Mid Valley Airport

Weslaco, Texas

Airport Master Plan

MID VALLEY AIRPORT
Weslaco, Texas

AIRPORT MASTER PLAN

FINAL TECHNICAL REPORT

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Weslaco, Texas

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Weslaco MidValley Airport

Chapter One
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INVENTORY

INTRODUCTION

The initial step in preparation of the Airport Master Plan for Weslaco Mid Valley Airport (T65) is the collection and analysis of pertinent information. This includes an inventory of existing conditions at Mid Valley Airport. Other essential data has been gathered that place the city of Weslaco and the Mid Valley Airport, not only geographically, but also within the context of local and regional needs and demands. The inventory will provide a framework for all subsequent evaluations and proposed actions. This compilation of material includes the following:

- Airport setting, including locale, history, jurisdiction, climate, other airports, and previous studies.

- Physical inventories and descriptions of facilities and services now provided by the airport.

- An overview of existing regional plans and studies to determine their potential influence on the airport master plan.

- Background information pertaining to the city of Weslaco, the Texas lower Rio Grande Valley (the "Valley") area, Hidalgo County, which represents the McAllen-Edinburg-Mission Metropolitan Statistical Area (MSA), and Cameron County, which represents the Brownsville-Harlingen-San Benito MSA. Analysis of these areas also includes descriptions of recent development which have taken place in the airport environs and plans for future development which may impact the airport.

- Population and socioeconomic information which provide an indication of the market and possible future development in the Metropolitan Service Area(s) (MSA).

This information has been obtained through on-site investigations of the airport and interviews with airport management, airport tenants, representatives of various government agencies, and local and regional economic agencies. Information was also made available through studies concerning the airport, including: the **Weslaco Mid Valley Airport Master Plan** (December, 1994), **City of Weslaco Mid Valley Airport Statistical Data** provided by the city, and the **1993 Texas Aeronautical Facilities Plan** (**TAFP**). City planning and zoning documents were utilized, as well as internet web pages:
www.airnav.com,
www.faa.com,
www.weslaco.com, and
www.gcrl.com.

AIRPORT SETTING

The following discussion describes the physical location and historical background of the Weslaco Mid Valley Airport. It also places it within the contexts of the national and state airspace systems.

LOCATION

As shown on **Exhibit 1A, Location Map**, Weslaco, Texas is located in the fertile delta of the lower Rio Grande River of south Texas. This subtropical river delta area, which is commonly referred to as "the Valley", is the heart of the Texas vegetable, fruit, and especially, citrus industry. A mere fifty miles from the Gulf of Mexico and just north of the border with Mexico, Weslaco exists as a microcosm of the regional Valley economy supported by tourism and commerce alike. Weslaco is situated between the two major commercial gateways to Mexico: McAllen and Brownsville.

Weslaco is served by US Highway 83, a multi-lane divided highway that swings to the north of downtown Weslaco, with old Highway 83 accessing the business district. Highway 83 parallels the Valley, connecting the major cities and growth areas of the lower Rio Grande Valley from Brownsville to McAllen. Federal Highway 281 also runs east-west between Brownsville and McAllen before turning north in McAllen toward San Antonio. Highway 281 is located six miles south of Weslaco and more closely aligned with the Rio Grande River. U.S. Highway 77 is another major north-south access highway from Mexico to northern markets in Texas and beyond. This highway routes traffic north from Brownsville toward Corpus Christi, intercepting Interstate 37 to San Antonio.

Located south of Weslaco on Highway 281 is Progreso, Texas. The new Progreso International bridge has been constructed over the Rio Grande to the Mexican town of Nuevo Progreso. Perhaps more important is the link of this crossing to the *autopista*, a 40-mile superhighway constructed between the cities of Monterrey and Reynosa,

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Exhibit 1A
LOCATION MAP

Mexico, for the conveyance of goods. In anticipation of the bridge opening and encouraged by the flow of trade spurred by the North American Free Trade Agreement (NAFTA), the City of Weslaco is developing a Foreign Trade Sub-Zone near the bridge.

The Weslaco Mid Valley Airport is centered between two larger municipalities in the middle valley corridor, McAllen and Harlingen. Both cities are served by commercial air carriers, as is Brownsville, forty miles southeast.

The Mid Valley Airport consists of approximately 206 acres and is located on the northeast side of Weslaco. Highway 83 provides direct access to the airport which is only a few miles from downtown.

To access the east side and main terminal area vehicular traffic turns east from Airport Drive onto Mile Eight North Road. Mile Three and a Half West Road intersects with Mile Eight and routes airport traffic north for a short distance until it splits, with airport traffic taking Stephens Boulevard, paralleling the full length of the field. Eastbound Highway 83 traffic can take the exit ramp that precedes Airport Drive and proceed onto Mile Eight Road.

With industrial parks along the east side and airport facilities on the west, northbound Stephens Avenue eventually tees into Mile Nine West Road. Mile Nine West Road runs east-west across the north side of the airport. A service road that extends from Airport Drive to Mile Nine West allows access to the northwest corner of airport property.

As is shown on **Exhibit 1B, Airside Facilities,** Weslaco Mid Valley Airport has a single runway, Runway 13-31. The airport elevation is 70 feet above mean sea level (MSL). Weslaco Mid Valley Airport had an estimated 33,580 aircraft operations for 1999 and currently has 106 total based aircraft. Airport facilities are discussed in greater detail below.

AIRPORT JURISDICTION

Weslaco Mid Valley Airport is maintained under city ownership and management. The airport layout and property boundary is depicted on **Exhibit 1B, Airside Facilities**. Established by ordinance the Airport Advisory Board has seven members, appointed by the City Commission. The Board has the responsibility of advising the Weslaco City Commission on airport matters. The airport manager and airport staff administer, manage, and carry out daily operations.

HISTORICAL AIRPORT DEVELOPMENT

The Weslaco Mid Valley Airport was initially constructed in 1945 by the City of Weslaco to meet the needs of the growing Lower Rio Grande Valley regional area. The first airplane touched down on June 28, 1945. By January of 1946, the first commercial service had begun. During this first year two separate airlines vied for the transportation service: Braniff Airlines

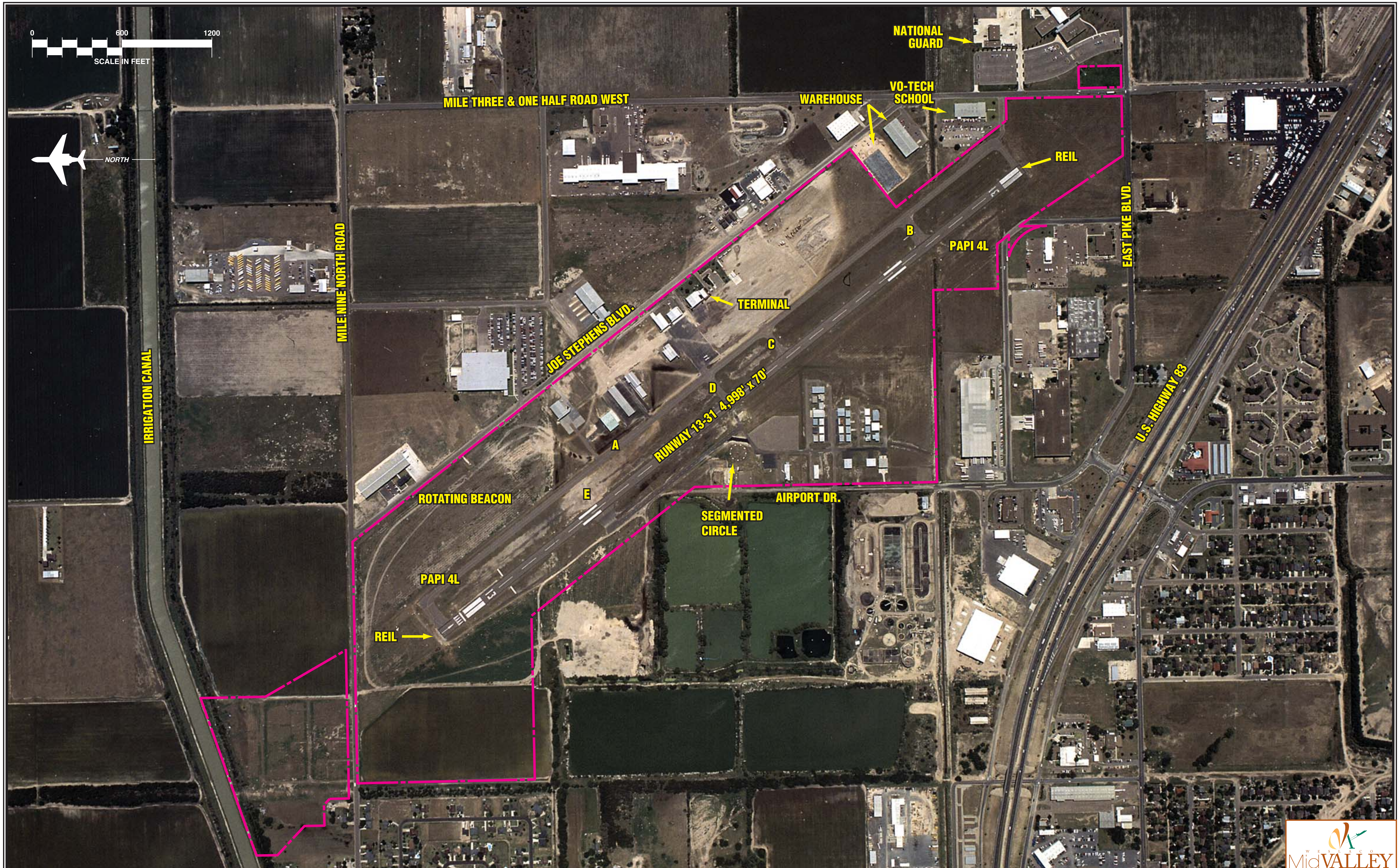

Exhibit 1B
AIRSIDE FACILITIES

flying DC-3s and Fleetwood Airways flying the Norsman. In February, 1946 the city passed a bond issue to provide revenue to pave the airstrip. Construction of the runway was completed by April 25, 1946 at a cost of $36,500. It was also in April that Rio Grande Valley tomatoes became the first agricultural product to be shipped by air from Mid Valley Airport. During this period all landside facilities were constructed on the west side of the airport.

Shifting demographics in the 1950s contributed to the exodus of commercial service from Weslaco Mid Valley Airport to the cities of Harlingen and McAllen. Dwindling needs transformed the once promising regional commercial aviation airport to a base for crop dusters and small general aviation.

As the Rio Grande Valley has grown and prospered, so has the city of Weslaco. Renewed interest in the airport and its business and economic potential compelled the city to hire a full time, professional airport manager in 1994. The Mid Valley Airport was voted the "Most Improved Airport" in the state of Texas the following year. Much effort and improvement have gone into the airport. **Table 1A** provides an inventory of historical improvements and grants received from the State of Texas and the Federal Aviation Administration (FAA).

CLIMATE

Knowledge of climate and typical regional weather conditions greatly enhances a pilot's flying capabilities. Likewise, the ability to prepare for these conditions enhances the use of an airport. High surface temperatures and high humidity, as is found in Texas, increases runway length requirements. Runway development depends on typical winds. Cloud cover percentages and frequency of other climatic conditions also determine the need for navigational aids and lighting. Brownsville, Texas climatology reports are used in this portion of the report on climate, as Brownsville is the closest National Oceanic and Atmospheric Administration (NOAA) weather recording station.

Weslaco's location near the tip of Texas and sixty miles from the Gulf of Mexico also means that it is greatly affected by moisture laden air. Humidity averages 89 percent in the morning hours and 61 percent in the evenings for a daily average of 75 percent. Total annual precipitation averages 26.61 inches. Of this only a trace amount falls in the form of snow. This is due to the semitropical climate in which normal daily mean temperature is 73.8 degrees Fahrenheit. The mean maximum daily temperature is 82.9 degrees Fahrenheit. A mean high temperature of 96 degrees is consistent with the approved Airport Layout Plan.

The effects of converging frontal activity create extremes in weather. These air masses are typically formed by moist Gulf of Mexico air, westerly winds caused by the earth's rotation, and northern cold fronts.

TABLE 1A Historical Improvements and Grants Received Weslaco Mid Valley Airport				
Year	**Project Description**	**Local Match**	**State Grant**	**FAA Grant**
1966	Runway (RW) Lighting	$0	$724	$0
1968	Major runway construction	$0	$11,859	$0
1980	Construct aircraft parking apron Install rotating beacon and NDB.	$0	$56,250	$0
1984	Master Plan	$0	$0	$24,390
1985	Overlay and mark RW Construct, mark, and light extension of RW Rehab existing MIRL and MITL Construct and mark parallel and connecting Taxiways (TW) Construct eastside apron Reconstruct portion of westside apron Install segmented circle and lighted wind cone	$0	$0	$710,000
1986	Loan: Construct multiple unit T-hangar	$0	$50,000	$0
1986	Acquire land for approaches	$0	$0	$193,810
1992	Acquire land for RW13 RPZ (18.94 ac.) Acquire land for relocation of Haggar Ave. (1 ac.) Acquire land for road relocation in north RPZ (2 ac.)	$64,136	$64,136	$1,154,454
1994	Extend RW (600' x 70'), TW, and & MIRLs Overlay RW Reconstruct west side hangar access TW (320' x 35') Construct hangar access TW west side (1,325' x 35'). Relocate fencing (1,000 lft). Relocate Haggar Ave. & Mile 9 Road (north RPZ). Improve drainage for TW, RW31.	$39,518	$39,518	$711,335
Total Costs		$103,654	$222,487	$2,793,989
Source: Texas Airport System Plan; TxDOT records				

High surface temperatures create areas of vertical air movements, causing cumulus cloud building and afternoon thundershowers. Texas summer evenings are often punctuated by the thunder and high energy winds of thunderstorms driven eastward by westerly winds aloft and fueled by the moist Gulf air.

Wind patterns for the south Texas area are typically from the south/southeast during the spring, summer, and fall months and from the north/northwest in the winter months. Average wind speeds for this area are clocked at 11.4 miles per hour (mph). Wind data from the Brownsville reporting station confirms that, over a 16 year reporting period, most high wind activity originated from the south and reached speeds of 48 mph. High winds during some months may be assumed to be directly associated with periods of seasonal frontal activity, such as easterly winds in July that are probably a result of tropical storms or high winds in December out of the north.

AREA AIRPORTS

Table 1B indicates the public and private airports providing various degrees of service within the operating vicinity of the Weslaco Mid Valley Airport. **Exhibit 1C, Area Airspace** depicts this airspace graphically. Information is given below on those public airfields whose operations parallel those at Mid Valley Airport. The statistics for Mid Valley Airport are included for ease of comparison. The following information is included in the table below: associated city, distance from Weslaco Mid Valley Airport, longest runway, annual operations and the number of based aircraft.

TABLE 1B
Area Airports

Airport/City	Distance nm (from T65)	Longest Runway	Annual Operations	Based Aircraft
Mid Valley Airport Valley/ Weslaco	**0**	**4,998'**	**33,580**	**106**
Valley International/Harlingen	17	8,299'	58,400	42
McAllen Miller International/McAllen	14	7,120'	59,840	83
Brownsville - South Padre Island International/ Brownsville	33	7,400'	36,135	62
Edinburg International/ Edinburg	17	5,000'	600	3
Port Isabel Cameron County/ Port Isabel	34	8,000'	8,030	21

Brownsville Sectional Chart, 65^{th} Edition, June 2000

Harlingen /Valley International Airport (HRL) is a full service Part 135-certified airport. Valley International has an air traffic control tower and precision radar. Among services offered, in addition to commercial transportation service, are automatic terminal information service (ATIS), aircraft rental, air cargo, Jet A and 100LL fuel sales, aircraft maintenance, air charter, and aircraft pilot training. The airport approach and departure control operations are performed from Valley International for much of the mid Lower Valley area. Approximately one third of all aircraft operations at Harlingen are military flights. Statistics for 1999 indicate that of 42

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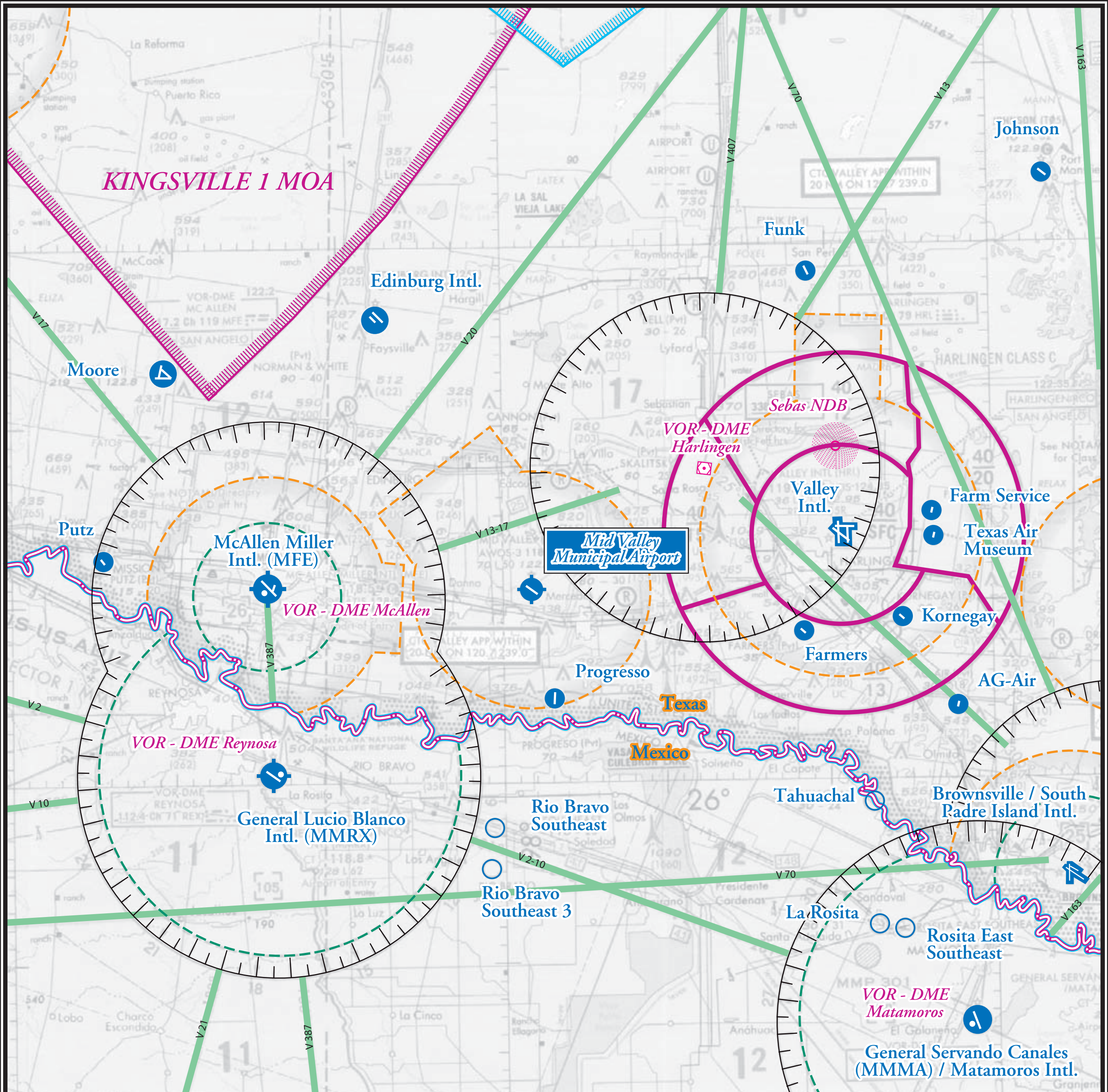

LEGEND

- Airport with other than hard-surfaced runways
- Airports with hard-surfaced runways 1,500 ft. to 8,069 ft.
- Airports with hard-surfaced runways greater than 8,069 ft. or some multiple runways less than 8,069 ft.
- VOR/DME
- Non-Directional Radiobeacon (NDB)
- Compass Rose
- Victor Airways
- Military Operations Area (MOA)
- Prohibited, Restricted, Warning, and Alert Areas
- Class C Airspace
- Class B Airspace
- Class D Airspace
- Class E Airspace with floor 700' above surface

NORTH

NOT TO SCALE

Source: Brownsville Sectional Aeronautical Chart
National Oceanic and Atmospheric Administration (NOAA)
Effective Date: November 4, 1999

Exhibit 1C
AREA AIRSPACE

based aircraft, 26 were single engine, 15 were multi-engine, and 1 rotorcraft type aircraft.

