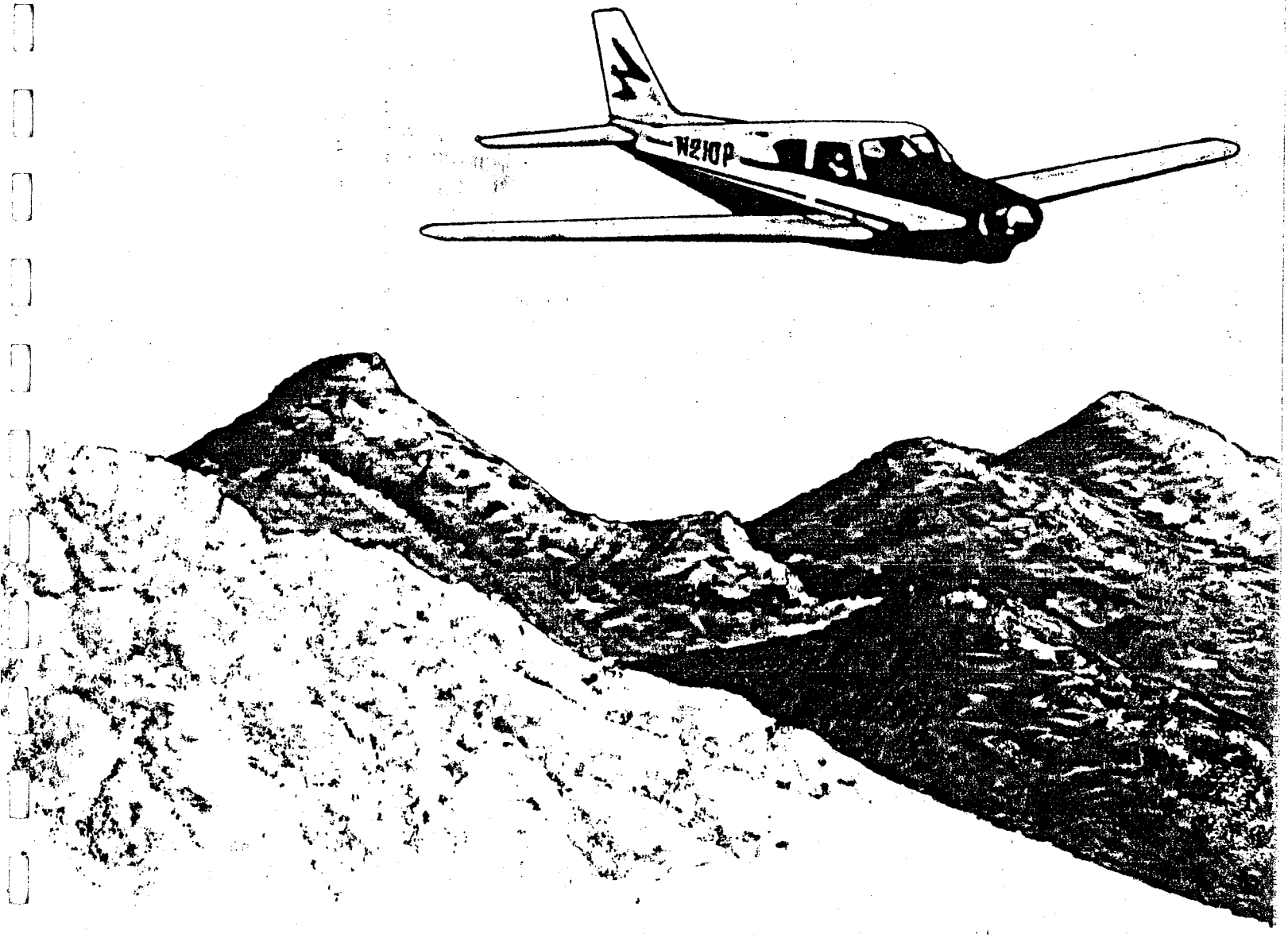
COTTONWOOD AIRPORT MASTER PLAN

COTTONWOOD ARIZONA 1986



ellis-murphy CONSULTING ENGINEERS & LAND SURVEYORS

james vercellino AVIATION CONSULTANT

ellis-murphy inc.
consulting engineers / land surveyors

PRINCIPALS:
ROBERT A. MURPHY
ROBERT G. McDOWELL
JOHN C. ANDERSON

April 2, 1986

The Honorable Charles D. Garrison
Town Council
Town of Cottonwood
821 North Main Street
Cottonwood, Arizona 86326

Dear Mayor Garrison and Members of the Town Council:

It is our pleasure to submit this Master Plan for the Cottonwood Municipal Airport.

Our forecasts indicate that the Town of Cottonwood will enjoy a continuous growth within the next decade, and this will reflect in a greater demand for airport facilities to meet the anticipated population increase along with business growth.

It is believed that the Capital Program recommended in this Plan is realistic and its adoption is recommended in order to meet future aviation demands for the airport.

It is anticipated that federal funding authorized by the Airport and Airways Act will provide for a substantial portion of the Capital Improvement Program. In addition, supplemental state funding is available through the Arizona Department of Transportation, Aeronautics Division.

We deeply appreciate and are grateful for the assistance provided by your town staff, council members, planning department and local citizens.

Very truly yours,

ELLIS-MURPHY, INC.

James Vercellino
Airport Consultant

JV/kls

Central Office — 2411 W. Colter — Phoenix, Arizona 85015 (602) 242-4411
East Valley Office — 3331 N. Hayden Rd. — Scottsdale, Arizona 85251 (602) 990-2352

PREPARED FOR:

THE TOWN OF COTTONWOOD

Mayor - Charles D. Garrison

City Manager - Charles Sweet

COTTONWOOD TOWN COUNCIL

Leroy Lewis - Vice Mayor
Joseph "Joe" Jones
Linda Hobson
Kathy Perez
William Snyder
R. K. "Pete" Minter

Cottonwood Municipal Airport

CONSULTANT STAFF

Project Director, Text & Composition - James Vercellino
Project Advisor - John Black
Technical Advisor - Robert A. Murphy, P.E., L.S.
Project Engineer - Mike Clark
Graphics and Drafting - Bud Smith

E-M JOB NO. 320-7327

APRIL, 1986

This report was financed in part by the Federal Aviation Administration and the Arizona Department of Transportation-Aeronautics Division.

TABLE OF CONTENTS

	Page
INTRODUCTION	i
CHAPTER ONE - INVENTORY	
Historical Background	1-1
Data Collection	1-3
Site Location	1-3
Airport Boundaries	1-3
Perimeter Fence	1-3
Runway	1-3
Runway Lights	1-4
Taxiways	1-4
Airplane Parking	1-4
Wind Indicator	1-4
Airport Beacon	1-4
Fuel Facilities	1-4
Automobile Parking	1-4
Access Road	1-5
Structures	1-5
Navigational Aids	1-5
Utilities	1-5
Field Obstructions	1-5
Weather Patterns	1-6
Clear Zones	1-6
Socio Economic	1-6
Wildlife and Vegetation	1-7
Soils	1-7
Demography	1-8
CHAPTER TWO - FORECASTS	
Methodology	2-1
CHAPTER THREE - DEMAND/CAPACITY ANALYSIS	
Demand/Capacity Analysis	3-1
CHAPTER FOUR - FACILITY REQUIREMENTS	
Facility Requirements	4-1
Airfield Facilities	4-4
Runways	4-4
Aircraft Parking - Local	4-4
Aircraft Parking - Itinerant	4-6
Terminal Facilities	4-6
Terminal Building	4-6
Fueling Facilities	4-6
Access Road	4-6
Auto Parking	4-6
Security Fence	4-7
Airport Beacon	4-7

Navaids..... 4-7
Fire Fighting Equipment..... 4-7
Hangars..... 4-7
Airplane Shelters..... 4-7
Support Areas - Commercial & Industrial..... 4-8
Land Acquisition..... 4-8
Alternative Analysis..... 4-12
"Do Nothing" Policy..... 4-13
Utilize Other Forms of Transportation..... 4-13
Relocate Airport..... 4-14
Use Other Airports..... 4-14
Improve Existing Airport..... 4-15

CHAPTER FIVE - ENVIRONMENTAL ANALYSIS
Environmental Overview..... 5-2
Noise..... 5-2
Compatible Land Use..... 5-4
Social Impacts..... 5-4
Induced Social Impacts..... 5-8
Air Quality..... 5-8
Water Quality..... 5-8
Department of Transportation Act..... 5-8
Biotic Communities..... 5-9
Endangered & Threatened Species..... 5-9
Wet Lands..... 5-9
Floodplains..... 5-9
Coastal Management..... 5-9
Prime & Unique Farmlands..... 5-9
Energy Supply and Natural Resources..... 5-9
Light Emissions..... 5-9
Solid Waste Impacts..... 5-9
Construction Impacts..... 5-9
Vehicle Noise..... 5-10
Disposal of Wastes..... 5-10
Control of Air Pollution..... 5-10
Impact on Water Quality..... 5-10
Local Plans..... 5-10

CHAPTER SIX - AIRPORT LAYOUT PLANS
Land Use Planning..... 6-4
Land Use Conflicts..... 6-5
Land Use Compatible with Airports..... 6-6
Land Acquisition..... 6-7
Easements..... 6-7
Incompatible Land Uses..... 6-8
Comprehensive Planning..... 6-9
Implementing Land Use Plans..... 6-10
Land Use Zoning..... 6-10
Limitations on Zoning..... 6-10
Airport Beautification..... 6-12
Architecture..... 6-13

CHAPTER SEVEN - CAPITAL IMPROVEMENTS
Work Programs:
Short Term 1986-1990..... 7-3
Intermediate Term 1991-1995..... 7-4
Long Term 1996-2005..... 7-5
Airport Operation and Management..... 7-6
Financing..... 7-9
Source of Funds..... 7-10
Federal Aviation Administration..... 7-10
Arizona Dept. of Transportation..... 7-10
Arizona Dept. of Transportation-Aeronautics Division. 7-10
General Fund..... 7-10
County Funds..... 7-11
Revenue General Obligation Bonds..... 7-11
Private Funds..... 7-11
Taxes..... 7-11

CHAPTER EIGHT - SUMMARY & CONCLUSIONS

TABLE OF FIGURES

FIGURE NO.	TITLE	PAGE NO.
I	Arizona Map - Primary Airport System	iv
II	Aerial Photo Cottonwood Airport	v
III	Vicinity Map	vi
IV	Service Area Map	vii
2-A	County Based Aircraft at Cottonwood	2-4
2-A	Aircraft Registration -vs- Population	2-4
2-B	Summary of Basic Planning Factors	2-5
2-C	Active Aircraft/One Thousand Population	2-6
2-D	Arizona Aircraft Registration Data	2-7
2-E	Aircraft/Ten Thousand Population	2-8
2-F	Arizona Registered Aircraft by County	2-9
2-G	Yavapai County Population Projections	2-10
4-A	Airplane Models Accommodated by Type	4-2
4-B	Runway Length Design Table	4-5
4-C	Airport Dimensional Standards	4-10
4-D	Airport Dimensional Layout	4-11
5-A	Noise Contours 1986	5-5
5-B	Noise Contours 2005	5-6
5-C	Guidelines for Land Use Compatibility	5-7
5-D	Aircraft and Auto Pollutants	5-11
6-A	Airport Lay-Out Plan	6-1
6-B	Terminal Area Plan	6-2
6-C	Approach & Clear Zone Plan - Conical Surface	6-3
7-A	Capital Improvement Short Term	7-3
7-B	Capital Improvement Intermediate Term	7-4
7-C	Capital Improvement Long Term	7-5

INTRODUCTION

The Town of Cottonwood is located in the geographic center of the State of Arizona at the eastern base of Mingus Mountain which rises to an elevation of 7,700 feet above sea level. It is flanked to the east by the Verde River. It was founded in 1879 and incorporated in 1960.

Cottonwood's location in the geographic center of the state is not far from any of the state's wonders; its deserts and mountains, rivers and lakes, and the spectacular Grand Canyon. In the immediate vicinity, there are a variety of attractions. Jerome is one of America's most fantastic ghost towns with cracked and tilted buildings stretching 1,500 feet down the mountainside. There is also the amazing box-like 550 year old Indian ruins at Tuzigoot National Monument and the 11th century cliff dwellings at Montezuma Castle National Monument. Natural attractions abound with Oak Creek Canyon and the 12,000 foot San Franicisco Peaks to the north in Coconino National Forest and Prescott National Forest's 7,700 foot Mingus Mountain to the West. Also, just outside Cottonwood, there is a "Petting Zoo".

The Town of Cottonwood and the surrounding communities comprising the Verde Valley has undergone an unpresedented growth. It has enjoyed industrial, commercial and tourism growth. Because of its good climate and small town atmosphere, it has grown as a retirement area.

In a brief span of years, 1973-1984, the population of the service area has grown from 6,500 to 20,155. These figures include Clarkdale, Jerome, Camp Verde, Cornville, Lake Montezuma and Verde CCD remainder, all of which lie in the service area. The source of the population figures is from the Northern Arizona Council of Governments population projections, 1980-2005 and the office of Economic Planning and Development 4/85.

The Master Plan presented herein provides for the establishment of guidelines for airport development to provide a facility for the safe and efficient conduct of air transportation which is in balance with local and regional planning efforts.

The overall objective of the Cottonwood Airport Master Plan will be to provide guidelines for future development which will satisfy aviation demand and be compatible with the environment, community development, and other modes of transportation. Specific objectives within this broad framework are as follows:

A. To provide an effective graphic presentation of the ultimate development of the airport and of anticipated land uses adjacent to the airport.

B. To establish a schedule of priorities and phasing for the various improvements proposed in the plan.

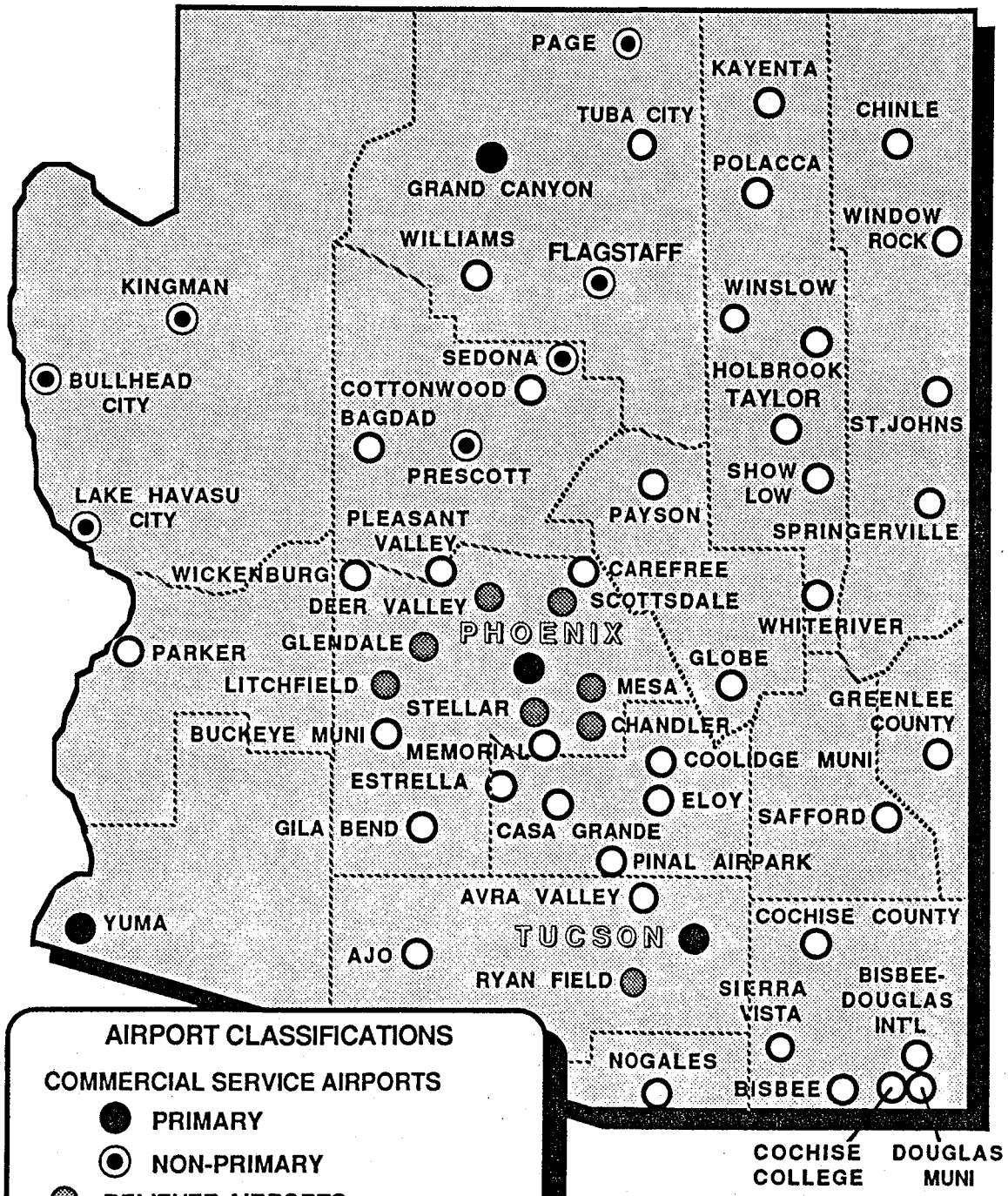
C. To provide for the present and future community aviation needs consistent with economic growth and available funding.

D. To describe the various concepts and alternatives which were considered in the establishment of the proposed plan.

E. To provide a concise and descriptive report so that the impact and logic of its recommendations can be clearly understood by the community the Cottonwood Airport serves and by those authorities and public agencies which are charged with the approval, promotion, and funding of the improvements proposed in the Airport Master Plan.

