 2002-2005	0	0	0	0

Figure 5-49 Airport Information and Capital Improvement Program

Airport: Spanish Springs
Associated City: Reno
County: Washoe, NV
Ownership: Public
Airport-ID: N86

NPIAS No.:
Site Number: 13123.01A
Service Level: GA
Airport Category: BA
Airport Reference Code: B-I

<u>Annual Activity</u>	<u>Current (Year)</u>		<u>Forecast (Year)</u>		<u>Based Aircraft Fleet Mix</u>	
Passenger Enplanements:					Single Engine: 20	Helicopter: 0
Aircraft Operations:	4,650	2000	8,550	2020	Multi -Engine: 3	Military: 0
Based Aircraft:	23	2000	40	2020	Jet: 0	Gliders: 0
Critical Aircraft: Beech Baron						Ultra-Lights: 0

Existing Facilities

Land Area 191 Acres

Elevation: 4,600 MSL

Primary Runway 16-34

Surface Type: Dirt
 Condition: Good
 Length: 3,540'
 Width: 71'
 Lighting: Solar Powered

Secondary Runway

Surface Type:
 Condition:
 Length:
 Width:
 Lighting:

Taxiway

Surface Type: Dirt
 Condition: Good
 Area:
 Lighting:

Apron Areas

Commercial Service:
 Condition:
 General Aviation:
 Condition:

Vehicular Parking

Commercial Service:
 General Service:

Approach/Landing Aids

None

Visual Approach Aids

None

Weather Reporting

None

Terminal Building Area

Commercial Service:
 General Aviation:

Aircraft Storage

Conventional:
 T-hangar:
 Plane Port:

Fuel Available

100LL

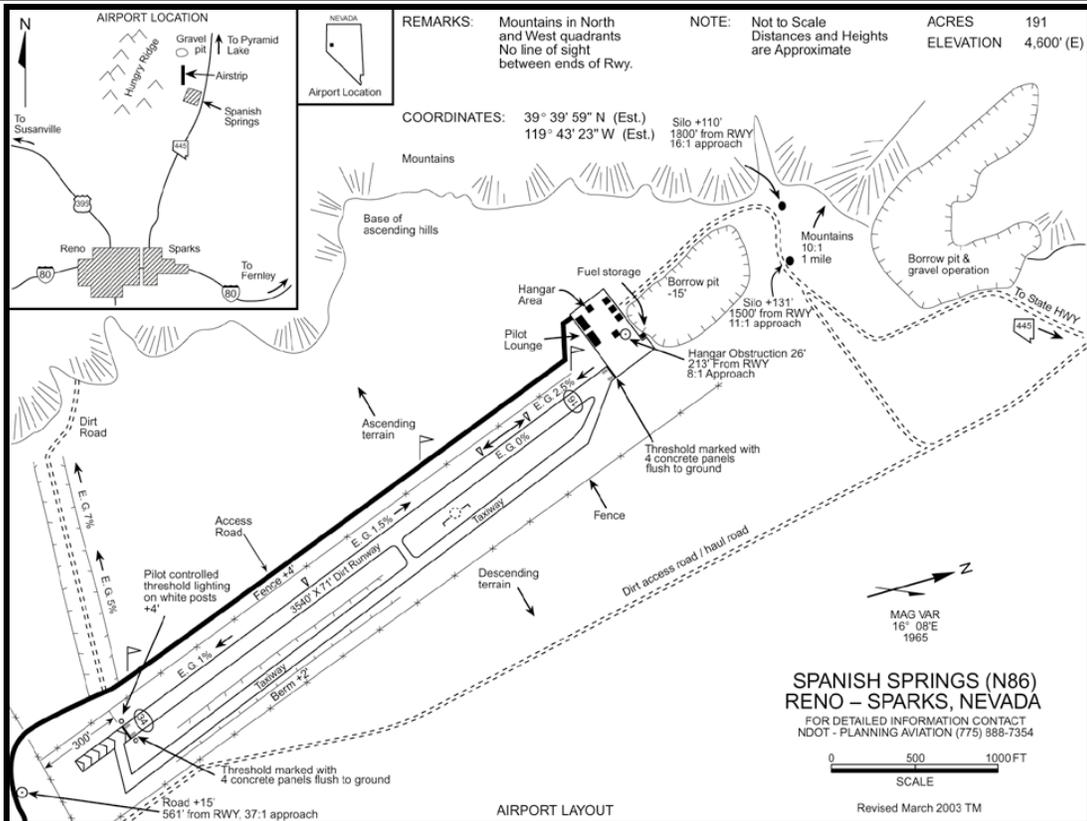


Figure 5-49 -- continued

CAPITAL IMPROVEMENT PROGRAM				
Airport Name: Spanish Springs		Associated City: Reno		
Project Description	Phase I			
	Total Costs	Federal	Local	Private
Perimeter Fencing	20,000		20,000	0
Pave Runway 16-34 (Correct Line-of-Sight and Include Runway Markings)	300,000		300,000	0
Extend Electricity to Airport	50,000		50,000	0
Medium Intensity Runway Lights	60,000		60,000	0
Airport Signage	30,000		30,000	0
Access Road	50,000		50,000	0
Acquisition of BLM Lease (Conveyance)	500,000		500,000	0
Total Phase I 2002-2005	1,010,000	0	1,010,000	0

Figure 5-50 Airport Information and Capital Improvement Program

Airport: Stevens/Crosby Field
Associated City: North Fork
County: Elko, NV
Ownership: Public
Airport-ID: 08U

NPIAS No.:
Site Number: 13100.21A
Service Level: GA
Airport Category: BA
Airport Reference Code: A-I

<u>Annual Activity</u>	<u>Current (Year)</u>		<u>Forecast (Year)</u>		<u>Based Aircraft Fleet Mix</u>	
Passenger Enplanements:					Single Engine: 0	Helicopter: 0
Aircraft Operations:	25	2000	40	2020	Multi -Engine: 0	Military: 0
Based Aircraft:	0	2000	0	2020	Jet: 0	Glidors: 0
Critical Aircraft: Cessna 172						Ultra-Lights: 0

Existing Facilities

Land Area 6 Acres

Elevation: 6,397 MSL

Primary Runway 01-19

Surface Type: Dirt
 Condition: Poor
 Length: 3,600'
 Width: 50'
 Lighting: None

Secondary Runway

Surface Type:
 Condition:
 Length:
 Width:
 Lighting:

Taxiway

Surface Type:
 Condition:
 Area:
 Lighting:

Apron Areas

Commercial Service:
 Condition:
 General Aviation:
 Condition:

Vehicular Parking

Commercial Service:
 General Service:

Approach/Landing Aids

None

Visual Approach Aids

None

Weather Reporting

None

Terminal Building Area

Commercial Service:
 General Aviation:

Aircraft Storage

Conventional:
 T-hangar:
 Plane Port:

Fuel Available

Jet A:
 100LL:

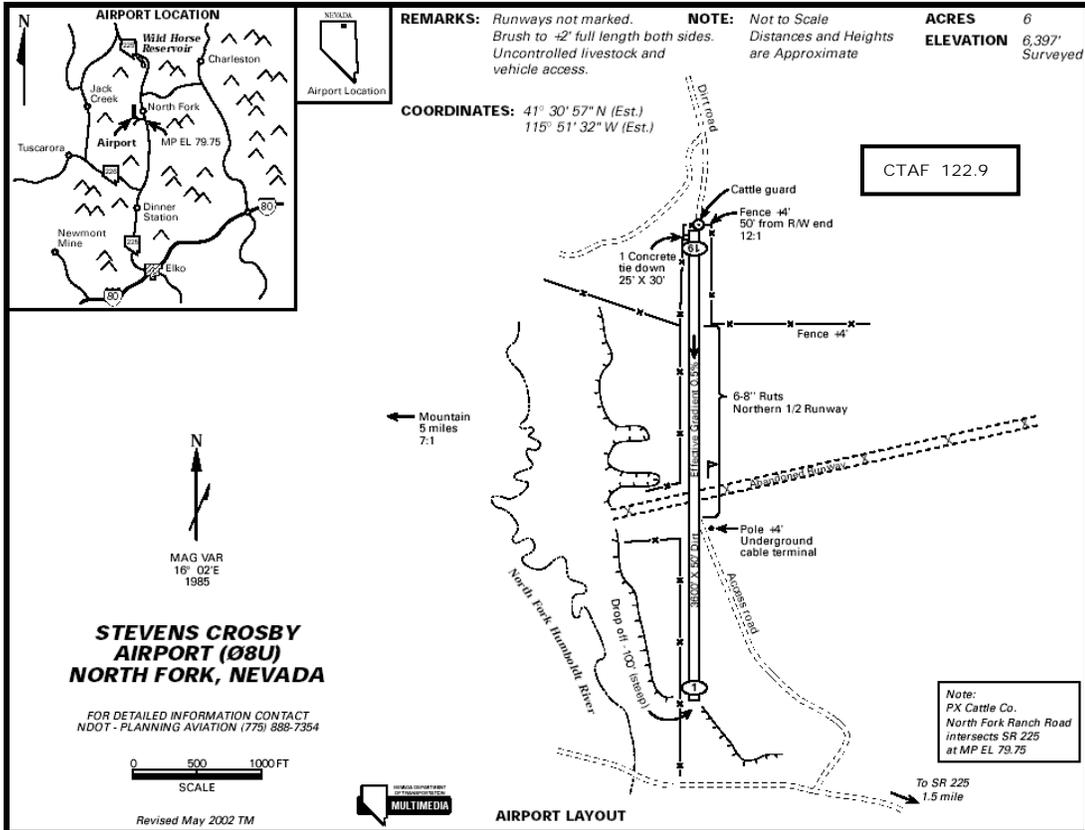


Figure 5-50 -- continued

CAPITAL IMPROVEMENT PROGRAM				
Airport Name: Stevens/Crosby Field		Associated City: North Fork		
Project Description	Phase I			
	Total Costs	Federal	Local	Private
	0	0	0	0
Total Phase I 2002-2005	0	0	0	0

Figure 5-51 Airport Information and Capital Improvement Program

Airport: Tiger Field
Associated City: Fernley
County: Lyon, NV
Ownership: Private
Airport-ID: N58

NPIAS No.:
Site Number: 13060.A
Service Level: GA
Airport Category: CA
Airport Reference Code: B-I

<u>Annual Activity</u>	<u>Current (Year)</u>		<u>Forecast (Year)</u>		<u>Based Aircraft Fleet Mix</u>	
Passenger Enplanements:					Single Engine: 10	Helicopter: 0
Aircraft Operations:	2,400	2000	3,570	2020	Multi -Engine: 0	Military: 0
Based Aircraft:	10	2000	14	2020	Jet: 0	Glidors: 0
Critical Aircraft: Beech Baron						Ultra-Lights: 0

Existing Facilities

Land Area 80 Acres

Elevation: 4,346 MSL

Primary Runway 15-33

Surface Type: Asphalt
 Condition: Good
 Length: 3,974"
 Width: 40'
 Lighting: None

Secondary Runway 05-23

Surface Type: Gravel
 Condition: Good
 Length: 2,750'
 Width: 40'
 Lighting: None

Taxiway

Surface Type: Dirt
 Condition:
 Area:
 Lighting:

Apron Areas

Commercial Service:
 Condition:
 General Aviation:
 Condition:

Vehicular Parking

Commercial Service:
 General Service:

Approach/Landing Aids

None

Visual Approach Aids

None

Weather Reporting

None

Terminal Building Area

Commercial Service:
 General Aviation:

Aircraft Storage

Conventional:
 T-hangar:
 Plane Port:

Fuel Available

None

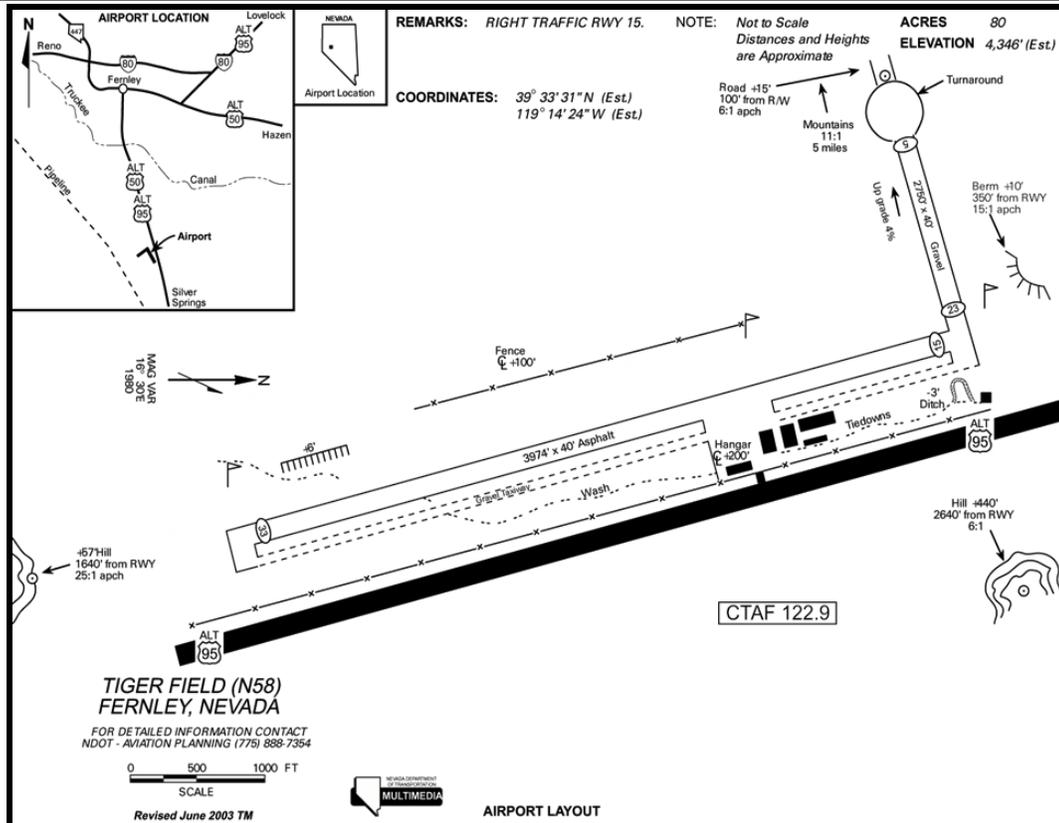


Figure 5-51 -- continued

CAPITAL IMPROVEMENT PROGRAM				
Airport Name: Tiger Field		Associated City: Fernley		
Project Description	Phase I			
	Total Costs	Federal	Local	Private
Extend Runway 15-33 by 1,500 Feet to the North and Provide 1,000-Foot overrun to the South	0			0
Pave Runway 15-33 Including Taxiways	0			0
Total Phase I 2002-2005	0	0	0	0

Figure 5-52 Airport Information and Capital Improvement Program

Airport: Tonopah
Associated City: Tonopah
County: Nye, NV
Ownership: Public
Airport-ID: TPH

NPIAS No.: 32-0019
Site Number: 13130.A
Service Level: GA
Airport Category: CA
Airport Reference Code: B-II