McAllen Miller International (MFE)/ McAllen is a full service, Part 135-certified airport. McAllen has an air traffic control tower and precision radar. Services offered include Jet A and 100LL fuel sales, air ambulance, avionics service, charter flights, flight instruction, aircraft rental, and aircraft sales. Statistics for 1999 indicate that there were 83 general aviation based aircraft.

Brownsville - South Padre Island International (BRO)/ Brownsville is a full service FAR Part 135-certified airport with an air traffic control tower. Services offered include Jet A and 100LL fuel sales, air ambulance, avionics service, charter flights, flight instruction, aircraft rental, and aircraft sales. Statistics for 1999 indicate that there were 62 based aircraft.

Edinburg International (25R)/ Edinburg is a general aviation airport located north of Weslaco. The airport has a 5,000 foot runway with nonprecision instrument airport markings. The airport services general aviation with self service Jet A and 100 LL fuel, tie downs, and hangar facilities. In 1999 there were 3 based aircraft.

Port Isabel Cameron County (PIL)/ Port Isabel is a general aviation airport that offers 100LL and JET-A fuel, hangars and tiedowns . Other services include major airframe and powerplant service, air cargo, charter flights, flight instruction, skydiving, aircraft rental, and aircraft sales. In 1999 there were 21 based aircraft. The airport is also frequently used for parachute jumping.

OTHER STUDIES

MID VALLEY AIRPORT MASTER PLAN

The most recently updated airport master plan for Weslaco Mid Valley Airport (December, 1984) proposed several improvements at the airport to accommodate increased traffic. The three phased development plan, as depicted in the Airport Layout Plan (ALP), recommended the following:

- Purchase of 76 acres of adjacent land;
- Expansion of the runway from 3,000 feet to 4,400 feet;
- Construction of a parallel taxiway;
- Construction and expansion of roads and vehicular parking;
- Construction and expansion of apron parking;
- Construction and expansion of T-hangars and typical box hangar facilities;
- Construction and expansion of tie-downs;
- Construction of airport buildings;
- Installation of lighting and navaids, especially medium intensity runway lighting MIRL), runway end identifier lighting (REIL), and visual approach slope indicator lighting (VASI);
- Construction of a fuel storage area, equipped with fueling facilities; and
- Restriction of non aviation land use on airport property.

NATIONAL PLAN OF INTEGRATED AIRPORT SYSTEMS (NPIAS)

Other programs for aviation planning are conducted at the federal and state levels.

Weslaco Mid Valley Airport is classified in the FAA's **National Plan of Integrated Airport Systems (NPIAS)** as a General Utility (GU) airport, able to accommodate virtually all general aviation aircraft. According to the NPIAS, of the 3,344 existing NPIAS airports across the country, 2,472 are classified as general aviation. General aviation accounts for the bulk of civil aircraft operations. It includes everything from crop dusting to passenger and cargo charter in the largest aircraft.

General aviation airports, by definition, are at least 20 miles from the nearest NPIAS airport and have typically more than 10 based aircraft. General aviation airports handle 37.3 percent of all active general aviation aircraft.

TEXAS AIRPORT SYSTEMS PLAN (TASP)

The **Texas Airport Systems Plan (TASP)** is developed by the Texas Department of Transportation (TXDOT), Aviation Division to address statewide airport facilities needs. TXDOT administers federal funds within this systemized planning process using the **Texas Airport Facilities Plan (TAFP)**. Weslaco Mid Valley Airport Valley Airport is designated by the TAFP as a General Utility airport coinciding with the NPIAS evaluation and designation.

The TAFP further categorizes Mid Valley Airport in its system plan as a general utility airport. Current and ultimate design standards meet a General Utility II (GU II) category. This category serves small to large aircraft in approach categories A and B. The airport may have precision approach capability. According to the **TAFP**, the minimum design standards for a GU II airport include a 4,800 foot by 75 foot runway, 30,000 pound single gear wheel (SWL) pavement strength, medium intensity runway lighting, full parallel taxiway, precision approach capability, and terminal services.

AIRPORT FACILITIES

This section describes the existing facilities at the Weslaco Mid Valley Airport. Facilities are presented as follows:

- Airside Facilities
- Landside Facilities

AIRSIDE FACILITIES

Airside facilities typify those needed for the safe and efficient movement of aircraft including: **runways, taxiways, airport lighting, and navigational aids**. In most cases, airside facilities dictate the types and levels of aviation activity capable of operating at an airport. An aerial view of the airside facilities at the airport is shown on **Exhibit 1B, Airside Facilities**. **Table 1C** summarizes key airside facility data for the airport, especially regarding runway and navigational information. A discussion on other key airside facilities is provided below.

TABLE 1C
Airside Facilities Data
Mid Valley Airport

	Runway 13-31
Runway Length (feet)	4,998
Runway Width (feet)	70
Runway Surface Material	Asphalt
Surface Treatment	None
Runway Load Bearing Strength (lbs.)	
Single Wheel Loading (SWL)	12,500
Runway Markings	Nonprecision Instrument
Runway Lighting	MIRL
Taxiway Lighting	MITL
Approach Lighting	REIL,PAPI-4L ODALS
Visual Aids	Rotating Beacon Lighted Windcone Segmented Circle
Navigational Aids	GPS 13 VOR/DME 13

PAPI-Precision Approach Path Indicator
VASI-Visual Approach Slope Indicator
REIL-Runway End Identification Lights
MIRL-Medium Intensity Runway Lighting
MITL- Medium Intensity Taxiway Lighting
ODALS-Omnidirectional Approach Lighting System
VOR/DME-Very High Frequency Omnidirectional Range/Distance Measuring Equipment
GPS-Global Positioning System
AWOS-3-Automated Surface Observation System

Sources: Airport Facility Directory; South Central U.S. (April 20, 2000); Texas System Plan Airport Development Worksheet, Airport Description (July 3, 2000); Conversations with Airport personnel.

Runways

The airport is served by Runway 13-31, oriented northwest to southeast. The runway is 4,998 feet long and 70 feet wide. The asphalt runway is strength-rated at 12,500 pounds for single wheel type landing gear, or single wheel loading (SWL).

Taxiways

Weslaco Mid Valley Airport has a full parallel taxiway that accesses Runway 13-31, as depicted on **Exhibit 1B Airside Facilities**. The parallel taxiway, Taxiway A, runs the full length of the runway on the east side of the airport with run-up areas on both ends. This taxiway serves the terminal and hangar facilities constructed on the east side.

There are three other existing connecting taxiways located perpendicular to the runway, and accessing Taxiway A. Two are centrally sited on either side of the midway point of the runway. The third and widest connector is situated further to the south within the last thousand feet of Runway 13. The added width allows safe passage of aircraft with large wingspans.

Taxiway D serves the facilities located on the west side of the airport. This taxiway does not extend the full length of the runway. At the time of construction of this taxiway the west side contained the only active landside facilities that served the airport. When extension of the runway to the north occurred this taxiway was not extended. This circumstance requires that aircraft must partially backtaxi down the runway for takeoff in either direction. Currently a connector taxiway is being built to allow aircraft direct through access to either east or west side facilities. Taxiway lengths and widths are as follows:

Taxiway A: 4,998 x 50 feet;
Taxiway D: 2,600 x 50 feet (existing);
1,500' x 50' (proposed).

Connector Taxiways (from south):
Taxiway B: 200' x 100'
Taxiway C: 200' x 50'
Taxiway D: 200' x 50'
Taxiway E: 200' x 50'

Taxiway surfaces at Mid Valley Airport are predominantly in good condition. The ongoing improvements to the airport include construction of the new Taxiway E and reconstruction of Taxiway D. Existing Taxiway D, serving the west side of the airport, is in poor to fair condition. When reconstructed Taxiway D will extend from the new facilities on the east side to the west side facilities, crossing the runway. The current extension that partially parallels the runway will be removed.

Pavement Markings

The nonprecision markings on Runway 13-31 identify the runway, runway centerline, touchdown point, and aircraft holding positions. The 172 foot displaced threshold of Runway 13 is denoted by the solid white bar, preceded by centerline arrows and arrowheads along the line of displacement. The displacement is required to achieve the approach surface requirements over the county road at the north end. Taxiway and apron taxilane centerline markings are provided to assist way finding and aircraft maneuvering on the ground.

Airfield Lighting

Airport lighting systems extend the capability of airport use into periods of darkness and/or poor visibility. Several lighting systems are installed at the airport for this purpose. These lighting systems, categorized by function, are described below.

Identification Lighting: The location of the airport at night is universally indicated by the rotating beacon. A rotating beacon displays flashes of alternating white and green light to identify a public airport. The rotating beacon, illustrated on **Exhibit 1B**, is located north of the terminal, just off Joe Stephens Avenue.

Pavement Edge Lighting: Pavement edge lighting utilizes light fixtures placed near the pavement edge to define the lateral limits of the runway or taxiway. Medium intensity runway lights (MIRL) are currently being installed on Runway 13-31. The taxiways are served by medium intensity taxiway lights (MITL).

Runway End Identification Lighting: Runway end identifier lights (REILs) provide rapid and positive identification of the approach end of a runway. REILs are typically used on runways without more sophisticated approach lighting systems. The REIL systems consist of two synchronized flashing lights, located laterally on each side of the runway facing the approach aircraft. REILs are installed on Runway 13 and are within the current construction contract for installation on Runway 31.

Approach Lighting: Approach lighting is installed for the purpose of giving landing aircraft descent guidance to the end of the runway. Approach lighting can aid in both visual and instrument landings. At Mid Valley Airport the steady, pulsating visual approach slope indicator (PVASI) is located to the left of the approach end of both Runways 13 and 31. The PVASI indicates vertical alignment to aircraft on final approach.

The current construction contract calls for installation of Precision Approach Path Indicator lights, or PAPIs, within the master planning time frame. The PAPIs will have four lights to indicate vertical path. White over red lights indicate a glide or descent path that is on the correct path. White over white indicates too high of a path, while red over red indicates too low of a descent path. These are to be located on the left sides of both runways 13 and 31 and are noted on the **Airside Facilities Exhibit**.

Runway 13 is served by an Omnidirectional Approach Lighting System (ODALS). ODALS consist of seven omnidirectional flashing lights, five of which are centered on the runway centerline.

LANDSIDE FACILITIES

Landside facilities are those providing support to the operation of aircraft and are essential to the aircraft and pilot/passenger handling functions. The existing landside facilities: a general aviation terminal, parking apron areas, and hangar facilities are indicated in **Table 1D** and are outlined in the following section. These are depicted in **Exhibit 1D, Landside Facilities**.

TABLE 1D
Landside Facilities

Facility Type	Quantity	Size	Condition
T-Hangars (eastside) Private Hangars (eastside)	2units- north to south 6 units - north to south	280' x 70' 50' x 100' 150' x 75' 100' x 70'(Wilson) 100' x 130' 90' x 100' 120' x 80' 120' x 80'	Excellent Excellent Excellent Excellent Excellent Excellent Excellent Excellent
T-Hangars (westside) Private Hangars (westside)	none 31 units	NA approximately 50' x 50'	NA Good to Fair
Fuel Storage	Tank 100 LL Tank Jet A	12,000 gal. 12,000 gal.	Good Good
General Aviation Terminal	Main terminal	3,200 square feet	Excellent
Vehicular Parking - terminal	22-25 stalls	125' x 60'	Good
Aircraft Tie-down/Terminal Ramp Area	Main ramp	550' x 350'	Good

Terminal Facilities

The general aviation facility is located on the east side of the airport. The terminal contains the airport offices and a pilot lounge with a pilot shop. It has an automated weather observation system (AWOS-3), enroute flight service information, and WSI pilot weather briefing available. Conference facilities accommodate seating for ten. Audio/ visual equipment is also available upon request and advance notice. All facilities are in good to very good condition. Current construction calls for building of a second floor above the main terminal to house airport offices.

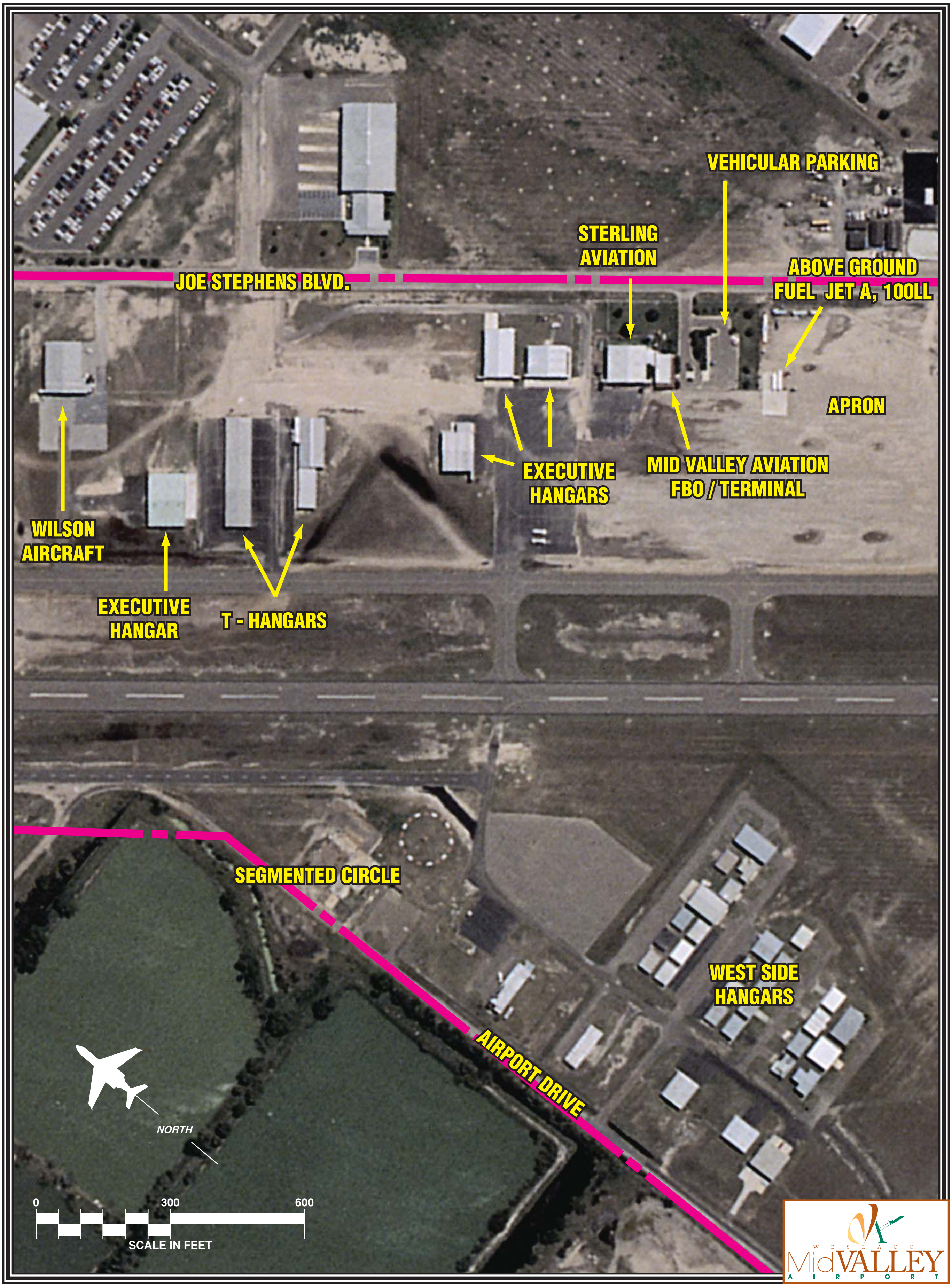

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Exhibit 1D
LANDSIDE FACILITIES

Aircraft Apron Areas

The main apron, under construction on the east side of the airport, is approximately 21,400 square yards in area, which will provide approximately 27 aircraft tie-down positions. The eastside apron area is located directly in front of the new terminal. Future additional apron area and a helipad are planned directly south of the main apron. Approximately 4,900 square yards are proposed for this area.

The west side apron is approximately 6,700 square yards in area. This apron provides for approximately 12 aircraft tie-down spaces.

Aircraft Hangar Facilities

Hangar facilities at Weslaco Mid Valley Airport are located on both the east and west sides. These consist of T-hangars as well as executive hangars. The main sets of T-hangars have been newly constructed on the east side. Ground is being prepared at this time to accommodate additional new facilities. Taxi areas and markings are in good condition where available.