ARIZONA DEPARTMENT OF TRANSPORTATION

PRIMARY AIRPORT SYSTEM



1986

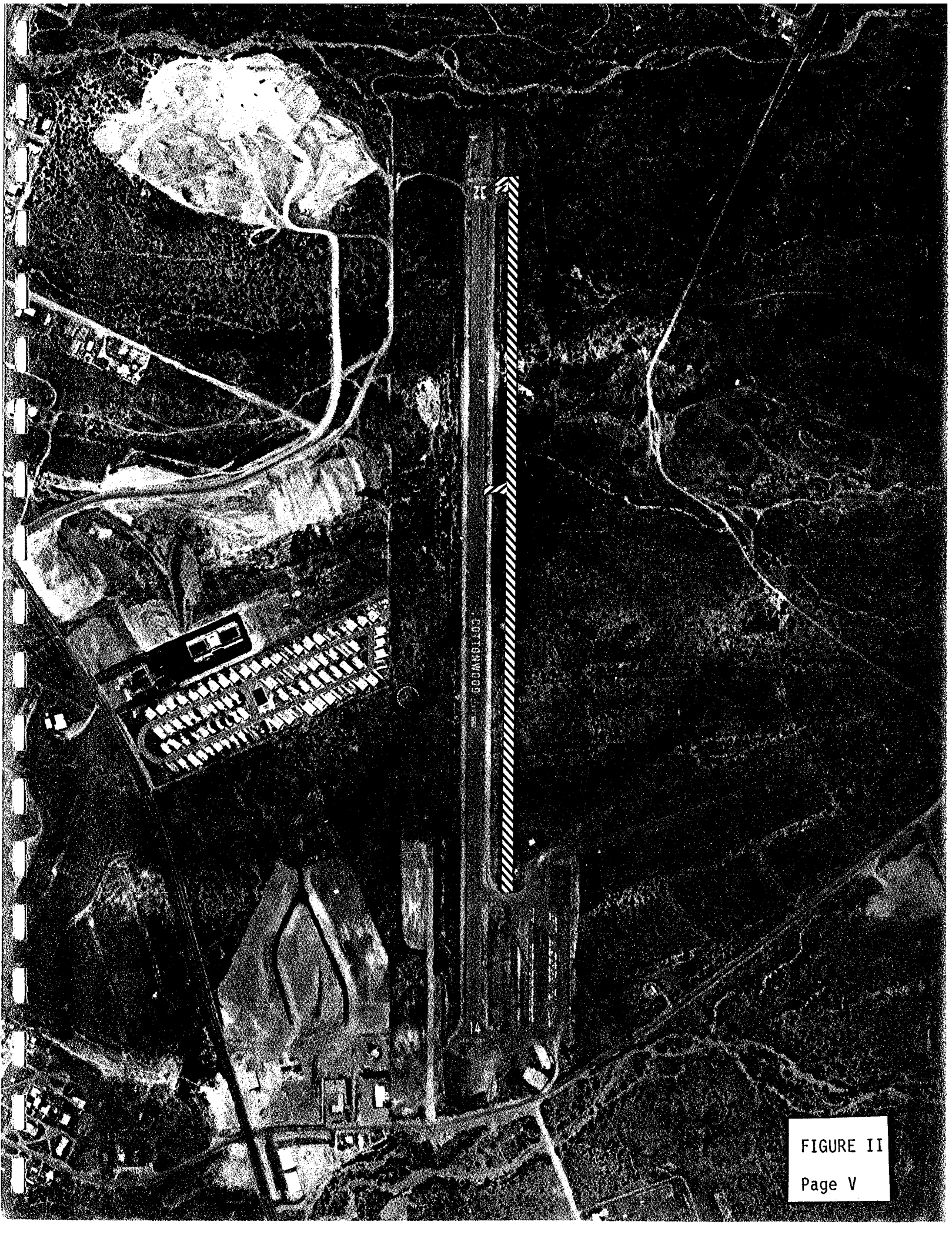
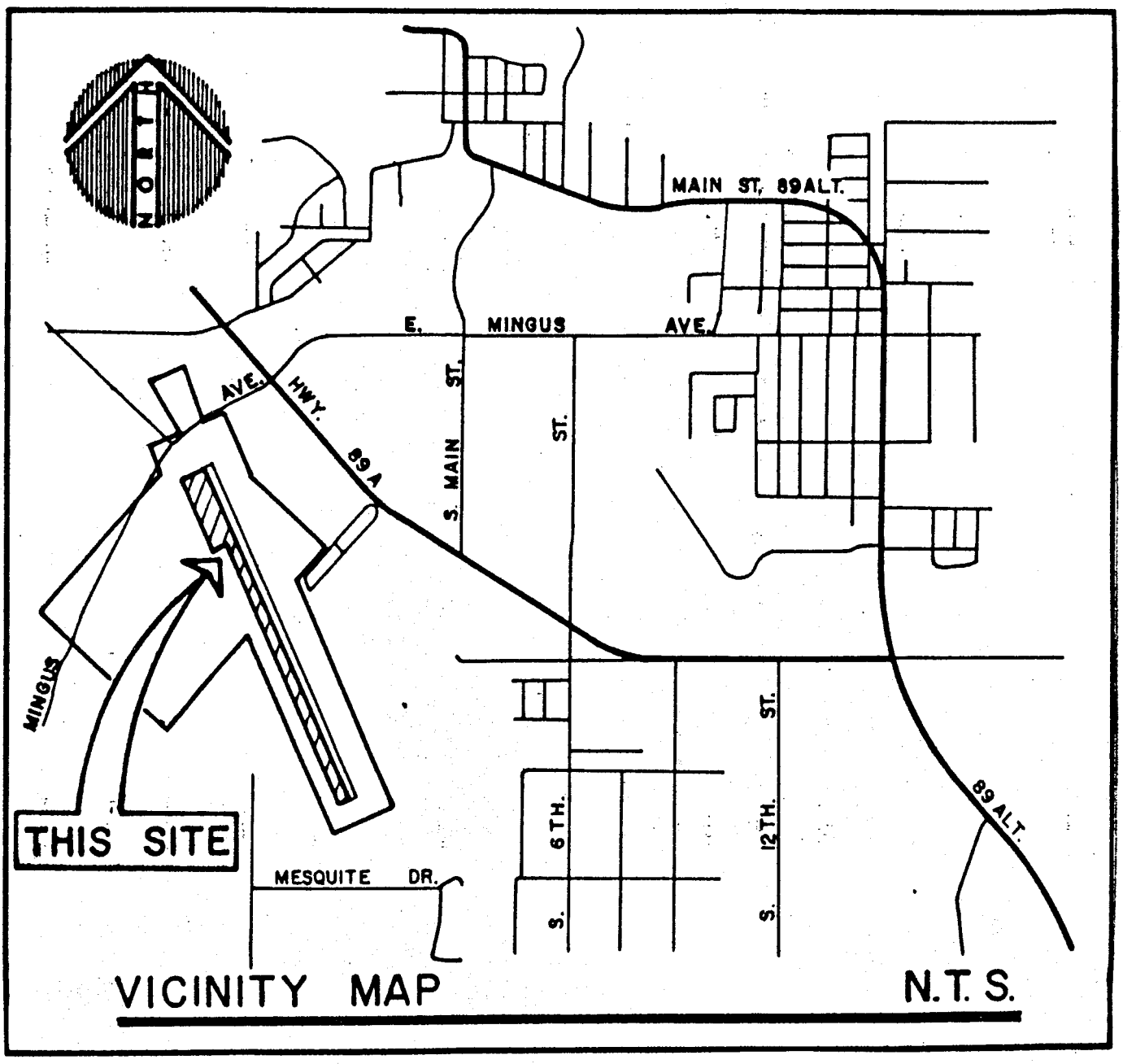
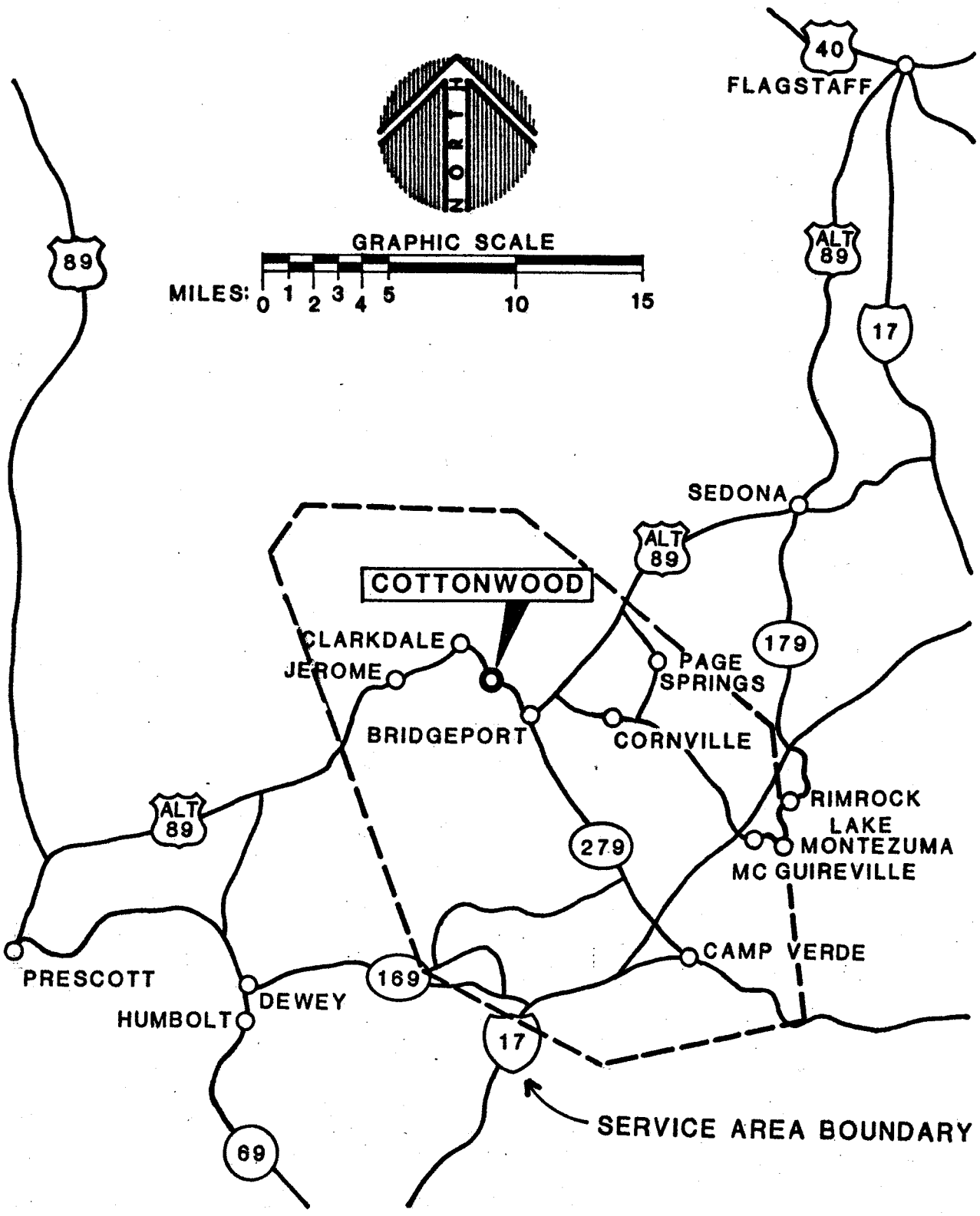


FIGURE II

Page V

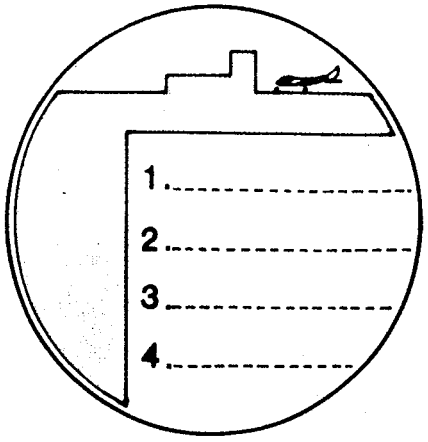

NORTH
MAIN ST. 89ALT.
E. MINGUS AVE.
AVE.
HWY.
89A
S. MAIN ST.
ST.
MINGUS
THIS SITE
MESQUITE DR.
6TH.
12TH.
S.
S.
ST.
89 ALT.
VICINITY MAP
N.T.S.



SERVICE AREA MAP

CHAPTER ONE

INVENTORY



INVENTORY

HISTORICAL BACKGROUND

Cottonwood Airport is ideally located within the Southwest Quadrant of the town and is one mile southwest of the business area. See Aerial Photo and Vicinity Map, Figures II & III, Pages v and vi.

Cottonwood Airport was formerly known as the Cottonwood/ Clemenceau Airport. It was established early in the 1940's and was developed during World War II as a primary military training field for naval cadets. At that time the airport consisted of a dirt runway 3600 feet in length, a storage and maintenance hangar and a series of offices.

Upon termination of military training, the airport was acquired by Yavapai County. Operation and maintenance of the airport was undertaken by Yavapai County.

When the Town of Cottonwood was incorporated in 1968, ownership of the facility was transferred to the town. Cottonwood has operated the airport since that time either through town management or through airport lease agreements.

During the early 1970's the town applied for federal and state funds to construct a paved runway 3500 feet in length and to construct a paved aircraft tie down apron. Both federal and state funds were received and construction was completed early in 1970. Low intensity runway lights were installed using funds provided by the town and Arizona Department of Aeronautics. Installation of medium intensity runway lights, runway and apron overlay was completed in 1979 utilizing federal, state and local funds.

The runway was extended to 4200 feet in 1980 by the town.

Fred Claycomb of Cottonwood Air Service constructed a hangar adjacent to the airport to provide aircraft repair services. A stub taxiway from the runway led to the service area which was located off the airport. Other equipment provided included a unicom, wind sock, wind instruments and a barometer. Other services included flight instruction, aerial photography and charter plane service.

Cottonwood Air Service terminated its services at Cottonwood Airport in 1979.

An agreement effective March 9, 1982, authorized the Town of Cottonwood to hire Blue Sky Aviation as the airport operator to control, operate and maintain the airport. In return for the services performed by Blue Sky Aviation, they were entitled to all revenue from the sale of gasoline products, petroleum products and revenue from airplane tie-downs. This agreement was terminated 3/09/85.

A new agreement providing the same services between the town and Cottonwood Airpark, Inc. was signed May 23, 1983, effective 3/10/85. In addition, the new tenant, Cottonwood Airpark Inc., was granted a lease on the airport property for long term development effective 10/15/84, excepting:

A. The taxiway, runways and clear zones

B. Mingus Avenue (Airport Road)

C. Yavapai County Compactor Site

D. The Town of Cottonwood "Town Yards"

E. Tract Four (Town)

DATA COLLECTION

Cottonwood Municipal Airport (F.A.A. site 665) is located within the town limits approximately one mile southwest of the business area, and along Highway 89A. East Mingus Avenue leads to the airport from the center of town, Lat: 34 degrees 44 minutes, Long: 112 degrees 01 minutes. The airport is at an elevation of 3558' M.S.L. The airport contains approximately 255 acres. Cottonwood Municipal Airport is classified in the National Plan of Integrated Airport Systems (NPIAS) as a Basic Utility II airport. See Figure III, Page vi, Vicinity Map.

AIRPORT BOUNDARIES

Cottonwood Airport encompasses 255 acres of land which is owned by the city. The airport is of irregular configuration.

PERIMETER FENCE

The airport boundary is enclosed by a six foot chain link fence from the approximate midpoint of the east airport property line extended north around the boundary of the airport property line to a point midway along the west boundary where a 4-strand barbed wire fence with steel posts completes the fence enclosure. All fencing is in good condition. Airport access gates (chain link) are located on the north end of the airport (Mingus Road) and on the northeast end (terminal area) of the airport.

RUNWAY

Runway 14-32 is a bituminous surfaced 4250' x 75' strip in good condition.

RUNWAY LIGHTS

The runway is lighted with medium intensity runway lights. The electrical cable insulation has been stripped in several areas by gophers and now requires replacement in conduit.

TAXIWAYS

A short paved taxiway from the parking apron to Runway 14 is in good condition. A full length paved parallel taxiway was completed in November, 1985.

AIRPLANE PARKING AREA

A paved airplane parking apron approximately 850' x 250' is in good condition. Forty-two marked and numbered tie-down spaces with chain tie downs are currently available.

WIND INDICATOR

A lighted wind sock in a segmented circle is located midfield on the east side of the runway. A wind sock is also located in the terminal area; both are in good condition.

AIRPORT BEACON

An old style 36" Crouse Hinds beacon is located on the north end of the airport. Beacon is mounted on a steel tower.

FUEL FACILITIES

One hundred octane aviation fuel is provided at the fuel island pump located in the terminal area. Fuel is stored in a 10,000 gallon underground tank.

AUTOMOBILE PARKING AREA

There is no defined auto parking area. At present, vehicles are parked in a dirt area located near the operation building on the northeast side of the runway area. Automobiles are also parked along the airplane parking apron.

ACCESS ROAD

A bituminous surface access road, Mingus Avenue leads to the north airport entrance; the current entrance to the airport is unimproved. Highway 89A, also paved, leads to the northeast entrance road of the airport.

STRUCTURES

Two off-site privately owned structures serve the airport. One structure of masonry serves as the operation and terminal building; a waiting room and rest room facilities, as well as an office and storage area, are contained in this building.

A second building previously served as an aircraft repair and maintenance hangar. It has been unoccupied since March, 1985.

LANDING AIDS

A unicom is located in the terminal building office. Wind recording instruments are also installed in the office.

UTILITIES

Electricity is provided by A.P.S. Water is furnished by the Cottonwood Water Works, a private company. Natural gas is piped to the site. Sewage disposal is by septic tanks.

FIELD OBSTRUCTIONS

None

WEATHER ANALYSIS PATTERNS

The average temperatures for the year ranges from a high of 78.7 to a low of 45.4. The low range is in January from a maximum of 58.2 and a minimum of 28.4. This high range in July records a daily maximum of 98.4 to an average minimum of 66.0. Average rainfall is 12.21 inches of rainfall with the high of 2.43" in August and a low of 0.57" in April. Average total snow, sleet and hail average 5.0" annually.

CLEAR ZONES

The town has acquired title to the land area comprising the clear zones.

SOCIOECONOMIC

Cottonwood serves as the trading center for the Verde Valley. Employment is generated by a wide variety of retail trade establishments.

Many residents work at the nearby Phoenix Cement Company. The Marcus J. Lawrence Hospital in Cottonwood is one of the finest diagnostic and treatment centers in Northern Arizona.

The development of Cottonwood Airport will contribute substantially to the local economy in 1986. Cottonwood's newest industry, General Semi Conductor Industries, may employ over 250 residents. Because of the ideal climate and good life style, there has been a great influx of retired residents. Twenty-six percent of the population is over 65 years old. This along with tourism, because of the many tourist attractions, should have a major impact on the local economy.

The town has three banks, three saving and loan institutions, a weekly and biweekly newspaper, two radio stations and cable television. Local churches provide the spiritual needs of the town. Senior citizen facilities provide for the elderly. In addition, there are a number of community facilities including parks, recreation center, bowling alley, golf course, swimming pool, library, tennis courts, theaters, etc.

The area has five elementary schools, one high school and a branch of Yavapai College - Verde Campus.

Source: Arizona Office of Economic Planning and Development

WILDLIFE AND VEGETATION

Wildlife in the area includes small mammals - rabbit, rat, squirrel, gopher, mouse, gray fox, skunk and collard peccary. Coyotes and mule deer are also indigenous to the area. Bird life includes sparrow hawk, dove, hummingbird, woodpecker, western king, robin, yellow warbler, starling, housefinch and alberts towhee.

Vegetation in the area consists of a variety of grasses, snakeweed and mesquite. Large cottonwood trees are in abundance in the residential and town area as well as along the banks of the Verde River.

SOILS

Soils in the area consist of clay and clay loam as well as cobbly sandy loam and gravelly loam.

SOURCE: U.S. Dept. of Agriculture, Soil Conservation Services

DEMOGRAPHY

The demographic characteristics of Cottonwood and the entire service area encompassed in this plan has undergone considerable change in the past ten years. What was at one time a fairly stable "no growth" condition has changed dramatically. The small town life style, good climate and the natural picturesque scenery has tempted an influx of retired citizens.

New subdivisions, homes, commercial businesses, as well as some industry, have been accelerated, and the economy has grown from what appeared to be "ghost town" status to a thriving community. The median family income for the service area has shown a steady increase since 1979 as shown below:

1979	1980	1981	1982
12,448	14,070	15,700	15,705

Per capita income has increased in Yavapai County as follows:

1973	1978	1979	1980	1981
5,155	6,839	7,861	8,419	8,572

SOURCE: U.S. DEPT. OF COMMERCE, BUREAU OF ECONOMIC ANALYSIS

The following pages include statistical information prepared and distributed by the Arizona Department of Economic Security. It is included in its entirety. The information includes only the Town of Cottonwood and not the entire service area.