<u>Annual Activity</u>	<u>Current (Year)</u>		<u>Forecast (Year)</u>		<u>Based Aircraft Fleet Mix</u>	
Passenger Enplanements:					Single Engine: 10	Helicopter: 0
Aircraft Operations:	12,727	2000	18,810	2020	Multi -Engine: 0	Military: 0
Based Aircraft:	10	2000	13	2020	Jet: 0	Glidors: 0
Critical Aircraft: Cessna Citation III						Ultra-Lights: 0

Existing Facilities

Land Area 3,820 Acres

Elevation: 5,426 MSL

Primary Runway 15-33

Surface Type: Asphalt
 Condition: Good
 Length: 7,057'
 Width: 80'
 Lighting: MIRL

Secondary Runway 11-29

Surface Type: Asphalt
 Condition: Good
 Length: 5,464'
 Width: 50'
 Lighting: None

Taxiway

Surface Type: Asphalt-concret
 Condition: Fair
 Area:
 Lighting: MITL

Apron Areas

Commercial Service:
 Condition:
 General Aviation: 40 spaces
 Condition:

Vehicular Parking

Commercial Service:
 General Service: 40 spaces

Approach/Landing Aids

VOR, GPS

Visual Approach Aids

PAPI-2, VASI-4, Beacon

Weather Reporting

ASOS

Terminal Building Area

Commercial Service:
 General Aviation:

Aircraft Storage

Conventional:
 T-hangar:
 Plane Port:

Fuel Available

Jet A, 100LL

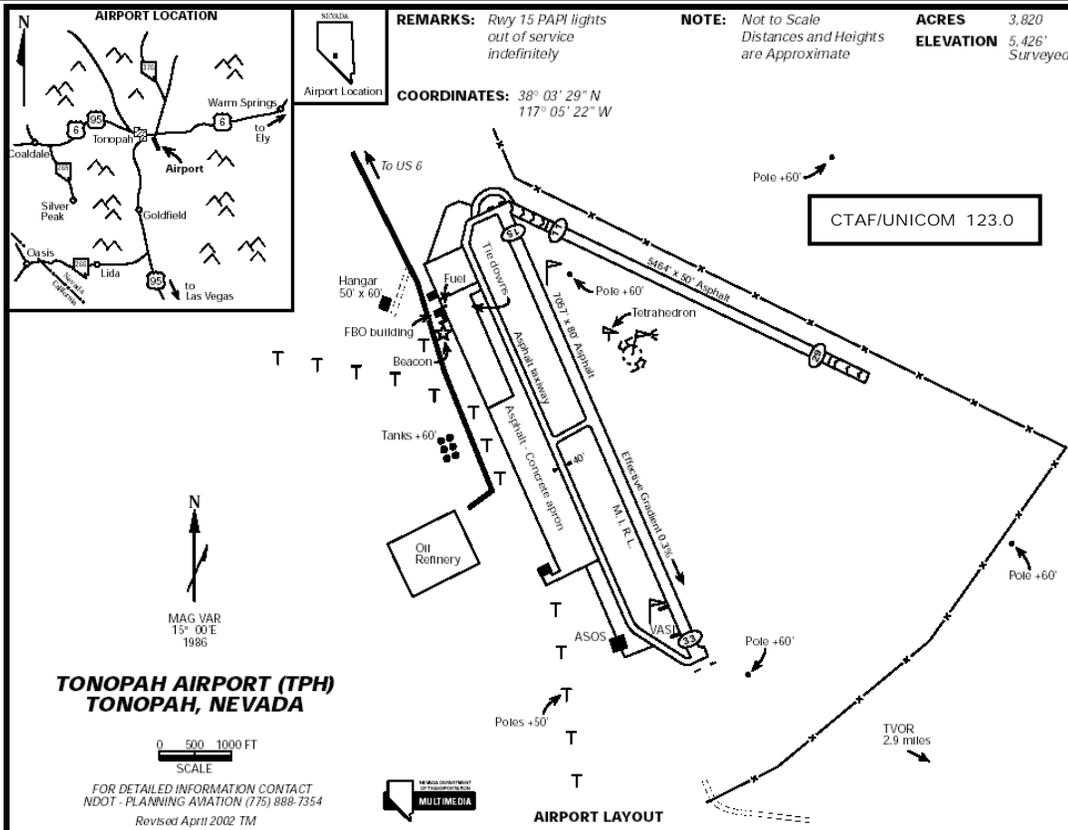


Figure 5-52 -- continued

CAPITAL IMPROVEMENT PROGRAM				
Airport Name: Tonopah		Associated City: Tonopah		
Project Description	Phase I			
	Total Costs	Federal	Local	Private
Extend Runway 15-33 and Parallel Taxiway 1,940' and Widen Existing Runway 15-33 to 100', Includes Lighting and Relocation of VASI for Runway 33 and Installation of new PAPI at Runway 15	1,000,000	950,000	50,000	0
Provide Mandatory Runway Hold Signs	60,000	57,000	3,000	0
Construct Terminal Building 2,000 SF	250,000	237,500	12,500	0
Total Phase I 2002-2005	1,310,000	1,244,500	65,500	0
Project Description	Phase II			
	Total Costs	Federal	Local	Private
Install Perimeter Fencing	250,000	237,500	12,500	0
Remove Barbed Wire Fence	60,000	57,000	3,000	0
Construct Taxiway Signs	60,000	57,000	3,000	0
Instrument Landing System Runway 15-33	2,000,000	1,900,000	100,000	0
Provide MITL for Parallel Taxiway to Runway 11-29	200,000	190,000	10,000	0
Reconstruct and Widen Runway 11-29	2,000,000	1,900,000	100,000	0
Total Phase II 2006-2010	4,570,000	4,341,500	228,500	0
Grand Total	5,880,000	5,586,000	294,000	0

Figure 5-53 Airport Information and Capital Improvement Program

Airport: Winnemucca Municipal
Associated City: Winnemucca
County: Humboldt, NV
Ownership: Public
Airport-ID: WMC

NPIAS No.: 32-0021
Site Number: 13161.A
Service Level: GA
Airport Category: CA
Airport Reference Code: B-II

<u>Annual Activity</u>	<u>Current (Year)</u>		<u>Forecast (Year)</u>		<u>Based Aircraft Fleet Mix</u>	
Passenger Enplanements:					Single Engine: 37	Helicopter: 0
Aircraft Operations:	24,520	2000	36,360	2020	Multi -Engine: 5	Military: 0
Based Aircraft:	42	2000	54	2020	Jet: 0	Glidors: 0
Critical Aircraft: Cessna Citation III						Ultra-Lights: 0

Existing Facilities

Land Area 968 Acres

Elevation: 4,303 MSL

Primary Runway 14-32

Surface Type: Asphalt
 Condition: Good
 Length: 7,000'
 Width: 75'
 Lighting: MIRL

Secondary Runway 02-20

Surface Type: Asphalt
 Condition: Good
 Length: 4,800'
 Width: 75'
 Lighting: MIRL

Taxiway

Surface Type:
 Condition:
 Area:
 Lighting:

Apron Areas

Commercial Service:
 Condition:
 General Aviation:
 Condition:

Vehicular Parking

Commercial Service:
 General Service:

Approach/Landing Aids

VOR/DME, GPS

Visual Approach Aids

VASI-2, Beacon

Weather Reporting

ASOS

Terminal Building Area

Commercial Service:
 General Aviation:

Aircraft Storage

Conventional:
 T-hangar:
 Plane Port:

Fuel Available

Jet A, 100

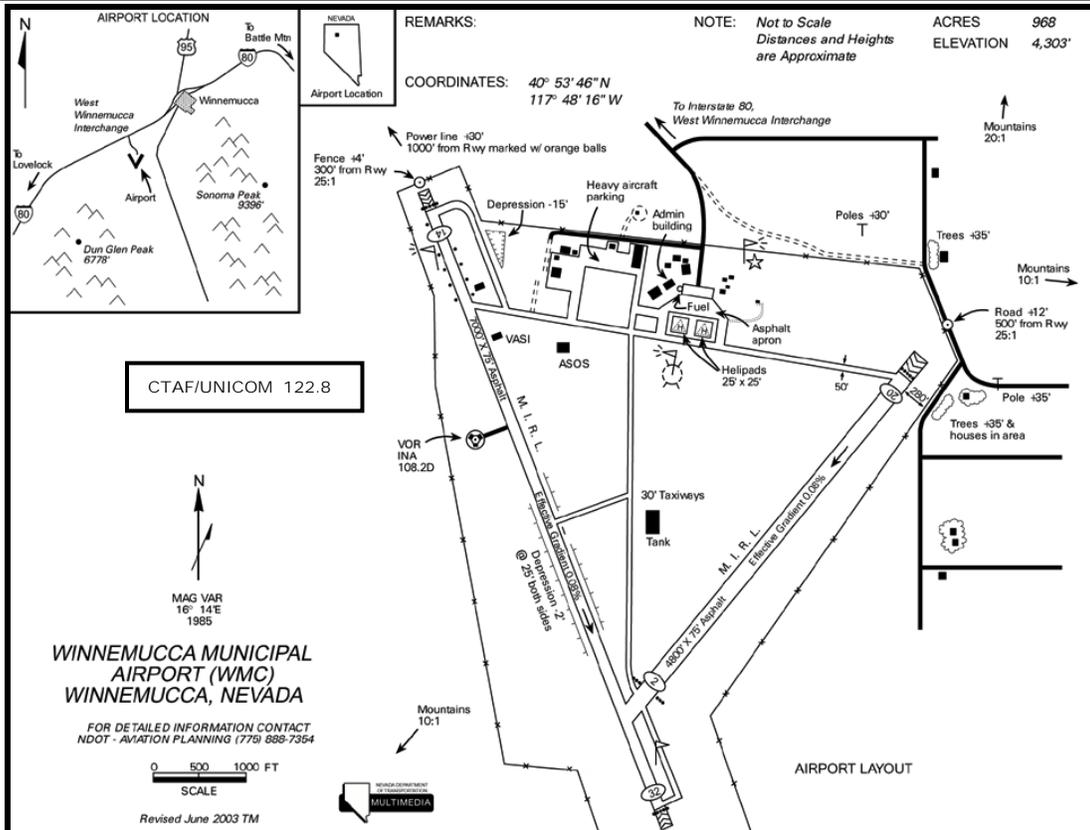


Figure 5-53 -- continued

CAPITAL IMPROVEMENT PROGRAM				
Airport Name: Winnemucca Municipal		Associated City: Winnemucca		
Project Description	Phase I			
	Total Costs	Federal	Local	Private
Apply Runway 2-20 Friction Course	410,000	384,375	25,625	0
Rehabilitate Apron	122,000	114,375	7,625	0
Install Vertical Guidance System (PAPI)	80,000	75,000	5,000	0
Rehabilitate Runway Lighting/Electrical Vault	120,000	112,500	7,500	0
Install Miscellaneous Approach Aids (Precision GPS - Part 139)	50,000	46,875	3,125	0
Acquire Miscellaneous Land (VOR Clear Zone)	25,000	23,438	1,562	0
Acquire Land for Approaches (Runway 32 RPZ)	100,000	93,750	6,250	0
Install Taxiway Lighting (MITL) Required by Part 139	100,000	93,750	6,250	0
Acquire Land/Easement for Approaches (List Parcels)	25,000	23,438	1,562	0
Total Phase I 2002-2005	1,032,000	967,501	64,499	0

Figure 5-54 Airport Information and Capital Improvement Program

Airport: Yerington Municipal
Associated City: Yerington
County: Lyon, NV
Ownership: Public
Airport-ID: O43

NPIAS No.: 32-0022
Site Number: 13163.A
Service Level: GA
Airport Category: CA
Airport Reference Code: B-II

<u>Annual Activity</u>	<u>Current (Year)</u>		<u>Forecast (Year)</u>		<u>Based Aircraft Fleet Mix</u>	
Passenger Enplanements:					Single Engine: 39	Helicopter: 0
Aircraft Operations:	24,400	2000	36,110	2020	Multi -Engine: 5	Military: 0
Based Aircraft:	44	2000	59	2020	Jet: 0	Glidors: 0
Critical Aircraft: Cessna Citation II						Ultra-Lights: 0

Existing Facilities

Land Area 101 Acres

Elevation: 4,378 MSL

Primary Runway 01-19

Surface Type: Asphalt
 Condition: Good
 Length: 5,800'
 Width: 75'
 Lighting: MIRL

Secondary Runway

Surface Type:
 Condition:
 Length:
 Width:
 Lighting:

Taxiway

Surface Type:
 Condition:
 Area:
 Lighting:

Apron Areas

Commercial Service:
 Condition:
 General Aviation:
 Condition:

Vehicular Parking

Commercial Service:
 General Service:

Approach/Landing Aids

None

Visual Approach Aids

REIL, VASI-2, PAPI-2, Beacon

Weather Reporting

None

Terminal Building Area

Commercial Service:
 General Aviation:

Aircraft Storage

Conventional:
 T-hangar:
 Plane Port:

Fuel Available

100

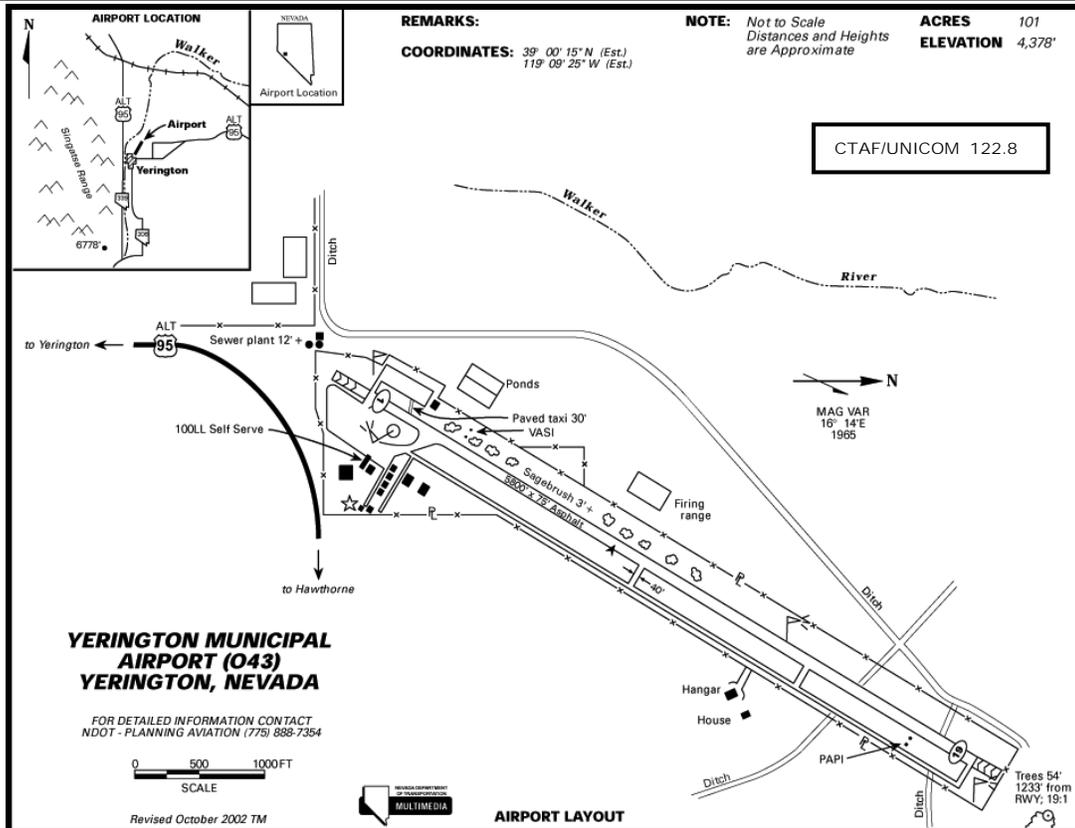


Figure 5-54 -- continued

CAPITAL IMPROVEMENT PROGRAM				
Airport Name: Yerington Municipal		Associated City: Yerington		
	Phase I			
Project Description	Total Costs	Federal	Local	Private
Improve/Modify/Habilitate Access Road	100,000	93,750	6,250	0
Perimeter Fencing	17,000	15,938	1,062	0
Total Phase I 2002-2005	117,000	109,688	7,312	0

Table 5-3

UNIT COSTS FOR RECOMMENDED AIRPORT IMPROVEMENTS
Nevada Airport System Plan

IMPROVEMENT	UNITS	UNIT COST
Runways and Taxiways¹		
Asphalt Paving	square foot	\$ 5
Navigational Aids		
Runway end identifier lights (REIL)	each end	\$ 70,000
Precision approach path indicator (PAPI)	each end	\$ 30,000
VHF omnidirectional range (VOR)	each	\$ 110,000
AWOS/ASOS	each	\$ 40,000/260,000
Lighting		
Medium intensity runway lights (MIRL)	each	\$ 750
Medium intensity taxiway lights (MITL)	each	\$ 650
Reflectors	each	\$ 25
Fencing		
Chain Link	linear foot	\$ 20
Barbed Wire	linear foot	\$ 10
Fuel Storage		
Jet A	10,000 gallon	\$ 160,000
100LL	10,000 gallon	\$ 160,000

1. NDOT Pavement Evaluation Reports

SOURCE: Aries Consultants Ltd.