The box hangars on the west side are in fair condition. Some are older metal sheds that date from the 1950's. There are individual storage units, as well as facilities for storage of multiple aircraft. Taxi areas and markings are in fair condition where available.

Fixed Base Operators

Mid Valley Aviation
Weslaco Mid Valley Aviation is the fixed base operator (FBO) at Mid Valley Airport. Mid Valley Airport provides on base 24 hour fuel service. Available fuel includes 100 Low Lead (LL) Avgas and Jet A fuel.

Sterling Air Service
Sterling Air Service is a Part 135 air carrier conducting passenger, cargo and air ambulance operations. They use two Beechcraft Queen Air and a Cessna 206.

B & H Aviation
B & H Aviation is located on the west side of the airfield. They provide light maintenance service.

Wilson Aircraft
Wilson Aircraft is a major airframe and engine maintenance facility, rated for repair of single and multi-engine land aircraft. Located on the east side of the airport in the north most hangar, Wilson has provided service at Weslaco Mid Valley Airport for several years. Wilson specializes in Beechcraft Queen Air maintenance.

Garrick Warbirds
Garrick Warbirds operates a restoration and sales operation of Russian war planes, the Yakovlev YAK 3. Garrick is located on the west side of the airfield.

AIRPORT SUPPORT FACILITIES

Fuel Facilities

The above ground fuel storage tanks are located just south of the general aviation terminal. Mid Valley Aviation has two storage tanks that store 12,000 gallons each of Jet A fuel and 100LL Avgas. Also provided on field is a 2,200 gallon Jet A fuel service truck.

UTILITIES

A critical element of land and airport facility development capability is the availability and quality of utility service. In this case, Weslaco Mid Valley Airport is supplied electrical service by both Magic Valley Electric (west side) and Central Power and Light (east side). The airport is supplied water service via the municipal system. The east side is located on the city loop system and can handle expanded service. Sewer service is provided on the east side of the airport and connects to City sanitary sewer service. Telephone service is provided by GTE.

AREA AIRSPACE, NAVIGATIONAL AIDS, AND AIR TRAFFIC CONTROL

The FAA Act of 1958 established the FAA as the responsible agency for the control and use of navigable airspace within the United States. The FAA has established the National Airspace System (NAS) to protect persons and property on the ground and to establish a safe and efficient airspace environment for civil, commercial, and military aviation. The NAS is defined as the common network of U.S. airspace, including air navigation facilities; airports and landing areas; aeronautical charts; associated rules, regulations and procedures; technical information; personnel and material. System components shared jointly with the military are also included.

AIRSPACE STRUCTURE

To ensure a safe and efficient airspace environment for all aspects of aviation, the FAA has established an airspace structure that regulates and establishes procedures for aircraft using the National Airspace System. The U.S. airspace structure provides for categories of airspace and identifies them as Classes A, B, C, D, E, and G.

Class A airspace is high level controlled airspace and includes all airspace from 18,000 feet MSL to Flight Level 600 (approximately 60,000 feet MSL). Class B airspace is controlled airspace surrounding high activity commercial service airports (i.e. DFW International Airport). Class C airspace is controlled airspace surrounding lower activity commercial service and some military airports, such as Harlingen Valley International. Class D airspace is controlled airspace surrounding low activity commercial service and general aviation airports with an airport traffic control tower (ATCT).

All aircraft operating within Class A, B, C, and D airspace must be in constant contact with the air traffic control facility responsible for the particular airspace. Class E airspace is controlled airspace that encompasses all instrument approach procedures and low altitude federal airways. Only aircraft conducting instrument flights are required to be in contact with air traffic control when operating in Class E airspace. Class G airspace is uncontrolled airspace. Airspace in the vicinity of Weslaco Mid Valley Airport is depicted on **Exhibit 1C, Area Airspace,** as taken from the Brownsville Sectional Air Chart, May 2000.

As can be seen from the exhibit, Weslaco Mid Valley Airport is located within Class E airspace. The Class E airspace surrounding Weslaco Mid Valley Airport encompasses airspace 700 feet above ground level (AGL) to 1,200 feet AGL. The Class E airspace extends outward from the center of the airport to a radius of seven nautical miles. The Class E airspace has been extended outside the seven nautical mile radius to include the instrument approaches to Runway 13.

At the southern edge of the seven mile radius of the Mid Valley Airport control area is the US Air Defense Identification Zone (ADIZ), a continuous zone for control of United States boundaries. To the east is the edge of the Harlingen Valley International Airport Class C Airspace.

Aircraft enroute or departing Weslaco Mid Valley Airport may use VOR navigational facilities. The VOR or VORTAC facilities, as depicted on **Exhibit 1C, Area Airspace** are a system of Federal Airways, also referred to as Victor Airways. Victor Airways have been established to allow assured navigational capability along corridors of airspace eight miles wide and extending upward from 1,200 feet AGL to 18,000 feet MSL between VOR facilities. For further discussion of Victor Airways refer to enroute navigational aids below.

TERMINAL AREA AND ENROUTE NAVIGATIONAL AIDS

Navigational aids are electronic devices that transmit radio frequencies which are received by pilots of properly equipped aircraft. These transmissions are translated into point-to-point guidance and position information. The types of navigational aids available for aircraft flying between airports include, the very high frequency omnidirectional range (VOR) facility which can also be equipped with Distance Measuring Equipment (DME); nondirectional radio beacon (NDB); and the global positioning system (GPS).

The VOR, in general, provides azimuth readings to pilots of properly equipped aircraft by transmitting a radio signal at every degree to provide 360 individual navigational courses. Frequently, distance measuring equipment (DME) is combined with a VOR facility to provide distance as well as direction information to the pilot. In addition, military tactical air navigation aids (TACANs) and civil VORs are commonly combined to form a VORTAC. A VORTAC provides distance and direction information to civil and military pilots. VORs can be positively identified by a series of Morse code transmissions that spell the three letter identifier.

Mid Valley Airport is situated between two VOR facilities. The McAllen VOR-DME just west of Weslaco Mid Valley Airport is identified by the three letter identifier, MFE. Harlingen VOR is located to the east and identified by its three letter identifier HRL. The Victor Airway providing navigation between McAllen VOR and Harlingen VOR is V 13.

The following VOR facilities are located in the region and are utilized by pilots flying to or from Weslaco Mid Valley Airport:

MCALLEN (MFE) VOR/DME is located fifteen nautical miles west of Weslaco Mid Valley Airport following radial 09E. The signal may be intercepted on a radio frequency of 117.20 Megaherz.

HARLINGEN (HRL) VOR/DME is located 11.8 nautical miles northeast of the Weslaco Mid Valley Airport. Aircraft fly inbound on the 226 degree radial. The signal is intercepted on a frequency of 113.20 Megaherz.

REYNOSA (REX) VOR/DME is located 17.0 nautical miles northeast of the Weslaco Mid Valley Airport in Reynosa, Mexico. Aircraft fly inbound to Weslaco on the 046 degree radial. The signal is intercepted on a frequency of 112.40 Megaherz.

MATAMOROS (MAM) VOR/DME is located 34.4 nautical miles southeast of the Weslaco Mid Valley Airport in Matamoros, Mexico. Aircraft fly inbound to Weslaco on the 308 degree radial. The signal is intercepted on a frequency of 114.30 Megaherz.

BROWNSVILLE (BRO) VORTAC is located 9.0 nautical miles southeast of the Weslaco Mid Valley Airport in Reynosa, Mexico. Aircraft fly inbound to Weslaco on the 286 degree radial. The signal is intercepted on a frequency of 116.30 Megaherz.

Exhibit 1C, the regional airspace system map, depicts the location of these VORs in relation to Mid Valley Airport.

The NDB transmits nondirectional radio signals whereby the pilots of properly equipped aircraft can determine the bearing to or from the NDB facility and then “home” or track to or from the station. The Weslaco Mid Valley Airport is not served by a NDB.

GPS is an additional navigational aid for pilots enroute to the airport, as well as an instrument approach aid. GPS was initially developed by the United States Department of Defense for military navigation around the world. Increasingly, over the last few years, GPS has been utilized to a greater extent in civilian aircraft. GPS uses satellites placed in orbit around the globe to transmit electronic signals which are used by properly equipped aircraft to determine altitude, speed, and navigational information. GPS allows pilots to directly navigate to any airport in the country, eliminating the need for a specific navigational facility.

The FAA is proceeding with a program to gradually replace all traditional enroute navigational aids with GPS over the next decade. The FAA phase-out schedule for traditional navigational includes: VORs between 2005 and 2010, and NDBs between 2000 and 2005. Currently, Weslaco Mid Valley Airport is served by a GPS approach to Runway 13. Discussion of these approaches is provided in the next section.

Instrument Approach Procedures

Aircraft following instrument flight rules (IFR) are required to follow instructions from Valley Approach Control, operated out of Harlingen/ Valley International Airport, approximately 17 nautical miles northeast. Approach Control then handles the aircraft, giving instrument approach instructions. Details of the two published instrument approaches for Weslaco Mid Valley Airport are provided in **Table 1E**, **Instrument Approach Data**.

TABLE 1E
Instrument Approach Data
Weslaco Mid Valley Airport

	Weather Minimums Cloud Height (feet)/ Visibility (statute miles)		
VOR/DME - A	Cat A/B	Cat C	Cat D
Circling	600/1	600/1.5	NA
(Minimums when using McAllen Miller Altimeter Setting below)			
Circling	600/1	600/1.5	NA
GPS Runway 13 Approach	Cat A/B	Cat C	Cat D
Straight-In	400/1		NA
Circling	600/1	600/1.5	NA
(Minimums when using McAllen Miller Altimeter Setting below)			
Straight-In	400/1	400/1.25	NA
Circling	600/1	600/1.5	NA
United States Government Flight Information Publication, US Terminal Procedures: South Central, Vol. 3 of 4, April 20, 2000			

When the visibility and cloud ceilings deteriorate to a point where visual flight can no longer be conducted, aircraft must follow published instrument approach procedures to locate and land at the airport. The different minimum requirements for visibility and cloud ceilings are varied dependent on the approach speed of the aircraft. These are noted by Category type: A- 0-90 knots, B - 91-120 knots, C - 121-140 knots, or D - 141-165 knots. As mentioned there are currently two published instrument approaches to the Weslaco Mid Valley Airport: GPS Runway 13 and VOR/DME -A, a circling approach to either Runway 13 or 31.

The GPS Runway 13 approach provides the airport with the lowest approach visibility minimums. Utilizing this approach, a properly equipped aircraft and pilot can land at the airport with 400-foot cloud ceilings and one mile visibility for aircraft categories A, B, and C.

The VOR/DME-A circling approach utilizes the McAllen (MFE) VOR frequency to track a heading of 080 degrees from the VOR for 4.2 nautical miles to a descent height of 620 feet. With visual contact with the runway the aircraft, upon authorization from Valley Approach Control, would circle into position to land on the active runway. Minimums for this approach are 600 feet and one mile visibility for aircraft categories A and B, and one and one half mile visibility for aircraft category C. Minimums vary if the McAllen altimeter setting is used causing cloud ceiling heights to be at least 600 feet above ground level (AGL) with one mile visibility for aircraft categories A and B, and one and one half mile visibility for aircraft Category C.

Instrument Departure Procedures

Aircraft departing the Weslaco Mid Valley Airport using instrument flight rules are required to contact and receive instruction from Harlingen/Valley Departure Control for take-off from Weslaco. An aircraft would, then, fly assigned headings and altitudes. Ultimately the aircraft is "handed off" to the Air Route Traffic Control Center with authority over that flight sector.

AIR ROUTE TRAFFIC CONTROL CENTER (ARTCC)

The FAA has established 21 Air Route Traffic Control Centers (ARTCC) in the continental United States to control aircraft operating under instrument flight rules (IFR) within controlled airspace on the enroute phase of flight. An ARTCC assigns specific routes and altitudes along federal airways to maintain separation and orderly air traffic flow. Centers use radio communication and long range radar with automatic tracking capability to provide enroute air traffic services. Typically, the ARTCC splits its airspace into sectors and assigns a controller or team of controllers to each sector. As an aircraft travels through the ARTCC, one "hands off" control to another. Each sector guides the aircraft using discrete radio frequencies. Houston ARTCC is responsible for enroute control of all aircraft operating under IFR and arriving and departing the Weslaco airspace.

LOCAL AIR TRAFFIC CONTROL

Although Weslaco Mid Valley Airport Valley Airport is not served by an airport traffic control tower (ATCT), pilots can broadcast their intention and position on the common traffic advisory frequency (CTAF) channel 122.8 Megaherz (Mhz), also called UNICOM.

AREA LAND USE AND ZONING

Land use is important to the existing and potential needs of the airport. By understanding the land use issues surrounding the airport, more appropriate recommendations can be made for the future.

EXISTING LAND USES

Weslaco Mid Valley Airport lies within the north city limits and completely within city property boundaries. This can be observed on **Exhibit 1B, Airside Facilities**. Land use surrounding the airport is mixed. To the east of the airport across Joe Stephens Avenue are industrial zoned tracts. Surrounding the airport on the southeast and southwest are commercial properties that are compatible with the airport environment. Directly south is a tract of agricultural land that is proposed for zoning as commercial. On the west side industrial uses are mixed with the City of Weslaco Sewage Treatment Plant property, including old sewage lagoons. A new pond is being constructed just west of the west side airport facilities.

At both the northeast and northwest ends of the airport are two tracts of agricultural land. The property on the east is designated for future industrial land. The property on the west is slated for future commercial zoning for aviation related use. Directly northwest of the airport property bordered by the irrigation canal are existing residential properties. North of the irrigation canal are large estate residential homes mixed with agricultural property.

HEIGHT ZONING

Use of the existing properties and planned future uses of land near the Weslaco Mid Valley Airport include height and obstruction considerations. Vernon's Revised Statutes for the State of Texas regarding the use of state funds for airport improvement require establishment of an airport hazard zoning ordinance. This ordinance is established to regulate and restrict the heights of structures and objects of natural growth around the airport to enhance safety of aircraft in flight and objects on the ground. Also, the ordinance considered the potential conflicts an obstruction could pose on existing and future approach minimums at the airport. The City of Weslaco has approved an ordinance regulating height and obstructions to this effect.

The language of the height zoning ordinance borrows from Federal Aviation Regulation (F.A.R.) Part 77, **Objects Effecting Navigable Airspace**. F.A.R. Part 77 assigns three-dimensional imaginary areas to the runway in accordance with the type of aircraft and approach minimums being served. These imaginary surfaces emanate from the runway centerline and are dimensioned to protect approaching and departing aircraft from the potential hazard of obstructions.

SOCIOECONOMIC CHARACTERISTICS

A variety of historical and forecast socioeconomic data, related to Weslaco and Hidalgo County (McAllen MSA), was collected for use in various elements of this master plan. This information is essential in determining aviation service level requirements, as well as forecasting the number of based aircraft and aircraft activity at the airport. Aviation forecasts are normally related to the population base, economic strength of the region, and the ability of the region to sustain a strong economic base over an extended period of time.

POPULATION

Airports are support facilities to the cities and regions that they serve. Therefore, the population and economic structure of the attending communities are critical factors to consider when planning airport facilities. In this analysis consideration will be given, not only to the City of Weslaco, Texas, but the entire McAllen - Edinburg - Mission Metropolitan Statistical Area (MSA) which includes all of Hidalgo County. Statistics also consider the Brownsville - Harlingen - San Benito MSA which is all of Cameron County.

The population data presented in **Table 1F, Historical Population** was obtained from **The Complete Economic and Demographic Data Source** (**CEDDS 2000**) by Woods and Poole Economics, Inc. and the **Weslaco Economic Development Corporation Community Profile** (**2000**).

TABLE 1F
Historical Population

Area	1970	1980	1990	2000	Annual Growth Rate (1970-00)
State of Texas	11,258,480	14,337,820	17,046,580	20,335,750	1.99%
Hidalgo County	183,892	286,711	386,786	546,330	3.70%
Cameron County	141,834	212,070	261,709	335,288	2.91%
City of Weslaco	15,313	19,331	21,877	29,435	2.20%

Sources: Woods and Poole CEDDS 2000; Texas Water Development Board, 1999

As indicated in **Table 1F, Historical Population,** the population for Hidalgo County has increased at an average annual growth rate of 3.70 percent between 1970 and 2000 (estimated). This rate is almost double the state average for the same time period. At 2.2 percent Weslaco has experienced a lower annual average growth. However, during the last ten-year period from 1990 to 2000 the average growth rate for the city rose to 3 percent per year. In fact, population growth in Hidalgo County represented almost 5 percent of the population growth in the state of Texas for those same ten years.

The population for the City of Weslaco grew from 15,313 in 1970 to 19,331 in 1980, an increase of 4,018 persons. During the second ten-year time frame from 1980 to 1990, the population increased by the somewhat smaller margin of 2,546. From 1990 to estimated year 2000, Weslaco will have increased in population by an additional 7,558 persons.

RECENT ECONOMIC HISTORY

Lower Rio Grande Valley

Despite some employment losses due to the peso devaluation and losses to Mexico in the manufacturing sector, the Lower Rio Grande Valley area posted solid economic growth through the past decade. The region is made up of Cameron, Willacy, Starr, and Hidalgo Counties. In 1994 selected areas of the four counties were designated as the Valley Empowerment Zone, receiving $40 million in federal social service block grants. In addition to this, the Valley Empowerment Zone has received more than $29 million in state aid to combat the problems associated with colonias. Colonias are rural communities and neighborhoods located within 150 miles of the US-Mexico border, that lack adequate basic services, such as water and sewer. Some colonias may be neighborhoods within incorporated communities and some may be entire border communities.

Unemployment rates for the Valley have fallen due to the expanding economy. In 1994 10,500 new jobs were created in an expansion of service industries, trade, and government. In 1970 7,000 new jobs were created in the same areas. Some of the largest employers include public schools, health care services, and food and textile products manufacturers.

The Rio Grande Valley is the center for crop production in the state of Texas. Vegetables, cotton, and sorghum are the big money crops. Hidalgo County is the hub of fruit and vegetable production, accounting for 72 percent of all cash receipts for vegetables and 80 percent of all fruit receipts for the region since 1993.

The Lower Rio Grande Valley's role as a transportation hub for international trade continues as the North American Free Trade Agreement (NAFTA) related trade increases. The implementation of NAFTA in 1995 strengthened economic ties between Mexico and Texas. Since 1988 the volume of trade between Texas and Mexico has increased by 194 percent, from $9.3 billion in 1988 to $27.4 billion in 1996. According to a U.S. Department of Commerce report, export sales from Cameron and Hidalgo Counties (Brownsville and McAllen MSAs) totaled $3.8 billion in 1995, a 14 percent increase of $465 million since 1993.