SPECIAL CENSUS OF COTTONWOOD -- YAVAPAI COUNTY, ARIZONA, AS OF 14 MAY 1985

TABLE 1: BASIC COUNTS OF POPULATION AND HOUSING

AREA	PERSONS								HOUSING		
	RACE										
	TOTAL	WHITE	BLACK	ASIAN PACIFIC ISLANDR	AM. IN. ALASKAN NATIVE	OTHER	SPANISH ORIGIN	IN GROUP QUARTRS	TOTAL	OCCUPID	VACANT
SPECIAL CENSUS TOTAL.....	5009	4916	5	26	61	1	544	75	2287	2064	223
ED: 0001.....	621	610	-	7	4	-	40	-	342	291	51
ED: 0002.....	731	710	1	2	17	1	78	-	375	338	37
ED: 0003.....	541	535	1	4	1	-	93	-	244	229	15
ED: 0004.....	-	-	-	-	-	-	-	-	-	-	-
ED: 0005.....	1193	1185	-	2	6	-	105	53	522	461	61
ED: 0006.....	445	428	-	-	17	-	69	-	210	184	26
ED: 0007.....	685	677	2	6	-	-	107	6	287	270	17
ED: 0008.....	793	771	1	5	16	-	52	16	307	291	16

TABLE 2: PERSONS BY AGE, SEX, RACE AND SPANISH ORIGIN
GEOGRAPHIC AREA: SPECIAL CENSUS TOTAL

	TOTAL			RACE								
	TOTAL			WHITE			BLACK			ASIAN PACIFIC ISLANDER		
	TOTAL	MALE	FEMALE	TOTAL	MALE	FEMALE	TOTAL	MALE	FEMALE	TOTAL	MALE	FEMALE
TOTAL.....	5009	2377	2632	4916	2329	2587	5	...	...	26	14	12
UNDER 5 YEARS.....	357	170	187	345	162	183	...	...	...	4	3	1
UNDER 1 YEAR.....	63	33	30	62	32	30	...	...	...	-	-	-
1 YEAR.....	61	29	32	58	27	31	...	...	...	1	-	1
2 YEARS.....	77	40	37	74	39	35	...	...	...	-	-	-
3 YEARS.....	81	33	48	80	33	47	...	...	...	-	-	-
4 YEARS.....	75	35	40	71	31	40	...	...	...	3	3	-
5 TO 9 YEARS.....	381	192	189	373	188	185	...	...	...	1	1	-
5 YEARS.....	88	49	39	85	47	38	...	...	...	1	1	-
6 YEARS.....	81	40	41	80	39	41	...	...	...	-	-	-
7 YEARS.....	64	32	32	62	32	30	...	...	...	-	-	-
8 YEARS.....	75	34	41	73	33	40	...	...	...	-	-	-
9 YEARS.....	73	37	36	73	37	36	...	...	...	-	-	-
10 TO 14 YEARS.....	342	180	162	322	170	152	...	...	...	6	2	4
10 YEARS.....	61	33	28	58	32	26	...	...	...	1	-	1
11 YEARS.....	68	31	37	61	29	32	...	...	...	2	1	1
12 YEARS.....	66	29	37	63	27	36	...	...	...	1	-	1
13 YEARS.....	73	42	31	69	39	30	...	...	...	1	-	1
14 YEARS.....	74	45	29	71	43	28	...	...	...	1	1	-
15 TO 19 YEARS.....	316	175	141	308	171	137	...	...	...	1	1	-
15 YEARS.....	65	41	24	64	41	23	...	...	...	-	-	-
16 YEARS.....	76	40	36	74	39	35	...	...	...	-	-	-
17 YEARS.....	62	35	27	58	33	25	...	...	...	1	1	-
18 YEARS.....	47	28	19	46	27	19	...	...	...	-	-	-
19 YEARS.....	66	31	35	66	31	35	...	...	...	-	-	-
20 TO 24 YEARS.....	334	155	179	333	155	178	...	...	...	-	-	-
20 YEARS.....	64	26	38	64	26	38	...	...	...	-	-	-
21 YEARS.....	52	23	29	52	23	29	...	...	...	-	-	-
25 TO 29 YEARS.....	338	160	178	330	155	175	...	...	...	2	2	-
30 TO 34 YEARS.....	316	160	156	309	156	153	...	...	...	1	-	1
35 TO 39 YEARS.....	319	165	154	309	161	148	...	...	...	1	1	-
40 TO 44 YEARS.....	242	111	131	236	109	127	...	...	...	5	2	3
45 TO 49 YEARS.....	242	117	125	239	116	123	...	...	...	1	-	1
50 TO 54 YEARS.....	187	98	89	187	98	89	...	...	...	-	-	-
55 TO 59 YEARS.....	242	89	153	241	88	153	...	...	...	-	-	-
60 TO 64 YEARS.....	316	141	175	312	139	173	...	...	...	2	1	1
65 TO 69 YEARS.....	296	132	164	293	131	162	...	...	...	1	-	1
70 TO 74 YEARS.....	309	136	173	308	135	173	...	...	...	1	1	-
75 TO 79 YEARS.....	230	102	128	229	101	128	...	...	...	-	-	-
80 YEARS AND OVER...	242	94	148	242	94	148	...	...	...	-	-	-
18 YEARS AND OVER...	3726	1719	2007	3680	1696	1984	...	...	...	14	7	7
62 YEARS AND OVER...	1288	561	727	1282	557	725	...	...	...	3	2	1
65 YEARS AND OVER...	1077	464	613	1072	461	611	...	...	...	2	1	1
MEDIAN.....	36.9	34.9	39.0	37.2	35.2	39.4	...	...	...	27.5	21.0	37.0

TABLE 2: PERSONS BY AGE, SEX, RACE AND SPANISH ORIGIN - CON.
GEOGRAPHIC AREA: SPECIAL CENSUS TOTAL

	< - - - - - - - - - RACE - CON. - - - - - - - - - ->								
	<- - AMERICAN INDIAN - >			< - - OTHER RACES - - >			<- - SPANISH ORIGIN - >		
	ALASKAN NATIVE								
	TOTAL	MALE	FEMALE	TOTAL	MALE	FEMALE	TOTAL	MALE	FEMALE
TOTAL.....	61	32	29	1	...	...	544	275	269
UNDER 5 YEARS.....	6	4	2	...	...	...	49	23	26
UNDER 1 YEAR.....	1	1	-	...	...	...	10	6	4
1 YEAR.....	1	1	-	...	...	...	4	2	2
2 YEARS.....	3	1	2	...	...	...	12	7	5
3 YEARS.....	-	-	-	...	...	...	9	3	6
4 YEARS.....	1	1	-	...	...	...	14	5	9
5 TO 9 YEARS.....	7	3	4	...	...	...	57	29	28
5 YEARS.....	2	1	1	...	...	...	11	4	7
6 YEARS.....	1	1	-	...	...	...	16	10	6
7 YEARS.....	2	-	2	...	...	...	5	4	1
8 YEARS.....	2	1	1	...	...	...	14	6	8
9 YEARS.....	-	-	-	...	...	...	11	5	6
10 TO 14 YEARS.....	13	8	5	...	...	...	57	31	26
10 YEARS.....	2	1	1	...	...	...	7	5	2
11 YEARS.....	4	1	3	...	...	...	11	4	7
12 YEARS.....	2	2	-	...	...	...	14	5	9
13 YEARS.....	3	3	-	...	...	...	11	8	3
14 YEARS.....	2	1	1	...	...	...	14	9	5
15 TO 19 YEARS.....	7	3	4	...	...	...	55	32	23
15 YEARS.....	1	-	1	...	...	...	10	6	4
16 YEARS.....	2	1	1	...	...	...	14	8	6
17 YEARS.....	3	1	2	...	...	...	11	8	3
18 YEARS.....	1	1	-	...	...	...	8	3	5
19 YEARS.....	-	-	-	...	...	...	12	7	5
20 TO 24 YEARS.....	1	-	1	...	...	...	46	28	18
20 YEARS.....	-	-	-	...	...	...	9	6	3
21 YEARS.....	-	-	-	...	...	...	6	4	2
25 TO 29 YEARS.....	6	3	3	...	...	...	30	14	16
30 TO 34 YEARS.....	6	4	2	...	...	...	26	13	13
35 TO 39 YEARS.....	8	3	5	...	...	...	37	20	17
40 TO 44 YEARS.....	1	-	1	...	...	...	31	11	20
45 TO 49 YEARS.....	2	1	1	...	...	...	25	12	13
50 TO 54 YEARS.....	-	-	-	...	...	...	28	18	10
55 TO 59 YEARS.....	1	1	-	...	...	...	18	4	14
60 TO 64 YEARS.....	2	1	1	...	...	...	27	14	13
65 TO 69 YEARS.....	-	-	-	...	...	...	16	8	8
70 TO 74 YEARS.....	-	-	-	...	...	...	11	3	8
75 TO 79 YEARS.....	1	1	-	...	...	...	12	5	7
80 YEARS AND OVER...	-	-	-	...	...	...	19	10	9
18 YEARS AND OVER...	29	15	14	...	...	...	346	170	176
62 YEARS AND OVER...	1	1	-	...	...	...	76	36	40
65 YEARS AND OVER...	1	1	-	...	...	...	58	26	32
MEDIAN.....	17.5	17.0	17.8	...	...	...	26.3	24.1	29.2

TABLE 3: CHARACTERISTICS OF HOUSING UNITS BY RACE AND SPANISH ORIGIN OF HOUSEHOLDER
GEOGRAPHIC AREA: SPECIAL CENSUS TOTAL

	TOTAL	RACE: WHITE	BLACK	ASIAN P. ISLANDER	AM. INDIAN ALAS. NATIVE	OTHER RACES	SPANISH ORIGIN
TOTAL OCCUPIED HOUSING UNITS.....	2064	2041	-	6	16	1	165
TENURE AND UNITS IN STRUCTURE							
OWNER OCCUPIED HOUSING UNITS.....	1329	1316	-	...	7	...	116
PERCENT OF ALL OCCUPIED UNITS.	64.4	64.5	-	...	43.8	...	70.3
1 UNIT, DETACHED.....	933	925	-	...	5	...	96
1 UNIT, ATTACHED.....	8	8	-	...	-	...	3
2 UNITS.....	4	4	-	...	-	...	-
3 OR 4 UNITS.....	1	1	-	...	-	...	-
5 OR MORE UNITS.....	6	6	-	...	-	...	1
MOBILE HOME OR TRAILER.....	377	372	-	...	2	...	16
RENTER OCCUPIED HOUSING UNITS....	735	725	-	...	9	...	49
PERCENT OF ALL OCCUPIED UNITS.	35.6	35.5	-	...	56.3	...	29.7
1 UNIT, DETACHED.....	259	256	-	...	2	...	19
1 UNIT, ATTACHED.....	27	26	-	...	1	...	-
2 UNITS.....	53	52	-	...	1	...	5
3 OR 4 UNITS.....	42	42	-	...	-	...	5
5 OR MORE UNITS.....	163	161	-	...	2	...	3
MOBILE HOME OR TRAILER.....	191	188	-	...	3	...	17
PERSONS							
IN OCCUPIED HOUSING UNITS.....	4934	4865	-	...	47	...	513
PER OCCUPIED HOUSING UNIT.....	2.39	2.38	-	...	2.94	...	3.11
IN OWNER OCCUPIED UNITS.....	3191	3152	-	...	19	...	363
PER OWNER OCCUPIED UNIT.....	2.40	2.40	-	...	2.71	...	3.13
OWNER OCCUPIED UNITS.....	1329	1316	-	...	7	...	116
1 PERSON.....	325	324	-	...	1	...	14
2 PERSONS.....	591	585	-	...	4	...	41
3 PERSONS.....	156	153	-	...	1	...	15
4 PERSONS.....	145	145	-	...	-	...	20
5 PERSONS.....	67	65	-	...	-	...	17
6 PERSONS.....	27	27	-	...	-	...	6
7 PERSONS.....	13	12	-	...	1	...	3
8 OR MORE PERSONS.....	5	5	-	...	-	...	-
MEDIAN.....	2.57	2.57	-	...	2.63	...	3.20
IN RENTER OCCUPIED UNITS.....	1743	1713	-	...	28	...	150
PER RENTER OCCUPIED UNIT.....	2.37	2.36	-	...	3.11	...	3.06
RENTER OCCUPIED.....	735	725	-	...	9	...	49
1 PERSON.....	259	257	-	...	2	...	14
2 PERSONS.....	210	206	-	...	3	...	10
3 PERSONS.....	120	120	-	...	-	...	8
4 PERSONS.....	77	75	-	...	2	...	4
5 PERSONS.....	39	38	-	...	1	...	8
6 PERSONS.....	19	19	-	...	-	...	3
7 PERSONS.....	4	3	-	...	1	...	-
8 OR MORE PERSONS.....	7	7	-	...	-	...	2
MEDIAN.....	2.52	2.51	-	...	2.83	...	3.06

SPECIAL CENSUS OF COTTONWOOD -- YAVAPAI COUNTY, ARIZONA, AS OF 14 MAY 1985

TABLE 4: HOUSEHOLD AND FAMILY CHARACTERISTICS BY RACE AND SPANISH ORIGIN
GEOGRAPHIC AREA: SPECIAL CENSUS TOTAL

	TOTAL	RACE: WHITE	BLACK	ASIAN P. ISLANDER	AM. INDIAN ALA. NATIVE	OTHER RACE	SPANISH ORIGIN
TOTAL PERSONS	5009	4916	5	26	61	1	544
PERSONS IN HOUSEHOLDS	4934	4842	...	26	60	...	541
HOUSEHOLDER	2064	2041	...	6	16	...	165
15 TO 24 YEARS	157	154	...	-	3	...	14
25 TO 34 YEARS	338	330	...	2	6	...	24
35 TO 44 YEARS	309	303	...	2	4	...	33
45 TO 54 YEARS	263	263	...	-	-	...	33
55 TO 64 YEARS	328	325	...	1	2	...	24
65 TO 74 YEARS	378	376	...	1	-	...	15
75 YEARS AND OVER	291	290	...	-	1	...	22
FAMILY HOUSEHOLDER	1429	1410	...	6	12	...	134
MALE	1194	1179	...	6	8	...	115
FEMALE	235	231	...	-	4	...	19
NONFAMILY HOUSEHOLDER	635	631	...	-	4	...	31
MALE	240	237	...	-	3	...	13
FEMALE	395	394	...	-	1	...	18
SPOUSE	1180	1159	...	7	12	...	108
CHILD	1419	1374	...	12	31	...	238
OTHER RELATIVE	143	142	...	-	-	...	18
NONRELATIVES	128	126	...	1	1	...	12
PERSONS IN GROUP QUARTERS	75	74	...	-	1	...	3
INMATE OF INSTITUTION	6	6	...	-	-	...	2
OTHER	69	68	...	-	1	...	1
PERSONS 75 YEARS AND OVER LIVING ALONE	138	137	...	-	1	...	5
PERSONS PER HOUSEHOLD (BY RACE OF HOUSEHOLDER)	2.39	2.38	...	3.33	2.94	...	3.11
PERSONS PER FAMILY (BY RACE OF HOUSEHOLDER)	2.92	2.91	...	3.33	3.50	...	3.57
PERSONS UNDER 18	1283	1236	...	12	32	...	198
HOUSEHOLDER OR SPOUSE	13	11	...	-	2	...	-
CHILD	1203	1160	...	12	29	...	188
IN MARRIED COUPLE FAMILIES	951	915	...	12	24	...	161
PERCENT OF PERSONS UNDER 18 YEARS	74.1	74.0	...	100.0	75.0	...	81.3
FEMALE HOUSEHOLDER, NO HUSBAND PRESENT	205	199	...	-	4	...	19
MALE HOUSEHOLDER, NO WIFE PRESENT	47	46	...	-	1	...	8
OTHER RELATIVES	48	47	...	-	-	...	9
NONRELATIVES	19	18	...	-	1	...	1
INMATE OF INSTITUTION	-	-	...	-	-	...	-
OTHER, IN GROUP QUARTERS	-	-	...	-	-	...	-
PERSONS 65 YEARS AND OVER	1077	1072	...	2	1	...	58
FAMILY HOUSEHOLDER	388	386	...	1	-	...	23
MALE	346	344	...	1	-	...	17
FEMALE	42	42	...	-	-	...	6
SPOUSE	276	274	...	1	-	...	13
OTHER RELATIVE	46	46	...	-	-	...	6
NONRELATIVES	25	25	...	-	-	...	2
NONFAMILY HOUSEHOLDER	281	280	...	-	1	...	14
MALE	71	70	...	-	1	...	7
FEMALE	210	210	...	-	-	...	7
INMATE OF INSTITUTION	-	-	...	-	-	...	-
OTHER, IN GROUP QUARTERS	61	61	...	-	-	...	-

CHAPTER TWO

FORECASTS

FORECASTS

In the preparation of Airport Master Plans, forecasts must be developed in order to establish a relationship between demand and the capacity of the airport and its related facilities to accommodate future demands. From this information, airport and support facility requirements can be established, and development schedules to meet forecast demand can be determined. Twenty year forecasts are very approximate in nature.

Todays airport problems can be attributed in part to planning inadequacies. Airport demand has been underestimated.

A number of forecast methods are available to the planner to estimate future needs. In some instances, one method can serve to support or supplement another. Past trends, analytical forecasts, judgment forecasts are but a few methods. The resultant factors of a single forecast method with no supporting information from previous forecasts may be difficult to defend. It is therefore, desirable to compare final forecast results with previous forecasts which may be available.

This study will address the following factors to establish growth patterns in order to evaluate future demands.

1. Establish a service area located within 30 minutes ground access to the airport. See Service Area Map, Figure IV, Page vii.
2. Determine population of service area
3. Analyze economy and industry of area
4. Income per capita
5. Geographical influences
6. Aircraft ownership in service area

7. Based aircraft
8. Number of airport operations
9. Aircraft mix
10. Deomographic characteristics
11. Available transportation modes
12. Isolation from centers of population

Airport registration information available through the Arizona Department of Transportation, Aeronautics Division, population figures provided by the Arizona Department of Economic Security and Northern Arizona Council of Governments, aircraft census as well as forecasts provided by the Federal Aviation Administration, previous regional and Airport Master Plans, the National Plan of Integrated Airport Systems (NPIAS) and the FAA 5010 forms are excellent sources of information to establish reasonably accurate trends. In addition, they provide a wealth of comparative data.

As of October 1985, there were 6500 aircraft in the State of Arizona. This information was provided by the Division of Aeronautics, the agency responsible for aircraft registration. The state population as provided by the Arizona Department of Economic Security for 1985 is 3,171,000. This is 2.05 aircraft per 1,000 population. The population of Yavapai County for the year 1985 as provided by the Northern Arizona Council of Governments is 87,000; 276 aircraft are based in Yavapai County. This is 3.17 aircraft per 1,000 population. The service area has a population of 20,155; 39 aircraft are based at Cottonwood. This is 1.95 airplanes per 1,000 population. It will be noted in Figure 2-A, Page 2-4, that there is a steady decline in aircraft ownership since 1973 at which time the ownership of airplanes was

2.49 per 1,000 population. This decline can be exlained by the large influx of retirees in the area since 1979. Retirees are not generally airplane owners.

There is a current trend for more commercial and industrial activity within the area and a compromise of 1.95 aircraft per 1,000 population would be a conservative forecast currently and would adjust for the anticipated industrial and commercial growth. A future growth rate of 1.5% per year is anticipated for Cottonwood based on state aircraft population growth.

Detailed aircraft and population growth and distribution information is shown in Figure 2-A, Page 2-4. It will be noted that the aircraft/population ratio for Yavapai has remained fairly constant.

Figure 2-B, Page 2-5, "Summary of Basic Planning Factors" was calculated using information from several sources and is used as the basis for future facility requirements.

Figure 2-C, Page 2-6 was prepared for the Arizona State Airport System Plan and the growth pattern is consistent with present forecasts.

Figure 2-D, Page 2-7, "Arizona Aircraft Registration Data" used in previous airport master plans is included for comparative purposes. Figure 2-E, Page 2-8, is also included, and it is noted that previous forecasts are consistent with growth patterns.

Figure 2-F, Page 2-9 shows the current number of registered aircraft for 1985. Figure 2-G, Page 2-10 shows Yavapai County population figures.