Table 5-4

SUMMARY OF AIRPORT CAPITAL IMPROVEMENT PROGRAM COSTS
Nevada Airport System Plan

AIRPORT NAME	Funding Sources			
	FEDERAL	LOCAL	PRIVATE	TOTAL
<u>Alamo Landing Field</u>				
Phase I 2002-2005	2,926,875	195,125	0	3,122,000
Phase II 2006-2010				
Phase III 2011-2020				
Total	2,926,875	195,125	0	3,122,000
<u>Austin Airport</u>				
Phase I 2002-2005	597,022	1,714,850	0	2,311,872
Phase II 2006-2010				
Phase III 2011-2020				
Total	597,022	1,714,850	0	2,311,872
<u>Battle Mountain Airport</u>				
Phase I 2002-2005	6,638,486	464,007	0	7,102,493
Phase II 2006-2010	403,988	111,406	0	515,394
Phase III 2011-2020		27,590	0	27,590
Total	7,042,474	603,003	0	7,645,477
<u>Beatty Airport</u>				
Phase I 2002-2005	755,688	43,312	0	799,000
Phase II 2006-2010	2,465,250	129,750	0	2,595,000
Phase III 2011-2020				
Total	3,220,938	173,062	0	3,394,000
<u>Boulder City Municipal Airport</u>				
Phase I 2002-2005	1,155,938	77,062	0	1,233,000
Phase II 2006-2010	54,000	3,600	0	57,600
Phase III 2011-2020				
Total	1,209,938	80,662	0	1,290,600
<u>Carson Airport (Carson City)</u>				
Phase I 2002-2005	14,826,375	988,625	0	15,815,000
Phase II 2006-2010	6,018,234	401,216	0	6,419,450
Phase III 2011-2020	4,373,624	291,576	0	4,665,200
Total	25,218,233	1,681,417	0	26,899,650
<u>Currant Ranch Airport</u>				
Phase I 2002-2005				
Phase II 2006-2010				
Phase III 2011-2020				
Total	0	0	0	0
Total Page	40,215,480	4,448,119	0	44,663,599

SUMMARY OF AIRPORT CAPITAL IMPROVEMENT PROGRAM COSTS

Nevada Airport System Plan

AIRPORT NAME	Funding Sources			
	FEDERAL	LOCAL	PRIVATE	TOTAL
<u>Dayton Valley Airpark</u>				
Phase I 2002-2005		46,918	0	46,918
Phase II 2006-2010		3,933	0	3,933
Phase III 2011-2020				
Total		50,851	0	50,851
<u>Denio Junction Airport</u>				
Phase I 2002-2005				
Phase II 2006-2010				
Phase III 2011-2020				
Total	0	0	0	0
<u>Derby Field (Lovelock)</u>				
Phase I 2002-2005	1,337,010	89,134	0	1,426,144
Phase II 2006-2010				
Phase III 2011-2020				
Total	1,337,010	89,134	0	1,426,144
<u>Duckwater Airport</u>				
Phase I 2002-2005				
Phase II 2006-2010				
Phase III 2011-2020				
Total	0	0	0	0
<u>Dyer Airport</u>				
Phase I 2002-2005				
Phase II 2006-2010				
Phase III 2011-2020				
Total	0	0	0	0
<u>Echo Bay Airstrip (Overton)</u>				
Phase I 2002-2005				
Phase II 2006-2010				
Phase III 2011-2020				
Total	0	0	0	0
<u>Elko Regional Airport/J. C. Harris Field</u>				
Phase I 2002-2005	13,907,837	927,190	0	14,835,027
Phase II 2006-2010	6,377,062	425,138	0	6,802,200
Phase III 2011-2020				
Total	20,284,899	1,352,328	0	21,637,227
Total Page	21,621,909	1,492,313	0	23,114,222

SUMMARY OF AIRPORT CAPITAL IMPROVEMENT PROGRAM COSTS

Nevada Airport System Plan

AIRPORT NAME	Funding Sources			
	FEDERAL	LOCAL	PRIVATE	TOTAL
<u>Ely Airport/Yelland Field</u>				
Phase I 2002-2005	2,508,603	167,240	0	2,675,843
Phase II 2006-2010	781,875	352,125	0	1,134,000
Phase III 2011-2020				
Total	3,290,478	519,365	0	3,809,843
<u>Empire Airport</u>				
Phase I 2002-2005				
Phase II 2006-2010				
Phase III 2011-2020				
Total	0	0	0	0
<u>Eureka Airport</u>				
Phase I 2002-2005	2,546,877	169,790	0	2,716,667
Phase II 2006-2010	223,125	14,875	0	238,000
Phase III 2011-2020				
Total	2,770,002	184,665	0	2,954,667
<u>Fallon Municipal Airport</u>				
Phase I 2002-2005	1,714,965	114,333	0	1,829,298
Phase II 2006-2010				
Phase III 2011-2020				
Total	1,714,965	114,333	0	1,829,298
<u>Ft. Ruby Ranch Airstrip (Ruby Valley)</u>				
Phase I 2002-2005				
Phase II 2006-2010				
Phase III 2011-2020				
Total	0	0	0	0
<u>Gabbs Airport</u>				
Phase I 2002-2005	869,250	45,750	0	915,000
Phase II 2006-2010	494,000	26,000	0	520,000
Phase III 2011-2020				
Total	1,363,250	71,750	0	1,435,000
<u>Goldfield Airport</u>				
Phase I 2002-2005				
Phase II 2006-2010				
Phase III 2011-2020				
Total	0	0	0	0
Total Page	9,138,695	890,113	0	10,028,808

SUMMARY OF AIRPORT CAPITAL IMPROVEMENT PROGRAM COSTS

Nevada Airport System Plan

AIRPORT NAME	Funding Sources			
	FEDERAL	LOCAL	PRIVATE	TOTAL
<u>Hadley Airport (Round Mountain)</u>				
Phase I 2002-2005				
Phase II 2006-2010				
Phase III 2011-2020				
Total	0	0	0	0
<u>Harriet Field/Wells Municipal Airport</u>				
Phase I 2002-2005	5,918,869	601,591	0	6,520,460
Phase II 2006-2010				
Phase III 2011-2020				
Total	5,918,869	601,591	0	6,520,460
<u>Hawthorne Municipal Airport</u>				
Phase I 2002-2005	1,358,399	90,560	0	1,448,959
Phase II 2006-2010				
Phase III 2011-2020				
Total	1,358,399	90,560	0	1,448,959
<u>Henderson Executive Airport (Las Vegas)</u>				
Phase I 2002-2005	2,764,500	145,500	0	2,910,000
Phase II 2006-2010	17,100,000	900,000	0	18,000,000
Phase III 2011-2020				
Total	19,864,500	1,045,500	0	20,910,000
<u>Hidden Hills Airport (Pahrump)</u>				
Phase I 2002-2005				
Phase II 2006-2010				
Phase III 2011-2020				
Total	0	0	0	0
<u>Jackass Aeropark (Amargosa Valley) Closed</u>				
Phase I 2002-2005				0
Phase II 2006-2010				
Phase III 2011-2020				
Total	0	0	0	0
<u>Jackpot Airport/Hayden Field</u>				
Phase I 2002-2005	993,750	66,250	0	1,060,000
Phase II 2006-2010				
Phase III 2011-2020				
Total	993,750	66,250	0	1,060,000
Total Page	28,135,518	1,803,901	0	29,939,419

SUMMARY OF AIRPORT CAPITAL IMPROVEMENT PROGRAM COSTS

Nevada Airport System Plan

AIRPORT NAME	Funding Sources			
	FEDERAL	LOCAL	PRIVATE	TOTAL
Jean Airport				
Phase I 2002-2005	1,061,666	70,778	0	1,132,444
Phase II 2006-2010				
Phase III 2011-2020				
Total	1,061,666	70,778	0	1,132,444
Kidwell Airport (Cal Nev Ari)				
Phase I 2002-2005				
Phase II 2006-2010				
Phase III 2011-2020				
Total	0	0	0	0
Kingston Airport				
Phase I 2002-2005				
Phase II 2006-2010				
Phase III 2011-2020				
Total	0	0	0	0
Lida Junction Airport (Goldfield)				
Phase I 2002-2005				
Phase II 2006-2010				
Phase III 2011-2020				
Total	0	0	0	0
Lincoln County Airport (Panaca)				
Phase I 2002-2005	1,356,562	512,811	0	1,869,373
Phase II 2006-2010		69,749	0	69,749
Phase III 2011-2020				
Total	1,356,562	582,560	0	1,939,122
McCarran International Airport (Las Vegas)				
Phase I 2002-2005	26,166,317	111,158,772	0	137,325,089
Phase II 2006-2010	94,529,828	780,223,081	0	874,752,909
Phase III 2011-2020				
Total	120,696,145	891,381,853	0	1,012,077,998
Mesquite Municipal Airport				
Phase I 2002-2005	2,077,782	138,518	0	2,216,300
Phase II 2006-2010				
Phase III 2011-2020				
Total	2,077,782	138,518	0	2,216,300
Total Page	125,192,155	892,173,709	0	1,017,365,864

SUMMARY OF AIRPORT CAPITAL IMPROVEMENT PROGRAM COSTS

Nevada Airport System Plan

AIRPORT NAME	Funding Sources			
	FEDERAL	LOCAL	PRIVATE	TOTAL
<u>Mina Airport</u>				
Phase I 2002-2005				
Phase II 2006-2010				
Phase III 2011-2020				
Total	0	0	0	0
<u>Minden-Tahoe Airport</u>				
Phase I 2002-2005	21,639,854	1,442,657	0	23,082,511
Phase II 2006-2010				
Phase III 2011-2020				
Total	21,639,854	1,442,657	0	23,082,511
<u>North Las Vegas Airport</u>				
Phase I 2002-2005	5,257,500	342,500	0	5,600,000
Phase II 2006-2010	17,100,000	900,000	0	18,000,000
Phase III 2011-2020				
Total	22,357,500	1,242,500	0	23,600,000
<u>Owyhee Airport</u>				
Phase I 2002-2005	1,171,875	78,125	0	1,250,000
Phase II 2006-2010				
Phase III 2011-2020				
Total	1,171,875	78,125	0	1,250,000
<u>Parker Carson Stolport (Carson City)</u>				
Phase I 2002-2005				
Phase II 2006-2010				
Phase III 2011-2020				
Total	0	0	0	0
<u>Perkins Field (Overton)</u>				
Phase I 2002-2005	1,350,011	80,001	0	1,430,012
Phase II 2006-2010	1,900,000	100,000	0	2,000,000
Phase III 2011-2020				
Total	3,250,011	180,001	0	3,430,012
<u>Reno Stead Airport</u>				
Phase I 2002-2005	3,918,750	206,250	0	4,125,000
Phase II 2006-2010	30,970,105	1,630,005	0	32,600,110
Phase III 2011-2020				
Total	34,888,855	1,836,255	0	36,725,110
Total Page	83,308,095	4,779,538	0	88,087,633

SUMMARY OF AIRPORT CAPITAL IMPROVEMENT PROGRAM COSTS

Nevada Airport System Plan

		Funding Sources			
		FEDERAL	LOCAL	PRIVATE	TOTAL
<u>Reno/Tahoe International Airport</u>					
Phase I	2002-2005	35,563,360	27,810,896	0	63,374,256
Phase II	2006-2010	99,047,422	6,603,160	0	105,650,582
Phase III	2011-2020				
Total		134,610,782	34,414,056	0	169,024,838
<u>Rosaschi Air Park (Smith)</u>					
Phase I	2002-2005				
Phase II	2006-2010				
Phase III	2011-2020				
Total		0	0	0	0
<u>Searchlight Airport</u>					
Phase I	2002-2005				
Phase II	2006-2010				
Phase III	2011-2020				
Total		0	0	0	0
<u>Silver Springs Airport</u>					
Phase I	2002-2005	0	0	0	0
Phase II	2006-2010	4,557,150	239,850	0	4,797,000
Phase III	2011-2020				
Total		4,557,150	239,850	0	4,797,000
<u>Sky Ranch Estates Airport (Sandy Valley)</u>					
Phase I	2002-2005				
Phase II	2006-2010				
Phase III	2011-2020				
Total		0	0	0	0
<u>Spanish Springs Airport (Reno)</u>					
Phase I	2002-2005		1,010,000		1,010,000
Phase II	2006-2010				
Phase III	2011-2020				
Total		0	1,010,000	0	1,010,000
<u>Stevens/Crosby Field (North Fork)</u>					
Phase I	2002-2005				
Phase II	2006-2010				
Phase III	2011-2020				
Total		0	0	0	0
Total Page		139,167,932	35,663,906	0	174,831,838

SUMMARY OF AIRPORT CAPITAL IMPROVEMENT PROGRAM COSTS

Nevada Airport System Plan

AIRPORT NAME	Funding Sources			
	FEDERAL	LOCAL	PRIVATE	TOTAL
Tiger Field (Fernley)				
Phase I 2002-2005				
Phase II 2006-2010				
Phase III 2011-2020				
Total	0	0	0	0
Tonopah Airport				
Phase I 2002-2005	1,244,500	65,500	0	1,310,000
Phase II 2006-2010	4,341,500	228,500	0	4,570,000
Phase III 2011-2020				
Total	5,586,000	294,000	0	5,880,000
Winnemucca Municipal Airport				
Phase I 2002-2005	967,501	64,499	0	1,032,000
Phase II 2006-2010				
Phase III 2011-2020				
Total	967,501	64,499	0	1,032,000
Yerington Municipal Airport				
Phase I 2002-2005	109,688	7,312	0	117,000
Phase II 2006-2010				
Phase III 2011-2020				
Total	109,688	7,312	0	117,000
Total Page	6,663,189	365,811	0	7,029,000
GRAND TOTAL	453,442,973	941,617,410	0	1,395,060,383

SOURCE: Figures 5-2 to 5-54

Chapter 6
Capital Improvement Program
and Financing

Chapter 6

CAPITAL IMPROVEMENT PROGRAM AND FINANCING

6.1 INTRODUCTION

The capital improvement program costs identified for the individual airports in Chapter 5 are summarized for the recommended system plan airports by short-term (2002-2005), intermediate (2006-2010) and long-term (2011-2020) improvement needs. The funding sources available for financing the capital improvement program are discussed.