Hidalgo County (McAllen MSA)

Employment in the McAllen-Edinburg-Mission MSA boomed in 1993, adding jobs at a faster rate than any other metro area in the country. The Wall Street Journal, March 30, 1994, calculated the area's job growth rate at 6.7 percent, more than four times the national rate. The improving state and national economies, added to low interest rates and passage of NAFTA all combined to fuel the growth. Mild slowdowns of job growth in 1994 and 1995 were caused by rising interest rates and turmoil in the Mexican economy. Yet 3.8 percent job growth still occurred.

City of Weslaco

The City of Weslaco is strategically located as the front door to business and trade with Mexico. Its workforce is drawn from both countries. Within a 50-mile radius the Texas and Mexican population is estimated at 1.6 million people. Low wage costs and high productivity characterize the area labor force.

Weslaco has traditionally been an agricultural hub. It is home to the Texas A&M Agricultural Research Center which created the famous 1015 onion. Grapefruit, as the leading citrus crop, is a multibillion dollar industry locally. Also important to the local economy is the seasonal influx of "Winter Texans," largely Mid Westerners who come to the Valley to escape harsh winters. This has boosted real estate and retail trade in the area. The city has also developed its Foreign Trade Sub-Zone near the Progreso International Bridge. As a result all customs duties and federal excise taxes are deferred while merchandise is in the trade zone. Ultimately many costs can be substantially reduced or eliminated. The 175-acre Foreign Trade Zone at the airport is afforded the same benefits.

Table 1G, Largest Employers depicts Weslaco's largest employers. In the government sector are the growing Weslaco Independent School District, the City of Weslaco, and the USDA Agricultural Research Station. VSR Custom Blinds is one of the nation's leading manufacturers of wood miniblinds. Among the wholesale producers are H.E.B. Foods and McManus/Wyatt Produce. The city's second largest employer, Knapp Medical supplies medical services for the area, including a 215-bed hospital, home health services, family clinics, a wound treatment center, and outpatient services.

EMPLOYMENT

Analysis of a community's employment base can provide valuable insight to the overall well-being of the community. In most cases, the community make-up and health are significantly impacted by the availability of jobs, variety of employment opportunities, and types of wages provided by local employers. Employment statistics for Hidalgo County can be found in **Table 1H, Employment by Sector** below. According to information presented in **The Complete Economic and Demographic Data Source** (**CEDDS 2000**) by Woods and Poole Economics, Inc., Hidalgo County increased in total employment over the thirty-year reporting period by an average 4.0 percent annually. Not only did employment increase for the area by over 44,271 in ten years from 1970 to 1980, but that rate remained steady for the following twenty year period. This rate of growth in employment over the last ten years, translates into the creation of more than ten new jobs every day for ten years.

TABLE 1G
Largest Employers
City of Weslaco

Company Name	Employees
Weslaco Independent School District (WISD)	2,000
Knapp Medical	1,000
Williamson - Dickie Manufacturing	1000
McManus/Wyatt Produce Co.	400
City of Weslaco	260
Caldwell/VSR Inc	300
HEB Foods	312
Tan U.S. Sales	250
Weslaco Cutting Center	200+
Payne Dealer Group	196
K-Mart Super Center	100+
J-III Concrete Co.	100+
Wal-Mart Stores, Inc.	100+
Albertson's	100+
USDA Agricultural Research Service	100+
KRGV-TV Channel 5	80+
U.S. Border Patrol	80+
Clarion Corporation of America	70+

Source: Weslaco Chamber of Commerce (www.weslaco.com)

The greatest sectors of growth have proven to be in the trade, services, and construction industries, each growing at more than five percent per year over the thirty year recorded period depicted in **Table 1H, Employment by Sector**. Together the three sectors combined to add 60,360 jobs from 1970 to 2000. Good diversity has maintained a steady economy even through the peso devaluation of 1994, as can be seen with growth of over four percent per year in the manufacturing, retail trade, transportation and utilities, and state and local government sectors. Seasonal growth in retail sales is spurred by approximately five months of itinerant population, known as "Winter Texans".

All seven sectors mentioned above combined to add more than 72,948 new jobs in the thirty year time frame. Support for the manufacturing and trade sectors has been boosted significantly by maquiladoras, a "twin plant" concept, with labor on goods accomplished in Mexico, and finishing, transportation, and other support facilities provided in the US.

TABLE 1H **Employment by Sector** **Hidalgo County**	**1970**	**1980**	**1990**	**2000***	**Annual % Increase**
Total employment	55,171	99,442	135,730	181,300	4.05%
Farm and Agricultural	9,269	11,374	8,979	9,709	0.15%
Mining	1,023	1,759	1,195	1,363	0.96%
Construction	2,237	5,724	6,909	11,975	5.75%
Manufacturing	3,512	9,460	13,760	13,733	4.65%
Transportation and public utilities	2,286	3,524	4,296	7,763	4.16%
Wholesale trade	3,432	6,958	7,006	7,983	2.85%
Retail trade	10,380	18,580	28,649	39,930	4.59%
Finance, insurance, and real estate	2,462	5,276	7,014	10,914	5.09%
Services	9,255	15,692	29,235	51,425	5.88%
State and Local Government	9,530	18,771	25,658	37,230	4.65%
Federal Civilian and Military Government	1,959	2,661	3,577	4,126	2.51%

* Estimated
Source: CEDDS, Woods and Poole (2000)

PER CAPITA PERSONAL INCOME

Table 1J, Per Capita Personal Income (PCPI), compares the per capita personal income (adjusted to $1992) for the Hidalgo County (McAllen MSA), Cameron County (Brownsville MSA) the State of Texas, and the United States between 1970 and 2000.

As illustrated by the table, the State of Texas's PCPI has mirrored, but slightly trailed that of the United States. The State of Texas' PCPI ranked 31st in the country at 91 percent of the national average ($21,500) in 1995. The average annual growth rate of Texas' adjusted CPI over the thirty year period was 1.94 percent, while the nation's adjusted PCPI averaged 1.86 percent annual growth.

The percent increase in growth of PCPI for Hidalgo County (McAllen MSA) was higher than the other three comparative PCPIs. The personal per capita income in 1970 was an average of $6,574 compared to the 2000 average income of $11,387 almost double the amount. This reflects what was occurring state and nation wide at a slightly faster rate of growth.

TABLE 1J Adjusted Per Capita Personal Income	1970	1980	1990	2000	Average Annual Increase
Hidalgo County	$6,574	$9,067	$9,856	$11,387	1.98%
Cameron County	$7,376	$9,848	$10,539	$12,249	1.83%
State of Texas	$12,361	$16,993	$18,631	$21,167	1.94%
United States	$13,812	$17,203	$20,652	$23,119	1.86%

Source: CEDDS, Woods and Poole (2000) - Adjusted to 1992 Dollars

SUMMARY

The information discussed on the previous pages provides a framework for the remaining elements of the Airport Master Planning process. Information on current airport facilities, their utilization, and conditions will serve as a basis, with additional analysis and data collection, for the development of forecasts of aviation activity, and facility requirement determinations.

DOCUMENT SOURCES

A variety of different documents were referenced in the inventory process. The following listing reflects a partial compilation of these sources. An on-site inventory and interviews with city administrators were also used to review the conditions of facilities for the master planning effort.

Airport Facility Directory, Southwest U.S., U.S. Department of Commerce, National Oceanic and Atmospheric Administration, April 20, 2000 Edition.

The Complete Economic and Demographic Data Source (CEDDS) Woods and Poole Economics, 2000.

Weslaco Mid Valley Airport Valley Airport Master Plan; City of Weslaco Comprehensive Plan, Updated 1984.

National Plan of Integrated Airport System (NPIAS), US Department of Transportation, Federal Aviation Administration, 1994-1998.

Brownsville Sectional Aeronautical Chart, U.S. Department of Commerce, National Oceanic and Atmospheric Administration, May 2000.

Weslaco Economic Development Corporation.

Texas Airport System Plan, Texas Department of Transportation, Aviation Division, 1999.

U.S. Terminal Procedures, Southcentral Volume 3 of 4, U.S. Department of Commerce, National Oceanic and Atmospheric Administration, 20 April, 2000 Edition.

The following Web pages were also visited for information during the preparation of the inventory:
as
FAA 5010 Data, Area Airports
http://www.airnav.com/
http://www.nasao.org/

FAA Information
http://www.gcrl.com/
City of Weslaco website
http://www.weslaco.com
State of Texas Comptrollers Office
http://www.cpa.state.tx.us.ecodata/..
.ctktmsa.html

Chapter Two

Aviation Demand Forecasts

FORECASTS

The purpose of this chapter is to examine the existing and potential demand for aviation activity at Weslaco Mid Valley Airport (T65). The proper planning of a facility of any type must begin with a definition of the demand that may occur over a specified period. Projections of specific aviation demand elements will be used to determine the types and sizes of facilities required to meet the aviation demands of the Weslaco and lower Rio Grande Valley area over the next 20 years.

General aviation is a unique industry that has experienced wide fluctuations in growth and recession. For this reason, it is important to evaluate an airport's current situation and examine future demand trends and potential. This holds especially true today given limited public funding mechanisms and increased traveler needs.

The primary objective of this planning effort is to define the magnitude of change that can be expected over time. Because of the cyclical nature of the

economy, it is virtually impossible to predict with certainty year-to-year fluctuations in activity when looking as far as 20 years into the future. However, a trend can be established which delineates long-term growth potential.

While a single line is often used to express the anticipated growth, it is important to remember that actual growth may fluctuate above and below this line. The point to remember about forecasts is that they serve only as guidelines, and planning must remain flexible to respond to unforeseen facility needs. This is because aviation activity is affected by many external influences,

Recognizing this, it is intended to develop a Master Plan for Weslaco Mid Valley Airport that will be demand-based rather than time-based. As a result, the reasonable levels of activity potential that are derived from this forecasting effort will be related to the planning horizon levels rather than dates in time. These planning horizons will be established as levels of activity that will call for consideration of the implementation of the next step in the Master Plan program. This will be further described in subsequent chapters of this Master Plan.

Although publicly owned and operated, an airport is, in many ways, very similar to the private business environment. Airports provide much needed services to the community. It becomes important to recognize their many purposes and establish well planned goals in order to better serve the community. Marketing efforts and facility development are matched to goals so that the airport can best serve the community.

In order to fully assess current and future aviation demand for Weslaco Mid Valley Airport, an examination of several key factors is needed. These include: national and regional aviation trends, historical and forecast socioeconomic and demographic information of the area and competing transportation modes and facilities. Consideration and analysis of these factors will ensure a comprehensive outlook for future aviation demand at the Weslaco Mid Valley Airport.

LOCAL SOCIOECONOMIC FEATURES

The local socioeconomic conditions provide an important baseline consideration for preparing aviation demand forecasts. While in many cases local socioeconomic variables such as population, employment and income cannot be relied upon to indicate the growth or decline of aviation demand, these factors can provide an important indicator for understanding the dynamics of the community and in particular the trends in economic growth.

For this study, socioeconomic variables for the city of Weslaco, the McAllen (Hidalgo County) Metropolitan Statistical Area (MSA), and the Brownsville (Cameron County) MSA have been considered. Both the McAllen and Brownsville MSAs consist entirely of the county in which each is located, as indicated. Information concerning the communities was obtained from the Texas Water Development Board and the City of Weslaco, while County and MSA information was gathered from Woods and Poole CEDDS 2000.

POPULATION

Table 2A, Socioeconomic Forecasts summarizes historical and forecast population estimates for area cities and the McAllen and Brownsville MSAs. As shown in the table, each segment has experienced population growth over each decade. The City of Weslaco has experienced an average annual growth of 2.2 percent, increasing from 15,313 people in 1970 to 29,435 estimated in

2000. Over the thirty year time period the city has almost doubled in size.

Hidalgo County is represented by two of the three highest growth cities in the Lower Rio Grande Valley: Edinburg and McAllen as charted in **Table 2A.** The County itself shows significant population growth. Growth has been steady over the previous two decades, increasing by approximately 100,000 people per decade. A significant rise in even this growth, was experienced in the 1990s, increasing by approximately 160,000 people. The growth can be primarily attributed to factors of increased trade and commerce, in large part due to NAFTA. Comparatively the Cameron County (Brownsville MSA) rose at a 1.96 percent annual increase, much of which occurred in Brownsville as is indicated by **Table 2A**.

TABLE 2A
Socioeconomic Forecasts

	HISTORICAL					**FORECAST**	
	1970	**1980**	**1990**	**2000**	**% Annual Avg. Growth**	**2010**	**2020**
McAllen MSA (Hidalgo County)							
Population	183,892	286,711	386,786	546,330	3.70%	662,387	780,745
Employment	55,171	99,440	135,730	195,275	4.30%	238,239	282,666
PCPI (1992$)	$6,574	$9,067	$9,856	$11,387	2.80%	$13,096	$15,050
Brownsville MSA (Cameron County)							
Population	141,834	212,070	261,709	335,288	2.90%	379,246	427,069
Employment	48,387	81,857	98,777	132,418	3.40%	151,479	170,339
PCPI (1992$)	$7,376	$9,848	$10,539	$12,249	1.70%	$14,157	$16,222
City Populations							
Weslaco	15,313	19,331	21,877	29,435	2.20%	36,241	43,710
McAllen	37,636	66,279	84,021	116,891	3.85%	128,278	139,070
Harlingen	33,503	43,543	48,746	59,661	1.94%	70,033	79,739
Edinburg	17,163	24,075	29,885	45,024	3.27%	55,856	67,744
Brownsville	52,522	84,997	98,962	147,305	3.50%	172,894	201,684

Source: County and MSA from Woods & Poole, CEDDS 2000; City Populations from Texas Water Development Board, 2002 State Water Plan and Texas State Data Center information

The City of Weslaco grew from 1970 to 2000 at an average annual rate of 2.2 percent, doubling in population. This mirrored the steady growth pattern for Hidalgo County, but at a slightly slower pace overall.

Future projections of population for Hidalgo and Cameron Counties indicate continued steady growth, but at a reduced pace of 1.80 percent and 1.22 percent respectively. Populations are expected to reach 780,745 for Hidalgo

County and 427,069 for Cameron County by 2020. Weslaco projections indicate a 1.2 percent growth over the twenty years from 2000 to 2020, reaching 43,710 people. This growth represents a capture of 5.5 percent of the population increase projected for Hidalgo County.

EMPLOYMENT

Historical and forecast employment data for Hidalgo and Cameron Counties is also presented in **Table 2A**. To briefly recap from Chapter One, the infusion of jobs due to NAFTA, has promoted growth. NAFTA has increased the flow of goods and promoted the concept of the maquiladora trade, through which goods manufactured in Mexico by U.S. corporations are finished and shipped in the U.S. This new population also requires services. The services sector has experienced significant gain in employment levels. A rise in tourism and a real estate sales boon were accompanied by new federal spending programs to combat poor quality services and infrastructure in the colonias. With the exception of a few poor crop years for cotton and sorghum, agriculture and wholesale trade also have contributed to an economic rise, accompanied by a rise in the rate of employment.

Total employment for both counties has increased at a greater average annual rate than population over the thirty year period shown in **Table 2A**, with some slowing in the last ten years. Over the period, employment in Hidalgo County increased by 4.30 percent annually compared to the 3.40 percentage increase in employment for Cameron County. Indicators show that annual average employment numbers lead population by approximately one half of a percent.

Employment forecasts for both Hidalgo and Cameron Counties indicate a slower, more moderate growth, increasing at an annual average rate of 1.88 percent and 1.27 percent respectively by 2020.

PER CAPITA PERSONAL INCOME (PCPI)

Table 2A compares per capita personal income (adjusted to 1992 dollars) for Hidalgo and Cameron Counties. Hidalgo County has an adjusted PCPI of $11,387 estimated for 2000. Cameron County has an adjusted PCPI which was somewhat higher at $12,249. The average annual rate of growth in personal income grew at a higher rate for Hidalgo County (1.85 percent) than Cameron County (1.70 percent). Based on a continuation of this trend, at some time in the future the PCPI for Hidalgo County would surpass that for Cameron County. Statistics also indicate that growth slowed in a similar pattern to employment and population for the 1990's.

Through the year 2020, the Hidalgo County adjusted PCPI is expected to increase at 1.40 percent annually to $15,050 by 2000. Similarly the Cameron County adjusted PCPI is anticipated to rise at a slower pace, down from 1.51 to 1.41 percent, reaching $16,222 by 2020.

FORECASTING APPROACH

The development of aviation forecasts proceeds through both analytical and judgmental processes. A series of mathematical relationships are tested to establish statistical logic and rationale for projected growth. However, the judgement of the forecast analyst, based upon professional experience, knowledge of the aviation industry, and their assessment of the local situation, is important in the final determination of the preferred forecast.

The most reliable approach to estimating aviation demand is through the utilization of more than one analytical technique. Methodologies frequently considered include trend line projections, correlation/regression analysis, and market share analysis.

Trend line projections are probably the simplest and most familiar of the forecasting techniques. By fitting growth curves to historical demand data, then extending them into the future, a basic trend line projection is produced. A basic assumption of this technique is that outside factors will continue to affect aviation demand in much the same manner as in the past. As broad as this assumption may be, the trend line projection does serve as a reliable benchmark for comparing other projections.

Correlation analysis provides a measure of direct relationship between two separate sets of historic data. Should there be a reasonable correlation between the data sets, further evaluation using regression analysis may be employed.

In regression analysis, values for the aviation demand in question (i.e. based aircraft), the dependent variable, are projected on the basis of one or more other indicators, the independent variable. Historical values for all variables are analyzed to determine the relationship between the independent and dependent variables. These relationships may then be used, with projected values of the independent variable, to project corresponding values of the dependent variable, in this case, based aircraft.

Market share analysis involves a historical review of the airport activity as a percentage, or share, of a larger regional, state, or national aviation market. A historical market share trend is determined providing an expected market share for the future. These shares are then multiplied by the forecasts of the larger geographical area to produce a market share projection. This method has the same limitations as trend line projections, but can provide a useful check on the validity of other forecasting techniques.

It is important to note that one should not assume a high level of confidence in forecasts that extend beyond five years. Facility and financial planning usually require at least a ten-year preview, since it often takes more than five years to complete a major facility development program. However, it is important to use forecasts which do not overestimate revenue-generating capabilities or understate demand for facilities needed to meet public (user) needs.