FIGURE 2-A

PERCENTAGE OF COUNTY BASED AIRCRAFT ASSIGNED TO COTTONWOOD AIRPORT

YEAR	COUNTY BASED AIRCRAFT	LOCAL BASED	PERCENTAGE
1973	119	16	13%
1975	190	20	11%
1978	202	21	10%
1979	221	22	10%
1980	230	25	11%
1985	279	39	14%

ARIZONA POPULATION AND AIRCRAFT REGISTRATION DATA

YEAR	POPULATION STATE	POPULATION COUNTY	AIRCRAFT REGISTRATION STATE	AIRCRAFT REGISTRATION COUNTY	AIRCRAFT/1,000 POP. STATE	AIRCRAFT/1,000 POP. COUNTY
1970	1,775,000	37,005	2,307	-	1.30	-
1978	2,449,300	62,400	5,000	202 (ACT)	2.04	3.23
1980	2,718,425	68,145	5,448	230 (ACT)	2.00	3.38
1985	3,171,000	87,100	6,500	276 (ACT)	2.05	3.17
1990	3,708,700	106,200 EST	7,338	307 (EST)	1.98	2.90
1995	4,279,000	126,900 EST	8,429	354 (EST)	1.97	2.80
2000	4,841,100	147,600 EST	10,270	431 (EST)	2.12	2.92
2005	5,441,900	167,000 EST	12,300	516 (EST)	2.26	3.08

AIRCRAFT REGISTRATION VS. POPULATION SERVICE AREA

YEAR	POPULATION	AIRCRAFT	AIRCRAFT/ 1,000 POP.
1973	6,421	16 (ACT)	2.49
1975	8,357	20 (ACT)	2.39
1979	13,000	22 (ACT)	1.70
1985	20,155	39 (ACT)	1.95
1990	24,755	51 (EST)	2.06
1995	26,330	58 (EST)	2.20
2000	29,865	69 (EST)	2.31
2005	33,360	82 (EST)	2.46

SOURCE: POPULATION - DEPT. OF ECONOMIC SECURITY AND NORTHERN ARIZONA COUNCIL OF GOVERNMENTS.
AIRCRAFT REGISTRATION: ARIZONA DEPT. OF TRANSPORTATION - AERONAUTICS DIVISION FAA
CENSUS OF U.S. CIVIL AIRCRAFT
COTTONWOOD AIRPORT MASTER PLAN, 1974
FAA 5010's

SUMMARY OF BASIC PLANNING FACTORS

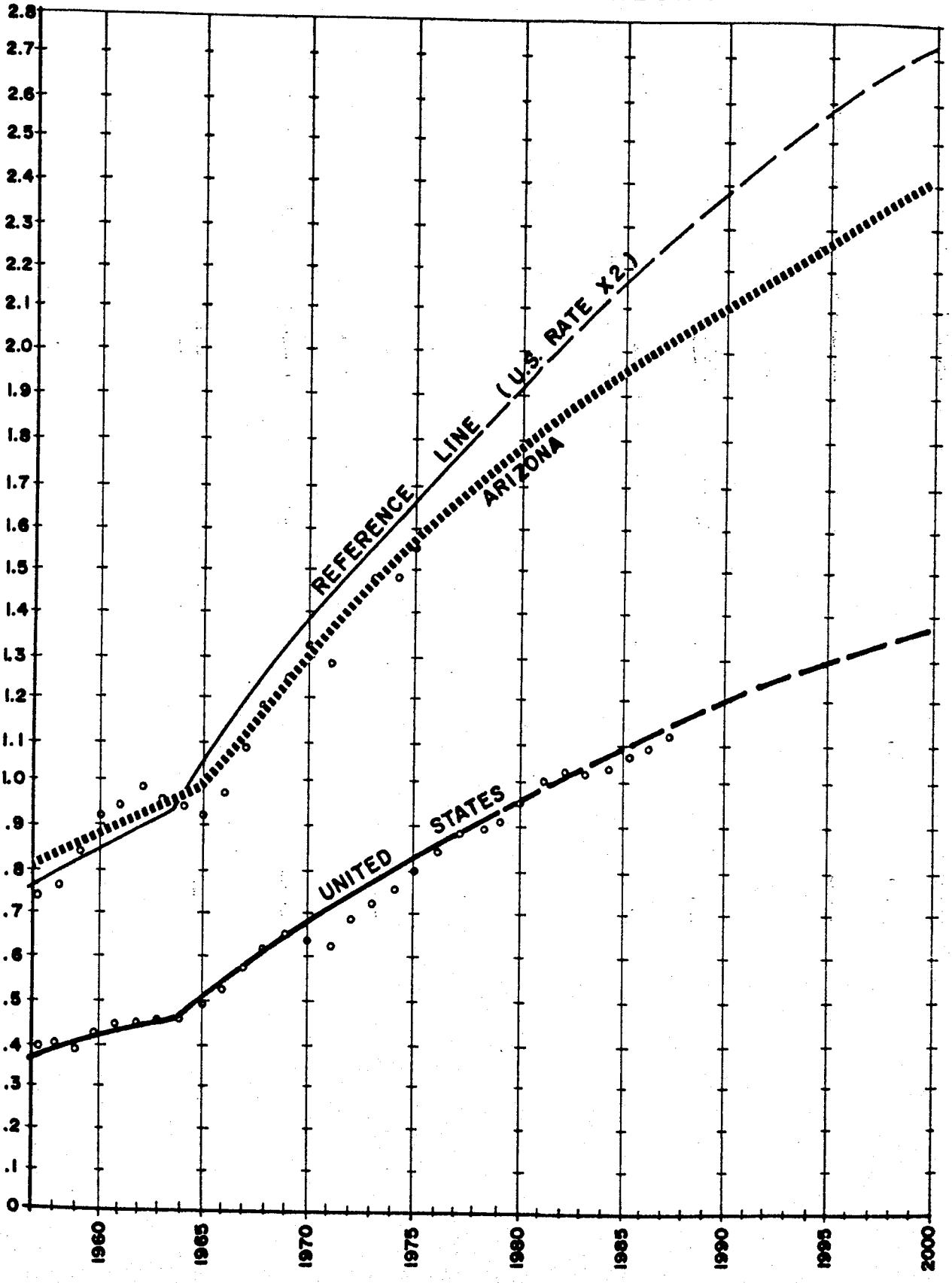
	1978	1985	1990	1995	2000	2005
POPULATION						
State	2,449,200	3,171,000	3,708,700	4,279,000	4,841,100	5,441,900
County	62,400	87,100	100,200	126,900	147,600	167,000
Service Area	13,000	20,155	24,755	26,330	29,865	33,360
BASED AIRCRAFT						
State	5,448 Act.	6,500 Act.	7,338	8,429	10,270	12,300
County	230 Act.	276 Act.	307	354	431	516
Local	22 Act.	39 Act.	51	58	69	82
AIRCRAFT OPERATIONS						
Local	12,100	21,450	28,050	31,900	37,950	45,100
TERMINAL AREA PARKING						
Apron-(Sq. Ft.)	59,850	106,000	138,700	157,800	187,700	223,000
Local	18	33	40	41	47	52
Itinerant	4	6	8	10	11	12
HANGAR SPACES	0	0	6	6	6	9
SHELTERS	0	0	10	10	10	14
AUTO PARKING						
Square Feet	9,000	9,000	10,500	13,500	15,900	18,000
Spaces	30	30	35	45	53	60
TERMINAL BUILDING						
Square Feet			750 (Min) As Required			

SOURCE: Arizona State Aviation System Plan 1973 & 1978
FAA Census of Civil Aircraft
Arizona Statistical Review
FAA 150/5060-3A
FAA Statistical Handbook of Aviation
FAA AC 150/5300-4B
Arizona Dept. of Transportation, Aeronautics Div.
Arizona Dept. of Economic Security
Northern Arizona Council of Governments

FIG. 2-C

ACTIVE AIRCRAFT PER 1000 PEOPLE

UNITED STATES & ARIZONA



SOURCE: *1978 ARIZONA STATE AIRPORT SYSTEM PLAN*

FIG. 2-D

ARIZONA AIRCRAFT REGISTRATION DATA

YEAR	POPULATION		AIRCRAFT REGISTRATION					AIRCRAFT/ 1,000 POP.
	STATE	COUNTY	A	B	C	D	E	F
1978	2,449,200	34,300	4,280	4,280	4,013	4,000	4,143	1.69
1980	2,613,500	36,600	4,855	4,127	4,311	4,599	4,473	1.71
1985	2,940,700	42,400	7,000	6,060	5,132	5,782	5,993	2.03
1990	3,294,000	44,500	8,488	8,992	7,198	7,004	7,920	2.40
1995	3,692,300	46,000	10,000	9,909	8,456	8,181	9,136	2.47
2000	4,127,500	47,000	12,000	11,620	10,087	9,476	10,795	2.61

SOURCE:
Population: Arizona Department of Economic Security

A. 1973 ARIZONA STATE AVIATION SYSTEM PLAN projection.

B. Calculated from Economic Research Associates (% distribution of aircraft - Arizona of U.S.)

C. FAA FORECASTS FISCAL YEARS 1977 - 1988

D. 1979 ARIZONA STATE AIRPORT SYSTEMS PLAN

E. Average of four sources.

F. Aircraft per 1,000 population.

The ratio of aircraft/1000 population corresponds reasonably well to historical trend on the distribution of aircraft contained in the *FAA CENSUS OF AIRCRAFT* and the *FAA STATISTICAL HAND BOOK OF AVIATION* as well as other previous studies.

FIGURE 2-E

AIRCRAFT PER TEN THOUSAND POPULATION

H I S T O R I C A L

YEAR	U.S.	ARIZONA
1963	4.6	9.6
1964	4.6	9.6
1965	4.7	9.4
1966	5.0	9.0
1967	5.4	9.8
1968	5.4	11.1
1969	6.3	11.9
1970	6.5	13.0
1971	N.A.	15.4

F O R E C A S T

1975	6.8	16.0
1980	8.0	15.0
1985	9.4	18.0
1990	11.1	22.0
1994	11.1	22.0

SOURCE: FAA Census of Civil Aircraft, Economics Research Associates Analysis

FIGURE 2-F

AIRCRAFT REGISTRATION BY COUNTY

OCTOBER 1985

Apache County	57
Cochise County	186
Coconino County	177
Gila County	57
Graham County	45
Greenlee County	8
La Paz	35
Maricopa County	3,611
Mohave County	203
Navajo County	127
Pima County	834
Pinal County	264
Santa Cruz County	31
Yavapai County	329
Yuma County	189
TOTAL	6,153

SOURCE: ARIZONA DEPT. OF TRANSPORTATION, DIVISION OF AERONAUTICS

YAVAPAI COUNTY POPULATION PROJECTIONS, 1980-2005

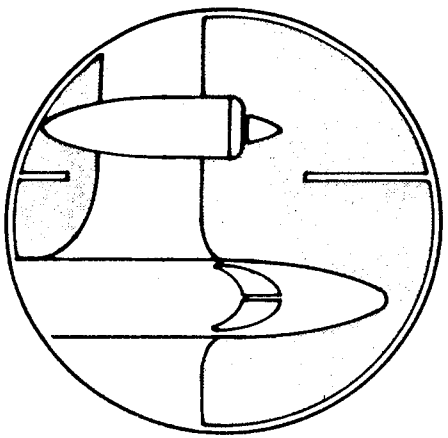
	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	2000	2005
YAVAPAI COUNTY TOTAL	68145	72600	75800	79100	83100	87100	90700	94500	98400	102200	106200	111200	114200	118300	122600	126900	147600	167000
Prescott	20055	20705	21425	22265	23395	24385	25305	26315	27395	28465	29635	30705	31675	32715	33805	34895	39865	44855
Prescott Suburbs	5950	6400	6555	6710	7135	7410	7690	7940	8200	8430	8660	8920	9180	9445	9760	10080	11495	12710
Prescott Valley	2284	2750	3500	4240	4900	5600	6010	6470	6910	7405	7900	8395	8890	9365	9755	10145	12340	14940
Chino Valley	2858	3100	3450	3730	3940	4170	4410	4680	4940	5230	5520	5810	6100	6380	6610	6840	8130	9660
Bagdad	2331	2330	2330	2330	1500	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1800	1800
Dewey	740	815	840	865	935	980	1025	1065	1105	1145	1180	1225	1265	1310	1360	1410	1645	1840
Prescott CCD Remainder	4640	4865	4945	5020	5235	5370	5510	5635	5765	5890	5995	6125	6255	6390	6545	6705	7415	8020
Ash Fork CCD	1382	1375	1350	1300	1300	1300	1300	1300	1300	1300	1300	1305	1310	1315	1320	1325	1350	1375
Cordes Junction	325	355	365	375	400	420	435	450	465	480	495	510	530	545	565	585	670	745
Humboldt	525	580	600	620	670	705	740	775	805	835	865	895	925	960	1000	1040	1215	1370
Mayer	1000	1085	1115	1145	1225	1275	1325	1375	1420	1465	1510	1555	1605	1655	1715	1775	2040	2265
Humboldt CCD Remainder	230	275	290	305	350	375	405	430	455	480	500	530	555	580	610	645	785	910
Black Canyon City	1600	1700	1740	1770	1860	1920	1980	2035	2095	2145	2195	2250	2310	2365	2435	2505	2815	3080
Yarnell	900	940	955	970	1010	1035	1060	1085	1110	1130	1150	1175	1200	1225	1255	1285	1420	1535
Congress	500	530	540	550	575	595	610	625	640	655	670	685	705	720	740	760	845	920
Congress CCD Remainder	620	660	675	685	725	750	775	795	820	840	860	880	905	925	955	980	1105	1215
Cottonwood	4550	4800	5050	5325	5500	5690	5890	6110	6330	6570	6810	7050	7290	7525	7715	7905	8975	10245
Cottonwood Suburbs	2600	2795	2865	2930	3115	3235	3360	3470	3580	3685	3785	3895	4010	4125	4265	4405	5020	5555
Clarkdale	1512	1530	1550	1630	1680	1735	1790	1855	1920	1990	2060	2130	2200	2265	2320	2375	2685	3050
Jerome	420	435	450	460	465	470	475	480	490	495	505	510	520	525	530	535	570	605
Mingus CCD Remainder	640	695	715	735	785	820	855	890	920	950	980	1010	1040	1075	1115	1155	1330	1485
Sedona	3590	3940	4225	4500	4825	5135	5385	5800	6240	6615	7100	7545	8060	8625	9250	9870	12850	14910
Village of Oak Creek	1200	1570	1700	1825	2180	2405	2635	2840	3055	3245	3435	3650	3860	4080	4345	4605	5775	6775
Cornville	835	920	950	980	1060	1110	1160	1210	1255	1300	1345	1390	1440	1490	1550	1610	1875	2100
Camp Verde	4000	4225	4305	4380	4595	4730	4870	4995	5125	5240	5355	5485	5615	5750	5905	6065	6775	7380
Lake Montezuma	1250	1360	1400	1440	1545	1615	1685	1745	1810	1870	1925	1990	2055	2120	2200	2280	2635	2940
Verde CCD Remainder	1608	1865.	1915	2015	2195	2265	2415	2530	2650	2755	2865	2980	3100	3225	3375	3520	4175	4740

Source: Northern Arizona Council of Governments. Approved by Regional Council, December 20, 1984; not approved by State Population Technical Advisory Committee.

December 20, 1984

FIGURE 2-G

CHAPTER THREE



DEMAND/CAPACITY ANALYSIS

DEMAND/CAPACITY ANALYSIS

A Demand/Capacity Analysis is an essential step in the development of a Master Plan. It provides the basic information to be used in the determination of the facility requirements and the financial feasibility for airport improvements or expansion.

The Aviation Demand related to the Airfield Capacity is generally expressed in terms of Practical Annual Capacity (PANCAP) and is compared with forecast demands to establish what deficiencies, if any, exist in the runway and taxiway system, and to determine the improvements necessary in the proper time frame to relieve these deficiencies.

A practical annual rating for Cottonwood Airport was determined to be 215,000 (A/C Circular 150/5060-3A). The FAA recommends that plans be initiated for expansion of an airport when the operations approach 60% of the indicated limit. For Cottonwood Airport, this would be 129,000 operations.

Current projections indicate that this rating will not be reached within the time frame of this study as shown by the following table:

1978	1985	1990	1995	2000	2005
12,000	17,050	34,750	26,950	30,250	34,100

Current projections, as indicated by the following table of based aircraft, support the consideration of additional aircraft parking apron area.

1978	1985	1990	1995	2000	2005
22	39	51	58	69	82

SOURCE: AC CIRCULAR 150/5060-3A

It does not appear that deficiency in the runway capacity, airspace capacity, or access capacity will exist within the time frame covered by this study. For the year 2005, operations are estimated to be 34,100, which is far below the value at which expansion becomes necessary. There are, however, a number of deficiencies including the primary runway length, existing airport terminal area, expanded apron tie down area, and automobile parking, along with other minor items which are addressed in Chapter 4, Facility Requirements.

Cottonwood Airport is currently listed in the Arizona Aviation System Plan as a Basic Utility (BU) facility. The existing length of 4200 feet is consistent with FAA Advisory Circular 154-5300-4B (Utility Airports).

The criteria set forth in AC 150/5300-4B recommends a 4,900 foot runway for a Basic Utility Stage 2 (BU-2) Airport. This is based upon the highest temperature 98 degrees and a field elevation of 3,558 feet.

Airspace Capacity is evaluated to determine whether operations at the airport and surrounding airports create conflicting traffic conditions and adversely affect normal aviation activity.

At Cottonwood Airport there does not exist any air operational problems for airspace capacity at this time and none will exist within the time frame of this study.

The airfield system is composed of runway, tie down aprons, taxiways and connecting taxiways to the terminal area. Capacity calculations are given in time periods required for the movement

of aircraft. Unacceptable delays in aircraft operations require close scrutiny to the demand capacity of the airfield. To state it more simply--does the airfield system meet the demands imposed upon it? Present acceptable criteria places a minimum two minute operational delay for general aviation facilities. Various factors or variables in the application of operational capacity include:

1) Aircraft mix
2) Configuration of runways and taxiways
3) Touch and go traffic
4) Navigational
5) Aircraft exits
6) Variation in hourly traffic

The runway configuration is the primary factor in determining airfield capacity. The airport at Cottonwood consists of a single Runway 14/32 bituminous surface 4250'x75'. The adjacent terrain to the west slopes upward to the Mingus Mountains to an elevation of 7,700 feet above sea level. The terrain slopes downward to the east to the Verde River. This comprises the Verde Valley. There are no obstructions on this departure and arrival path to either end of the runway.

Runway exits is another important factor in evaluating airport configuration. Along with airport configuration, and runway length, Cottonwood Airport is provided with four exists; one at each end of the runway and two evenly spaced from runway ends.

Touch and go traffic will be minimal and will not contribute to any unusual delays.

General aviation wind conditions favor the runway alignment. All traffic is monitored by Unicom. No instrument flight aids are currently provided or planned. A non-directional beacon, however, may be considered in the future.

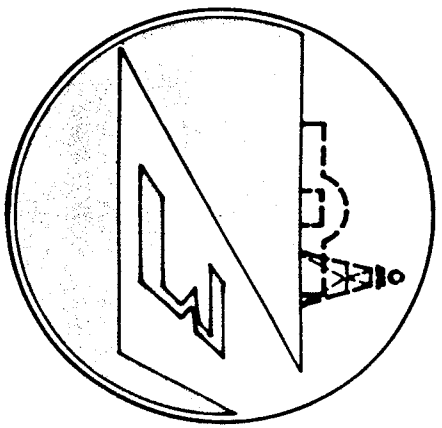
The following table illustrates the classifications of aircraft in general use within the time frame of this study.

AIRCRAFT CLASSIFICATIONS

A - Large Jets - 707,880, DC 8
B - Small Jets - DC9, 727, etc.
C - Business Jets - Lear, F27, Gulstream, etc.
D & E - Light Twins & Single Engines - Cessna, Beech, Piper, Grumman, Bellanca, etc.

For the purpose of this study within the time frame, it is assumed that 100% of operations will be Type C, D, & E aircraft.

CHAPTER FOUR



FACILITY REQUIREMENTS

FACILITY REQUIREMENTS

Future airport development over the next twenty year period will be addressed in this chapter and airport priorities will be assigned and programmed in appropriate time frames covering this period.

In the chapter, Demand/Capacity Analysis, forecast demand does not reveal any deficiency in runway capacity during the time frames of this study. Examination of the existing facilities, however, discloses deficiencies in areas which compromise the full utility of the existing airfield. These conclusions are the result of careful study based upon experience and supported by established guidelines on planning criteria as well as information contained in FAA Advisory Circulars and other acceptable references on Airport Planning.

In the development schedules which follow, alternatives will be presented and each of these alternatives must be evaluated from both a practical and economic consideration to meet the community needs and the time frame covered by this study.

Major decisions must carefully be analyzed during the first five year period in order to avoid unnecessary future growth capital expense. The first consideration in capital decisions should be safety, followed by economic feasibility. Each alternative must be studied to provide the best possible facility consistent with airport requirements and financial ability to meet these requirements. Each item must be evaluated to meet economic feasibility to establish continuous stage development of a complete unit. For further detail see Chapter 7 "Capital Improvement Program".

The following table lists the categories of aircraft which can be accommodated at Cottonwood Municipal Airport as a Basic Utility Airport (AC 150/5330-4B).