6.2 CAPITAL IMPROVEMENT PROGRAM

The total costs associated with developing the recommended system of airports in Nevada has been summarized and is presented in Table 6-1. The summary is presented by the eligibility criteria under the Federal Aviation Administration's (FAA) Airport Improvement Program. Primary airports are those commercial service airports that enplane more than 10,000 passengers on an annual basis. All other airports that are in the *National Plan of Integrated Airport Systems* (NPIAS) and are eligible for Airport Improvement Program grants are referred to as nonprimary airports. In addition, development costs for the privately-owned airports that are not included in the NPIAS and not eligible for Airport Improvement Program grant funding are presented.

Of the estimated \$1.4 billion total program cost over the 20-year planning period for the existing airports, an estimated \$447 million will be eligible for Federal funding under the current Airport Improvement Program criteria. In addition to the \$1.4 billion, it is estimated that an additional \$1.5 billion will be needed for the development of three new airports in the State including the Ivanpah (Las Vegas), Mesquite and Pahrump Valley Airports.

The development cost requirements for the primary airports, including the Elko Region, McCarran International, North Las Vegas and Reno/Tahoe International Airports total \$1.2 billion, or 88 percent of the total program requirements. The development cost requirements for the nonprimary airports total \$161 million, or 11 percent of the total program requirements. The development cost requirements for the other airports in the State system that are not included in the NPIAS and are not eligible for FAA Airport Improvement Program funds total \$1 million and account for 1 percent of the total program requirements.

Federal funding requirements for the nonprimary airports for the Phase I (2002-2005) capital improvement program average over \$31 million annually, and its very unlikely

Table 6-1

SUMMARY OF NEVADA AIRPORTS CAPITAL IMPROVEMENT PROGRAM COSTS
Nevada Airport System Plan

		All Airports			
Phase	Year	FAA	Local	Private	Total
Phase I	2002-2005	\$162,705,810	\$148,935,856	\$0	\$311,641,666
Phase II	2006-2010	\$286,363,539	\$792,362,388	\$0	\$1,078,725,927
Phase III	2011-2020	\$4,373,624	\$319,166	\$0	\$4,692,790
	Totals	\$453,442,973	\$941,617,410	\$0	\$1,395,060,383
		Primary Airports			
Phase	Year	FAA	Local	Private	Total
Phase I	2002-2005	\$80,895,014	\$140,239,358	\$0	\$221,134,372
Phase II	2006-2010	\$217,054,312	\$788,151,379	\$0	\$1,005,205,691
Phase III	2011-2020	\$0	\$0	\$0	\$0
	Totals	\$297,949,326	\$928,390,737	\$0	\$1,226,340,063
		Nonprimary Airports			
Phase	Year	FAA	Local	Private	Total
Phase I	2002-2005	\$81,810,796	\$7,639,580	\$0	\$89,450,376
Phase II	2006-2010	\$69,309,227	\$4,207,076	\$0	\$73,516,303
Phase III	2011-2020	\$4,373,624	\$319,166	\$0	\$4,692,790
	Totals	\$155,493,647	\$12,165,822	\$0	\$167,659,469
		Non-NPIAS Airports			
Phase	Year	FAA	Local	Private	Total
Phase I	2002-2005	\$0	\$1,056,918	\$0	\$1,056,918
Phase II	2006-2010	\$0	\$3,933	\$0	\$3,933
Phase III	2011-2020	\$0	\$0	\$0	\$0
	Totals	\$0	\$1,060,851	\$0	\$1,060,851

SOURCE: Figures 5-2 to 5-54

that Airport Improvement Program grants will be available to fund all of the projects within the Phase I timeframe.

6.3 SOURCES OF FUNDS

There are four sources of funds typically used to fund capital improvement programs for the State's system airports including:

- Federal Funding Programs
- State Funding Programs (Aviation Trust Fund)
- Local Funding
- Private Funding

The availability of Federal, State, local and private funding sources to fund the development of the recommended airport system plan is discussed in the following sections.

6.3.1 Federal Funding Programs

The major source of revenues for funding capital improvement projects for airports in Nevada has been from Federal Aviation Administration (FAA) Airport Improvement Program grants for eligible project costs. The FAA has published criteria for airport sponsors eligible to receive Airport Improvement Program grants including metropolitan and statewide planning agencies, public agencies owning and/or operating public airports, and private airport owners/operators of public-use reliever or commercial service airports.

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

The Wendell H. Ford Aviation Investment and Reform Act for the 21st Century (AIR-21), signed into law in 2000, provided a multi-year program for funding under the Airport Improvement Program through September 30, 2003, and many of the provisions of AIR-21 were brought forward in the 2003 Reauthorization of the

Program. The Reauthorization of the Airport Improvement Program entitled Vision 100—The Century of Aviation Reauthorization Act (Vision 100) was signed into law in December 2003. Vision 100 provides a multi-year program for funding under the Airport Improvement Program with increases in funding through fiscal year 2007 and provides Federal funding for 95 percent of an eligible project for small hub and smaller commercial service or general aviation airports with a requirement for a 5 percent local match. For large hub (McCarran International) and medium hub (Reno/Tahoe International) airports, Federal funding levels vary and are based on the project, e.g., airfield, terminal development, noise compatibility.

Of the 53 airports included in the NASP, 32 airports are included in the NPIAS and are eligible for FAA Airport Improvement Program grants. The proposed new airports, Ivanpah (Las Vegas), Mesquite and Pahrump Valley Airports, are also included in the NPIAS. The Airport Improvement Program provides grants for the airports included in the NPIAS under the following categories.

6.3.1.1 Primary Airports

Primary airports are defined as those commercial service airports having 10,000 or more annual passenger enplanements. The AIR-21 legislation provided a minimum annual apportionment of \$1 million in passenger entitlement grants with the total amount determined by the number of enplaned passengers. These apportionments are granted on an annual basis for all FAA-eligible projects for fiscal years in which the total amount of Airport Improvement Program funding is \$3.2 billion or more. The 2003 Vision 100 appropriations total \$3.4 billion, \$3.5 billion, \$3.6 billion and \$3.7 billion for fiscal years 2004, 2005, 2006 and 2007, respectively. The Elko Regional, McCarran International, North Las Vegas and Reno/Tahoe International Airports are primary airports. In addition to annual passenger entitlement grants, the McCarran and Reno/Tahoe International Airports receive air cargo entitlement grants based on the annual landed weight of air cargo and Airport Improvement Program grants for noise-related and other eligible projects.

The Elko Regional, McCarran International and Reno/Tahoe International Airports are also eligible to collect Passenger Facility Charges. The Aviation Safety and Capacity Expansion Act of 1990 requires the U.S. Department of Transportation to issue regulations under which a public agency may be authorized to impose an airport passenger facility charge of up to \$4.50 per enplaned passenger at an airport receiving commercial passenger service. Revenues from passenger facility charges can be used to finance FAA-eligible projects and to pay all or part of the allowable cost of an approved project, may be used to pay debt service and financing costs incurred on that portion of a bond issued to carry out approved projects; in combination with airport grant funds to accomplish an approved project; or to meet the non-Federal share of the cost of projects funded under the Federal airport grant program.

6.3.1.2 Nonprimary Airports

Other airports in the NASP are referred to as nonprimary airports and are eligible for Airport Improvement Program grants under the nonprimary airport category. AIR-21 provided grant funds for nonprimary airports listed in the latest published NPIAS. Nonprimary airports can receive up to \$150,000 annually in entitlements each year that Congress budgets \$3.2 billion or higher for the Airport Improvement Program. The nonprimary entitlement is available to use in the fiscal year it becomes available and for the next three fiscal years. General aviation entitlement grants will continue under Vision 100 through fiscal year 2007. Vision 100 also provides the airport sponsor with the flexible use of nonprimary entitlements for multiyear grants.

Vision 100 expanded the eligibility for using nonprimary entitlement funds for revenue-producing facilities in support of aeronautical activities. Primary projects include hangars and fuel farms, however, there is potential for funding other revenue-producing projects. The airport sponsor should not rely entirely on entitlement funds to finance the proposed revenue-producing project and any airside needs for the airport must be identified and provisions made for financing those needs. The expanded eligibility should be for new construction capable of assisting the airport in reaching a goal of self-sustainability.

Vision 100 also provides the flexible use of nonprimary entitlements to permit an airport to share its entitlements with another airport in the same state or geographic area. An airport may share its entitlements under an agreement that in the future they may be repaid with the receiving airport's entitlements. The sharing of entitlements must be for projects eligible under the Airport Improvement Program.

6.3.1.3 Essential Air Service Program

The Airline Deregulation Act of 1978 ushered in a new era of change and uncertainty in air service at the nation's airports. Provisions of the Act established a subsidy program to ensure that small communities will receive "essential air service." Under provisions of the Act, the U.S. Department of Transportation is assisting communities that may be left without essential air transportation in finding replacement services.

The Ely Airport/Yelland Field was "grandfathered" as an eligible point to receive Essential Air Service under the Airline Deregulation Act. Service to the Ely Airport is 100 percent subsidized by the Federal Government as an eligible point. Total subsidies average about \$1 million on an annual basis.

6.3.1.4 Facilities and Equipment Program

Other Federal funding that is used for airport improvements in Nevada comes from the FAA's Facilities and Equipment Program. Facilities and Equipment funds are used exclusively to modernize and improve the National Airspace System to accommodate demands for aviation services, maximize operational efficiency, constrain costs and replace or modernize and improve air traffic control systems and facility improvements.

6.3.2 State Funding Programs

The Nevada Aviation Trust Fund was approved by the Governor on May 31, 2001 with an effective date of October 1, 2001. The legislation states that this is *an act relating to aviation; creating the fund for aviation; providing for the administration and expenditure of the money in the fund for certain purposes relating to airports, landing areas and air navigation facilities that are owned or controlled by certain counties, cities or other local governments; and providing other matters properly relating thereto.*

The fund for aviation was created as a trust fund in the State treasury. The money in the fund may be expended only in accordance with the terms and conditions of any gift, bequest, grant, appropriation or donation to the fund. Not more than 1 percent of the money in the fund may be used to pay the costs of administering the fund. The State Aviation Trust Fund is not yet funded. A portion of the revenues from the recently-approved aviation specialty license plates go into the Trust Fund, however, each license plate generates only \$20. The NDOT staff have a continuous ongoing effort to identify sources of revenues to fund the State Aviation Trust Fund.

6.3.3 Local Funding

Local public airport sponsors including counties, cities, authorities and commissions are responsible for providing the local matching funds for receipt of FAA Airport Improvement Program grants. The FAA grant provides 95 percent of the total project costs with local matching funds providing the remaining 5 percent for nonprimary airports.

Local government funding of airport development projects is derived from three basic sources including:

- General Fund Revenues
- Bond Issues
- Airport Generated Revenues

Of these, general fund revenues and general obligation bonds are by far the most common funding sources. Revenue bonds supported by project-generated revenues are seldom used because most general aviation airports do not generate enough money to pay operating expenses and the debt service of capital funding requirements.

6.3.3.1 General Fund Revenues

Capital development expenditures from general fund revenues have been somewhat difficult to obtain in recent years. One reason for this difficulty is the shortfall in local general fund revenues. Budgetary problems, coupled with local attitudes concerning the importance of airports and aviation, have created an environment where local funding is uncertain. The amount of general fund support of airport improvement projects varies by airport and is based upon the local tax base, priority of the development project, historical funding trends and local attitudes concerning the importance of the airport and aviation.

Financing airport improvements by direct appropriation from the airport sponsor's general fund may be the most realistic method of financing development not eligible for FAA Airport Improvement Program grants or for matching the 5 percent local requirement for grants as such financing may eliminate any interest payments. General fund appropriations can be justified by the airport sponsor on the basis that the airport provides direct economic and social benefits to the community and local taxpayers, as well as the possessory interest, personal property and other tax increments generated by airport tenants and users.

6.3.3.2 Bond Issues

Bond issues funding the local share of airport development projects must compete with bond issues for other types of community improvements, e.g., schools, highways and sewer systems. Bond issues supporting airport development depend greatly on the priority assigned to such projects by the local community, as with the general fund apportionment. Revenue bonds are mostly used at large commercial service airports where surplus revenue generation can be assured, as mentioned earlier. General obligation bonds, on the other hand, must be used at general aviation airports where revenue surpluses are rare.

6.3.3.3 Airport Generated Revenues

Airport generated revenues for general aviation airports are those revenues associated with goods and services that the airport provides. After expenses, net revenues can be used to pay the local share of capital improvement projects. Historically, most general aviation airports are not able to realize enough revenue to completely cover

their expenses and operate at a deficit. Therefore, general aviation airports typically do not expect to use generated revenues to fund the local share.

Primary airports, in most cases, do generate enough revenue to cover expenses and realize sufficient net revenues to fund the local share of capital improvement projects. These revenue sources typically come from landing fees, terminal space rentals, vehicular parking and fees and commissions on gross sales.

6.3.4 Private Funding

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

6.3.5 Other Sources

There are several other sources of funding for grants and loans that could be available to publicly-owned airports in Nevada. On the State level, these funding sources are administered by the Nevada Commission on Economic Development, the Western Nevada Development District and the Bureau of Justice Assistance. There are several grant and loan programs available through the U.S. Department of Agriculture. The other grant and loan programs have various requirements and designated uses of funds that require closer investigation as to the eligibility of other use for the individual State airports.

Chapter 7

Implementation

IMPLEMENTATION

7.1 INTRODUCTION

The Nevada Airport System Plan (NASP) has been updated by the Nevada Department of Transportation (NDOT) and is focused on the State's airports and the role of the individual airports within the overall aviation system. The 1995 NASP recommended several actions that are part of the State's ongoing aviation-related activities that provide technical assistance and support to airport sponsors in the system. Other activities and development programs were recommended, and the status of these recommended activities has been updated. In addition, recommendations for new programs and activities are discussed, including recommendations for special studies and a continuous aviation system planning process. It is also important to recognize the Federal, State and local roles in the aviation system and the responsibilities of each in implementing the recommendations of the NASP Update.