A wide range of factors are known to influence the aviation industry and can have significant impacts on the extent and nature of air service provided in both the local and national market. Technological advances in aviation have historically altered, and will continue to change, the growth rates in aviation demand over time. The most obvious example is the impact of jet aircraft on the aviation industry, which resulted in a growth rate that far exceeded expectations. Such changes are difficult, if not impossible to predict, and there is simply no mathematical way to estimate their impacts. Using a broad spectrum of local, regional and national socioeconomic and aviation information, and analyzing the most current aviation trends, forecasts are presented in the following sections.

The following forecast analysis examines general aviation demand expected at Weslaco Mid Valley Airport over the next twenty years. This will provide an understanding of the overall aviation activity at Mid Valley Airport through 2020.

GENERAL AVIATION

General aviation is defined as the portion of civil aviation which encompasses all facets of aviation except commercial and military operations. To determine the types and sizes of facilities that should be planned to accommodate general aviation activity, certain elements of this activity must be forecast. These indicators of general aviation demand include:

% Based Aircraft
% Based Aircraft Fleet Mix
% Local and Itinerant Operations
% Annual Instrument Approaches
% Aviation Peaking Activity

NATIONAL TRENDS

By most statistical measures, general aviation recorded its fifth consecutive year of growth (1994-1999). Following more than a decade of decline, the general aviation industry was revitalized with the passage of the General Aviation Revitalization Act in 1994 (federal legislation which limits the liability on general aviation aircraft to 18 years from the date of manufacture). This legislation sparked an interest to renew the manufacturing of general aviation aircraft due to the reduction in product liability and a renewed optimism for the industry. The high cost of product liability insurance was a major factor in the decisions by many American aircraft manufacturers to slow or discontinue the production of general aviation aircraft.

According to the General Aviation Manufacturers Association (GAMA), aircraft shipments and billings grew for the fifth consecutive year in 1999, following fourteen years of annual declines. In the first three quarters of 1999, general aviation aircraft manufacturers shipped a total of 1,692 aircraft, 13.4 percent higher than the same period in1998. Shipments of piston aircraft and jets were up 10.8 and 26.2 percent, respectively. Turboprop shipments increased 14.8 percent in 1998 and 8.6 percent through the first three quarters of 1999.

Both the number of active pilots and student pilot starts were up in 1998. Total active pilot numbers increased by 3.5 percent in 1999 over 1998, eclipsing the 0.3 percent gain the previous year. For 1999, student pilot starts increased for the third consecutive year, increasing by 4.4 percent over 1998. These student pilots are the future of general aviation and are one of the key factors impacting the future direction of the general aviation industry.

Since most pilot training activities are conducted using general aviation aircraft, the increases in new pilot starts and increases in advanced training discussed above are one of the primary reasons for the resurgence in general aviation over the past years. These increases combined with the increases in piston-powered aircraft shipments and aircraft production are tangible evidence of the resurgence of the industry and that many of the industry initiated programs to revitalize general aviation have begun to yield substantive results.

Manufacturer and industry programs and initiatives continue to revitalize the general aviation industry. Notable initiatives include the "No Plane, No Gain" campaign sponsored by GAMA and the National Business Aviation Association (NBAA), "Project Pilot" sponsored by the Aircraft Owners and Pilots Association (AOPA), the "Learn to Fly" campaign sponsored by the National Air Transportation Association (NATA), and "GA Team 2000", which is sponsored by more than 100 industry organizations and has had the goal of 100,000 annual student pilot starts by January 2000. The "No Plane, No Gain" campaign is a program promoting the cost effectiveness of using general aviation aircraft for business and corporate uses. "Project Pilot" and "Learn to Fly" are programs promoting training of new pilots.

The general aviation industry is also launching new programs to make aircraft ownership easier and more affordable. The New Piper Aircraft company has created Piper Financial Services (PFS) to offer competitive interest rates and/or leasing of Piper aircraft. The Experimental Aircraft Association offers financing for kit built airplanes through a private lending institution.

General aviation activity at towered airports increased for the third consecutive year 1999, up 5.2 percent over 1998. For the three year period, operations at towered airports were up 13.4 percent. The largest gain was in local (training) operations, up 6.5 percent in 1999. Itinerant operations were up 4.3 percent. Since 1996, local operations are up 17.4 percent and itinerant operations up 10.7 percent. The gain in local operations coincides with the gains in student pilot starts.

General aviation growth is not limited strictly to general aviation airports. Three of the top 10 airports showing the fastest growth in general aviation operations are large hub commercial service airports (Dallas/Fort Worth, Minneapolis/St. Paul and Covington/ Cincinnati), signifying the change in the general aviation fleet to include larger, more sophisticated turboprop and turbojet aircraft which require air traffic services and airport facilities similar to commercial air carriers.

Instrument operations at towered airports and general aviation aircraft handled at en route traffic control centers increased 4.8 percent and 1.9 percent, respectively, in 1999. Instrument operations have increased five of the past six years, with activity gains totaling 17.4 percent over the period. The number of general aviation aircraft handled at en route traffic control centers increased for the eighth consecutive year in 1999. These increases accompany the expanding fleet of sophisticated turboprop and turbojet aircraft in the general aviation fleet and the expansion in use of these aircraft for business/corporate uses.

The most notable trend in general aviation is the continued strong use of general aviation aircraft for business and corporate uses. For 1998 (the most current year of data), business and corporate use of general aviation aircraft represented 23.9 percent of general aviation activity. These uses accounted for 21.2 percent of general aviation activity in 1997.

The most striking industry trend is the continued growth in fractional ownership programs. Fractional ownership programs allow businesses and individuals to purchase an interest in an aircraft and pay for only the time that they use the aircraft. This has allowed many businesses and individuals, who might not otherwise, to own and use general aviation aircraft for business and corporate uses. The five major companies in this industry are Executive Jets' Netjets, Bombardier's Flexjet, Raytheon's Travel Air, Flight Options and TAB aviation. Between 1993 and 1998, these companies expanded their fleet and shareholders by 65.2 percent and 66.1 percent, respectively. In 1999, the fractional jet fleet totaled 329 and shareholders totaled 1,567. Since 1993, Executive Jet has ordered 368 new aircraft and is purportedly the single largest nonmilitary purchaser of aircraft.

While the fractional jet ownership industry is rapidly expanding, new attention has been given the regulatory oversight of the industry. Presently, fractional jet providers operate under Federal Aviation Regulation (FAR) Part 91 which governs general aviation aircraft. Industry pressure is for fractional ownership providers to operate under FAR Part 135 which governs commercial operations for air carriers, air taxi and air charter companies. Part 135 operators believe the fractional ownership providers benefit from the less restrictive FAR Part 91 standards. The FAA commissioned a formal rulemaking committee to analyze regulatory requirements for the industry. Their report, released in Spring 2000, recommended that fractional ownership providers operate under a new subpart of FAR 91. The FAA is now reviewing this proposal. A formal rulemaking proposal could be made within a year.

The fractional ownership providers are concerned about a move to regulate them as FAR Part 135 operators. FAR Part 135 standards would restrict the number and type of airports which could be operated at by requiring longer runways and airports with approved weather reporting. If these providers were required to operate under FAR Part 135, fractionals would not be treated as private owners in foreign countries, and the fractionals would be governed by international bilateral agreements.

Exhibit 2A depicts the FAA forecast for active general aviation aircraft in the United States. The FAA forecasts general aviation active aircraft to increase at an average annual rate of 0.9 percent over the 13 year planning period for general aviation aircraft. General aviation aircraft are projected to increase from 204,710 in 1998 to 230,995 in 2011.

Turbine-powered aircraft are projected to grow faster than all other segments of the national fleet and grow at 3.2 percent annually through the year 2011. Turbojet aircraft are projected to provide the largest portion of this growth and grow at 4.9 percent annually. Turboprop aircraft are projected to grow at 1.2 percent annually. The strong growth projected for the turbojet aircraft is the result of the strong U.S. and worldwide economy, growth in the fractional ownership industry, new product offerings (which include both new entry level aircraft and long range global jets) and a shift from commercial air travel to corporate/business air travel by many business travelers and corporations.

Although the general aviation active fleet is projected to increase at less than one percent annually, general aviation hours flown are forecast to increase by 1.7 percent annually over the twelve year planning period. The total pilot population is projected to grow at 2.1 percent annually through the planning period.

GENERAL AVIATION USER SURVEYS AND SERVICE AREA

The initial step in determining the general aviation demand for an airport is to define its generalized service area for the various segments of aviation the airport can accommodate. The airport service area is determined primarily by evaluating the location of competing airports, their capabilities and services, and their relative attraction and convenience. Also, to aid in identifying the generalized service area for Weslaco Mid Valley Airport, a general aviation user survey was conducted. With this information, a determination can be made as to how much aviation demand would likely be accommodated by a specific airport. It should be recognized that aviation demand does not necessarily conform to political or geographical boundaries.

The airport service area is an area where there is a potential market for airport services. Access to general aviation airports, commercial air service, and transportation networks enter into the equation that determines the size of a service area, as well the quality of aviation facilities, distance, and other subjective criteria.

As in any business enterprise, the more attractive the facility is in services and capabilities, the more competitive it will be in the market. As the level of attractiveness expands, so will the service area. If an airport's attractiveness increases in relation to nearby airports, so will the size of the service area. If facilities are adequate and rates and fees are competitive at

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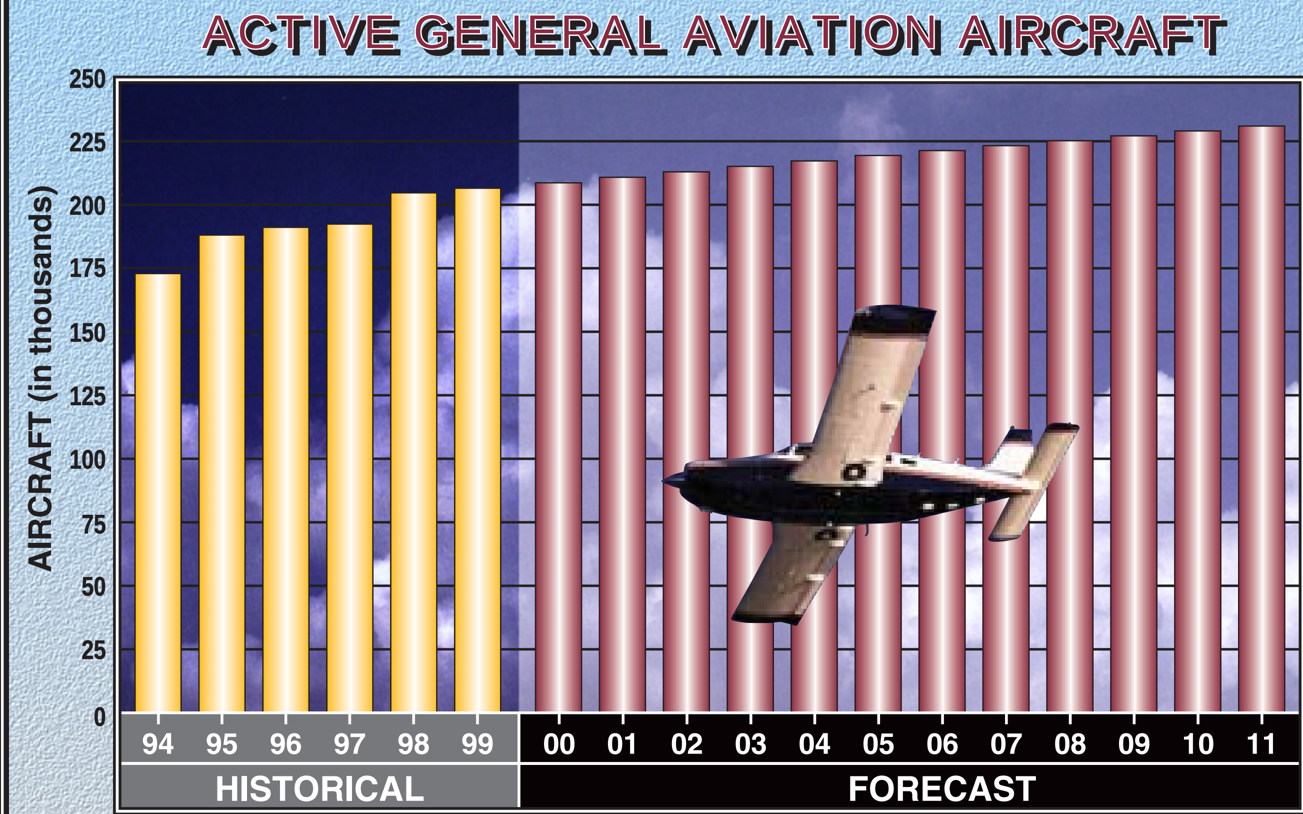


Source: FAA Aviation Forecasts, FY 2000-2011

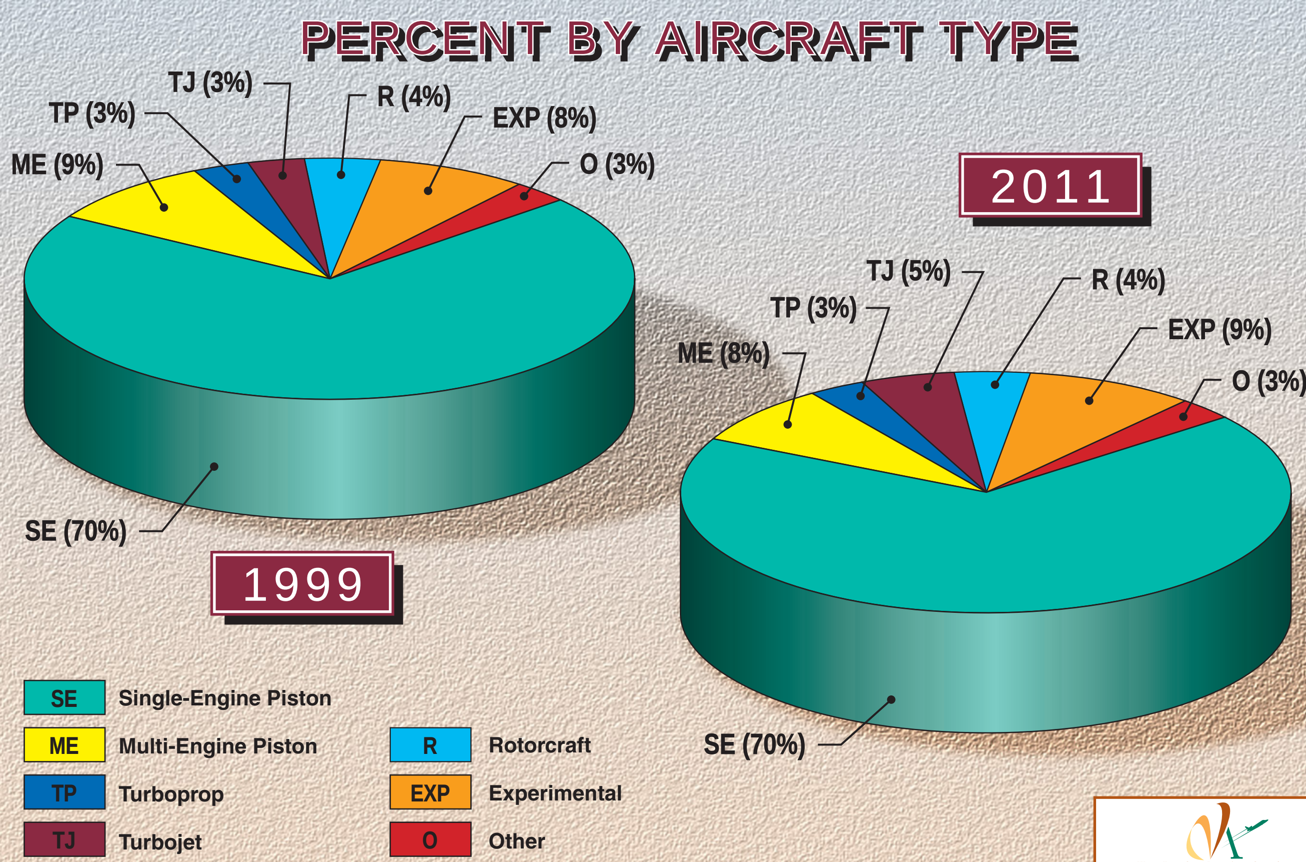


Exhibit 2A
U.S. ACTIVE GENERAL AVIATION
AIRCRAFT FORECASTS

Weslaco Mid Valley Airport, some level of general aviation activity might be attracted to the airport from surrounding areas.

General Aviation User Survey

In order to obtain a profile of local general aviation users and their preferences, a general aviation user survey was conducted with the results presented in **Table 2B**. The survey was sent to Mid Valley Airport tenants and from a search of aircraft owners living in the area (provided by FAA database). In all, approximately 350 surveys were sent out and 39 responses were received, a 11.14 percent response rate. Of the responses, a total of 20 indicated that they base at least one aircraft at Weslaco Mid Valley Airport.

The majority of respondents indicated several preferences which led them to base at the airport or has kept them at the airport. As indicated in the table the number one priority for basing at the airport was due to the availability of hangar facilities. The next two highest priorities, in order, are convenience and the presence of the FBO and terminal facility. Tied for the fourth category most valued by the users were the runway facility and the presence of navaids. The fifth most valued aspect of the airport was the lower cost.

The questionnaire also asked those surveyed what improvements were necessary at the airport. This question also asked for a priority ranking with "1" as highest. Responses generally indicated satisfaction with the facility, although many comments indicated the desire for improvements currently underway to be completed. Many responses indicated a need for added navigational aids and precision approach capability. Other responses included the desire for a longer runway, additional instrument approaches, more west side apron and taxiway improvements, and more hangar facilities. Responses were generally complimentary of the management and service at Mid Valley Airport, while showing much anticipation for the new facilities.

The question of hangar or parking needs and satisfaction with current arrangements indicated that those with T-hangars and individual hangars were the most satisfied. On indicating whether a change would like to be made the trend showed that more individual hangars would be preferred. Half of the respondents in multi-hangar facilities would prefer an individual hangar if available, also. The other half were owners of more than one aircraft and were content with their arrangements.

Responses to the last question on the General Aviation Pilot Survey indicated preferences for improvements to the airport. Most were pleased with current improvements. Some of the respondents called out other needed improvements, such as navaid facilities and more hangars.