FIGURE 4-A

EXAMPLES OF AIRPLANE MODELS ACCOMODATED BY AIRPORT TYPE

BASIC UTILITY STAGE I	BASIC UTILITY STAGE II	GENERAL UTILITY
Beech B19 Sport/150 Beech B24R Sierra/200 Bellanca Citabria Series Bellanca 8GCBC Scout Bellanca 300A Super Viking Cessna 150 Series Cessna 172 Skyhawk Cessna 182 Skylane Cessna T206 Stationair Grumann American AA-1B Trainer Grumann American AA-5A Cheetah Grumann American AA-5B Tiger Mooney M20C Ranger Mooney M20E Chaparral Mooney M20F Executive Navion Rangemaster H Piper PA-11 thru PA-22 Series Piper PA-28 Series Piper PA-32-300 Cherokee Six Piper PA-32-300R Lance Rockwell Int'l. 112 A Commander Rockwell Int'l. 112 TC Commander Rockwell Int'l. 114 Commander	Beech F33A Bonanza Beech V35B Bonanza Beech A36 Bonanza Beech C23 Sundowner Beech B55 Baron Cessna 204 Skywagon Cessna 337 Skymaster Cessna P337 Skymaster Cessna 310 Piper PA-32-260 Cherokee Six Piper PA-23-250 Aztec Piper PA-34-200 Seneca II Ted Smith Aerostar 600 Ted Smith Aerostar 601 Also accommodated are the airplane models listed under Basic Utility Stage I.	Beech B58P Baron Beech B60 Duke Beech B80 Queen Air Beech E90 King Air Beech B99 Airliner Cessna 340A Cessna 402B Businessliner Piper PA-24 Series Piper PA-30-150 Twin Commanche Piper PA-31-350 Chieftain Piper PA-31-425 Navajo Rockwell Int'l. 5008 Shrike Rockwell Int'l. 685 Commander Also accommodated are the airplane models listed under Basic Utility Stages I and II.

This chapter will address the following four principal functional areas:

Airfield Facilities

Terminal Facilities

Support, Industrial & Commercial Areas

Land Acquisition

Since the unexpected growth of the Cottonwood area in a relatively short period of time, it is well to be reminded that commercial and industrial growth has fallen behind and falls short of meeting the local needs from a consumer and employment standpoint.

Interest has been focused upon the airport and adjacent land area for commercial and industrial development. This interest will provide a two-fold purpose. First, to contribute to the self sufficiency of the airport in providing the necessary operational and maintenance costs; secondly, it will contribute to the economy of the area and provide for local employment. Overall development of the airport property should be given serious consideration in the interest of developing income and employment producing activities. Full use of present and future aviation demands, however, should not be compromised and the full utility of the airport should not be diminished by nonaviation activities. Prudent advance planning is highly recommended for the development of this valuable resource. See Chapter "Capital Improvement Program" for the time frame of the following requirements.

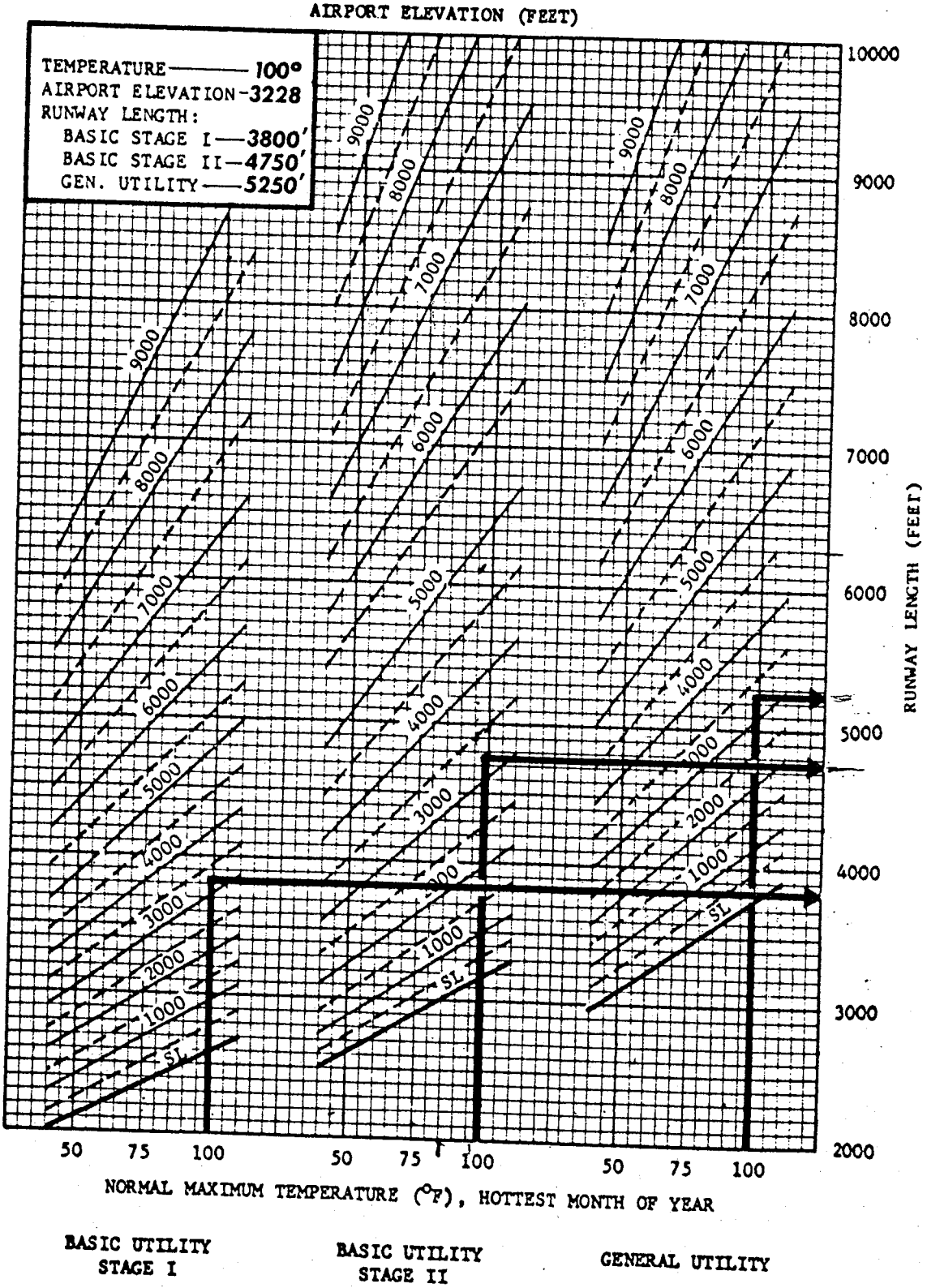
A. Airfield Facilities. Because of terrain constraints, the airport boundaries cannot be expanded beyond the present land area. Expansion to the north may appear feasible, however, this is neither environmentally sound nor economically cost effective.

1. Runway. The present runway which is 4250 feet in length has a 450 foot runway overrun at the north end and a 300 foot overrun on the south end. The airport elevation is 3558 feet MSL. Cottonwood Airport is classified as a Basic Utility II (BU II) Airport. FAA Advisory Circular 150/5300-4B recommends a 5000 foot runway for this category airport. See Figure 4-A, Page 4-2 for the category of airplanes that can be accommodated at this airport. As previously stated, the runway cannot be extended beyond its present length because of terrain constraints. However, it is recommended that the overruns on each end of the runway be properly maintained. This will provide a margin of safety for the existing runway. See Runway Length Design Table, Figure 4-B, Page 4-5. Addition- ally, the runway should be strengthened to accommodate planes with a single wheel LDG. of 12,500 pounds.

2. Local Aircraft Parking Apron. The existing aircraft parking apron will accommodate 42 airplanes. There are currently 39 aircraft based at the airport. Within the time frame of this study, the parking apron should be doubled from its present size and security lighting installed. See Capital Program for the proper time frame.

FIG. 4-B

RUNWAY LENGTH DESIGN TABLE



3. Itinerant Parking. A parking apron (40,500 square feet) to accommodate 15 aircraft is recommended for construction in the terminal or operation area.

B. Terminal Facilities. There is no defined operation or terminal area. Although, a structure located outside of the airport boundary serves as a terminal building and service area.

1. Terminal Building. A minimum of 750 square foot terminal/service building should be constructed as shown on the Airport Layout Plan. It should include as a minimum a lounge, office, restrooms and storage closet. It should also be equipped with a unicom and wind direction and velocity instruments. See Support Services, Page 4-8, for future space requirements.

2. Fueling Facilities. Fuel supply should be readily available in the operation area to serve itinerant aircraft. A fuel truck or fuel island will serve this purpose. Ten thousand gallon tanks should be installed in accordance with the Airport Layout Plan.

3. Access Road. A paved access road leading to the terminal building should be included in the Capital Improvement Program. Access to the aircraft parking area should be included and programmed.

4. Auto Parking. There is presently no defined auto parking area. A paved auto parking area to accommodate 60 cars should be constructed adjacent to the terminal/ operations area and FBO.

5. A Security Fence. A chain link fence to match the existing fence should be designed to provide for the security of the terminal/operations area and airplane parking apron.

6. Airport Beacon. The old 36" Crouse Hinds will eventually require replacement.

7. Navaids. The installation of visual approach slope indicators are recommended for installation on each runway end. A radio beacon is recommended in the proper time frame.

8. Fire Fighting Equipment. Town fire fighting equipment should be made available to the greatest possible extent. Purchase of new equipment is expensive to justify because of town priorities. The availability of fire fighting equipment through military surplus should be explored. As a minimum, hand or cart equipment should be available at strategic locations around the terminal/operational area, FBO and shop area and at any other location exposed to fire possibility.

9. Hangar Spaces. At present hangars should be provided and expanded as required, (see Capital Program).

10. Airplane Shelters. Shelters to accommodate twelve airplanes are recommended at this time and expanded as required.

C. Support, Industrial & Commercial Areas

1. FBO Area. Fixed base operators, i.e. flight training, charter, rentals, aircraft and engine repair, radio and instrument repair, etc., should be located near the operation area and should be clearly defined on the ALP. Any expansion of the terminal building could include FBO offices, restaurant, car rentals and other support services. The Airport Layout Plan should delineate the areas set aside for industrial and commercial development. All set back clearances should be carefully observed. See Figure 4-B, Page 4-5 , for dimensional clearance which are in accordance with Advisory Circular 150/5300-4B. In addition, FAA Part 77 "Objects Affecting Navigable Airspace", defines height limitations of objects or structures.

D. Land Acquisition and Use

1. The clear zones currently meet FAA requirements. A parcel of land, eight acres to the north of the existing clear zone, is currently zoned residential. This parcel of land should be rezoned to be compatible with airport use or purchased by the town for approach protection and future noise complaints. Land outside of the airport property is appropriately zoned to provide for compatible land use. Caution should be exercised, however, to encourage those activities for the best possible land utilization. In summary,

careful planning at this stage can produce positive benefits to the community and adversely, poor planning will result in problems.

ITEM	DIM 1/	NONPRECISION & VISUAL RUNWAY			PRECISION INSTRUMENT RUNWAY			
		AIRPLANE DESIGN GROUP			AIRPLANE DESIGN GROUP			
		I 2/ Wingspan < 49'	I Wingspan < 49'	II Wingspan < 79'	I 2/ Wingspan < 49'	I Wingspan < 49'	II Wingspan < 79'	III Wingspan < 118'
Runway								
Length	A	- Refer to chapter 4 -						
Width	B	60 ft 18 m	60 ft 18 m	75 ft 23 m	75 ft 23 m	100 ft 30 m	100 ft 30 m	100 ft 30 m
Runway Safety Area 3/								
Length Beyond Runway End 4/	2C	240 ft 72 m	240 ft 72 m	300 ft 90 m	600 ft 180 m	600 ft 180 m	600 ft 180 m	600 ft 180 m
Width	C	120 ft 36 m	120 ft 36 m	150 ft 45 m	300 ft 90 m	300 ft 90 m	300 ft 90 m	300 ft 90 m
Taxiway								
Width	D	25 ft 7.5 m	25 ft 7.5 m	35 ft 10.5 m	25 ft 7.5 m	25 ft 7.5 m	35 ft 10.5 m	50 ft 15 m
Taxiway Safety Area								
Width		49 ft 15 m	49 ft 15 m	79 ft 24 m	49 ft 15 m	49 ft 15 m	79 ft 24 m	118 ft 36 m
Separation Distance:								
Runway Centerline to;								
Parallel Runway Centerline		700 ft 210 m	700 ft 210 m	700 ft 210 m	- Refer to AC 150/5300-12 -			
Parallel Taxiway Centerline 5/	E	150 ft 45 m	225 ft 67.5 m	240 ft 72 m	200 ft 60 m	250 ft 75 m	300 ft 90 m	350 ft 105 m
Building Restriction Line and Aircraft Parking Area 6/	F	125 ft 27.5 m	200 ft 60 m	250 ft 75 m	7/ 7/	7/ 7/	7/ 7/	7/ 7/
Runway Centerline and End to;								
Object		- Refer to paragraph 16 -						
Property Line	G	- Refer to paragraph 19 -						
Taxiway Centerline to;								
Parallel Taxiway Centerline		69 ft 21 m	69 ft 21 m	103 ft 31.5 m	69 ft 21 m	69 ft 21 m	103 ft 31.5 m	153 ft 46.5 m
Parked Aircraft and Object	H	- Refer to paragraph 16 -						
Taxilane Centerline to;								
Parked Aircraft and Object		- Refer to paragraph 16 -						

1/ Letters are keyed to those illustrated in figure 7-2

2/ These dimensional standards are for facilities which are to serve only small airplanes.

3/ This runway safety area standard applies to all runways and runway extensions, that are constructed or upgraded after February 24, 1983. For other runways, the maximum feasible length and width of runway safety area should be provided.

4/ These distances may need to be increased to keep the stopway within the runway safety area.

5/ The location of a parallel taxiway may be adjusted such that no part of an aircraft (tail, wing tip) on taxiway centerline penetrates the obstacle free zone (OFZ).

6/ Objects located outside of the building restriction lines may penetrate the airport imaginary surfaces defined in Subpart C of FAR Part 77 where an FAA aeronautical study has determined that the specific penetration will not result in a hazard to air navigation.

7/ The building restriction line for a Category I ILS runway precludes any part of a building, tree, or parked aircraft from penetrating surfaces originating 300 feet (90 m) from runway centerline and sloping laterally outward 4 (horizontal) to 1 (vertical).

FIGURE 7-1. DIMENSIONAL STANDARDS

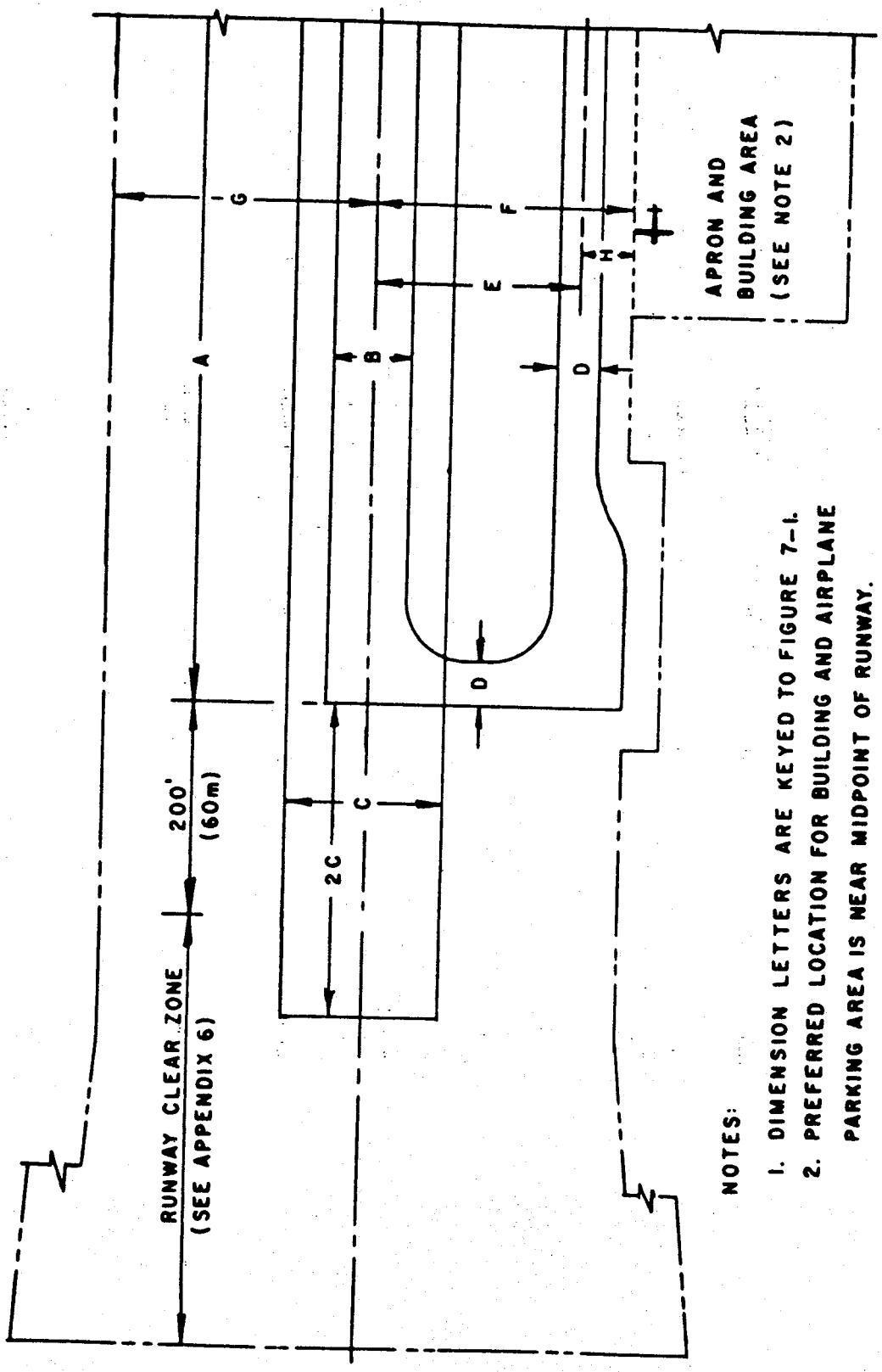


FIGURE 7-2. AIRPORT LAYOUT

ALTERNATIVE ANALYSIS

Facility requirements were established in the preceding chapter and certain areas were found to be deficient to meet projected needs. These areas were covered in detail in the preceding chapter - "Facility Requirements" and in general covered airplane parking, automobile parking, access road, terminal building, fueling facilities, operations area, hangars, support facilities, etc.

Detailed cost estimates to correct existing deficiencies and provide for project needs are provided in the chapter "Capital Improvements". This section will address alternatives and appropriate comments for each alternative. The ultimate goal is to develop an overall program which will achieve a balance in facility capability between the airfield, the land side area and support facilities. Consideration should also be given to develop income producing activities.

Since the airfield is the largest consumer of land, the terminal and other support facilities should be compatibly located, hence, the airfield is the first component to be evaluated.

The following alternatives will be evaluated and appropriate comments concerning each possible alternative will follow.

1. Do Nothing
2. Use other forms of transportation
3. Relocate and construct a new airport

4. Use other airports

5. Improve existing airport

A. Do Nothing or "No Build Policy". This policy for the Cottonwood Airport would assume that the existing system must accommodate the growing traffic demand throughout the planning period. This alternative, however, would only tend to aggravate existing and future problems as traffic demands increase. Furthermore, the rising population in a highly oriented retirement community will require more consumer goods and services. A "Do Nothing" policy would, therefore, ignore a potentially valuable economic resource in developing the employment and trade possibilities of the airport and adjacent land use.

This alternative is not practical and, in fact, would be shortsighted.

B. Utilize Other Forms of Transportation. This is an unacceptable alternative in the modern fast moving society to which we have become accustomed. Many private citizens, retailers, manufacturers, wholesalers, contractors, professionals, technicians, media, etc., own and operate their own airplanes for dependable and fast "one day service".

The above factors also apply in a "no build" or "do nothing" policy which permits airport facilities to decline to a point that compromises safety.

There is no rail service or daily bus schedules to Cottonwood, and there is a great dependency on the private automobile.