7.2 MISSION STATEMENT AND GOALS

NDOT's *Statewide Intermodal/Multimodal Transportation Plan 1994-2014* states that NDOT's mission is *to satisfy the present and future transportation needs of the State for adequate, safe and efficient movement of people and freight at a reasonable cost to the taxpayer.* NDOT has established the following goals to fulfill its air transportation mission:

- To foster and promote the development of a safe, efficient, dependable and environmentally compatible air transportation system.
- To cooperate and coordinate with the Federal government, regional transportation planning agencies, local governments, other appropriate political subdivisions, the public, the air carrier and general aviation industries, and the private sector in carrying out its aviation responsibilities.

7.3 CAPITAL IMPROVEMENT PROGRAM

The NASP describes a 20-year development program for 53 Nevada public-use airports and three proposed new airport facilities. Five airports, Elko Regional, Ely Airport/Yelland Field, Las Vegas-McCarran International, North Las Vegas and Reno/Tahoe International Airports accommodate scheduled commercial service while the other 48 airports accommodate only general aviation and air taxi activity. Only 32 of the total airports are included in the Federal Aviation Administration's (FAA)

National Plan Of Integrated Airport Systems (NPIAS) and are eligible for FAA Airport Improvement Program funding. In addition, the Jackass Aeropark in Amargosa Valley has recently been abandoned and deactivated by the FAA but there is interest in the community to reactive the Airport.

The capital improvement program identifies \$1.4 billion in airport development projects over the 20-year planning period. While \$1.2 billion are for the primary airports, another \$161 million are for further development of the nonprimary airports, and an additional \$1 million are for airports that are not eligible for Federal funding grants.

The magnitude of the Phase I projects (2002-2005) totaling \$317 million, averaging over \$105 million annually, suggests that it is very unlikely that all the projects planned for the first phase will be completed within the Phase I time period. This is particularly relevant to the funding requirements for the nonprimary and privately-owned airports. Federal funding will be required totaling \$95 million for the nonprimary airports, an average of \$32 million on an annual basis. An additional \$1 million will be required to fund the development of the privately-owned, non-NPIAS airports.

7.4 OFFICE OF AVIATION PLANNING

Implementation activities that are provided by the NDOT staff in the State's Office of Aviation Planning include both encouragement and technical assistance to individual airport sponsors and coordinating the State's aviation activities with the FAA. The NDOT staff should continue to do everything possible to see that the system of airports identified are developed to the extent required to carry out their role in the State aviation system and generally ensure the future of aviation throughout the State.

The NDOT staff coordinate with individual airport sponsors in providing State services, e.g., aerial photography, cadastral surveys, biological surveys, archaeological surveys and other available State resources that can be used as in lieu force account services for the local matching fund requirements for FAA Airport Improvement Program grants. In addition, the NDOT staff coordinate their efforts with other State departments and organizations and provide a number of support activities in furthering the Nevada Airport Managers Association (NAMA) mission to promote and sustain the development of all airports in the State.

The airport system planning process has included other activities by NDOT staff including preparation of economic impact studies and the acoustical counting program for aircraft operations, and these activities are expected to continue.

7.5 SYSTEM DEVELOPMENT

The following sections identify a range of activities that NDOT, in particular the Office of Aviation Planning, can consider to implement the recommendations and improvements from this update of the NASP towards the further development of the Nevada aviation and airport system. Many of these activities are ongoing and should be continued.

7.5.1 Aviation Trust Fund

The Nevada Aviation Trust Fund was approved by the Governor on May 31, 2001 with an effective date of October 1, 2001. The legislation states that this is *an act relating to aviation; creating the fund for aviation; providing for the administration and expenditure of the money in the fund for certain purposes relating to airports, landing areas and air navigation facilities that are owned or controlled by certain counties, cities or other local governments; and providing other matters properly relating thereto.*

The fund for aviation was created as a trust fund in the State treasury. The money in the fund may be expended only in accordance with the terms and conditions of any gift, bequest, grant, appropriation or donation to the fund. Not more than 1 percent of the money in the fund may be used to pay the costs of administering the fund. The State Aviation Trust Fund is currently under funded. A portion of the revenues from the recently-approved aviation specialty license plates go into the Trust Fund, however, each license plate generates only \$20. The NDOT staff have a continuous ongoing effort to identify sources of revenues to fund the State Aviation Trust Fund, and these efforts should continue.

The Aircraft Owners and Pilots Association (AOPA) has strongly supported use of aviation-related taxes for airport improvements and development. The AOPA was instrumental in getting the Nevada Aviation Trust Fund established through legislative action. The AOPA strongly supports the use of revenues from the collection of taxes paid by the aviation community to help fund aviation programs. In fact, the vast majority of states dedicate all or a portion of the revenue collected from aviation fuel taxes to a trust fund dedicated for aviation use at the state level. The funding of the Aviation Trust Fund through these types of taxes would provide the necessary resources to NDOT to help address the aviation and airport requirements identified in the NASP Update in a more balanced manner. Implementation of the system plan will require, in part, the dedication of an available funding source for future development. NDOT could then provide assistance to airport sponsors who need financial assistance to maintain and develop their airports within the overall State aviation system.

7.5.2 Airport Pavement Management Plans

The NDOT staff should continue to encourage local airport sponsors to be particularly attentive to the maintenance and preservation of their existing airport facilities prior to planning for new facilities. This is particularly important for maintaining and preserving the existing airport pavements as the airfield infrastructure represents the most costly investment in the airport facility. An integral part of this strategy will be to continue monitoring the condition of airport pavements. The 1995 NASP recommended that the 1992 Pavement Condition analysis be repeated and NDOT initiated the 2002 Airport Pavement Evaluation for a number of airports in the State.

NDOT should continue to update the Airport Pavement Evaluation conditions as needed to determine the timing and extent of pavement improvements at the system airports. In addition, it would be beneficial for NDOT to work with the pavement evaluation consultants to establish a program to prioritize pavement maintenance and other related pavement-related projects in the future.

7.5.3 Obstruction Criteria Analysis

The NDOT staff should continue to provide technical assistance to airport sponsors in establishing airport overlay zones and height-hazard zoning, along with providing comprehensive land use planning in the vicinity of the airports. Sample documentation for overlay zones and height-hazard zoning ordinances is available in the Office of Aviation Planning. In addition to the zoning ordinances, NDOT should provide technical assistance to the airport sponsors in evaluating the safety of their existing runway approach surfaces. The Federal Aviation Regulations (FAR) Part 77, *Objects Affecting Navigable Airspace*, requirements should be used to identify hazards or obstructions. The success of this exercise will have a direct bearing on the likelihood of the individual airport securing improved landing minimums through the installation of new navigational aids such as the global positioning system (GPS) equipment.

7.5.4 Airport Inspection Program

An activity that has been ongoing for years is the FAA Form 5010 *Airport Master Record* inspection program. These inspections are carried out by the Office of Aviation Planning personnel under contract with the National Association of State Aviation Officials (NASAO) on behalf of the FAA. The inspections serve as an airport facility inventory verification and a safety inspection. NDOT personnel use this opportunity to update existing airport facility information, including existing conditions, aviation activity levels, services available and to identify runway approach obstructions.

7.5.5 Aviation Newsletters

In the earlier 1990s, the Aviation Planning Office published an aviation newsletter that became a valuable asset to the State aviation community as it served as a direct communication to airport sponsors, pilots, aircraft owners and other interested parties regarding issues in the aviation industry. The Office of Aviation Planning should consider publishing periodic newsletters to disseminate information on the Statewide level.

7.5.6 Statewide Intermodal/Multimodal Transportation Plan

The Office of Aviation Planning should continue to provide input to the *Statewide Intermodal/ Multimodal Transportation Plan* with airport improvement projects that have been identified through the recommendations of the system planning process.

7.5.7 Airport Information System

The 1995 NASP recommended that NDOT's Airport Information System software be used as a project priority setting model to reflect State's priorities and FAA policies in assigning rankings to proposed projects for funding in particular years. The project priority setting model was considered critical to the creation of the individual airport's capital improvement program. The Airport Information System has never been fully utilized by NDOT in prioritizing projects within the aviation system. In the absence of combining the funding requirements of all the system airports, the individual capital improvement programs greatly exceed the available funding sources. Although it is unrealistic to constrain capital improvement programs to the lowest-likely funding levels, the total funding requirements indicates there may be unrealistic expectations on the part of individual airport sponsors that have required them to expend unnecessary resources.

7.6 FEDERAL AVIATION ADMINISTRATION COORDINATION

NDOT staff has historically coordinated with the FAA on prioritizing airport planning and development projects that have a high priority in the implementation of the Statewide aviation system. Properly planning Nevada airports to determine the extent of development needs at the more rural airports and the cost and timing of these developments through completion of Airport Master Plans, Airport Layout Plan Narrative Reports or Airport Layout Plans would provide significant planning tools for implementation of the NASP Update.

The FAA has requested that NDOT investigate the potential of serving as the sponsor for several airports combined in one FAA grant to prepare Airport Master Plans, Airport Layout Plan Narrative Reports or Airport Layout Plans. The 1995 NASP

noted that this strategy has been successfully used in several other states and has lessened the workload of the FAA and provided for consistency in the products while retaining decision-making at the airport level.

The implementation of a program of this type has implications requiring further investigation by NDOT. Legally, NDOT cannot own and operate an airport. NDOT will need a legal opinion as to whether NDOT has the legal authority to accept a Federal grant for planning that will result in future development grants for an airport owned and operated by another agency. In addition, there are questions over who will provide the local matching funds for receipt of the FAA Airport Improvement Program grant. If the airport sponsor has the local matching funds then the responsibility of NDOT is to assist in preparing the FAA grant application for their airport.

The FAA has also requested that NDOT review the annual Airport Capital Improvement Plans (ACIPs) submitted by the individual airports in the State and assist the FAA in prioritizing projects for Airport Improvement Program funding. NDOT and the FAA will have to facilitate the requirement that ACIPs for the nonprimary State airports be submitted to the FAA through NDOT on an annual basis.

7.7 SPECIAL STUDY NEEDS

The NASP Update has identified several issues that should be pursued by NDOT as presented in the following sections:

7.7.1 Land Use Compatibility Planning

One of the most critical issues facing Nevada airports is the continuing encroachment by incompatible land uses around the airports. With the population of the State expected to grow from over 2 million in 2003 by another 1.4 million by 2020, the issue of encroachment on Nevada's airports will become more exasperated as residential, commercial, industrial and other incompatible land uses expand beyond the two major metropolitan areas of Las Vegas and Reno and other areas in the State become more urbanized. Encroachment by incompatible land uses is becoming a major issue at several airports, particularly in western Nevada as population and economic development has continued to expand.

NDOT included a land use compatibility evaluation of a limited number of the system airports in the 1995 NASP. The airports were evaluated for the existing land uses and expected aviation system development to define potential land use constraints and incompatibilities. The elements of noise, safety, property values and land uses were investigated. As a result of the evaluation, the recommendation was made that NDOT utilize cooperation, education and assistance as the principal means to develop an

understanding of the issues and the need for consistent and legally-enforceable Statewide standards and criteria for achieving land use compatibility. While these recommendations were made for continuous planning efforts on the part of NDOT for implementation in the long-term (beyond five years), it is recommended that NDOT now take the necessary steps to develop land use compatibility planning criteria to protect the State's airports from incompatible encroachment before the range of future development alternatives for some airports is diminished.

7.7.2 Commercial Air Services Analysis

NDOT should consider preparing an overview of the existing commercial air services and addressing potential requirements for additional points for commercial service within the State either now or in the future. Currently, the majority of the commercial air transportation services are provided to and from the two major metropolitan areas of Las Vegas in the south and Reno mid-State. The large geographic area of the State (close to 500 miles from north to south and over 300 miles from east to west) and the expanding population within the State suggest that NDOT review the demographics of remote locations to identify if and when commercial air transportation services may be required.

Consideration should be given to addressing the existing requirements of receiving Essential Air Service and/or preparing a proposal under the U.S. Department of Transportation Small Community Air Service Pilot Program to further evaluate the potential for new and/or improved scheduled air service, particularly to the remote areas in the north and eastern portions of the State.

NDOT should continue to exert whatever influence it can with the scheduled air carriers as they provide air service to the State. The communities of Elko and Ely are most in need of this assistance as the air carriers are inclined to make changes in service levels for these communities that are not always in the best interest of the community. The State's influence can sometimes positively affect these decisions and enable the communities to enjoy a level of air service that might have otherwise been withdrawn. The State should continue to monitor other communities that are not presently receiving scheduled air service for indications that they might be reaching a point where they could support such service.

7.8 CONTINUOUS SYSTEM PLANNING

Aviation is a major part of what the State of Nevada is about. Based on the December 2003 Proclamation by the Governor, aviation is a key economic factor in the quality of life for Nevada's citizens. While the McCarran International and Reno/Tahoe International Airports are positioned as major west coast air-ground distribution centers and considered major inland ports of entry, Nevada's economic future and

transportation infrastructure is directly tied to an efficient, effective dynamic air transportation system for all of its citizens.

Due to the large geographic area of the State and the small population centers in rural Nevada, concentrated efforts must be made to provide an adequate public air transportation system for all of the citizens in the State, including those outside of the major metropolitan areas of Las Vegas and Reno.

Implementation of a continuous system planning process by NDOT to monitor, enhance and revalidate the NASP will provide the necessary information for the timely updating of the NASP. Continuous updated information on aviation activity and airport development in the State is needed to protect the investment of the FAA, NDOT, local public airport sponsors and the private sector and insure that all aviation users are provided with a safe and efficient air transportation system that is developed and maintained to meet the requirements and needs of all of the communities. A number of continuous planning recommendations were discussed in the 1995 system plan and are still valid today. Other recommendations are included based on aviation activities and events that have occurred since 1995, most notably the events of September 11, 2001. The continuous planning recommendations are presented in the following sections.

7.8.1 Military Airspace

The Nevada Department of Transportation is already involved in several aviation initiatives that do not directly relate to specific airports but do involve the entire aviation system. One important example of this is the continued review of military airspace use. Nevada airspace is some of the most heavily used by the military of anywhere in the country, and this fact has caused concern in both the civilian aviation community and throughout State government. Involved in this activity is the review and comment on FAA notices of proposed rule-making and review of proposals to change military airspace usage. This should be continued as an implementation activity of the Aviation Planning Office.

7.8.2 Transportation Security Administration

The Aviation and Transportation Security Act was signed into law on November 19, 2001 establishing the Transportation Security Administration (TSA). While TSA activities have been concentrated on the larger commercial service airports since its inception, the TSA is required to develop security requirements for general aviation airports. The TSA published *Security Guidelines for General Aviation Airports* in May 2004 and notes that the guidelines are not regulatory and the recommendations should not be considered mandatory. The guidelines provide options, ideas and suggestions for the airport sponsor, tenants and users in an attempt to provide

consistency across the nation with regard to security at general aviation facilities. The intent of the guidelines is to provide a living document that will continue to be refined with input from the various stakeholders nationwide. Security recommendations for the general aviation airports in the State could include additional fencing, lighting, access control systems, signs, law enforcement actions, and security procedures that could have a cost impact on the development of the airport system as the TSA continues to update and refine the recommendations for general aviation airports.

While not mandatory requirements, the State's airports should be made aware of the published guidelines, and the NDOT staff should make any updates and refinements available to the general aviation airports as they become available.