TABLE 2B
Pilot Survey Results

Total Surveys Sent = 350

Total Survey Responses = 39

Response Rate =11.14%

Respondents Based @ Mid Valley =20

Total Based Aircraft of Respondents = 29

MV Respondents Considering Upgrade or Purchase of another Aircraft in next 5 years = 9

Primary Use of Aircraft

Business	Pleasure	Flight Instruction	Other
31.0	61.0	9.0	0.0

Monthly Operations at Weslaco by these aircraft = 500

Average Operations for each aircraft per month = 17

Percentage Touch and Go Ops per Aircraft per month = 17.24

Primary Reasons for Basing at Mid Valley Airport (1.0 being the highest possible)

Convenience	Aircraft Hangar Facilities	FBO- Terminal Services	Lower Storage Costs	Runway Length	Navigational Aids
3.3	2.9	4.7	5.7	5.4	5.3

Current Aircraft Storage Use* (Of 17 respondents)

Tie-down	T-hangar	Individ. Hangar	Multi-aircraft Hangar
0	4	7	6

Preferred Aircraft Storage* (Of 17 respondents)

Tie-down	T-hangar	Individual Hangar	Multi-aircraft Hangar
0	4	9	4

Improvements Necessary at Mid Valley Airport* (1.0 being highest possible)

Runway/Taxiway	Airport/FBO Services	Aircraft Apron	Hangars	Terminal Building	Navigational Aids
3.5	5.2	4.7	4.8	6.2	4.8

Improvements were ranked by the respondents in order as follows:

1. improved runways and taxiways ;
2. more apron area;
3. more hangars;
4. better navaids;
5. improved FBO services; and
6. improved terminal facilities.

Airport Service Area

The determination of future based aviation demand for Weslaco Mid Valley Airport begins with a review of the local based aircraft service area. The local airport service area is defined by the proximity of other airports and the facilities and services that they currently provide to general aviation aircraft.

As previously mentioned, Weslaco Mid Valley Airport is designated as a general aviation airport by the FAA and further categorized as a general utility airport by TxDOT. The designation indicates that the airport serves to provide general aviation services as an active general aviation base.

Defining the service area, or aviation demand pool for Weslaco is somewhat subjective. The projected increase in aviation use of the airports at Harlingen and McAllen by commercial transport aircraft may affect use at Weslaco. Additionally, new facilities are under construction at Mid Valley Airport. It is yet to be seen how this will affect airport use, in quantity and by type aircraft. Mid Valley Airport has shown a steady growth, accompanied by a wider diversity of aircraft, including jets, that have chosen to use Mid Valley Airport and base here.

The other general aviation airports in the lower valley region include Edinburg International Airport and Port Isabel/ Cameron County Airport. Edinburg is located 17 miles north of Mid Valley Airport. The standard of aircraft service offered there is substantially lower with no support facilities other than self service fuel and tie downs. No instrument approach is published for the Edinburg airport. Port Isabel/CameronCounty also lacks services. Runway and other airside facilities are generally in only fair condition. Parachuting is available at Port Isabel Airport. This can be a negative factor to some general aviation aircraft operators.

The other airports with high general aviation activities are Harlingen/Valley International Airport, 25 miles east of Mid Valley, and McAllen-Miller International Airport, 18 miles west of Mid Valley. Harlingen, the early leader in air carrier service, peaking in 1989 with over 538,000 enplanements, has lost enplanements to McAllen over the past decade. While air carrier service has fluctuated at Harlingen between 1990 and 1995, a slow, but steady downward trend in enplanements has continued since 1995. McAllen had 133,000 enplanements in 1980, rose to almost double that by 1990, and peaked at a high of 320,000 in 1995. By comparison, enplanements in Harlingen for 1995 numbered close to 500,000. Projections for both airports indicate that enplanements will rise at slightly different rates.

During the last two decades based aircraft continued to dwindle for the two commercial service airports, after sharply falling off in 1988. Weslaco, meanwhile, experienced some decline amid the general aviation malaise of the early 1990s, but recovered nicely with solid gains over the past five years. More is discussed in the following section on based aircraft.

Mid Valley Airport is situated to attract aircraft from the larger two airports as air carrier operations increase as forecasted by the FAA. Other airports in the immediate area offer little competition with regard to services and facilities, both airside and landside. Of the 39 respondents to the General Aviation Pilot Survey that base aircraft out of Mid Valley Airport, approximately half are drawn from the immediate area. Others drive from as far as Mission and Edinburg, citing hangar facilities as the number one reason for choosing Mid Valley Airport over the closer McAllen-Miller and Edinburg Airports. All indicators point to Mid Valley Airport as the premier general aviation facility in the Lower Rio Grande Valley.

For Weslaco Mid Valley Airport the primary service area can be expected to be defined by the aviation demand of Weslaco and smaller surrounding communities. The service area may also overlap portions of the McAllen and Harlingen service area. The service area can be expected to extend east, west, and north approximately 30 nautical miles.

Based Aircraft Forecasts

The number of based aircraft is the most basic indicator of general aviation demand. By first developing a forecast of based aircraft, the growth of the other aviation demand indicators can be projected. The rationale for forecasting general aviation activity is presented below.

A review of historically based aircraft at Weslaco Mid Valley Airport reveals that the airport has had good solid growth in based aircraft over the recording years from 1980 to 2000. In 1980 forty-three aircraft based at Mid Valley Airport. The number rose to seventy nine by 1990 and one hundred and six aircraft by 2000, as of current recording.

The first method for forecasting based aircraft for Weslaco Mid Valley Airport includes a trend line projection. Considering based aircraft at the airport between 1980 and 2000, the time series analysis for trend line projections provides a “r” value of 0.87. As previously mentioned an “r” value of greater than 0.9 indicates a strong correlation. The trend line projection yields 113 aircraft for 2005, 126 aircraft for 2010, and 152 aircraft for 2020, as depicted in **Exhibit 2B**.

The trend line projection indicates an increase in aircraft for all projected years. A trend line is developed utilizing regression analysis, which attempts to level the high and low points, drawing a line through the middle.

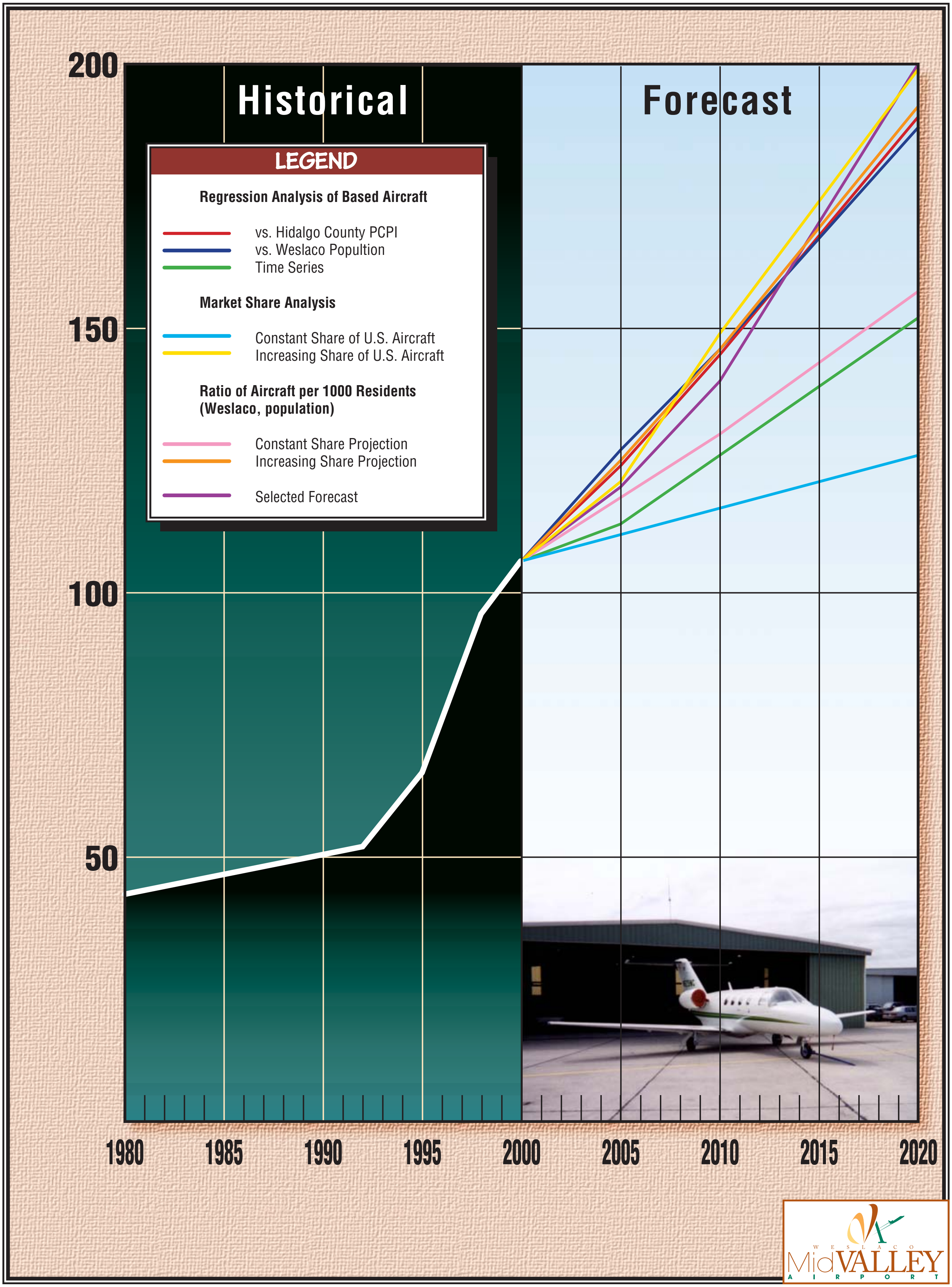


Exhibit 2B
BASED AIRCRAFT FORECASTS

Several other regression analyses have also been conducted comparing based aircraft with the socioeconomic elements presented earlier. The first uses population statistics and forecasts for Weslaco. The second uses Per Capita Personal Income (PCPI) values for Hidalgo County and their forecasts.

The first regression, testing the relationship between population and based aircraft numbers over the same recording period, yields an output of 0.95. This is an extremely high correlation factor. Therefore the forecasts for based aircraft for the years 2005, 2010, and 2020 are 127, 146, and 188 respectively. This is depicted graphically on **Exhibit 2B.**

Using the second regression of PCPI versus based aircraft, again a significant correlation is found, yielding an "r" value of 0.92. This is due to steady growth of the area's socioeconomic categories with similarly increasing levels of based aircraft. The regression yields based aircraft forecasts for 2005, 2010, and 2020 of 124, 145, and 190. As can be seen from the chart in **Exhibit 2B**, these figures agree very closely with the previous regression of population versus based aircraft.

In **Table 2C, Based Aircraft versus Population Projections,** a market analysis approach was used. In this type analysis comparisons are made involving based aircraft numbers for the Mid Valley Airport and the population statistics for Weslaco. The projections used for forecasting the based aircraft for the years 2005, 2010, and 2020 are indicated using both a constant share projection, or rate of growth of population that stays the same as the historical pattern, and an increasing share projection, where the same forecast population increases its share of the aircraft market. This is consistent with comments from the Survey of Aircraft Owners which found that upgrades in aircraft included new purchase of additional aircraft. The survey also confirmed that the facilities are drawing, and will continue to draw, aircraft from a wider service area.

Therefore, the constant share projections of 118 based aircraft for 2005, 130 aircraft for 2010, and the projection of 157 for the year 2020 are deemed valid. Even greater validity, however, is placed on the increasing share projections for Mid Valley Airport based on population share analyses. This analysis as discussed, shows that for the year 2005 there will be 125 based aircraft, an increase of nineteen aircraft over the next five years, or approximately four per year increase. Historical figures indicate an increase of forty aircraft based at Mid Valley over the past five years, an increase of eight aircraft per year.

The constant share projection in comparison predicts an increase of twelve aircraft by the year 2005, an increase of an average 2.4 aircraft per year. The increasing share forecasts 146 aircraft by 2010 and 192 for the year 2020. The two forecasts are indicated in comparison with others in **Exhibit 2B**.

The next forecasting method compares Weslaco based aircraft with active general aviation aircraft in the United States since 1980. **Table 2D, Based Aircraft versus United States Active**

Aircraft Projections presents historical based aircraft at Weslaco and active general aviation aircraft in the U.S. As indicated in **Table 2D**, Mid Valley's market share of U.S. active aircraft has steadily increased over the last 20 years. **Table 2D** indicates this comparison and shows projections of based aircraft predicated on both a constant market share projection and an increasing share projection. The constant share projection shows that by 2020, given that Mid Valley Airport maintains the same share of the U.S. market, the airport will have 126 based aircraft. By comparison 199 based aircraft are predicted for 2020 considering an increasing share projection.

TABLE 2C
Market Share Analysis
Based Aircraft vs. Population Projections

Year	Mid Valley Based	Population	Aircraft per 1,000 Population
1980	43	19,331	2.22
1990	79	21877	3.61
1998	96	27,449	3.50
1999	103	28,443	3.62
2000	106	29,435	3.60
Constant Share Projection			
2005	118	32,838	3.6
2010	130	36,241	3.6
2020	157	43,710	3.6
Increasing Share Projection			
2005	125	32,838	3.8
2010	145	36,241	4.0
2020	192	43,710	4.4

The constant share forecast appears to be somewhat conservative in light of past trends. Thus, an increasing market share projection reaching 0.080 percent was developed. This growth rate represents the same growth experienced as averaged over the last 20 years. An important aspect to note is the consistency of the numbers, comparing the increasing market share projection of based aircraft at Mid Valley with the increasing numbers of based aircraft versus population shown in **Table 2C**.

A summary of historical and forecast based aircraft is illustrated on **Exhibit 2B**. The projections depicted on the exhibit illustrate an envelope of potential based aircraft at Weslaco over the next 20 years.

TABLE 2D
Based Aircraft vs. US Active Aircraft Projections

Year	Mid Valley Based	US Aircraft	% of Active Aircraft
1980	43	210,300	0.0204%
1992	52	191,629	0.0271%
1995	66	188,243	0.0351%
1998	96	204,710	0.0469%
2000	106	208,655	0.0508%
Constant Share Projection			
2005	111	219,415	0.0508%
2010	116	229,070	0.0508%
2020	126	248,380	0.0508%
Increasing Share Projection			
2005	121	219,415	0.0550%
2010	149	229,070	0.0650%
2020	199	248,380	0.0800%

A combination of projections including the increasing market share of U.S. active aircraft and the increasing share of aircraft per 1,000 Weslaco residents projection appears to be the most reasonable for the purposes of this Master Plan. These projections are somewhat optimistic, but they allow for consideration of increasing capture of general aviation away from McAllen-Miller and Valley International, an increase due to expanded and improved facilities, and the limited facility availability at other nearby general aviation airports. In order to develop a plan which will allow the City to develop facilities based upon demand, the following planning horizon activity milestones have been established for based aircraft:

- Short Term - 120
- Intermediate Term - 140
- Long Term - 200

BASED AIRCRAFT FLEET MIX PROJECTION

Knowing the aircraft fleet mix expected to utilize the airport is necessary to properly plan facilities that will best serve the level of activity and the type of activities occurring at the airport. The existing-based aircraft fleet mix is comprised of single and multi-engine piston-powered aircraft and also includes helicopter and turbojet aircraft.

As detailed previously, the national trend is toward a larger percentage of sophisticated turboprop, jet aircraft, and helicopters in the national fleet. Growth within each based aircraft category at the airport has been determined by comparison with national projections (which reflect current aircraft production) and consideration of local economic conditions.

The projected trend of based aircraft at Mid Valley Airport includes a growing number of single and multi-engine aircraft and turboprop aircraft. However, growth in business turbojet aircraft is projected for the airport through the planning period, consistent with national trends. The based aircraft fleet mix projection for Weslaco Mid Valley Airport is summarized in **Table 2E**.

Currently, single engine aircraft compose the largest segment of aircraft at Mid Valley Airport. Future based aircraft mix will continue to be dominated by single engine aircraft, but with an increasing percentage of turbine aircraft. The current improvement of the Mid Valley Airport, combined with a positive economic outlook and the lack of competitive nearby general aviation airport facilities, will promote increases in operations by large general aviation aircraft. It is very likely that corporate aircraft will find Mid Valley Airport an attractive base of operations. For this reason, all aircraft types, including both turboprop and turbojet aircraft, have been forecast to increase. Although increasing consistently in numbers over the forecast period, single engine based aircraft percentages are forecast to represent less of the total mix in the future.

ANNUAL OPERATIONS

There are two types of operations at an airport: local and itinerant. A local operation is a takeoff or landing performed by an aircraft that operates within sight of the airport, or which executes simulated approaches or touch-and-go operations at the airport. Itinerant operations are those performed by aircraft with a specific origin or destination away from the airport. Generally, local operations are characterized by training operations. Typically, itinerant operations increase with business and commercial use since business aircraft are used primarily to carry people from one location to another.

Due to the absence of an airport traffic control tower, actual operational counts are not available for Weslaco Mid Valley Airport. Instead, only general estimates of aircraft operations based on observations are made periodically. Historical aircraft operations for the airport have been recorded by the FAA on the 5010-1, Airport Master Record Form. Operational estimates have been estimated by airport management for the FAA and TxDOT in the past.

TABLE 2E
Fleet Mix Forecast

	EXISTING		FORECAST					
Type	**2000**	**%**	**Short Term**	**%**	**Intermediate Term**	**%**	**Long Term**	**%**
Single Engine	88	83.0%	97	80.5%	110	78.5%	152	76.0%
Multi-Engine	15	14.2%	17	14.0%	18	13.0%	25	12.5%
Turboprop	0	0.0%	2	2.0%	3	4.0%	8	6.0%
Jet	1	0.9%	2	1.5%	5	2.0%	10	3.0%
Helicopter	2	1.9%	2	2.0%	4	2.5%	5	2.5%
Totals	106	100.0%	120	100.0%	140	100.0%	200	100.0%

As shown in **Table 2F**, general aviation operations are estimated to total approximately 31,000. Of this total, approximately 15,000 are estimated as itinerant and approximately 16,000 as local operations.

Projections of annual operations have been developed by examining the number of operations per based aircraft. Typically, operations per based aircraft can range between 100 and 500 at airports similar to Weslaco Mid Valley Airport. Airports with higher training operations (local operations) will have a higher operation per based aircraft ratio, whereas airports with a higher percentage of transient aircraft operations will have a lower ratio.