The asset of fast transportation to airline hubs or major trade centers contributes greatly to the economic growth of a community. Conversely poor transportation will contribute to its decline.

C. Relocate the Airport. This alternative is neither practical or financially feasible. The terrain characteristics of the area and the present sprawl of subdivisions would create environmental problems. It is not possible to find an area nearby with terrain features suitable. The area is characterized as hilly with deep gullies and ravines which slope down from high mountains to the Verde River. Flood conditions during frequent summer thunderstorms create flooding problems.

D. Use Other Airports. Other airports located in the area include:

CAMP VERDE AIRPORT which is located 20 miles from Cottonwood. This airstrip is located and owned by the U.S. Department of Agriculture. It is a dirt strip and has no facilities. Vandalism potential is high. The strip is subject to closure at any time. This strip is not considered as an operational facility and is, therefore, not an acceptable alternative.

RIMROCK AIRPORT is a privately owned dirt landing strip 2500 foot in length. The landing strip length is marginal. It is located about 15 miles southeast of Cottonwood. Use of this small landing strip is not considered an acceptable alternative to meet the demands at Cottonwood.

SEDONA AIRPORT is located 18 miles northeast of Cottonwood and is owned by Yavapai County. It is operated by an airport authority. The airport is located on a mesa, has a single runway and taxiway, limited parking area and basic facilities. Sedona airport primarily serves the Sedona Oak Creek area. While this airport may have limited use, the distance from the Town of Cottonwood would be a limiting factor. In addition, to dilute the traffic at Cottonwood would dilute the economic incentive which is a major factor for the Town of Cottonwood.

PRESCOTT MUNICIPAL AIRPORT is located 45 miles from Cottonwood and the distance to travel is not acceptable.

FLAGSTAFF MUNICIPAL AIRPORT (Pulliam Field) is located 50 miles from Cottonwood and, it too, is located at an unacceptable distance.

E. Improve the Existing Airport. Cottonwood Airport is ideally located midpoint among neighboring towns and the subdivision sprawl throughout the valley. It is environmentally compatible with the Town of Cottonwood.

In the chapter "Demand/Capacity", it is concluded that the land area for Cottonwood is adequate for the time frame of this study. All clear zones are in "Fee Title". In the "Facility Requirements", however, it is recommended the additional available land to the north of the runway be acquired to preclude future problems. Town zoning ordinances have been passed to protect the runway approaches and departure routes.

Unless unforeseen and unprecedented growth occurs, it is believed that the present land area of the airport will serve future demands.

In summary, the airport is a stimulus to economic growth and services to the Town of Cottonwood. It is presently compatible with the environment, the land area is adequate for the time frame of this study, the airport is conveniently located to serve the community and the service area, it is the least costly and greater financial community results will accrue. Last but not least, the airport has served the community for the past forty plus years and is an established town facility. Improvements should be undertaken to satisfy current demands. It is a component of the present National Plan of Integrated Airport Systems (NPIAS) and the Arizona State Airport System Plan.

CHAPTER FIVE

ENVIRONMENTAL ANALYSIS

ENVIRONMENTAL ANALYSIS

Cottonwood Airport is located within the southwest quadrant of the town and is one mile southwest of the downtown business area. It was established in the early 1940's and has served the area since that time with no environmental problems. No expansion of the airport beyond its present boundaries is anticipated within the time frame of this study.

Most of the natural area surrounding the airport is rolling ridges and gulleys sloping from the surrounding mountains toward the Verde River which flows through Cottonwood.

Vegetation surrounding the airport consists of range grasses, mesquite, snakeweed and a variety of other weeds.

No expansion of the airport beyond its existing boundaries is anticipated although development and expansion of existing facilities as well as land use plans, to enhance the economical status of the area, are extensive.

The development of the Cottonwood Airport is consistent to both the National Plan of Integrated Airport Systems (NPIAS) and the Arizona State Airport System Plan and is a component of both plans.

A full environmental overview addressing each element of environmental factors follows this brief introduction.

ENVIRONMENTAL OVERVIEW

It does not appear that any significant environmental impact will result in the proposed development of Cottonwood Airport. No runway extension or property expansion is contemplated.

The following will briefly summarize each element of environmental factors:

Noise Measurement (Day-Night Sound Level Contour - Ldn)

Ldn is a computed noise level which uses Sound Exposure Levels (SEL) which are computed by numerically integrating the sound pressure level versus the time history of each operation measured. This data is then converted to Ldn by taking the energy average SEL at reference measurement points for all aircraft.

The Ldn concept defines the day-night level as a series of hourly noise levels for a given day, weighted for time of occurence.

Noise contours (see Figures 5-A and 5-B) were developed by Bolt Beranek & Newman, a reputable and widely used firm in the aviation industry as well as industrial and commercial.

Figure 5-C presents guidelines which have been developed in previous studies of compatible land uses for varying levels of noise exposure. Residential uses are clearly unacceptable in zones having Ldn 75 or greater noise pressure. However, no Ldn 75 contour is computed for this airport.

Residential uses are normally unacceptable in areas with Ldn 65 or greater unless the residences are properly sound attenuated. Mobile homes and recreational vehicles cannot normally be sound attenuated and are not recommended in the Ldn 65-75 area.

Four ranges of acceptability of various land uses are used in determining adjacent airport land compatibility:

1. "Compatible" is given to a land use where activities associated with that use are essentially conducted without interference. In residential areas, both indoor and outdoor noise environments are considered pleasant.
2. "Marginally compatible" is given to land uses where associated activity is affected to a small degree. People will normally express some concern over noise, however, average construction techniques can render the indoor environment "clearly acceptable," including sleeping activities. The outdoor environment will be reasonable, pleasant for recreation and play.
3. "With extra insulation" is given to land uses where construction would require unusual and costly building materials and standards to render the indoor environment "clearly acceptable".
4. "Incompatible" is given to land uses where construction and building material costs would be prohibitive to render the indoor environment "clearly acceptable".

An examination of the contours shown on the Zoning Map, Figures 5-A and 5-B clearly indicate no significant impact from aircraft noise.

Compatible Land Use

FAA Order 5050-4 states "The compatibility of existing and planned land uses in the vicinity of an airport is usually associated with the extent of noise impacts related to the airport. In this context, if the noise analysis described concludes that there is no significant impact, a similar conclusion usually may be drawn with respect to compatible land use".

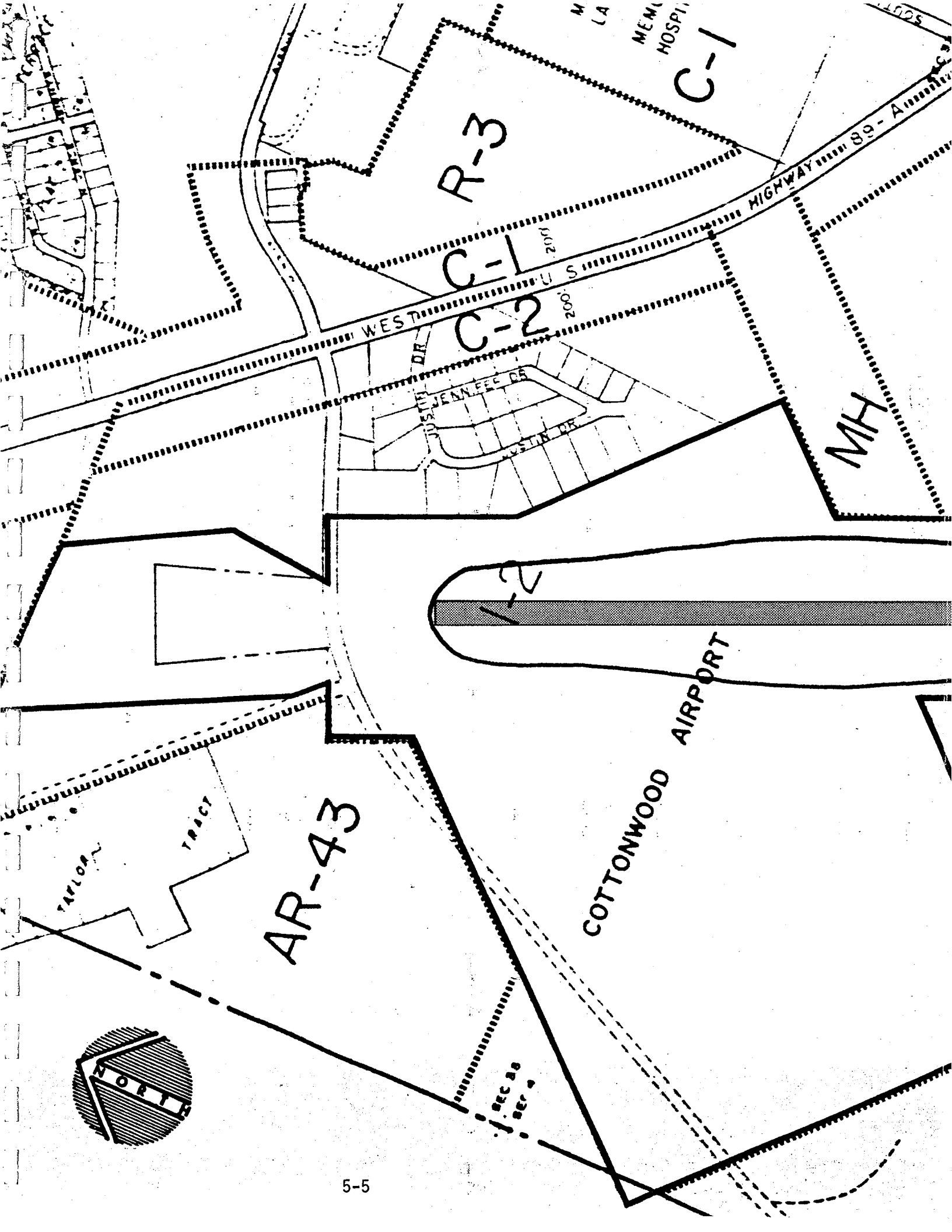
The Cottonwood Airport is appropriately zoned for continued and expanded airport use.

Social Impact

The proposed project will not require:

1. The relocation of residences or businesses.
2. Will not alter surface transportation.
3. Will not divide or disrupt established communities.
4. There are no parks, recreation areas, schools, hospitals or churches located in the immediate airport area.
5. The airport will not disrupt planned community development and will not create a change in employment.

It is concluded, therefore, that no significant impact will result in this category.


C-1
R-3
C-1
C-2
MH
AR-43
HIGHWAY 89A
WEST
JUSTIN DR
JUSTIN DR
COTTONWOOD AIRPORT
TAYLOR
TRACY
NORTH

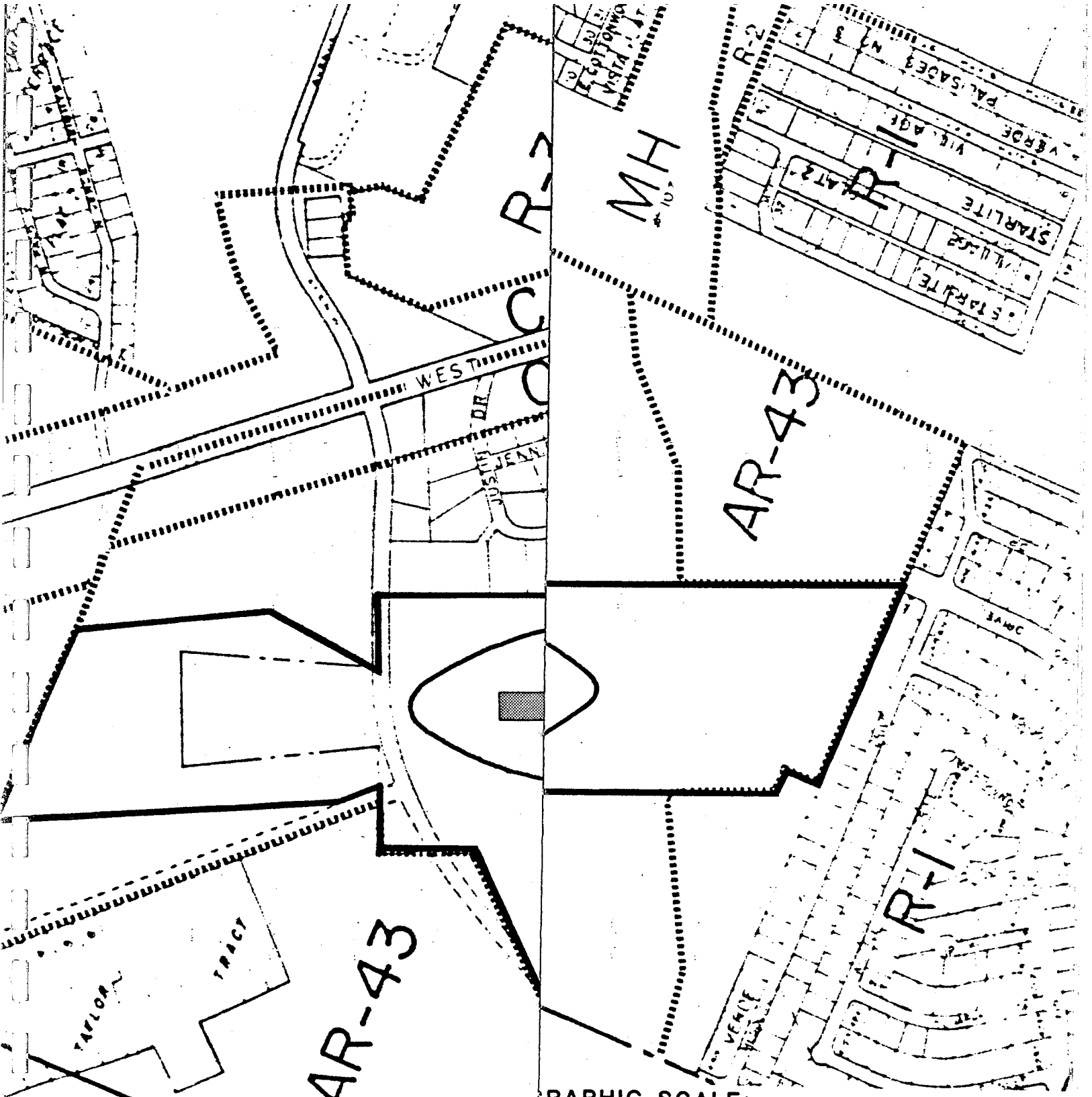


FIGURE 5-B

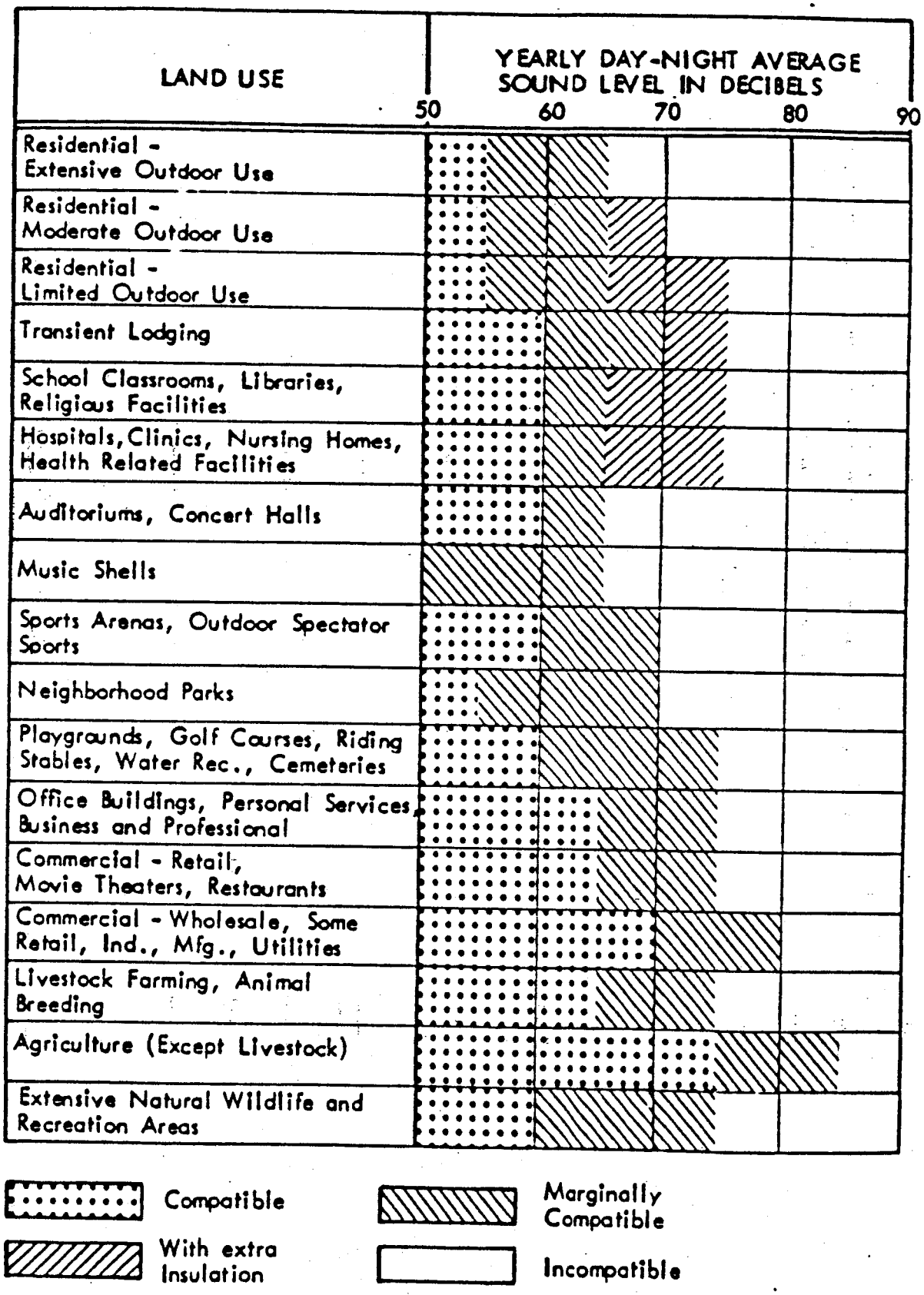
COTTONWOOD AIRPORT

OISE EXPOSURE CONTOURS

YEAR 2005

BY

ellis-murphy
consulting engineers / land surveyors



LAND USE COMPATIBILITY WITH YEARLY DAY-NIGHT AVERAGE SOUND LEVEL AT A SITE FOR BUILDINGS AS COMMONLY CONSTRUCTED
(AFTER ANSI STD S 3.23 - 1980)

Induced Socioeconomic Impacts

The proposed airport program and land use program will have a positive effect in providing a wider range of employment possibilities in service, commercial and industrial activities.

Air Quality

Air traffic generated from Cottonwood Airport will not significantly affect the ambient air quality of the area. Previous air quality studies compiled by Trico International, Inc. show air quality standards far below EPA and state standards. See Figure 5-D, Page 5-11.

Water Quality

Water is supplied to the Town of Cottonwood by the Cottonwood Water Works, a private company.

The airport is presently served by a 2" line and is sufficient to provide the required water service of the airport without exhausting the present supply.

The service will not provide adequate pressure or supply for minimum fire flow.

The drainage patterns of the airport will not change from its natural drainage channels. There are no bodies of water located in the area.

Department of Transportation Act

The project will not involve the use of any public land, facility, wildlife or water refuge, any historic site or archeological and cultural resources.

Biotic Communities

Negative declaration. The airport has been in existence since 1942 and its present boundaries will not change.

Endangered & Threatened Species

Negative Declaration.

Wetlands

Negative Declaration.

Floodplains

Negative Declaration.

Coastal Management

Not Applicable.

Prime & Unique Farmland

Not Applicable.

Energy Supply & Natural Resources

Negative Declaration.

Light Emissions

Negative Declaration.

Solid Waste Impacts

No significant impact will result. Federal, state and county regulations control solid waste disposal and hazardous waste disposal.