7.8.3 Aviation Activity Monitoring

Aviation activity forecasts should be updated every three to five years, or whenever significant changes occur in aviation activity, to ascertain the impacts associated with changes in the industry. The forecasting methodology has been established in the NASP, and the continued monitoring of based aircraft and aircraft operations in the State will provide the necessary data to make informed decisions on when airport development or other planning activities should be implemented. In addition, the impacts of projects developed at system airports, and their affects on aviation demand, can be ascertained.

7.8.4 Land Use and Environmental Monitoring

Estimates of change in the population, employment and land uses in the State and the environmental impacts associated with these characteristics as they relate to the facilities and services required to meet the needs of the air transportation system require continuous monitoring. This is particularly important in the western portions of the State as the requirements for aviation facilities and services continue to grow within the expanding needs of residential, commercial and industrial land uses. Over time, it will become increasingly more difficult to accommodate additional requirements for aviation activities within the expanding rural areas of the State.

7.8.5 Coordination of Planning

It is important that the jurisdictions and agencies affected by, and responsible for, the decision-making processes for airport development in the State be continued in a coordinated manner to effectively implement and monitor the NASP Update. The Nevada Aviation Technical Advisory Committee (NATAC) formed for the preparation of the NASP could serve in this capacity and continue to provide input and recommendations for the continuous aviation system planning process.

7.8.6 Nevada Department of Transportation Staffing Requirements

As mentioned earlier, the 1995 NASP recommended several actions that are part of the on-going aviation-related activities of the Office of Aviation Planning staff who provide technical assistance and support to airport sponsors in the system. A number of these programs have been implemented on an on-going basis. The NASP Update recommends additional activities and programs to be performed by the Office of Aviation Planning. NDOT should consider its staffing requirements to provide these additional services, e.g., accepting multiple projects under one FAA grant and prioritizing ACIP projects for the State's airports.

7.8.7 Nevada Airport System Plan Update

It is recommended that significant changes in any one of the elements included in the NASP Update as ascertained by aviation demand forecasting, changes in the State's socioeconomic characteristics and the valuable insights of the NATAC will define when the NASP should be updated. Due to the importance of air transportation services to the State's social and economic development, and the part that activity plays in the air transportation system, the elements that would require an update to the NASP should be re-evaluated every three to five years.

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Glossary

GLOSSARY

Air Carrier (Airline): An air carrier certified under Federal Aviation Regulations (FAR) Part 121, *Operating Requirements: Domestic, Flag and Supplemental Operations*, or FAR Part 129, *Operations: Foreign Air Carriers and Foreign Operations of U. S. Registered Aircraft Engaged in Common Carriage*. Aircraft operated by an airline that holds a certificate of public convenience and necessity authorizing performance of scheduled air transportation. Air carrier airlines conduct scheduled services on specified air routes operating aircraft with more than 60 seats. These air carriers may also provide non-scheduled or chartered services as a secondary operation.

Air Taxi: Aircraft operated by a company or individual that performs air transportation on a scheduled or non-scheduled basis over either designated or unspecified routes, with aircraft having less than 60 seats. An air carrier certified under FAR Part 135, *Operating Requirements: Commuter and On Demand Operations and Rules Governing Persons on Board such Aircraft*. Commuter airline flights are a special category of air taxi operations (see commuter airline).

Air Traffic Control (ATC): A term used to denote a number of different types of facilities that are operated by or under the auspices of the Federal Aviation Administration and which provide informational, navigational, and collision avoidance services to aircraft in flight. Air traffic control towers and air route traffic control centers are elements of the air traffic control system.

Air Traffic Control Tower (ATCT) (“tower”): A facility located within the physical boundaries of certain airports and consisting of a tower where controller personnel provide visual and/or radar tracking, ground-to-air radio communications, traffic management, and limited informational, navigational, and separation services to aircraft operating in the immediate vicinity of an airport.

Air Route Traffic Control Center (ARTCC): A facility established to provide ATC service to aircraft operating on IFR flight plans within controlled airspace and principally during the en route phase of flight. When equipment capabilities and controller workload permit, certain advisory/assistance services may be provided to VFR aircraft.

Aircraft Mix: The numerical or percentage breakdown of aircraft based at or using an airport into categories by aircraft type.

Aircraft Operation: A take off or a landing. A touch-and-go is counted as two operations.

Airport Classification:

- **Primary Commercial Service (PR):** Airports that receive scheduled passenger service and have 10,000 or more annual passenger enplanements.
- **Commercial Service (CS):** Airports that receive scheduled passenger service and have 2,500 or more annual passenger enplanements.
- **Reliever Airport:** An airport that serves as a “reliever” of general aviation traffic congestion for a Commercial Service airport, providing more general aviation access to the overall community. The Reliever airport should have a current or forecast activity level of 50 based aircraft and a minimum of 25,000 annual itinerant aircraft operations (or 35,000 local aircraft operations).
- **General Aviation Airport:** The remaining airports that do not fall into either the Commercial Service or Reliever status are referred to as General Aviation airports. This category includes Community, Rural, Basic and Private airports.
 - **Community Airport:** A public-use airport within the State of Nevada with a paved runway serving a community or number of communities in the immediate vicinity of said airport with a total population of more than 1,500 people.
 - **Rural Airport:** A public-use airport within the State of Nevada with a paved runway serving a community with less than 1,500 people.
 - **Basic Airport:** A public-use airport/facility or area within the State of Nevada with an unpaved runway serving a community of less than 1,500 people.
 - **Private Airport:** A privately-owned, privately-used airport/facility or area within the State of Nevada that restricts usage to select aircraft operators.
- **Heliports:** Airports used for the landing and takeoff of helicopters.

Airport Service Area: The area that generates demand for aviation services.

Airport Surveillance Radar (ASR): A navigation system used to control air traffic within the immediate airport traffic areas.

Airspace: The space above the ground in which aircraft travel. It is divided into corridors, routes and restricted zones for the control and safety of traffic. There are five classifications of controlled airspace, A, B, C, D and E, and Class G uncontrolled airspace. There are also six classifications of Special Use Airspace, prohibited areas, restricted areas, warning areas, military operations areas, alert areas and controlled firing areas.

Angle of Descent: The angle, with respect to a horizontal plane, of the flight path of an aircraft descending from a higher altitude to a lower altitude (usually expressed in degrees or in feet per nautical mile). Also referred to as **descent slope**.

Approach Angle: The angle, with respect to a horizontal plane, of the flight path of an aircraft descending to land at an airport (usually expressed in degrees or in feet per nautical mile). Also referred to as **approach slope**.

Approach Lighting System (ALS): An airport lighting system which, by means of a standardized array of lights on the ground provides visual cues which enable pilots of aircraft approaching the runway in conditions of darkness or poor visibility, to align the flight path of the aircraft with the extended centerline of the runway.

Approach Surface: An imaginary inclined surface longitudinally centered on the extended centerline of a runway, extending outward and upward from the runway and of specified size and gradient. It has a shallower gradient than the corresponding glide slope or approach angle.

Apron: An area on an airport designated for the parking, loading, fueling, or servicing of aircraft.

Avigation Easement: A form of legal land-use control prohibiting incompatible development of areas required for airports or aviation-related purposes.

Base Leg: A segment of the standard airport traffic pattern that extends at right angles from the extended runway centerline at some distance from the approach end of the runway. The base leg extends from the downwind leg of the traffic pattern to the final approach course (extended runway centerline) and is flown in the direction toward the runway centerline. The altitude of aircraft flying the base leg is usually between 1,000 and 400 feet above ground level.

Based Aircraft: Aircraft based at an airport on a permanent basis.

Building Restriction Line (BRL): A clearance restriction that is usually parallel to runway and taxiway centerlines at varying distances depending on the type of airport.

Circle-to-Land Procedure: A maneuver initiated by the pilot to align the aircraft with a runway for landing when a straight-in landing from an instrument approach is not possible or is not desirable. At tower-controlled airports, this maneuver is made only after ATC authorization has been obtained and the pilot has established visual reference to the airport.

Climb Gradient: The angle, with respect to a horizontal plane, of the flight path of an aircraft ascending from a lower altitude to a higher altitude (usually expressed in feet per nautical mile).

Closed Traffic: An airborne maneuver by which an aircraft takes off from and lands at an airport without leaving the immediate airport vicinity (usually performed as a flight training or practice maneuver) or the airport traffic pattern flown by such an aircraft.

Commercial Aviation: Aircraft activity licensed by state or federal authority to transport passengers and/or cargo on a scheduled or non-scheduled basis.

Commercial Operator: One of a class of air carriers operating on a private for-hire basis, as distinguished from a public or common air carrier, holding a commercial operator certificate issued by the Administrator of the Federal Aviation Administration (FAA) authorizing it to operate aircraft in air commerce for the transportation of goods or passengers for compensation or hire.

Commuter Airline: Aircraft operated by an airline that performs scheduled air transportation over specified routes using aircraft with fewer than 60 seats. Commuter airlines provide at least five scheduled round trips per week between two or more points or carry mail.

Conical Surface: A surface extending outward and upward from the periphery of the horizontal surface at a slope of 20 to 1 for a horizontal distance of 4,000 feet and extending to a height of 350 feet above the airport elevation.

Critical Aircraft: The user aircraft that requires the most sophisticated facilities at the airport; the aircraft for which the facilities are designed.

Crosswind Departure: A VFR departure procedure in which an aircraft exits the airport area by extension of the crosswind leg of the traffic pattern.

Crosswind Leg: A segment of the standard airport traffic pattern that extends at right angles from the extended runway centerline at some distance from the departure end of the runway. The crosswind leg extends from the upwind leg of the traffic pattern to the downwind leg and is flown in the direction away from runway centerline.

Decision Altitude/Decision Height: A specified altitude or height (A/H) in the precision approach at which a missed approach must be initiated if the required visual reference to continue the approach has not been established. The decision altitude (DA) is referenced to mean sea level (MSL) and decision height (DH) is referenced to the threshold elevation. The required visual reference means that section of the visual aids, or the approach area, that should have been in view for sufficient time for the pilot to have made

an assessment of the aircraft position and rate of change of position, in the relation to the desired flight path.

Departure Procedure (DP): See **instrument departure procedure**.

Descent Slope: The angle, with respect to a horizontal plane, of the flight path of an aircraft descending from a higher altitude to a lower altitude (usually expressed in degrees or in feet per nautical mile). Also referred to as **angle of descent**.

Displaced Threshold: Actual touchdown point on specific runways designated due to obstructions that make it impossible to use the actual physical runway end.

Distance Measuring Equipment (DME): Equipment consisting of a ground-based radio transmitter and a specialized airborne receiver, that provides information regarding the slant-range distance, in nautical miles, of an aircraft from the ground-based DME facility. Also, by extension, any airborne maneuver, course, or flight path which is determined through the application of DME information.

Downwind Departure: A VFR departure procedure in which an aircraft exits the airport area by extension of the downwind leg of the traffic pattern.

Downwind Leg: A segment of the standard airport traffic pattern that is parallel to the runway of intended landing, is usually between 1/2 and 1 1/2 miles lateral to the runway, and is flown in a direction opposite to the direction of intended landing. The downwind leg is, in most instances, is the initial leg of the traffic pattern for landing aircraft. The altitude of aircraft flying the base leg is usually between 1,000 and 800 feet above ground level.

Effective Runway Gradient: The maximum difference between runway centerline elevations divided by the runway length.

Enplaned Passengers: The total number of revenue-producing passengers boarding aircraft, including originating, stopover and transfer passengers, in scheduled and non-scheduled services.

En route Airways: The route a flight follows from departure point to destination.

Fixed Base Operator (FBO): A provider of support services to users of an airport. Such services include fueling, hangaring, flight training, repair, maintenance, and other services.

Fleet Mix: See "Aircraft Mix."

Flight Service Station (FSS): Air traffic facilities that provide pilot briefing, en route communications and VFR search and rescue services, assist lost aircraft and aircraft in

emergency situations, relay ATC clearances, originate Notices to Airmen, broadcast aviation weather and National Airspace System information, receive and process IFR flight plans and monitor navigational aids. In addition, at selected locations, FSSs provide En Route Flight Advisory Service (Flight Watch), take weather observations, issue airport advisories, and advise Customs and Immigration of transborder flights.

Freight: Property other than express, mail and passenger baggage transported by air.

General Aviation: That portion of civil aviation which encompasses all facets of aviation except air carriers and air taxis. It includes a multitude of diverse and growing uses of aircraft, ranging from flying for enjoyment and the transportation of personnel or cargo by business firms and individuals in privately-owned aircraft, to highly specialized uses such as crop dusting, pipeline patrol and aerial advertising. It included agricultural, industrial and business/corporate aviation, using an aircraft for flight training, the aviation of Federal, State and local governments, and miscellaneous other aviation uses.

General Obligation Bond: A form of public indebtedness backed by the full faith and credit of the municipality or other appropriate public body.

Glide Slope: Provides vertical guidance for aircraft during approach and landing. The glide slope/glide path is based on the following:

- Electronic components emitting signals which provide vertical guidance by reference to airborne instruments during instrument approaches such as ILS/MLS, or
- Visual ground aids, such as VASI, which provide vertical guidance for a VFR approach or for the visual portion of an instrument approach and landing.
- Precision Approach Radar (PAR). Used by ATC to inform an aircraft making a PAR approach of its vertical position (elevation) relative to the descent profile.

Global Positioning System (GPS): A space-base radio positioning, navigation and time-transfer system. The system provides highly accurate position and velocity information, and precise time, on a continuous global basis, to an unlimited number of properly-equipped users. The system is unaffected by weather and provides a worldwide common grid reference system. The GPS concept is predicated upon accurate and continuous knowledge of the spatial position of each satellite in the system with respect to time and distance from a transmitting satellite to the user. The GPS receiver automatically selects appropriate signals from the satellites in view and translates these into three-dimensional position, velocity and time. System accuracy for civil users is normally 100 meters horizontally.

Global Positioning System (GPS) Approach: A series of standardized, predetermined, and published aerial maneuvers which are based on navigational data received from earth-

orbiting satellites and which enable aircraft to descend toward an airport with the intention of landing when meteorological conditions are such that a safe approach cannot be made solely through the use of visual information. A typical GPS approach permits aircraft to descend to within 400 to 500 feet of the surface solely on the basis of satellite navigation aids.

Global Positioning System (GPS) Overlay: An FAA designation applied to certain instrument approach procedures originally designed to be performed by reference to ground-based navigational aids which authorizes pilots to perform the approach solely by reference to navigational information provided by earth-orbiting GPS satellites.

Horizontal Surface: A horizontal plane 150 feet above the established airport elevation, the perimeter of that is constructed by swinging arcs of specified radii from the center of each end of the primary surface of each runway and connecting the adjacent arcs by tangent lines.

Instrument Approach Procedure: A series of standardized, predetermined, and published aerial maneuvers which are based on navigational data received from ground-based navigational aids or satellites and which enable aircraft to descend toward an airport with the intention of landing when meteorological conditions are such that a safe approach cannot be made solely through the use of visual information.

Instrument Departure Procedure (DP): A series of standardized, predetermined, and published aerial maneuvers which are based on navigational data received from ground-based navigational aids or satellites and which enable aircraft to depart from an airport when meteorological conditions are such that a safe departure cannot be made solely through the use of visual information. DPs designed specifically for obstruction avoidance may be flown if not assigned another DP or radar vector by ATC. DPs designed by ATC to standardize traffic flow, ensure aircraft separation and enhance capacity are referred to as “Standard Instrument Departures (SIDs)”. SIDs also provide obstacle clearance. ATC clearance must be received prior to flying a SID.