In attempts to quantify more reliably than simply estimating airport operations, TxDOT established an on-going operations monitoring system. The goal of this program was to ultimately establish a model which will provide more accurate counts. TxDOT's model indicates that for airports similar to Mid Valley Airport, annual operations typically equate to approximately 300 operations per based aircraft. or 100 itinerant operations and 200 local operations per based aircraft. Thus, for planning purposes, annual operations per based aircraft will be forecast at approximately 300 operations per based aircraft for each associated planning horizon. The operations split is projected to remain 45 percent itinerant projections to provide for the long term projections.

The FAA projects an increase in aircraft utilization and the number of general aviation hours flown. This projected trend supports future growth in annual operations at Mid Valley Airport. **Table 2F** presents operational forecasts for each associated planning horizon. As indicated in the table, general aviation operations at Weslaco Mid Valley Airport are forecast to reach 64,000 in the long term. Approximately 33,000 of these operations are forecast to be local.

TABLE 2F General Aviation Operations Forecast					
Year	**Itinerant**	**Local**	**Total**	**Based AC**	**Ops per Based**
1980	9,000	13,000	22,000	43	512
1985	13,440	20,100	33,540	74	453
1990	13,440	20,100	33,540	79	425
1995	6,600	13,200	19,800	66	251
1998	15,000	16,000	31,000	96	323
2000	15,600	16,000	31,600	106	292
GENERAL AVIATION OPERATIONS FORECAST					
Short Term	17,200	19,800	37,000	120	308
Intermediate Term	20,900	23,100	44,000	140	315
Long Term	31,000	33,000	64,000	200	320

AIR TAXI

The Weslaco Mid Valley Airport is base to Sterling Aviation. This business operates as a Part 135 air carrier conducting passenger, cargo and air ambulance operations. A Part 135 carrier operates its charter operations under the rules specified under Federal Air Rules (F.A.R.) Part 135. As a Part 135 operator, the air operator must adhere to specific guidance set forth in the legislation in order to carry passengers for hire. Airport operational statistics indicate that commercial air service operations have not been performed at Mid Valley Airport for over 40 years.

AIR CARGO

As mentioned the sole air cargo operation currently based at Mid Valley Airport is Sterling Aviation. Sterling operates two Beechcraft Queen Airs. With potential greater use of the airport, more air cargo operations can be expected. The questions to be answered, then, become:

% How does Weslaco and the Mid Valley Airport compare with the trade and air cargo centers of the Valley- McAllen and Brownsville?

% What kind of air cargo operations can be anticipated within the planning framework?

% What aircraft category and design group are anticipated?

% How will these aircraft performing air cargo operations at Mid Valley Airport, then, be a factor in airport facility planning?

Three large commercial aviation airports ring Mid Valley Airport. McAllen-Miller, Valley International, and Brownsville-South Padre Island Airports all lie within a 33 nautical mile radius of Mid Valley Airport. McAllen-Miller and Brownsville-South Padre especially owe much of their air cargo and trade preeminence to their presence on the border and sisterhood status to the Mexican cities of Reynosa and Matamoros respectively. NAFTA has cemented the relationships among these cities. The effect of the lowering of trade barriers has allowed the volume of trade to increase by 194 percent from $9.3 billion in 1988 to $27.4 billion in 1996. Texas exports accounted for nearly half of all U.S. trade with Mexico in 1996.

One of the ways that NAFTA promotes trade is by encouraging the relationship of U.S. companies and their maquiladoras, Mexican production centers where goods are assembled and then shipped back to the U.S. Brownsville and McAllen represent two of the three largest maquiladora cities in the U.S. This NAFTA trade is capitalized upon economically by also promoting Free Trade Zones (FTZ), whereby further costs may be saved.

McAllen has over 700 acres of FTZ from which space may be leased and services provided for storage, repackaging, relabeling, export, and inventory control among others. The FTZ also has a direct feeder line to the Rio Grande Valley Railroad line that connects to Brownsville and several Mexican cities. However, the greatest majority of trade pours through the several major international bridges in McAllen. The newer Pharr-Reynosa International Bridge recently counted 18,435 truck crossings in a single month. The McAllen-Miller Airport also recently updated to accommodate higher numbers of commercial air traffic. The commercial carriers that serve McAllen are Continental, American, Aerolitoral, and Conquest. Seven air cargo companies are located on the field at the Air Cargo Facility, specifically designed to facilitate shipping and delivery.

Brownsville also has capitalized on its traditional relationship with Matamoros. The maquiladora trade with Matamoros is the oldest and most established of any with over 62,000 workers in its 120 plants. The City of Brownsville also operates several Free Trade Zones, one at the airport and one at the Port of Brownsville. Additionally, the Port has 18,000 acres for development and handles over three million metric tons of cargo per year. In order to further accommodate the flow of trade, a commercial bridge is currently being planned to be built from the east side of Matamoros directly to the Port.

The Brownsville-South Padre Island/ Airport is the largest volume air cargo center for the Lower Rio Grande Valley. Cargo carriers include Emery, BAX Global, and Continental Airlines. The airport encompasses 1,685 acres, including the industrial park and FTZ. Air cargo figures for the Brownsville-South Padre Island Airport indicate that in 1993 Brownsville handled 139,704,380 pounds of cargo. Air cargo numbers increased to a peak of 165,240,600 pounds in 1995. Surprisingly, in spite of the surge in

NAFTA trade in the Valley, air cargo numbers declined in 1996 and continued in a steady downward cycle to 1998 when 117,598,560 pounds were handled and ranked Brownsville 106th in air cargo in the U.S. The deduction to be made is that, although trade increased substantially, this did not translate to higher air cargo numbers at the airport. The abundance of alternative transportation modes (sea, overland truck, and rail operations) handled the majority of this trade.

Mid Valley Airport has many similarities to these cities. Weslaco has direct trade overland access to its Mexican sister city, Nuevo Progreso. The new international bridge was completed and connection completed to the Autopista, a four lane highway constructed to carry the heavy truck trade from Monterey, Reynosa, and Matamoros. Although slightly further in distance, time may be saved using the new crossing at Progresso/Nuevo Progreso which can avoid delays. The Mid Valley Airport also has approximately 174 acres of land designated as a Free Trade Zone. The city is, likewise, in the process of developing a Foreign Trade Sub-Zone near the Progresso International Bridge. These inducements can only be of benefit to attracting economic development. These facilities will eventually attract air cargo trade. However, the excess of adequate large facilities close to trade routes in McAllen and Brownsville will undoubtedly slow the pace of this type air cargo development at the Mid Valley Airport.

The Airport Surveys indicate that Mid Valley Airport is already creating a unique niche for itself, with potential reliever status, sustaining feeder air cargo operations, and combining high quality and increasing volume of general aviation traffic, including business jets.

For this reason air cargo operations considered for the Mid Valley Airport for the near, intermediate and long terms should emphasize facilities to accommodate a feeder status of smaller type aircraft, such as Cessna Caravans, the Cessna 441 Conquest, Turbo AeroCommander, the Mitsubishi MU-2, Beechcraft King Air, and possibly DC-3s. Long term projections may include space to be designated for on-field customs service. Chapter Three, Facility Requirements will outline the requirements necessary for these and further airport operations.

MILITARY ACTIVITY

Projecting future military utilization of an airport is particularly difficult since local missions may change with little notice. However, the existing operations and aircraft mix may be confirmed for their impact on facility planning. As indicated by the FAA TAF document, historically military operations have accounted for only 200 itinerant operations annually. Military operations consist of a range of helicopter and potential C-130 aircraft.

Military aircraft utilize Weslaco typically for National Guard flight training operations and supply to the National Guard base located directly south of the airport. For planning purposes these operations have been forecast to reach 1,000 annual itinerant operations by the long term. To plan for this increase will aid in determining facility needs such as an air traffic control tower.

PEAKING CHARACTERISTICS

Many airport facility needs are related to the levels of activity during peak periods. The periods used in developing facility requirements for this study are as follows:

- **Peak Month -** The calendar month when peak passenger enplanements or aircraft operations occur.
- **Design Day -** The average day in the peak month. This indicator is easily derived by dividing the peak month operations or passenger enplanements by the number of days in the month.
- **Busy Day -** The busy day of a typical week in the peak month.
- **Design Hour -** The peak hour within the design day.

Without an airport traffic control tower, adequate operational information is not available to directly determine peak general aviation operational activity at the airport. Therefore, peak period forecasts have been determined according to reported fuel sales and peak sales months.

Typically, the peak month for activity at general aviation airports approximates 10 to 15 percent of the airport's annual operations. For planning purposes, peak month operations have been estimated as 13 percent of annual operations. Based on peaking characteristics from similar airports, the typical busy day was determined by multiplying the design day by twenty percent of weekly operations during the peak month, or 1.4. Design hour operations were determined using 20 percent of the design day operations. The general aviation peaking characteristics are summarized in **Table 2G**.

ANNUAL INSTRUMENT APPROACHES

An instrument approach as defined by the FAA is "an approach to an airport with the intent to land by an aircraft in accordance with an Instrument Flight Rule (IFR) flight plan, when visibility is less than three miles and/or when the ceiling is at or below the minimum initial approach altitude." To qualify as an instrument approach at Mid Valley Airport, aircraft must actually land at the airport after following one of the published instrument approach procedures.

TABLE 2G
Peak Operations Forecasts
Mid Valley Airport

	1999	Short Term	Intermediate	Long Term
Annual Operations	31,600	37,000	44,000	64,000
Peak Month	4,108	4,810	5,720	8,320
Busy Day	192	224	267	388
Design Day	137	160	191	277
Design Hour	27	32	38	55

Annual instrument operations for Mid Valley Airport are only available from FAA sources for 1995 through 1999. Over the period, annual instrument approaches (AIA's) steadily fluctuated from 13 in 1995 to 8 in 1999. It can be reasonably assumed that this will increase based on improved navaids and airport facilities.

This number is believed to be misleading as to the actual numbers of instrument approaches performed at Mid Valley Airport. The low numbers may be due to the choice of the pilot to close an instrument flight plan in the air. This would eliminate the recording of an operation for that flight. Also, without a control tower it is less convenient to close a flight plan via telephone versus by radio in the air.

Generally, AIA's are expected to reach two percent of annual itinerant operations per FAA information. Due to the low number of current AIAs, future projections have been made at one percent of annual itinerant operations for short term, one and one half percent for the mid-term, and two percent for the long term. Thus, AIA's have been projected to reach 620 by the long term. **Table 2H** presents AIA forecasts for the planning period.

TABLE 2H
Annual Instrument Approach(AIA) Projections
Mid Valley Airport

Year	AIA's	Itinerant Operations	Ratio
1995	13	7,000	0.19%
1996	13	8,400	0.15%
1997	14	15,600	0.09%
1998	15	15,600	0.10%
1999	8	15,600	0.05%
PLANNING HORIZON FORECASTS			
Short Term	170	17,200	1.00%
Intermediate	315	20,900	1.50%
Long Range	620	31,000	2.00%

SUMMARY

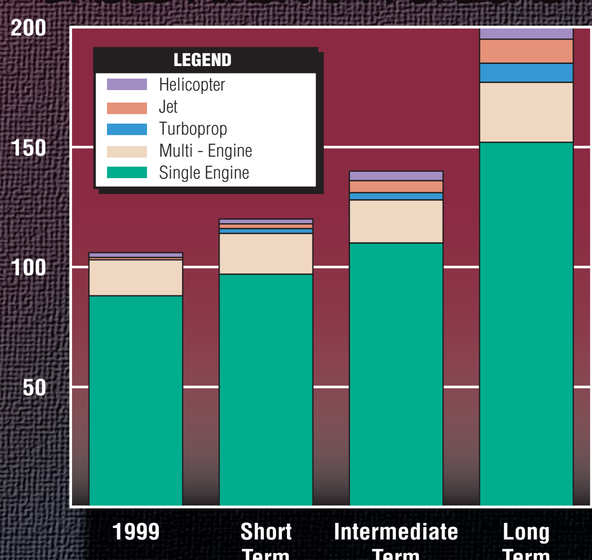
This chapter has outlined the various aviation demand levels anticipated for the next 20 years at Weslaco Mid Valley Airport. Long term growth at the airport will be influenced by many factors including the local economy, the need for a viable aviation facility in the immediate area and trends in general aviation at the national level.

The next step in the master planning process will be to assess the capacity of existing facilities, their ability to meet forecast demand, and to identify changes to the airfield and/or landside facilities which will create a more functional aviation facility. The aviation demand forecasts for Weslaco Mid Valley Airport through the long term planning horizon are summarized on **Exhibit 2C**.

FORECAST SUMMARY

CATEGORY	Historical 1999	Forecasts Short Term	Forecasts Intermediate Term	Forecasts Long Term
Annual Operations				
Itinerant				
AirTaxi	400	500	1,000	2,000
General Aviation	15,000	16,200	18,900	27,000
Military	200	500	1,000	2,000
Total Itinerant	*15,600*	*17,200*	*20,900*	*31,000*
Local	16,000	19,800	23,100	33,000
Total Operations	***31,600***	***37,000***	***44,000***	***64,000***
AIAs	**8**	**240**	**280**	**400**
Based Aircraft				
Single Engine	88	97	110	152
Multi-engine	15	17	18	25
Turboprop	0	2	3	8
Jet	1	2	5	10
Helicopter	2	2	4	5
Total Based Aircraft	***106***	***120***	***140***	***200***

BASED AIRCRAFT FORECAST



OPERATIONS FORECAST

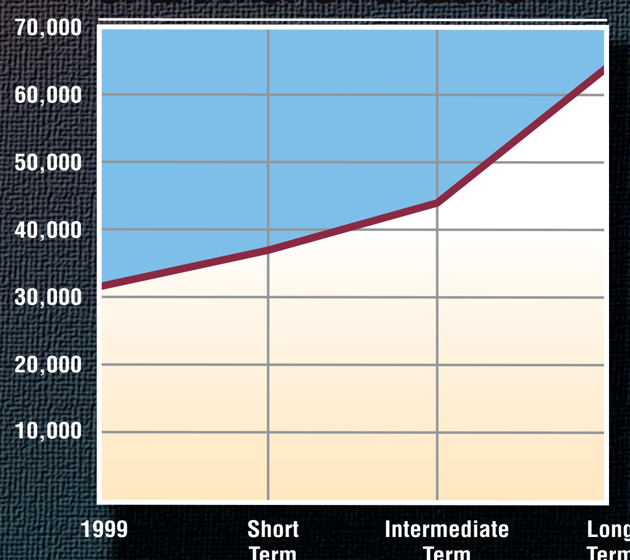


Exhibit 2C
FORECAST SUMMARY

Chapter Three
Facility Requirements

FACILITY REQUIREMENTS

To properly plan for the future of Weslaco Mid Valley Airport, it is necessary to translate forecast aviation demand into the specific types and quantities of facilities that will serve this identified demand. This chapter uses the results of the forecasts conducted in Chapter Two, as well as establishing planning criteria to determine the airfield (i.e., runways, taxiways, navigational aids, marking and lighting), and landside (i.e., hangars, general aviation terminal building, aircraft parking apron, fueling, automobile parking and access) facility requirements.

The objective of this effort is to identify, in general terms, the adequacy of the existing airport facilities, outline what new facilities may be needed, and when these may be needed to accommodate forecast demands. Having established these facility requirements, alternatives for providing these facilities will be evaluated in **Chapter Four** to determine the most cost-effective and efficient means for implementation.

AIRFIELD REQUIREMENTS

Airfield requirements include those facilities related to the arrival and departure of aircraft. These facilities are comprised of the following items:

- Runways
- Taxiways
- Airfield Marking and Lighting
- Navigational Aids

The selection of the appropriate FAA design standards for the development of the airfield facilities is based primarily upon the characteristics of the aircraft which are expected to use the airport. The most critical characteristics are the **approach speed** and the wingspan of the **critical design aircraft** anticipated

The critical design aircraft is defined as the most demanding category of aircraft which conducts 250 or more operations per year.

CRITICAL AIRCRAFT

The Federal Aviation Administration has established criteria for use in the sizing and design of airfield facilities. These standards include criteria which relate to aircraft size and performance. According to Federal Aviation Administration Advisory Circular (AC) 150/5300-13, Change 5, **Airport Design**, an aircraft's approach category is based upon 1.3 times its stall speed in landing configuration at that aircraft's maximum certificated weight. The five approach categories used in airport planning are as follows:

Category A: Speeds of less than 91 knots.

Category B: Speeds of 91 knots or more, but less than 121 knots.

Category C: Speeds of 121 knots or more, but less than 141 knots.

Category D: Speeds of 141 knots or more, but less than 166 knots.

Category E: Speeds of 166 knots or greater.

The second basic design criteria relates to aircraft size. The Airplane Design Group **(ADG)** is based upon wingspan. The six groups are as follows:

Group I: Up to but not including 49 feet.

Group II: 49 feet up to but not including 79 feet.

Group III: 79 feet up to but not including 118 feet.

Group IV: 118 feet up to but not including 171 feet.

Group V: 171 feet up to but not including 214 feet.

Group VI: 214 feet or greater.

Together, approach category and ADG correspond to a coding system whereby airport design criteria are related to the operational and physical characteristics of the aircraft intended to operate at the airport. This code, the **Airport Reference Code** (ARC), has two components. The first component, depicted by a letter, is the aircraft approach category and relates to aircraft approach speed (operational characteristic). The second component, depicted by a Roman numeral, is the airplane design group and relates to aircraft wingspan (physical characteristic). Generally, aircraft approach speed applies to runways and runway-related facilities, while airplane wingspan primarily relates to separation criteria involving taxiways and taxilanes. **Exhibit 3A** provides a listing of typical aircraft and their associated ARC. **Table 3A** indicates a listing by their Airport Reference Code (ARC) of typical aircraft of the type that might be expected to use an airport similar to Mid Valley Airport. Information is also given on approach speed and wingspan - the characteristics that determine ARC.

00MP04-3A-9/19/00

A-I

Beech Baron 55
Beech Bonanza
Cessna 150
Cessna 172
Piper Archer
Piper Seneca

B-I
less than 12,500 lbs.

Beech Baron 58
Beech King Air 100
Cessna 402
Cessna 421
Piper Navajo
Piper Cheyenne
Swearingen Metroliner
Cessna Citation I

B-II
less than 12,500 lbs.

Super King Air 200
Cessna 441
DHC Twin Otter

B-I, II
over 12,500 lbs.