Construction Impacts

The following impacts will be addressed by provisions inserted in the proposed construction contract:

1. Noise Impact from Construction Vehicles - Require all combustion engines to be properly muffled and prohibiting construction activities from 10:00 p.m. to 6:00 a.m.
2. Disposal of Construction Wastes and Borrow Area - The Contractor will be required to exercise care when borrow or disposal sites are used and that all such sites be finished to a neat and uniform grade.
3. Control of Air Pollution - From dust, burning and general construction operations. The Contractor will be prohibited from burning of construction waste and will require positive dust control procedures by watering haul roads and dust areas. Bituminous plants will be equipped with dust collectors.
4. Impact on Water Quality - FAA specifications and FAA Advisory Circular 150/5370-7, "Airport Construction Controls to Prevent Air and Water Pollution", will be used to minimize impacts to water quality during construction.

Local Plans

The project is consistent with local plans. Rezoning has been undertaken to accommodate the proposed project.

FIGURE 5-D

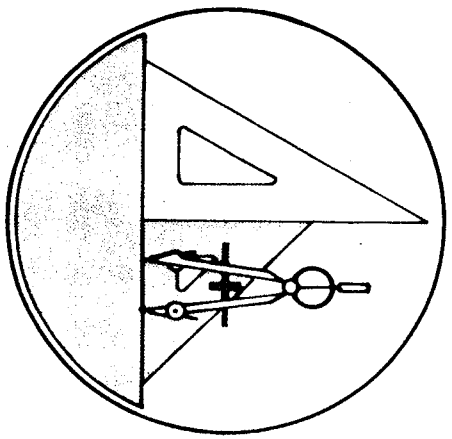
Aircraft and Auto Pollutants

	Current				1994 - Forecast				Federal Standards
	Aircraft	Ambient	Auto	Total	Aircraft	Ambient	Auto	Total	
Particulates	.00272 ug/m^3	Annual Geometric Mean 54 ug/m^3	*	54.00272 ug/m^3	.00632 ug/m^3	20% Increase 64.8 ug/m^3	*	64.80632 ug/m^3	**75 ug/m^3**
Sulphur Oxides	.00556 ug/m^3	*	*	0.00556 ug/m^3	.01156 ug/m^3	*	*	0.01156 ug/m^3	**80 ug/m^3**
Carbon Monoxide	.00076 mg/m^3	*	0.008723 mg/m^3	0.00948 mg/m^3	.00196 mg/m^3	*	0.029075 mg/m^3	0.03104 mg/m^3	**10 mg/m^3**
Hydrocarbons	.0678 ug/m^3	*	1.19269 ug/m^3	1.26049 ug/m^3	.1528 ug/m^3	*	3.9756 ug/m^3	4.12840 ug/m^3	**160 ug/m^3**
Nitrogen Oxides	.02392 ug/m^3	*	*	0.02392 ug/m^3	.0500 ug/m^3	*	*	0.0500 ug/m^3	**100 ug/m^3**

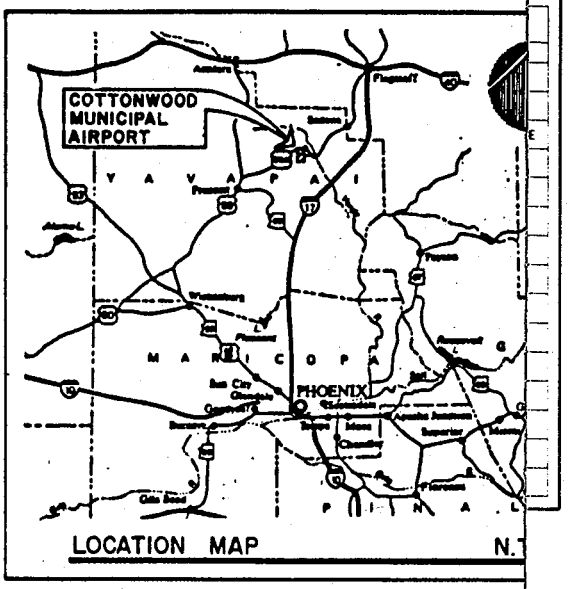
* **Indicates: No published data available in Arizona Air Pollution Control Implementation Plan and assumed to be a negligible concentration.**

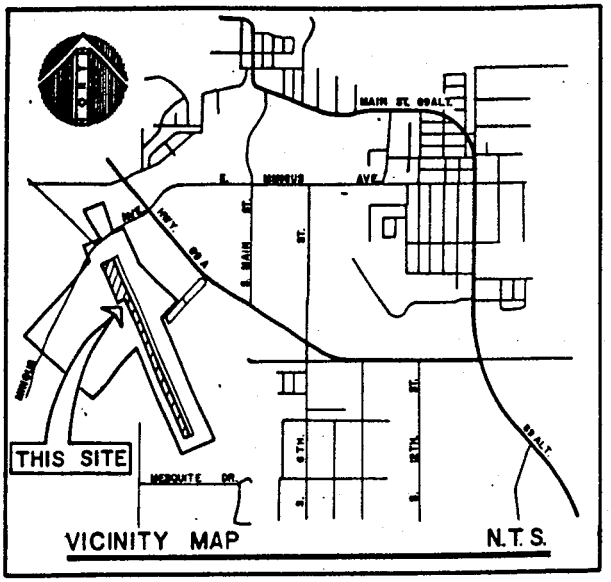
Prepared by: Trico International, Inc.

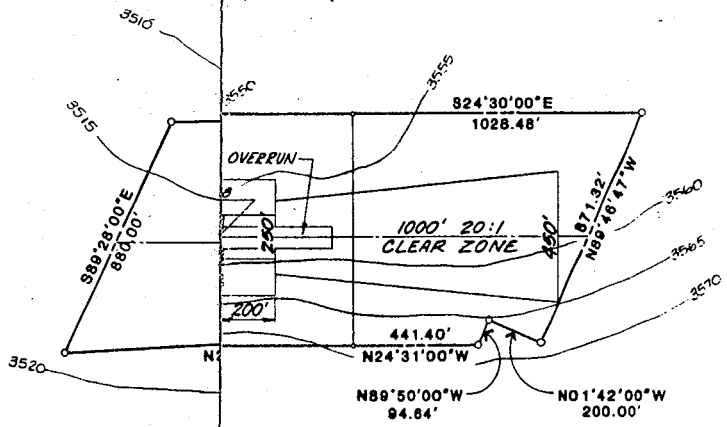
CHAPTER SIX



AIRPORT LAYOUT PLANS







RUNWAY DATA

	EXISTING	ULTIMATE
RUNWAY IDENTIFICATION	14 - 32	14 - 32
LENGTH OF LANDING STRIP	4650	5400
RUNWAY LENGTH	4250	5000
EFFECTIVE GRADIENT	0.95%	0.95%
APPROACH SLOPES	20:1	20:1
LIGHTING	MIRL	MIRL
MARKING	BASIC	BASIC
NAVIGATION AIDS	UNICOM	VASI-2
INSTRUMENT RUNWAY	NONE	NONE
PAVEMENT STRENGTH (Aircraft Gross weight w/single-wheel gear)	9,000	12,500

PREVAILING WIND DATA
PILOT SURVEY
75% S W AT 7 MPH
25% S S W AT 15-20 MPH
RUNWAY ALIGNMENT N24°25'00"W (TRUE)

AIRPORT DATA

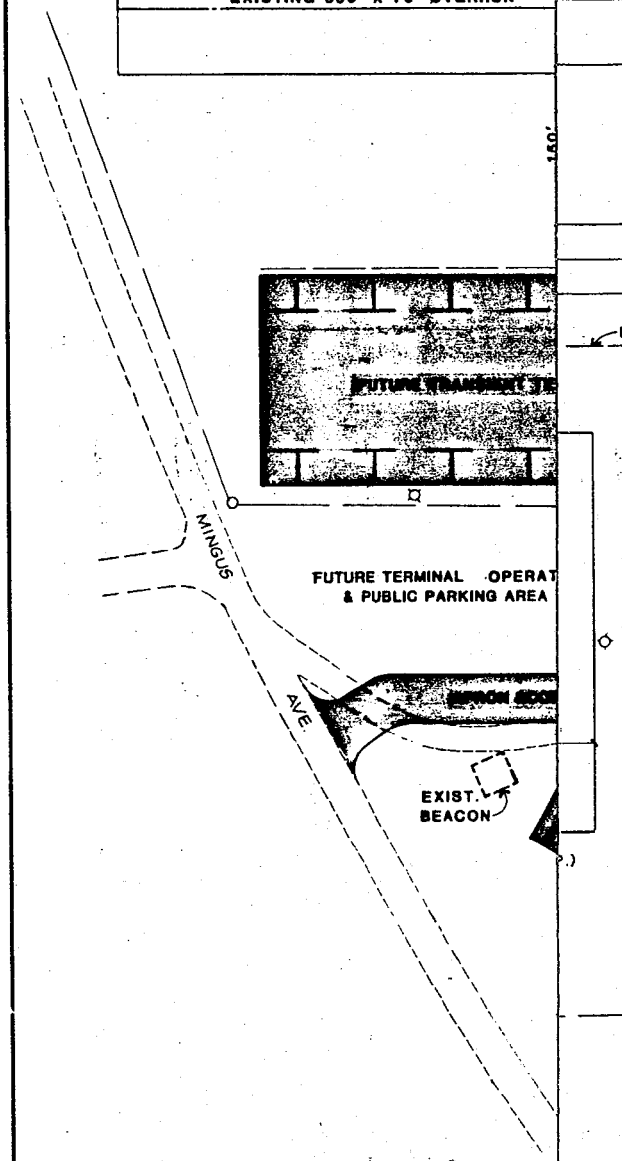
	EXISTING	FUTURE
AIRPORT ELEVATION	3,558	3,558
NORMAL MAX. TEMP.	99°F	99°F
TAXIWAY MARKING	BASIC	BASIC
NAVIGATIONAL AIDS	UNICOM	NDB
BEACON	ROTATING	ROTATING
WIND INDICATOR	LIGHTED WINDCONE	LIGHTED WINDCONE
OPERATIONAL ROLE	B.U. 1	B.U. 2

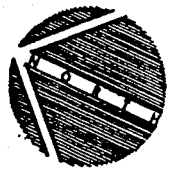
AIRPORT LAYOUT PLAN

COTTONWOOD MUNICIPAL AIRPORT

DESIGN MC	SCALE	JOB NO.	DATE	SHEET
DRAWN SS	GRAPHIC	7327	JAN 1986	6-1 OF 6-14
CHECK JV				

ellis-murphy consulting engineers / land surveyors





GRAPHIC SCALE:

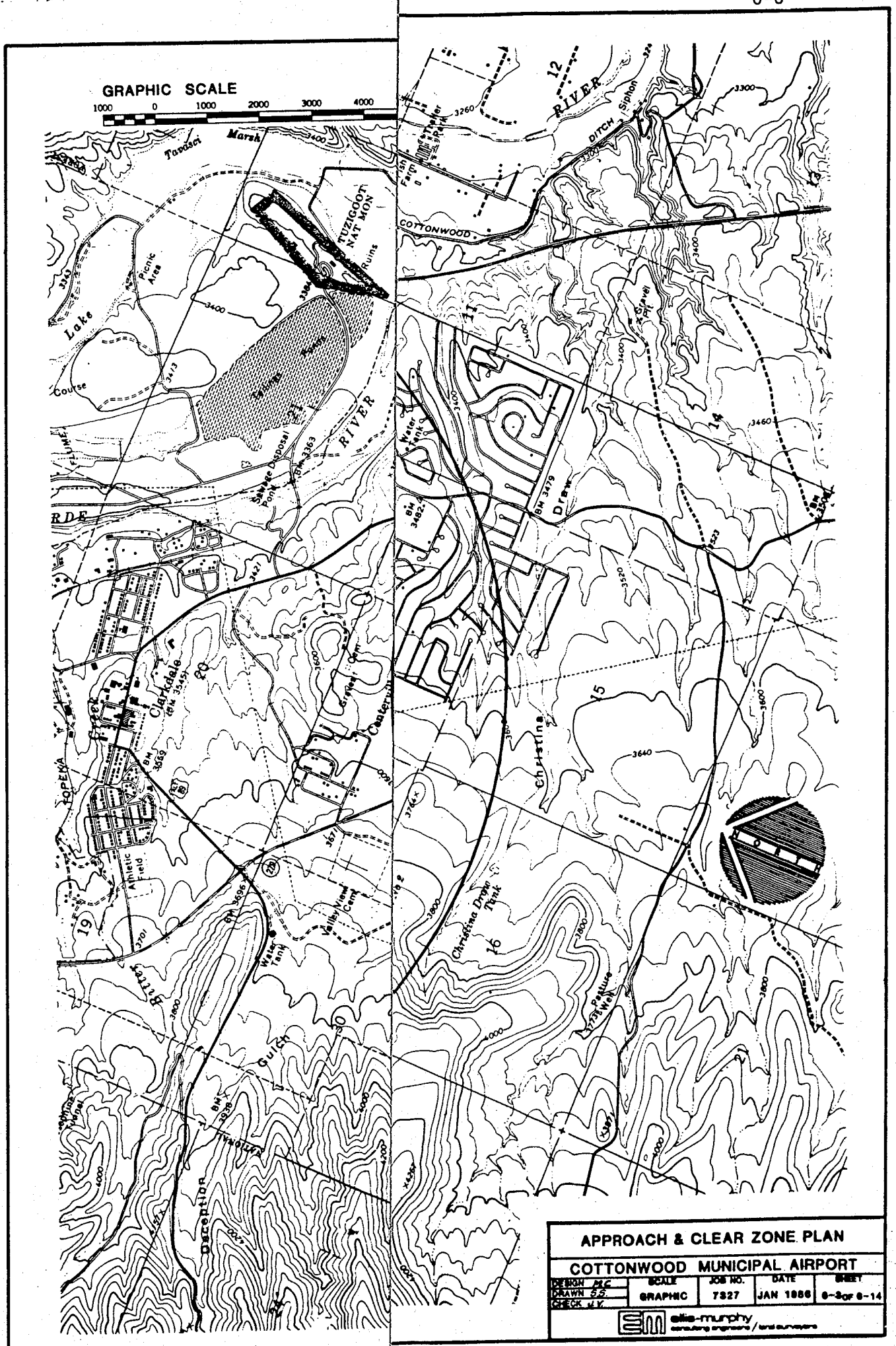
.0 50 100 200

TERMINAL AREA PLAN

COTTONWOOD MUNICIPAL AIRPORT

DESIGN MC	SCALE	JOB NO.	DATE	SHEET
DRAWN SS	GRAPHIC	7327	JAN 1986	6-2 OF 6-14
CHECK J.V.				

ellis-murphy


GRAPHIC SCALE
1000 0 1000 2000 3000 4000
Marsh
TUZIGOOT NAT MON
Ruins
Picnic Area
Lake
Course
Tailings Ponds
Sewage Disposal Pond
FLUME
RIVER
Clarkdale
Athletic Field
Water Tank
Valley View Cem
Gulch
Canterbury
Christina Drive
Water Tank
Pasture
Drive
Gravel Pit
Water Tank
Drive
Ditch
Siphon
COTTONWOOD
Fence
Pump House
Pump
Tank
Pipeline
Pipeline
Pipeline

LAND USE PLANNING

Land use planning must consider the future development of the airport in relation to the community growth. It is vital that planning efforts minimize any conflict between the airport and the community, in order to achieve full utilization and potential airport growth.

If the operational role of the airport is to be preserved and the health and general welfare of the public protected, it becomes necessary to integrate the Airport Development Program into any community or county comprehensive planning effort. This will preclude any conflicting land use where other jurisdictions are involved.

All airport land is owned by the Town of Cottonwood. Comprehensive land use zoning has been prepared by the Town Council.

The information which follows, however, is applicable and is included for the use and guidance in any future planning effort. Care should be exercised to confine land use of this area to those activities compatible with airport use. Residential areas in close proximity to the airport approach area should be avoided. Noise-sensitive activities; i.e., hospitals, schools, rest homes, etc. should not be planned in close proximity to the airport or along the runway approach and departure path.

All zoning efforts should provide for proper zoning to protect the airport from residential and noise-sensitive activities.

The land area around the airport will undoubtedly expand due to the population expansion. Attention to this matter should be given priority and accomplished as soon as practical.

Within the present airport property, land use planning efforts should be made to encourage revenue-producing activities. These activities need not be aviation-related although aviation-related activities are more compatible and therefore more desirable.

LAND USE CONFLICTS

Airports were originally located away from developed areas where a flat piece of land provided a suitable landing field. In some locations the landing field grew into the current facility while other communities planned the location of their airports based on the best available location for aircraft operations. No matter how the site for the airport was chosen there was one common denominator - the site was surrounded by agricultural or undeveloped land. This desirable environment did not last.

Suburban growth, increased air traffic, and larger and faster aircraft combined in a short period of time to create a land use conflict where one had not previously existed. Even at sites that were originally criticized for having been constructed too far from the city, residential suburbs developed on what had been the agricultural or undeveloped land around the airport. Proper land use planning in the vicinity of airports requires a basic understanding of compatible and incompatible uses.

LAND USES COMPATIBLE WITH AIRPORTS

Generally, the uses compatible with a particular airport depend on such things as the location and size of the airport as well as the type and volume of aircraft using it. Most commercial/industrial uses, especially those associated with the airport, make good airport neighbors. At those places where the airport creates the demand, motels, restaurants, warehouses, aircraft associated industries, as well as industries that benefit from access to an airport, are probable and compatible uses. At airport locations where there is not now a demand for these uses contiguous to or near the airport, communities may find it desirable to promote the use of this land for commercial or industrial use through a program of aids and incentives.

Care must be taken that buildings and structures for these uses do not obstruct the aerial approaches to the airport, interfere with aircraft radio communications, or affect a pilot's vision due to glare or bright lights. Motels and restaurants should also be sound-proofed to make them more comfortable and attractive to clientele.

Other uses compatible with airports are large parks, conservatory areas and open space. These land uses are created for public purposes and are, therefore, opportunities for local governing bodies to provide a compatible land use. Cemeteries, reservoirs, water and sewage treatment plants, golf courses, riding schools and some extractive industries are also land uses compatible with airports which governing bodies have some say in locating.

LAND ACQUISITION

Land acquisition is an important part of implementing airport land use plans. Land used for runways, terminals, hangars, tie-down areas and other airport associated uses should be purchased. To purchase means to obtain the fee simple: i.e., the property and the rights of property ownership. This ensures the airport owner maximum control of the use of the land most critical to the airport's operation. In addition, the land off runways should be purchased to provide maximum control of runway approaches.

EASEMENTS

Short of purchasing the fee simple, easements to property can be acquired by negotiation or condemnation. Easements permit the purchaser the use and enjoyment of another's property and property rights for the special purposes stated in the easement agreement. Easements relinquishing the development rights to property require that the land be kept in its natural state, or permit land uses compatible with airport use. This arrangement is beneficial to all concerned: the airport does not have to purchase the property; the property remains on the community tax rolls; the owner does not lose limited use of his land.

Avigation easements are those which grant the right of flight over the land in question and compensate the property owner for the side effects of aircraft operations over his property. Easements of this type are often acquired for both developed and undeveloped properties in runway approach zones. Clear zone easements grant the right to keep the subject property

free of structures, trees, or any other use of the land that could prove hazardous to aircraft taking off or landing. All of these easements might be included in one easement agreement.

INCOMPATIBLE LAND USES

Housing, the predominant urban land use, is also the use most incompatible with airport operations. As residential development fills the vacant land between the urban settlement and the airport, the possibility of it restricting the airport's potential increases. Residential growth restricts the airport by taking up the land needed for expansion and by removing the buffer between the airport and residential neighborhood. This buffer is vital because it diminishes the impact of aircraft noise and the possibility of an airplane crashing into the residential neighborhood. If residential uses fill this area around the airport, homeowners will inevitably express their concerns for safety, and objections to noise.

Residential uses during a period of rapid growth have been unwittingly developed too close to an airport. But there is no reason for the continued encroachment on the airport by this type of incompatible land use. Obviously, residential subdivisions, schools, churches and other similar uses are the most susceptible to the side effects of aircraft operations. It is neither in the interests of the homeowner nor the community to locate these uses where they will be subject to the greatest impact of aircraft takeoffs and landings. It is clearly in the public interest that action should be taken to prevent this land use conflict.