Instrument Flight Rules (IFR): A set of FAA rules, regulations, and procedures that define flight operations under conditions that do not permit navigation by means of visual information alone. Also employed as an adjective to designate a flight plan that will enable an aircraft to operate under conditions that preclude navigation by means of visual information.

Instrument Landing System (ILS): A precision instrument approach system that provides aircraft with both vertical (glide slope) and lateral guidance by means of radio signals transmitted from installations within the physical boundaries of the airport.

Instrument Landing System (ILS) Approach: A series of standardized, predetermined, and published aerial maneuvers which are based on vertical and lateral navigational data

received from radio transmitters located within the physical boundaries of the airport and which enable aircraft to descend toward an airport with the intention of landing when meteorological conditions are such that a safe approach cannot be made solely through the use of visual information. A typical ILS approach permits aircraft to descend to within 200 feet of the surface.

Instrument Meteorological Conditions (IMC): Weather conditions specified in FAA regulations under which aircraft are not authorized to takeoff, land, or maneuver under visual flight rules and may operate only by reference to electronic aids to navigation. The visibility and cloud clearance requirements for IMC are determined by the airspace designation in which and aircraft is operating, by the aircraft's altitude above both sea level and ground level, and by whether the aircraft is operating in daylight or at night.

Itinerant Operations: Arrivals and departures of aircraft to or from an area greater than 20 miles from the airport. Itinerant operations may involve an aircraft based at that airport or an aircraft from another airport.

Local Operations: Operations performed by aircraft which: (1) operate in the local traffic pattern or within sight of the tower; (2) are known to be departing for or arriving from flight in local practice areas within a 20-mile radius of the control tower; or (3) execute simulated instrument approaches or low passes at the airport.

Localizer (LOC): Equipment which provides, by means of radio signals from a transmitter located within the physical boundaries of an airport and a specialized airborne receiver, lateral course guidance for aircraft descending to land.

Localizer Approach: A series of standardized, predetermined, and published aerial maneuvers which are based on lateral guidance information received by means of a localizer transmitter located within the physical boundaries of an airport and which enable aircraft to descend toward an airport with the intention of landing when meteorological conditions are such that a safe approach cannot be made solely through the use of visual information. Localizer approaches do not provide vertical guidance, but localizers are often coupled with glide slope transmitters. A typical localizer approach permits aircraft to descend to within 400 to 500 feet of the surface solely on the basis of radio navigation aids.

Localizer-type Directional Array (LDA): A type of apparatus which provides, by means of radio signals from a transmitter located within the physical boundaries of an airport and a specialized airborne receiver, lateral course guidance for aircraft descending to land. The primary distinction between an LOC and an LDA is that the final approach course provided by the LDA is not aligned within 3 degrees of the runway centerline. Glide slope information is never provided in conjunction with an LDA.

Localizer-type Directional Array (LDA) Approach: A series of standardized, predetermined, and published aerial maneuvers which are based on lateral guidance information received by means of an LDA transmitter located within the physical boundaries of an airport and which enable aircraft to descend toward an airport with the intention of landing when meteorological conditions are such that a safe approach cannot be made solely through the use of visual information.

Middle Marker (MM): An electronic beacon that indicates a position approximately 3,500 feet from the landing threshold.

Military Operations: Operations by military aircraft

Minimum Descent Altitude (MDA): The minimum altitude above mean sea level to which an aircraft operating according to a non-precision instrument approach, or circling-to-land, may descend without visual contact with the airport or the airport environs.

Missed Approach: A maneuver conducted by a pilot when an instrument approach cannot be completed to a landing. The route of flight and altitude are shown on instrument approach procedure charts. A pilot executing a missed approach prior to the Missed Approach Point (MAP) must continue along the final approach to the MAP. The pilot may climb immediately to the altitude specified in the missed approach procedure.

Missed Approach Course: A standardized, predetermined, and published flight path to be flown in the event of a missed approach.

MSL: Mean Sea Level, used as an elevation datum

Nautical Mile (nm): a measure of distance equal to 6,076.115 feet (1,852 meters) commonly used for aviation navigation.

Navigational Aid: such as VOR, ILS, DME, VASI, MALS, REIL, PAPI.

Non-directional Beacon (NDB): A Low/Medium Frequency (L/MF) or Ultra High Frequency (UHF) radio beacon transmitting nondirectional signals whereby the pilot of an aircraft equipped with direction-finding equipment can determine his/her bearing to or from the radio beacon and “home” on, or track to or from, the station. When the radio beacon is installed in conjunction with the Instrument Landing System (ILS) marker, it is normally called a Compass Locator.

Non-directional Beacon (NDB) Approach: A series of standardized, predetermined, and published aerial maneuvers which are based on lateral guidance information received by means of an NDB transmitter located either at or remote from an airport and which enable aircraft to descend with the intention of landing when meteorological conditions are such that a safe approach cannot be made solely through the use of visual information.

Non-precision Instrument Approach Procedure: An instrument approach procedure for which vertical guidance is not provided. Common types of non-precision instrument approach procedures include VOR, GPS, localizer, NDB and LDA.

Non-scheduled Service: Revenue flights that are not operated in regular scheduled service, such as charter flights, and all non-revenue flights incident to such flights.

Operation: A takeoff or landing.

Origination: The initial enplanement of any passengers and cargo; total originations include all enplanements except transfers and stop-overs.

Outer Marker (OM): An electronic beacon that indicates at, or near, a position at which an aircraft will intercept the ILS glide path.

Peak Hour: Represents the highest number of aircraft operations or passengers during the busiest hour of an average day of a peak month.

Precision Approach Path Indicator (PAPI): A navigational aid installed adjacent to an airport runway that provides, by means of colored light beams, vertical course guidance to aircraft approaching to land on that runway. The usual descent slope provided by PAPI installations is 3 degrees.

Precision Instrument Approach Procedure: An instrument approach procedure for which vertical guidance is provided. ILS is the only common type of precision instrument approach currently in use. In the near future, certain GPS approaches will be upgraded to provide vertical guidance information, as well.

Primary Runway: That runway which provides the best wind coverage, etc. This is the runway that receives the most usage at an airport.

Primary Surface: A surface longitudinally centered on the runway. When the runway has a specially prepared surface, the primary surface extends 200 feet beyond each runway end. When there is no hard surface or planned hard surface, the primary surface ends at the end of the runway. The width of the primary surface will be that width prescribed in FAR Part 77, *Objects Affecting Navigable Airspace*, for the most precise existing or planned approach to that runway end.

Rate of Climb: The vertical speed or rate of change in altitude of an aircraft ascending from a lower altitude to a higher altitude (usually expressed in feet per minute).

Rate of Descent: The vertical speed or rate of change in altitude of an aircraft descending from a higher altitude to a lower altitude (usually expressed in feet per minute).

Reliever Airport: An airport to serve general aviation aircraft, which might otherwise use a congested air carrier served airport.

Revenue Bond: A form of public indebtedness backed by the revenue generated by the facility for which the debt was incurred.

Rotating Beacon: A visual navigational aid displaying flashes of white and/or colored light used to indicate the location of an airport.

Runway: A defined area on an airport prepared for landing and takeoff of aircraft along its length.

Runway Protection Zone (RPZ): An area used to enhance the protection of people and property on the ground and the safety of aircraft operations. It is at ground level beyond the runway end.

Runway Safety Area (RSA): An area symmetrical about the runway centerline and extending beyond the ends of the runway that must be free of obstructions, graded and suitable for reducing risk of damage to airplanes in the event of overshoot, undershoot or excursion from the runway.

Segmented Circle: An airport aid identifying the traffic pattern direction.

Special Use Airspace: Airspace of defined dimensions within that flight of aircraft, while usually not wholly prohibited, is subject to restrictions or to hazards that may exist to non-participating aircraft. In the case of prohibited special use airspace, overflight of most aircraft is prohibited.

Standard Instrument Departure (SID): See **Instrument Departure Procedure**.

Standard Terminal Arrival Route (STAR): A preplanned instrument flight rule (IFR) air traffic control arrival procedure published for pilot use in graphic and/or textual form. STARS provide transition from the en route structure to an outer fix or an instrument approach fix/arrival waypoint in the terminal area.

Straight-in Approach: A descent in an approach procedure in which the final approach course alignment and descent gradient permits authorization of straight-in landing minimums.

Straight-out Departure: A VFR departure procedure in which an aircraft exits the airport area along the extended centerline of the departure runway by extension of the upwind leg of the traffic pattern.

Supplemental Air Carrier: One of a class of air carriers now holding temporary certificates of public convenience and necessity issued by the U.S. Department of

Transportation, authorizing them to perform passenger and cargo charter services supplementing the scheduled service of the certificated route air carriers.

Tactical Air Navigation facility (TACAN): A ground-based radio navigational aid which transmits encoded signals that enable aircraft equipped with appropriate receivers to determine both bearing and distance with respect to the facility. The information with respect to bearing is generally available only to military aircraft, while information regarding distance is usable by both military and civil aircraft. TACAN facilities are frequently co-located with VORs and called a VORTAC.

Taxiway: A defined area on an airport prepared for the surface movement of aircraft to and from the runway.

Terminal Airspace: The controlled airspace normally associated with aircraft departure and arrival patterns to or from airports within a terminal system.

Terminal Building: A building on an airport that is used in making the transition between surface transportation and air transportation.

Terminal Instrument Procedures (TERPS): The United States Standard for Terminal Instrument Procedures establishes the standards and criteria that the FAA and military uses for developing Instrument Flight Rule (IFR) procedures.

Terminal Radar Approach Control (TRACON): An FAA air traffic control service to aircraft arriving and departing or transiting airspace controlled by the facility. TRACONs control IFR and, work load permitting, provide air traffic information to participating VFR flights.

Upwind Leg: A segment of the airport traffic pattern that is coincident with the centerline of the departure runway. The upwind leg is the initial leg of the traffic pattern for departing aircraft and extends from takeoff to the crosswind leg or departure from the airport area.

Very high Frequency Omnidirectional Range (VOR): A ground-based electronic navigation aid which transmits very high frequency navigation signals, 360 degrees in azimuth, oriented from magnetic north. Used as the basis for navigation in the National Airspace System. The VOR periodically identifies itself by Morse Code and may have an additional voice identification feature. Voice features may be used by ATC or FSS for transmitting instructions/information to pilots.

Very high Frequency Omnidirectional Range with Distance-Measuring Equipment (VOR-DME): A ground-based radio navigational aid which combines a VOR transmitter with a DME facility and which transmits encoded signals that enable aircraft equipped with appropriate receivers to determine both relative bearing and slant range distance with respect to the facility.

Very high Frequency Omnidirectional Range with Tactical Air Navigation (VORTAC):

A ground-based radio navigational aid which combines a VOR transmitter with a TACAN facility and which transmits encoded signals that enable both military and civilian aircraft equipped with appropriate receivers to determine both bearing and distance with respect to the facility.

Visual Approach: An approach conducted on an IFR flight plan which authorizes the pilot to proceed visually and clear of clouds to the airport. The pilot must, at all times, have either the airport or the preceding aircraft in sight. This approach must be authorized and under the control of the appropriate ATC facility. Reported weather at the airport must be ceiling at or above 1,000 feet and visibility of 3 statute miles or greater.

Visual Flight Rules (VFR): Rules that govern the procedures for conducting flight under visual conditions. The term “VFR” is also used in the United States to indicate weather conditions that are equal to or greater than minimum VFR requirements. In addition, it is used by pilots and controllers to indicate type of flight plan. For takeoff and landing, operation under visual flight rules requires 3 statute miles visibility and a cloud ceiling of at least 1,000 feet at airports with controlled airspace from the ground up. A special VFR clearance may be obtained from ATC if visibility is 1 statute mile or greater and the pilot can maneuver to remain clear of clouds in the vicinity.

Visual Meteorological Conditions (VMC): Weather conditions specified in FAA regulations under which aircraft are authorized to takeoff, land, and maneuver under visual flight rules and by means of only visual navigational information. Electronic aids to navigation may be utilized by aircraft operating in VMC, but are not required. The visibility and cloud clearance requirements for VMC are determined by the airspace designation in which and aircraft is operating, by the aircraft’s altitude above both sea level and ground level, and by whether the aircraft is operating in daylight or at night.

VOR Approach Procedure: A series of standardized, predetermined, and published aerial maneuvers which are based on lateral guidance information received by means of a VOR transmitter and which enable aircraft to descend toward an airport with the intention of landing when meteorological conditions are such that a safe approach cannot be made solely through the use of visual information. The VOR facility may be located within the physical boundaries of the destination airport or at some distance from the airport. VOR approaches do not provide vertical guidance. A typical VOR approach permits aircraft to descend to within 400 to 500 feet of the surface solely on the basis of radio navigation aids.

Wind Cone (sock): Conical wind direction indicator.

Wind Coverage: Refers to orientation of the runway in relationship to direction of prevailing winds (concerns usability of the runway for takeoffs and landings).

Wind Rose: A diagram indicating the percentage of winds from various directions and various velocities at a specific place.

Wind Tee: A visual device used to advise pilots about wind direction.

Appendix

HISTORICAL POPULATION AND INCOME DATA
Nevada Airport System Plan

COUNTY	POPULATION											Percent Change
	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	1990-2000
Carson City	40,950	42,513	43,908	45,128	47,095	48,690	49,942	50,873	51,551	52,624	53,208	23.0%
Churchill	18,100	18,763	19,010	19,880	20,706	21,371	22,301	23,466	23,927	24,132	24,157	25.1%
Clark	770,280	835,080	873,730	916,837	990,564	1,055,435	1,119,052	1,193,388	1,261,150	1,327,145	1,394,440	44.8%
Douglas	28,070	30,394	32,102	33,869	35,228	37,210	38,369	39,050	39,951	40,847	41,674	32.6%
Elko	33,770	35,825	37,416	39,399	41,004	42,316	44,428	46,543	46,818	45,727	45,633	26.0%
Esmeralda	1,350	1,227	1,363	1,111	1,039	1,142	1,094	1,067	1,088	1,036	1,061	-27.2%
Eureka	1,550	1,683	1,579	1,502	1,367	1,369	1,436	1,763	1,895	1,726	1,651	6.1%
Humboldt	13,020	13,651	14,087	14,520	14,776	15,530	16,161	17,032	17,456	17,103	16,197	19.6%
Lander	6,340	6,415	6,603	6,443	6,369	6,266	6,555	6,938	6,570	6,199	5,794	-9.4%
Lincoln	3,810	3,834	3,833	3,876	3,935	3,951	3,983	4,023	4,072	4,134	4,165	8.5%
Lyon	20,590	21,863	22,657	23,826	25,165	26,965	29,055	30,846	32,302	33,916	35,685	42.3%
Mineral	6,470	6,182	6,240	6,168	5,992	5,971	5,882	5,771	5,466	5,338	5,071	-27.6%
Nye	18,190	18,723	19,308	20,057	21,970	23,882	25,649	28,168	30,191	31,454	32,978	44.8%
Pershing	4,550	4,749	5,070	5,250	5,429	5,667	6,408	6,756	6,968	7,035	7,057	35.5%
Storey	2,560	2,637	2,694	2,923	3,202	3,471	3,590	3,610	3,586	3,582	3,491	26.7%
Washoe	257,120	265,762	273,178	282,214	293,141	302,748	312,366	320,828	327,899	334,601	341,935	24.8%
White Pine	9,410	9,296	9,141	8,953	8,881	9,609	10,134	10,085	9,991	9,767	9,181	-2.5%
STATE	1,236,130	1,318,597	1,371,919	1,431,956	1,525,863	1,611,593	1,696,405	1,790,207	1,870,881	1,946,366	2,023,378	38.9%
SOURCE: Years 1990-2000, Nevada State Demographer's Office												
COUNTY	PER CAPITA INCOME											Percent Change
	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	1990-2000
Carson City	\$ 20,635	\$ 21,542	\$ 22,836	\$ 23,183	\$ 24,291	\$ 25,780	\$ 26,460	\$ 27,477	\$ 28,748	\$ 29,505	\$ 32,049	35.6%
Churchill	\$ 15,591	\$ 16,515	\$ 18,037	\$ 18,955	\$ 19,710	\$ 19,824	\$ 21,353	\$ 21,779	\$ 23,465	\$ 23,851	\$ 25,068	37.8%
Clark	\$ 19,777	\$ 20,031	\$ 21,319	\$ 22,218	\$ 23,116	\$ 24,187	\$ 25,522	\$ 26,283	\$ 27,743	\$ 28,570	\$ 29,601	33.2%
Douglas	\$ 25,660	\$ 26,297	\$ 27,310	\$ 28,050	\$ 29,820	\$ 30,854	\$ 32,848	\$ 35,940	\$ 38,070	\$ 38,640	\$ 39,547	35.1%
Elko	\$ 18,291	\$ 19,077	\$ 20,317	\$ 21,224	\$ 22,230	\$ 22,597	\$ 23,757	\$ 23,560	\$ 23,389	\$ 24,150	\$ 24,618	25.7%
Esmeralda	\$ 14,142	\$ 15,549	\$ 14,865	\$ 17,266	\$ 17,821	\$ 17,411	\$ 18,496	\$ 19,463	\$ 20,351	\$ 22,988	\$ 24,411	42.1%
Eureka	\$ 23,052	\$ 22,470	\$ 22,456	\$ 24,226	\$ 25,268	\$ 25,708	\$ 27,837	\$ 23,957	\$ 23,432	\$ 22,515	\$ 23,242	0.8%
Humboldt	\$ 18,950	\$ 20,253	\$ 21,119	\$ 21,877	\$ 22,793	\$ 23,171	\$ 24,268	\$ 24,290	\$ 23,411	\$ 23,911	\$ 24,696	23.3%
Lander	\$ 18,717	\$ 19,609	\$ 19,950	\$ 20,454	\$ 21,256	\$ 22,361	\$ 23,549	\$ 23,801	\$ 23,488	\$ 24,109	\$ 25,509	26.6%
Lincoln	\$ 18,015	\$ 18,554	\$ 18,927	\$ 18,057	\$ 18,007	\$ 17,253	\$ 17,036	\$ 17,835	\$ 18,778	\$ 18,456	\$ 18,561	2.9%
Lyon	\$ 16,641	\$ 16,902	\$ 18,095	\$ 18,829	\$ 18,930	\$ 19,577	\$ 20,215	\$ 20,664	\$ 21,812	\$ 22,081	\$ 22,966	27.5%
Mineral	\$ 16,422	\$ 16,805	\$ 18,230	\$ 17,713	\$ 18,303	\$ 19,545	\$ 20,622	\$ 21,589	\$ 23,757	\$ 23,607	\$ 24,306	32.4%
Nye	\$ 16,365	\$ 16,774	\$ 17,212	\$ 17,934	\$ 19,119	\$ 19,574	\$ 20,668	\$ 21,270	\$ 21,928	\$ 22,623	\$ 24,206	32.4%
Pershing	\$ 16,094	\$ 16,124	\$ 16,384	\$ 16,255	\$ 16,161	\$ 17,165	\$ 18,856	\$ 19,839	\$ 17,448	\$ 16,523	\$ 16,887	4.7%
Storey	\$ 17,746	\$ 18,983	\$ 19,253	\$ 20,580	\$ 22,391	\$ 22,351	\$ 22,888	\$ 24,078	\$ 24,765	\$ 26,132	\$ 28,266	37.2%
Washoe	\$ 23,067	\$ 23,862	\$ 25,575	\$ 25,695	\$ 27,031	\$ 28,339	\$ 29,599	\$ 30,538	\$ 32,265	\$ 33,915	\$ 36,103	36.1%
White Pine	\$ 16,804	\$ 15,728	\$ 16,339	\$ 16,951	\$ 19,893	\$ 20,564	\$ 21,059	\$ 21,530	\$ 22,631	\$ 22,822	\$ 24,309	30.9%
STATE	\$ 20,346	\$ 20,761	\$ 22,084	\$ 22,777	\$ 23,772	\$ 24,817	\$ 26,085	\$ 26,862	\$ 28,260	\$ 29,184	\$ 30,438	33.2%

SOURCE: U.S. Bureau of Economic Analysis

Exhibit 2

**EXISTING PUBLIC-USE AIRPORT FACILITIES
Nevada Airport System Plan**

Airport by County	Owner-ship	Airport Role	Airport Classification	Airport Reference Code (ARC)	No. of Runways	Primary Runway Length (ft)	Primary Runway Width (ft)	Primary Runway Surface	Primary Taxiway Configuration	Primary Runway Lights (intensity)	Approach to Primary Runway	Rotating Beacon	Hangar Space	CTAF
<u>Carson City</u>														
Carson Airport	Public	RL	GU	B-II	1	5,900	75	Asphalt	Full Para	MIRL	Visual	Yes	78,100 s.f.	123.0
Parker Carson Stolport	Private	GA	LS	A-I	1	1,700	60	Dirt	Connector	None	Visual	No	42,800 s.f.	122.9
<u>Churchill</u>														
Fallon Municipal Airport	Public	GA	GU	B-II	2	5,703	75	Asphalt	Full Para	MIRL	NPI	Yes	68,000 s.f.	122.8
<u>Clark County</u>														
Boulder City Municipal Airport	Public	GA	GU	B-II	3	4,800	75	Asphalt	Full Para	MIRL	Visual	Yes	56,050 s.f.	122.7
Echo Bay Airstrip	Public	GA	BU	B-I	1	3,400	50	Asphalt	Turnarounds	None	Visual	No	0 s.f.	122.8
Henderson Executive Airport (Las Vegas)	Public	PR	GU	B-II	1	6,500	100	Asphalt	Full Para	MIRL	Visual	Yes	80,400 s.f.	125.1
Jean Airport	Public	GA	BU	B-I	2	4,600	75	Asphalt	Full Para	MIRL	Visual	Yes	0 s.f.	122.9
Kidwell Airport (Cal Nev Ari)	Private	GA	BU	B-I	1	4,140	65	Dirt	Full Para	MIRL/NSTD	Visual	No	0 s.f.	122.9
McCarran International Airport	Public	PR	TR	D-V	4	14,505	150	Asphalt	Full Para	HIRL	PIR	Yes	287,940 s.f.	122.95
Mesquite Municipal Airport	Public	GA	GU	B-II	1	5,100	75	Asphalt	Full Para	MIRL	NPI	Yes	0 s.f.	122.8
North Las Vegas Airport	Public	PR	GU	B-II	3	5,000	75	Asphalt	Full Para	MIRL	NPI	Yes	218,000 s.f.	125.7
Perkins Field (Overton Municipal)	Public	GA	GU	B-II	1	4,800	75	Asphalt	Full Para	MIRL	Visual	Yes	0 s.f.	122.8
Searchlight Airport	Public	GA	BU	B-I	1	5,040	70	Asphalt	None	None	Visual	No	0 s.f.	122.9
Sky Ranch Estates Airport (Sandy Valley)	Private	GA	BU	B-I	2	3,340	45	Asphalt	Connector	None	Visual	No	37,000 s.f.	123.0
<u>Douglas County</u>														
Minden-Tahoe Airport	Public	GA	TR	C-II	3	7,395	100	Asphalt	Full Para	MIRL	NPI	Yes	283.050 s.f.	122.8
<u>Elko County</u>														
Elko Regional Airport (J.C. Harris Field)	Public	PR	TR	C-III	2	7,211	150	Asphalt	Full Para	MIRL	NPI	Yes	70,540 s.f.	126.5
Harriet Field/Wells Municipal Airport	Public	GA	BU	B-I	2	5,500	150	Asphalt	Connector	MIRL	Visual	Yes	0 s.f.	122.8
Jackpot Airport/Hayden Field	Public	GA	BU	B-I	1	6,200	60	Asphalt	Connector	MIRL	Visual	Yes	0 s.f.	122.8
Owyhee Airport	Public	GA	BU	B-I	1	6,700	60	Asphalt	None	None	Visual	No	0 s.f.	122.9
Stevens/Crosby Field (North Fork)	Public	GA	LS	A-I	1	3,600	50	Dirt	None	None	Visual	No	0 s.f.	122.9

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<u>Esmeralda County</u>														
Dyer Airport	Public	GA	LS	A-I	1	2,870	60	Dirt	None	None	Visual	No	2,400 s.f.	122.9
Goldfield Airport	Public	GA	LS	A-I	1	3,150	37	Gravel	None	None	Visual	No	2,400s.f.	122.9
Lida Junction Airport (Goldfield)	Public	GA	LS	A-I	1	6,450	80	Dirt	None	None	Visual	No	0 s.f.	122.9
<u>Eureka County</u>														
Eureka Airport	Public	GA	BU	B-I	1	7,300	60	Asphalt	Connector	HIRL	Visual	Yes	1,280 s.f.	122.9
<u>Humboldt County</u>														
Denio Junction Airport	Public	GA	LS	A-I	3	3,100	150	Dirt	Connector	None	Visual	No		122.9
Winnemucca Municipal Airport	Public	GA	TR	B-II	2	7,000	100	Asphalt	Part Para & Conn	MIRL	NPI	Yes	29,980 s.f.	122.8
<u>Lander County</u>														
Austin Airport	Public	GA	BU	B-I	1	6,000	75	Asphalt	Full Para	NSTD/MIRL	Visual	Yes	3,000 s.f.	122.9
Battle Mountain Airport	Public	GA	GU	B-II	2	7,300	150	Asphalt	Part Para & Conn	NSTD/MIRL	NPI	Yes	8,550 s.f.	122.8
Kingston Airport	Public	GA	BU	A-I	2	4,000	70	Dirt	None	None	Visual	No	3,000 s.f.	122.95
<u>Lincoln County</u>														
Alamo Landing Field	Public	GA	LS	A-I	2	5,000	120	Dirt	None	None	Visual	No	0 s.f.	122.9
Lincoln County Airport (Panaca)	Public	GA	BU	B-I	1	4,620	60	Asphalt	Connector	MIRL	Visual	Yes	4,800 s.f.	122.8
<u>Lyon County</u>														
Dayton Valley Airpark	Private	GA	GU	B-II	1	5,351	75	Asphalt	Part Para	None	Visual	No	0 s.f.	122.9
Rosaschi Air Park	Private	GA	GU	B-II		4,800	32	Asphalt	Connector	None	Visual	No		122.9
Silver Springs Airport	Public	GA	BU	B-I	1	6,000	75	Asphalt	MIRL	None	Visual	No	14,000 s.f.	122.9
Tiger Field (Fernley)	Private	GA	BU	B-I	2	3,974	40	Asphalt	Full Para	None	Visual	No	2,550 s.f.	122.9
Yerington Municipal Airport	Public	GA	GU	B-II	1	5,800	75	Asphalt	Full Para	MIRL	Visual	Yes	33,770 s.f.	122.8
<u>Mineral County</u>														
Hawthorne Municipal Airport	Public	GA	GU	B-I	3	4,800	100	Asphalt	Full Para	MIRL	Visual	Yes	16,200 s.f.	122.8
Mina Airport	Public	GA	LS	A-I	1	4,600	165	Dirt	None	None	Visual	No	0 s.f.	122.9

EXISTING PUBLIC-USE AIRPORT FACILITIES, Nevada Airport System Plan

Airport by County	Owner-ship	Airport Role	Airport Classification	Airport Reference Code (ARC)	No. of Runways	Primary Runway Length (ft)	Primary Runway Width (ft)	Primary Runway Surface	Primary Taxiway Configuration	Primary Runway Lights (intensity)	Approach to Primary Runway	Rotating Beacon	Hangar Space	CTAF
<u>Nye County</u>														
Beatty Airport	Public	GA	BU	B-I	1	5,600	80	Asphalt	Connector	MIRL	Visual	Yes	0 s.f.	122.9
Currant Ranch Airport	Public	GA	LS	A-I	1	5,100	80	Dirt	None	None	Visual	No	2,400 s.f.	122.9
Duckwater Airport	Public	GA	LS	A-I	2	3,400	80	Dirt	None	None	Visual	No	0 s.f.	122.9
Gabbs Airport	Public	GA	BU	B-I	2	5,900	80	Dirt	Connector	NSTD/LIRL	Visual	Yes	1,540 s.f.	122.9
Hadley Airport (Round Mountain)	Public	GA	GU	B-I	1	6,776	60	Asphalt	Connector	None	Visual	No	0 s.f.	122.9
Hidden Hills Airport (Pahrump)	Private	GA	BU	B-I	2	4,050	125	Dirt	None	None	Visual	No	0 s.f.	122.9
Jackass Aeropark (Amargosa Valley)	Public	GA	BU	B-I	1	6,200	100	Dirt	Connector	None	Visual	No	7,000 s.f.	122.9
Tonopah Airport	Public	GA	TR	B-II	2	7,057	80	Asphalt	Full Para	MIRL	NPI	Yes	26,100 s.f.	123.0
<u>Pershing County</u>														
Derby Field (Lovelock)	Public	GA	GU	B-II	2	5,529	75	Asphalt	Connector	MIRL	NPI	Yes	0 s.f.	122.8
<u>Washoe County</u>														
Empire Airport	Public	GA	LS	A-I	2	3,170	48	Dirt	None	None	Visual	No	1,600 s.f.	122.9
Reno/Tahoe International Airport	Public	PR	TR	D-V	3	11,002	150	Concrete	Full Para	HIRL	PIR	Yes	301,000 s.f.	122.95
Reno Stead Airport	Public	RL	TR	C-III	2	9,000	150	Asphalt	Full Para	HIRL	NPI	Yes	225,770 s.f.	122.7
Spanish Springs Airport	Private	GA	BU	B-I	1	3,540	71	Dirt	Full Para	None	Visual	No		122.9
<u>White Pine County</u>														
Ely Airport/Yelland Field	Public	GA	TR	B-II	2	5,998	150	Asphalt	Full Para	MIRL	NPI	Yes	31,500 s.f.	122.8
Ft. Ruby Ranch Airstrip (Ruby Valley)	Private	GA	LS	A-I	1	4,500	60	Dirt	None	None	Visual	No	0 s.f.	N/A

SOURCE: FAA 5010-1 Airport Master Records and individual airports