COMPREHENSIVE PLANNING

Regional and community comprehensive planning occur at the local level. This is the most important level of general planning. Here the airport is considered not only in terms of its impact on transportation but also in terms of its effect on the local economy, land use and environment. The airport should be considered as part of a total transportation plan to meet the community's needs. Especially important in this respect is access to the airport by road, rail, and mass transit where appropriate.

Within the land use element of the comprehensive plan, the future plan should show the land needed for airport purposes and designate uses for surrounding land that are compatible with the airport. The general location and extent of designated uses should be based on a forecast of demand for various types of development and consideration of the likely characteristics of such development.

Various land use regulations and policies can be adopted to promote the land use plan identified in the planning process. Communities with comprehensive plans are more likely to be successful in achieving land uses compatible with the local airport. The comprehensive plan provides a legal basis for airport land uses and community consensus in support of the airport's operation.

IMPLEMENTING LAND USE PLANS

Land use plans, whether for the entire community or the airport vicinity, serve as guides to actions for plan implementation and land use compatibility. Implementing actions involves agreements by decision makers to support and cooperate in the plan implementation through the municipality's budgetary and administrative policy. Individual decisions made by governing bodies in areas such as land acquisition, incentives to business and capital improvements also affect the plan. Regulatory action is taken under the state's police power where the state has delegated specific powers to municipalities to protect and promote the public health, safety, convenience and general welfare. Regulatory actions such as zoning, building and plat approval are useful tools in plan implementation.

LAND USE ZONING

Zoning is the most commonly used form of land use control. The purpose of zoning is to designate those areas of the community most suitable for particular land uses. The desired distribution of land uses in the comprehensive plan becomes the basis for the zoning scheme.

LIMITATIONS ON ZONING

While zoning is useful in implementing land use plans, there are some limitations which restrict the use of zoning for airport protection. First, land must be zoned for some economic use, unless it is public property for which the desired use is open space or conservancy. Private property owners must be permitted

some economic use of their land. Because tax assessments are based on the highest and best use of land, pressure is placed on zoning officials to zone land for its highest and best use. The highest and best economic uses are not always the most compatible land uses in terms of desirable community development. Again, the best means to validate zoning for other than the highest and best use is by preparing a community comprehensive plan along with or prior to a zoning plan.

A reasonable demand should exist for the permitted use of zoned land. The demand does not have to exist at present but the capability of demonstrating that the demand will exist in the future is necessary. For example, an industrial park is a desired and compatible airport associated use. Land adjacent to the airport may be zoned for industrial use if it can be shown that the potential exists for an industrial park to develop.

The lack of existing or planned transportation facilities to industrial zoned land, or the existence of excessive undeveloped industrial zoned property in the community would not substantiate the industrial use zoning.

A second limitation on the use of zoning is its lack of retroactivity. Zoning is not a means to eliminate existing uses that may not conform to the desired plan. Land with existing uses may be rezoned to a more desirable use but the existing use may continue as a nonconforming use.

Furthermore, zoning plans are only applicable in the jurisdiction of the government adopting them. County ordinances

do not apply to villages and cities within the county. Cities and villages may zone the land within their boundaries. Zoning for uses compatible with the airport must be done separately for each governing body with land in the airport area. This fragmented approach to zoning increases the difficulty of implementing an airport land use plan through zoning.

Despite these limitations, zoning provides the most positive means to airport protection, next to property acquisition. Care must be taken in the drafting of zoning ordinances or amendments to insure that they are legally valid. Help in drafting ordinances may be obtained from local planners, zoning administrators, legal counsel, and regional planning commissions.

AIRPORT BEAUTIFICATION

Beautification is not easily measured nor can its worth be calculated with any degree of accuracy. However, nature is beautiful and well planned and landscaping and buildings can be functional as well as aesthetically pleasing. The visitor's first impression of the airport is important to the community attempting to attract new industry. The condition of the airport is a good indicator of civic interest and support of community affairs.

Airport beautification projects have been aesthetic and functional benefits. Landscaping can prevent erosion and may help to attenuate aircraft noise on the airport. A well planned land management program can reduce building and ground maintenance costs.

The best airport layout and engineering projects are not apparent to the public, but good landscaping, architecture, and overall cleanliness are apparent. It would, therefore, be in the best interests of the local airport sponsor to consider beautification as part of the maintenance program. The airport can also be a source of recreation for both aviation and nonaviation segments of the community. Recreation facilities and "airplane watching" are popular at many airport locations. Beautification projects can be effective in the cultivation of this interest and can do much to promote airports as a valued community asset.

Beautification is generally the outgrowth of good planning and land management. To be effective, begin airport beautification with a plan of what is to be done and how it is to be accomplished. Preferably, the plan should be the extension of a community's overall beautification program or part of a community's comprehensive land use plan. A planned beautification program is recommended, but it should not preclude independent airport beautification efforts, provided they are well organized, accomplished with adequate professional guidance, and in scale with the airport.

ARCHITECTURE

Airport structures, especially terminal and administration buildings, are focal points of airport activity. These buildings identify the airport, and are places where people experience the activities of the airport. The condition of airport buildings,

therefore, is often used by the public as a measure in judging the condition of the entire airport. In the construction of airport buildings, it is often just as easy to erect attractive buildings as it is to build something offensive.

Restoration of old airport buildings, including painting and structural repairs, can improve the overall appearance of the airport and reduce maintenance costs. Excessive repairs, heat loss, insurance rates, and other utility costs can be programmed with other building improvements.

Improved interiors of airport terminal and administrative buildings will also add to the amenities expected in such places of public assembly. Clean furniture, restrooms and other lounge facilities are basic to any local building improvement program.

CHAPTER SEVEN

CAPITAL IMPROVEMENTS

CAPITAL IMPROVEMENT PROGRAM

This chapter addresses funding, cost estimates and capital improvement programs. The capital programs for the five and ten year periods which follow in this chapter and which are recommended to accommodate future aviation activity and demands, have been arranged with flexibility to meet financial limitations or constraints.

Each item must be evaluated to meet economic feasibility and to establish continuous stage construction of a complete unit. Stage construction of a runway, for example, can provide a usable runway prior to the final completed runway. The nature of the terrain of the airport places limitations on the ideal configuration of runway alignment and length. To overcome these constraints, financial feasibility becomes the major consideration. To construct a cross wind runway may exceed the sponsor's financial limitations because of the excessive excavation and earthwork. Considerable excavation of rock will be necessary. F.A.A. funding may be available if the project can qualify. State funding is also available; use of local heavy equipment may reduce the cost of earthwork substantially. In the development schedules which follow, work units will be presented and each of these units must be evaluated from both a practical and economic consideration to meet the community needs and the time frame covered by this study.

Major decisions must carefully be analyzed during the first five year period in order to avoid unnecessary future growth capital expense. In order to assist in major capital improvement decisions, estimated costs are prepared as shown in this chapter, Figure 7-A "Short Term", Figure 7-B "Intermediate Term" and Figure 7-C "Long Term". These should be studied for economic feasibility.

The first consideration in capital decisions should be safety, followed by economic feasibility. Each work unit must be studied to provide the best possible facility consistent with airport requirements and financial ability to meet these requirements.

Contained in this chapter are possible funding sources and the percentage available in federal funds as well as state funds. It must be borne in mind that federal participation at present is 91.06% of eligible items. The Federal Airport Act expires in 1988, and it is possible that funding levels may be reduced. FAA eligible items are shown in this chapter.

WORK ITEMS

FIGURE 7-A

SHORT TERM 1986-1990

ITEM	TOTAL	FAA	STATE	LOCAL
I. LANDING AREA				
A. LAND ACQUISITION (4+ ACRES NORTH END)	124,000	112,915	5,542	5,543
II. OPERATION AREA				
*A. AIRCRAFT APRON EXPANSION 600' x 60' (4,000 sq. yds.)	60,000	54,636	2,682	2,682
B. TERMINAL AREA & TRANSIENT AIRCRAFT PARKING 270' x 120' (3,600 sq. yds.)	54,000	49,172	2,414	2,414
C. ITINERANT RAMP 110' x 55' (678 sq. yds.)	10,170	9,261	454	455
*D. AIRPORT ACCESS ROAD, 230 L.F.	20,000	18,212	894	894
*E. SEAL COAT APRON, 200' X 870'	20,000	18,212	894	894
F. RECONSTRUCT TAXIWAY TO APRON, 250' X 40'	18,000	16,391	805	804
*G. CONSTRUCT SECURITY FENCE, 1500 L.F.	9,000	8,954	670	671
*H. CONSTRUCT SECURITY LIGHTING	30,000	27,318	1,341	1,341
I. UTILITIES - WATER INC. 3 FIRE HYD.	16,600	15,116	742	742
J. UTILITIES - ELECTRICITY	3,000	0	0	0
K. UTILITIES - GAS	7,800	0	0	0
L. UTILITIES - SEWER	5,000	0	0	0
M. UTILITIES - PHONE	2,600	0	0	0
N. LANDSCAPING	10,000	0	0	0
O. TEE HANGARS (6)	72,000	0	0	0
P. TEE SHELTERS (10)	48,000	0	0	0
Q. CRASH RESCUE EQUIPMENT	50,000	45,530	2,235	2,235
III. SUPPORT FACILITIES				
A. FBO AREA 1986	156,000	0	0	0
IV. NAVAIDS				
*A. INSTALL PAPIS	40,000	36,424	1,788	1,788
TOTALS	756,170	412,141	20,461	20,463

NOTE: ALL FIGURES ARE IN 1986 DOLLARS. DOES NOT INCLUDE ENGINEERING, CONTINGENCIES OR ADMINISTRATIVE.

WORK ITEMS

INTERMEDIATE TERM

FIGURE 7-B

1991-1995

ITEM	TOTAL	FAA	STATE	LOCAL
I. LANDING AREA				
A. STRENGTHEN RUNWAY 12,500 LBS. SINGLE WHEEL LOADING	175,000	159,355	7,822	7,833
B. RUNWAY MARKING	3,000	2,732	1,341	1,341
II. OPERATION AREA				
A. EXPAND AIRCRAFT PARKING APRONS 8,444 sq. yds.	76,800	69,934	3,433	3,433
B. CONSTRUCT T-HANGARS (6)	72,000	0	0	0
C. CONSTRUCT T-SHELTERS (10)	48,000	0	0	0
D. EXPAND TERMINAL BUILDING	*	0	0	0
E. SEAL COAT TAXIWAY	20,000	18,212	894	894
III. SUPPORT FACILITIES				
A. EXPAND FBO AREA AS NEEDED	*	0	0	0
B. DEVELOP COMMERCIAL AND INDUSTRIAL AREAS AS REQUIRED	*	0	0	0
IV. NAVAIDS				
A. NON DIRECTIONAL RADIO BEACON (NDB)	40,000	36,424	1,788	1,788
TOTALS	434,800	286,657	15,278	15,289

* UNDETERMINED

NOTE: ALL FIGURES ARE IN 1986 DOLLARS. DOES NOT INCLUDE ENGINEERING, CONTINGENCIES, OR ADMINISTRATION.

WORK PROGRAM

LONG TERM 1996-2005

ITEM	TOTAL	FAA	STATE	LOCAL
I. LANDING AREA				
A. OVERLAY TAXIWAY 4250' X 40'	75,000	68,295	3,352	3,352
II. OPERATION AREA				
A. CONSTRUCT T-HANGARS (3)	35,000	0	0	0
B. CONSTRUCT T-SHELTERS (6)	24,000	0	0	0
C. EXPAND TERMINAL BUILDING AS NEEDED	*	0	0	0
III. SUPPORT FACILITIES				
A. FBO's AS REQUIRED	*	0	0	0
B. DEVELOP COMMERCIAL & INDUSTRIAL AREAS	*	0	0	0
TOTAL	134,000	68,295	3,352	3,352

* UNDETERMINED

NOTE: ALL FIGURES ARE IN 1986 DOLLARS. DOES NOT INCLUDE ENGINEERING, CONTINGENCIES OR ADMINISTRATIVE.

AIRPORT OPERATIONS & MANAGEMENT

Airport management, airport service and daily operational control is a frequent problem for many small general aviation airports because of fiscal constraints.

An airport manager with staff is obviously the most desirable method for airport operations. This, however, is not always possible since many small general aviation airports do not produce enough revenue to support this type of airport management. In fact, many small airports do well to supply adequate income for daily operational and maintenance expenses. Outside sources of funding must be explored to provide funds for capital improvement programs. Possible funding sources are discussed later in this chapter.

All of the above does not mean to imply, however, that an airport be considered a liability to a community. On the contrary, an airport contributes significantly to the stature and economic growth of a community. It provides an important transportation and communication link to outside cities. Furthermore, it is an important facility for emergency purposes including medical, disaster, and an open communication line when other lines of transportation or communication are closed.

In the absence of airport management, and in order to insure that the airport is properly operated, maintained and that improvement programs are implemented, it is advisable for the owner through its appropriate governing body to create an Airport Committee or Board (usually 5 members) familiar with airport operation and aviation requirements. The committee should be

empowered with proper authority through formal action to prepare rules and regulations, and to establish fees, capital improvement programs and operational procedures for the airport. This must be done in the form of an Advisory Committee to the appropriate governing body. The committee must be given enough latitude to operate freely from interference and with enough freedom to inspire a meaningful program and a spirit of community service. Committee members should possess an interest in aviation and continued promotion of aviation. Honorary membership for this purpose alone should be avoided.

An Airport Committee can relieve a City Council or a County Board of Supervisors from the many trivial day-to-day annoyances and problems which are inherent in the daily airport operational procedures. Additionally, the committee should propose short and long term programs to insure orderly airport growth. All fiscal responsibility and decisions must, of course, remain with the governing body.

Committee members should meet regularly and all requests for airport services, businesses, fees, operational procedures, grievances and capital improvement programs should be referred to the committee for their recommendations to the appropriate governing body. Minutes of meetings should be recorded by the secretary.

In the absense of an airport staff, committee management of an airport provides the best controls in airport management and operation. It is also the least costly to the owner.

In order to provide daily service at the airport, the Airport Committee or the appropriate governing body can select a Fixed Base Operator (FBO) to provide airport services and manage the airport on a daily basis. Certain operating concessions can be given in lieu of a salary. In some cases a salary-consession arrangement is advisable. For federally funded projects, any monopoly of concessions must be avoided. An airport committee can be effective in this type of airport management.

If consistent with local policy, an airport fund should be established, and all money received from airport income or other aviation sources should be deposited in the airport fund. This may insure available funds when needed for airport requirements.

The airport is a gateway to the community which it serves. To function properly it should be attractively maintained and should offer efficient basic services.

A. Essential services to visiting aircraft should include fuel storage and adequate tiedown space. Minor flight line repair should be available and a public telephone should be installed.

B. Basic conveniences should include a waiting room, restroom, telephone, and perhaps a snack bar or snack dispensing machine.

C. Flight services should include air taxi (charter) aircraft and engine repair, and flight training to meet the local demand.

The functions should be performed by private enterprise. This brings up the alternative of leasing the entire facility to

private enterprise. This alternative in many cases provided the best possible alternative to airport management and operation as well as providing the greatest economic benefit to both the community and the local government. A greater latitude of economic development, both commercial and industrial, can be achieved through this alternative. In addition, this relieves the local government of the many day-to-day problems of airport operation that frequently receive little or no attention until a major problem develops.

FINANCING

Developing a sound financing program is an essential element in the programming of the Capital Improvement Phase of Airport Development. Planning the elements of airport design and capital programs, the feasibility of airport improvements and the implementation of a plan is useless unless adequate financing in the proper time frame, to accomplish the proposed development, can be attained. In addition, recommended programs which are so sophisticated to exceed the owner's ability to finance, are equally useless. Frequently, capital improvement programs which exceed the owner's financial ability are recommended. Often those things which are desirable, we sometimes cannot afford. It then becomes necessary to establish programs which are within the financial limitation of the owner. The improvement programs contained within this study are believed to be within the financial capability of the owner if properly planned and programmed.

SOURCE OF FUNDS

Funds for airport development are available from several sources. They may be acquired singularly or in combinations. There are three established sources of airport funding and frequently, federal agencies are created which, from time to time, can provide funding on a limited and temporary basis. Airport funds are available on an annual basis from the FEDERAL AVIATION ADMINISTRATION. Funding from this source is available to the states on a state allocation basis for construction of runway, taxiways, aircraft aprons, land acquisitions, alterations, fire fighting, crash rescue vehicles, air navigation equipment, fencing, etc. The sponsor or his airport consultant can determine which airport items are eligible for federal funding. Federal funding for public airports must be on the National Airport System Plan (NASP).

THE ARIZONA DEPT. OF TRANSPORTATION, AERONAUTICS DIVISION

Funds are available through this agency in combination with federal funding or without federal funding. Frequently, projects not eligible for federal funding may be funded by this agency. Furthermore, inclusion in the NASP is not a requirement. The current level of funding may be acquired from the Aeronautics Division of ADOT or through the airport consultant.

GENERAL FUND

In the absense of an airport fund, sponsors may appropriate public funds for airport expenditures from the general fund. Because of the competition with other government services, general fund money becomes difficult to attain.

COUNTY FUNDS

In some instances, county funds may be appropriated from the general fund or other sources for airports. This is an appropriate source of funds since the county benefits from the airports.

REVENUE OF GENERAL OBLIGATION BONDS

This type of funding is usually limited to large airports which produce considerable revenue and, therefore, is not recommended since it may dilute the City's borrowing margin for other projects.

PRIVATE FUNDS

Donations are frequently available and should be deposited to the aviation fund.

TAXES

A tax may be levied directly to finance an airport. This is consistent with Arizona law.

CHAPTER EIGHT

SUMMARY & CONCLUSIONS

SUMMARY AND CONCLUSIONS

The Cottonwood Airport has served the Verde Valley area since early in the 1940's. After the closure of the mining activities at Jerome and Clarkdale, the area was economically depressed, and the airport became a low priority item.

In recent years, Cottonwood and the surrounding communities were "rediscovered" as a haven for a retirement life. The good climate, surrounding mountains and small town atmosphere were appealing. As a result, the surrounding communities have undergone an unprecedented growth and continues to grow as a retirement area.

In a brief span of years, the population has more than tripled exceeding 21,000. It is difficult to estimate the limit of the present growth pattern. One fact, however, is certain - the commercial, industrial and services have not kept pace with population growth. As a result, commercial and industrial development is taking place. Extensive airport improvement becomes a priority item. Aircraft activity at the airport is difficult to forecast simply because, the greater portion of the population growth, being retirees, are not airplane owners. However, that segment of industrial, commercial and service industries are high potential users of aircraft and the forecast numbers used in this report, using established forecast methods, could be low. Industrial growth is already in progress on the airport. In any event considerable work should be accomplished

during the short term period (1986-1990) in order to bring the airport up to its fullest utilization to accommodate the already apparent growth pattern.

Aircraft parking areas, both local and transient could become critical. Access roads, terminal or operational areas are needed.

The short term capital program represents the most pressing needs. It is flexible and the work items should be undertaken when the requirement becomes apparent. A close study of the short term capital program is recommended in order to establish priorities early in the capital program and commensuerate with financial constraints.

The existing airport boundary cannot be extended because of terrain limitations, and all available land use should be planned and utilized prudently as the present growth trend continues.

BIBLIOGRAPHY

BIBLIOGRAPHY

F.A.A. Advisory Circular 150/5060 3A, Airport Capacity Criteria in Long Range Planning

F.A.A. Advisory Circular 150/5300 4B, Utility Airports

F.A.A. Advisory Circular 150/5050-6, Airport Land Use Compatibility Planning

F.A.A. Advisory Circular 150/5070-6A, Airport Master Plans

F.A.A. Census of Civil Aircraft, 1984

F.A.A. Statistical Handbook of Aviation, 1983

U.S. Department of Transportation, F.A.A., National Airport System Plan, 1978-1987

Trico International, Inc. Cottonwood Airport Master Plan

Arizona State Airport System Plan, 1978 - Technical Supplement 1980

Arizona Office of Economic Planning and Development, Arizona Community Profile

Valley National Bank, Arizona Statistical Review, 1983

State of Wisconsin, Division of Aeronautics, Land Use Planning Around Airports, 1976

Northern Arizona Association of Governments Census of Population, 1984

Robert Huronjeff/Francis McKelvey, Planning and Design of Airports, 1983