Super King Air 300
Beech 1900
Jetstream 31
Falcon 10, 20, 50
Falcon 200, 900
Citation II, III, IV, V
Saab 340
Embraer 120

A-III, B-III

DHC Dash 7
DHC Dash 8
DC-3
Convair 580
Fairchild F-27
ATR 72
ATP

C-I, D-I

Lear 25, 35, **55**
Israeli Westwind
HS 125

C-II, D-II

Gulfstream II, **III**, IV
Canadair 600
Canadair Regional Jet
Lockheed JetStar
Super King Air 350

C-III, D-III

B 727-200
B 737-200
B 737-300, 400, 500
DC-9
Fokker 70, 100
MD-80
A320

C-IV, D-IV

B-757
B-767
DC-8-70
DC-10
MD-11
L1011

D-V

B-747 Series
B-777

Note: Aircraft pictured is identified in bold type.

WESLACO MidVALLEY AIRPORT

Exhibit 3A
AIRPORT REFERENCE CODES

TABLE 3A
Representative General Aviation Aircraft by ARC

Airport Reference Code	Typical Aircraft	Approach Speed	Wingspan (feet)	Maximum Takeoff Weight (lbs)
	Single Engine Piston			
A-I	Cessna 150	55	32.7	1,600
A-I	Cessna 172	64	35.8	2,300
A-I	Beechcraft Bonanza	75	37.8	3,850
	Turboprop			
A-II	Cessna Caravan	70	52.1	8,000
	Multi Engine Piston			
B-1	Beechcraft Baron	96	37.8	5,500
B-1	Piper Navajo	100	40.7	6,200
B-1	Cessna 421	96	41.7	7,450
	Turboprop			
B-1	Mitsubishi MU-2	119	39.2	10,800
B-1	Piper Cheyenne	119	47.7	12,050
B-1	Beechcraft King-Air B-100	111	45.8	11,800
	Business Jets			
B-1	Cessna Citation I	108	47.1	11,850
B-1	Falcon 10	104	42.9	18,740
	Turboprop			
B-II	Beechcraft Super King Air	103	54.5	12,500
B-II	Cessna 441	100	49.3	9,925
	Business Jets			
B-II	Cessna Citation II	108	51.7	13,330
B-II	Cessna Citation III	114	53.5	22,000
B-II	Cessna Citation Bravo	114	52.2	15,000
B-II	Cessna Citation Excel	114	55.7	19,400
B-II	Cessna Citation Ultra	109	52.2	16,500
B-II	Falcon 20	107	53.5	28,660
B-II	Falcon 900	100	63.4	45,500
	Business Jets			
C-1	Lear 55	128	43.7	21,500
C-1	Rockwell 980	137	44.5	23,300
C-1	Lear 25	137	35.6	15,000
	Turboprop			
C-II	Rockwell 980	121	52.1	10,325
	Business Jets			
C-II	Canadair Challenger	125	61.8	41,250
C-II	Gulfstream III	136	77.8	68,700
	Business Jets			
D-I	Lear 35	143	39.5	18,300
D-II	Gulfstream II	141	68.8	65,300
D-II	Gulfstream IV	145	78.8	71,780

The FAA and TxDOT advise designing all elements to meet the requirements of the airport's most demanding, or critical aircraft. As discussed above, this is the aircraft, or group of aircraft accounting for at least 250 operations per year. Thus, in order to determine the airport's facility requirements, the ARC of the critical aircraft should first be determined, thus enabling the application of appropriate design criteria.

As indicated in Chapter Two, Mid Valley Airport is presently utilized primarily by general aviation aircraft. General aviation aircraft currently using the airport range from small single-engine aircraft to more sophisticated turboprop and jet aircraft. The most critical aircraft currently based at the airport with 250 or more annual operations is the Citation III which is privately owned. Two Beech Queen Air aircraft are owned and operated by Sterling Aviation, a Part 135 passenger and air ambulance operator. The Queen Air fits category and design group B-I. The Citation III is the most demanding aircraft located on field which has 250 or more annual operations. Its approach speed and design group utilizes a minimum B-II facility. Other aircraft maintaining the same approach speed category and design group and that are also based at the Mid Valley Airport are Russian Yakovlev YAK 3s.

The future mix of aircraft can expect to include a larger percentage of corporate aircraft from Category C, Group II to Category D, Group II. Increased corporate aircraft utilization is typical at general aviation airports surrounded by growing population and employment centers. Once utilized only by large conglomerate type corporations, corporate aircraft (especially jets) have been increasingly utilized by a wider variety of companies. According to FAA statistics, active general aviation turbine aircraft are expected to increase on an average annual basis of 2.2 percent over the next decade.

As companies shift away from downtown locations to suburban areas and smaller communities, utilization of corporate aircraft has become a cost-effective manner in which to transport executives and other personnel. The cost benefit can be attributed to the newer, fuel efficient jet aircraft which can close the expense gap between the seat on the corporate jet versus the seat on the commercial carrier.

Considering the sizeable increase in industry and population base in the Lower Rio Grande Valley area, it is not unlikely that Mid Valley Airport will be frequented by larger corporate aircraft on the order of 250 or more operations per year within the planning period. The continued growth of the city of Weslaco and NAFTA generated industrial/commercial trade, will likely contribute to an increase in corporate aircraft activity at the airport over the planning period. The existence or future potential of other area airports will not preclude the use of Mid Valley Airport by the full range of corporate aircraft. In fact, the increased commercial use of the neighboring McAllen-Miller and Harlingen Valley International Airports, will likely enhance the ease of use of Mid Valley Airport as an itinerant stop. Thus, future facility planning must include the potential for the airport to be utilized by the full range of business jets.

In order to identify the critical aircraft which will make at least 250 annual operations, it is necessary to analyze what type of aircraft corporate operators might base or utilize at Mid Valley Airport on a regular basis. It can be expected that the majority of corporate aircraft utilizing the airport in the future will be a mix of multi-engine piston and turbo-prop aircraft. It can also be expected that business jet usage will increase above the 250 annual operational level. Thus, determination of the critical aircraft must consider the business jet most likely to operate at the airport more than 250 times annually.

The previous chapter indicated that as many as ten business jets are forecast to be based at the airport in the long range of the planning period. Thus, the combination of operations by based business jet aircraft combined with transient corporate jet operations will determine the critical aircraft for the airport.

According to FAA general aviation business jet aircraft data, the Cessna and Lear series jet aircraft comprise the largest portion of active business jet aircraft. Therefore, the most demanding of these aircraft should be considered. The Lear 35 and 55 are classified as ARC D-I and C-I, respectively. The series of Cessna Citation aircraft fall within ARC B-I and B-II. Because it can be expected that a mix of these aircraft will utilize the airport more than 250 times annually, airport design standards should at a minimum conform to FAA criteria for Approach Category C and Design Group II and eventually Category D, Design Group II.

Larger aircraft such as the C-130 (ARC C-IV) could utilize the airport 250 or more times annually, if the military presence increases. Currently the Air National Guard is constructing a new facility on the airfield. There is no means of forecasting whether this would also be accompanied by an increase in air operations. However, the base is proposed to be an armory for storage of goods. The C-130 is one of the main cargo hauling aircraft and would likely be utilized for delivery purposes.

It should be noted that federal and state funding mechanisms do not include monies for improvements related to military operations. If the military utilize the airport in the future, the city will have to determine if these operations will enhance the city in proportion to the required capital investment for airport facilities improvements to meet military needs.

Therefore, the facility analysis presented below will only consider the runway lengths required by both C-II and D-II aircraft.

The airfield facility requirements outlined in this chapter correspond to the design standards described in the FAA's Advisory Circular 150/5300-13, **Airport Design.** The following airfield facilities are outlined to describe the scope of facilities that would be necessary to accommodate the airport's role throughout the planning period.

RUNWAYS

The adequacy of the existing runway system at Mid Valley Airport has been analyzed from a number of perspectives, including runway orientation, airfield capacity, runway length, and pavement strength. Using this information, requirements for runway improvements have been determined for the airport.

Airfield Capacity

A demand/capacity analysis measures the capacity of the airfield facilities (i.e. runways and taxiways) in order to identify and plan for additional development needs. The capacity of the airport's one runway system is approximately 210,000 annual operations.

FAA Order 5090.3B **Field Formulation of the National Plan of Integrated Airport Systems (NPIAS)** indicates that improvements should be considered when operations reach 60 percent of the airfield's annual service volume (ASV). Even if the projected long range planning horizon level of operations comes to fruition prior to projections, the airfield's ASV will not exceed the 60 percent level by the long range planning horizon. Therefore, no additional airfield improvements aimed at increasing airfield capacity will be required for the planning period. Improvements which will enhance airfield efficiency, such as taxiway improvements, however, may be necessary and may also improve airfield capacity in the future.

Runway Orientation

The current airfield configuration includes Runway 13-31 which is oriented in a northwest/southeast manner. Ideally the primary runway at an airport should be oriented as close as practical in the direction of the predominant winds to maximize the runway's usage. This minimizes the percent of time that a crosswind could make the preferred runway inoperable.

FAA Advisory Circular 150/5300-13, Change 5, **Airport Design** recommends that a crosswind runway should be made available when the primary runway orientation provides less than 95 percent wind coverage for any aircraft forecast to use the airport on a regular basis. The 95 percent wind coverage is computed on the basis of the crosswind component not exceeding 10.5 knots (12 mph) for Airport Reference Codes (ARC) A-I and B-I; 13 knots (15 mph) for ARC A-II and B-II; and 16 knots (18 mph) for ARC C-I through D-II.

Wind data specific to the airport was not available. However, data for Brownsville-South Padre Island International Airport (1988-1997) provides adequate information for use in this study. This data is graphically depicted on the wind rose in **Exhibit 3B**.

As depicted on the exhibit, Runway 13-31 provides 94.61 (rounded to 95

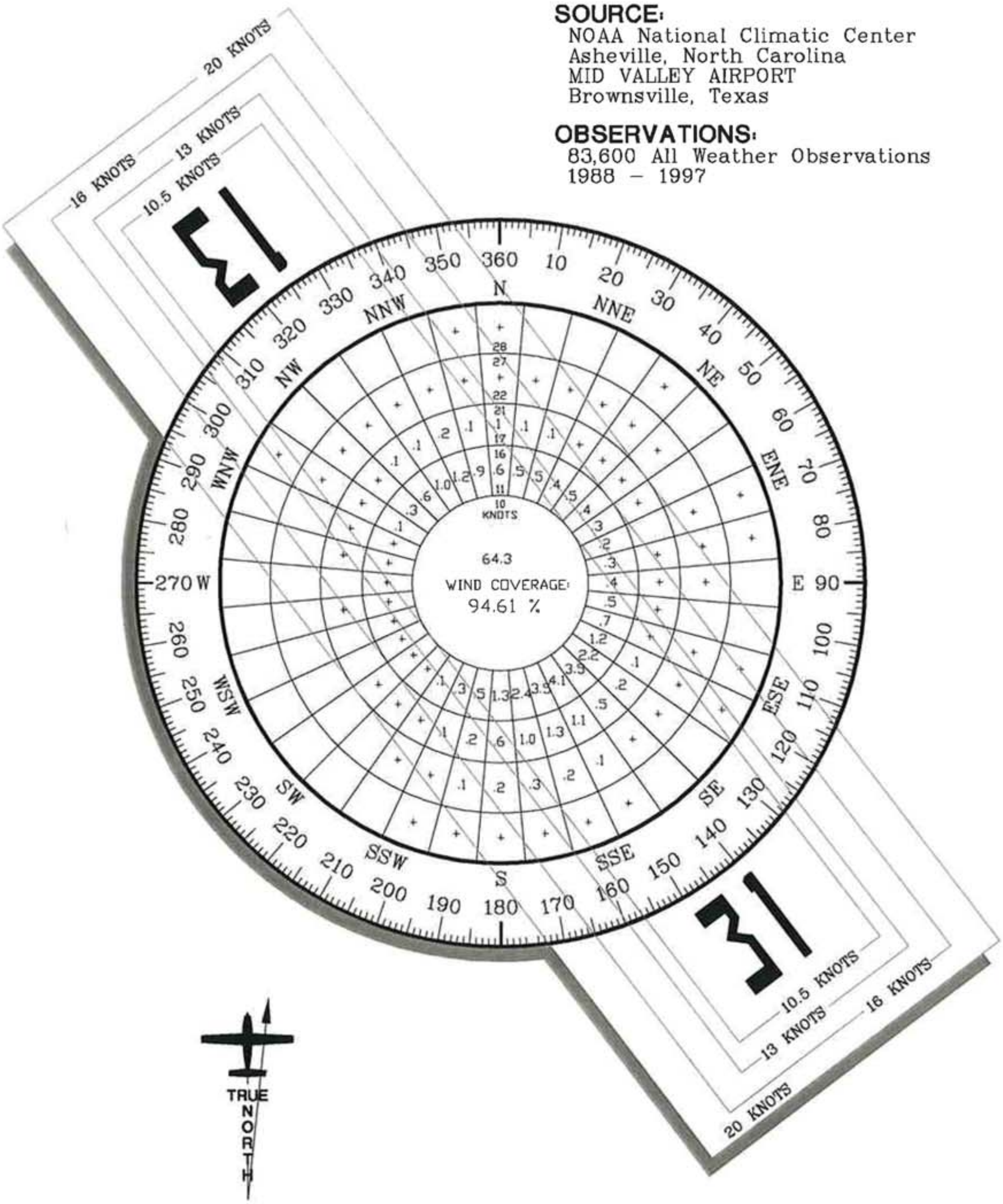
00MP04-3B-9-20-00

ALL WEATHER WIND COVERAGE

Runways	10.5 Knots	13 Knots	16 Knots	20 Knots
Runway 13–31	*94.61%*	*97.55%*	*99.50%*	*99.93%*

SOURCE:
NOAA National Climatic Center
Asheville, North Carolina
MID VALLEY AIRPORT
Brownsville, Texas

OBSERVATIONS:
83,600 All Weather Observations
1988 – 1997



5.94° E (September 2000)
Magnetic Variance

Exhibit 3B
WIND COVERAGE

percent) percent coverage for 12 mph crosswinds, 97.55 percent at 15 mph, and 99.50 percent at 18 mph. The analysis indicates that Runway 13-31 provides adequate crosswind coverage for ARC A-I and B-I aircraft. Thus, future plans for a crosswind runway designed to serve these aircraft will not be considered.

Runway Length

The determination of runway length requirements for the airport are based on five primary factors:

- Critical aircraft type expected to use the airport.
- Stage length of the longest nonstop trip destinations.
- Mean maximum daily temperature of the hottest month.
- Runway gradient.
- Airport elevation.

An analysis of the existing and future fleet mix indicates that business jets will be the most demanding aircraft on runway length at Mid Valley Airport. The typical existing business aircraft range from the Cessna Citation I, with minimal runway length requirements, to the Citation III and the Lear Jet models 25 and 35, requiring longer runway lengths.

Aircraft operating characteristics are affected by three primary factors. They are the mean maximum temperature of the hottest month, the airport's elevation, and the gradient of the runway. The mean maximum daily temperature of the month of August for Mid Valley Airport is 96.2 degrees Fahrenheit. The airport elevation is 70 feet MSL. The effective gradient for Runway 13-31 is 0.07 percent.

Table 3B outlines the runway length requirements for various classifications of aircraft that utilize Mid Valley Airport. These standards were derived from the **FAA Airport Design Computer Program** for recommended runway lengths. As with other design criteria, runway length requirements are based upon the critical aircraft grouping with at least 250 annual operations.

Based upon the forecasted aircraft fleet mix projected through the long range planning period, Mid Valley Airport should be designed to accommodate, at a minimum, 75 percent of business jet aircraft at 60 percent useful load (ARC C-II). According to the FAA design program, to fully accommodate 75 percent of these aircraft at 60 percent useful load, the runway length should be 5,000 feet. Currently, the length of the Runway 13-31 is 4,998 feet , and may for all purposes be considered to meet the standard. For 100 percent of business jet aircraft at 60 percent useful load (ARC D aircraft) the runway would need to be 5,800. As indicated on **Table 3B**, in order to accommodate aircraft weighing more than 60,000 pounds with 1,000-mile stage lengths, the runway needs to be 5,800 feet. Cities at the limits of this range are El Paso, New Orleans, Oklahoma City, Little Rock, Memphis, and Albuquerque.

TABLE 3B
Runway Length Requirements
Mid Valley Airport

AIRPORT AND RUNWAY DATA	
Airport elevation	70 feet
Mean daily maximum temperature of the hottest month	96.2 F
Maximum difference in runway centerline elevation	3.5 feet
Length of haul for airplanes of more than 60,000 pounds	1,000 miles
Dry runway conditions	
RUNWAY LENGTHS RECOMMENDED FOR AIRPORT DESIGN	
Small airplanes with less than 10 passenger seats	
75 percent of these small airplanes	2,600 feet
95 percent of these small airplanes	3,200 feet
100 percent of these small airplanes	3,800 feet
Small airplanes with 10 or more passengers seats	4,400 feet
Large airplanes of 60,000 pounds or less	
75 percent of business jets at 60 percent useful load	**5,000 feet**
75 percent of these large airplanes at 90 percent useful load	**7,300 feet**
100 percent of these large airplanes at 60 percent useful load	**5,800 feet**
100 percent of these large airplanes at 90 percent useful load	**9,300 feet**
Airplanes of 60,000 pounds or more	5,800 feet

REFERENCE: FAA's airport design computer software utilizing Chapter Two of AC 150/5325-4A, **Runway Length Requirements for Airport Design**, no Changes included.

Thus, in order to better serve business jet aircraft in the future, Runway 13-31 should be extended to 5,800 feet.

Runway Safety Areas

Consideration of runway length requirements must also factor other design criteria established by the FAA. FAA design criteria regarding runway object free area (OFA), runway safety area (RSA), and height clearances must be considered.

The runway OFA is defined in FAA Advisory Circular 150/5300-13 Change 5, **Airport Design**, as an area centered on the runway extending out in accordance to the critical aircraft design category utilizing the runway. The OFA must provide clearance of all ground based objects protruding above the runway safety area (RSA) edge elevation, unless the object is fixed by function serving air or ground navigation. **Table 3C** presents airfield planning design standards for Runway 13-31.

TABLE 3C **Airfield Planning Design Standards (Ultimate)** **Mid Valley Airport**		
	Runway 13-31	
DESIGN STANDARDS		
Airport Reference Code (ARC)	**C-II and D-II**	
Runways		
Length (ft.)	5,800	
Width (ft.)	100	
Pavement Strength (lbs.)		
Single Wheel (SWL)	66,000	
Dual Wheel (DWL)	75,000	
Shoulder Width (ft.)	20	
Runway Safety Area		
Width (feet)	500	
Length Beyond Runway End (ft.)	1,000	
Object Free Area		
Width (ft.)	800	
Length Beyond Runway End (ft.)	1,000	
Obstacle Free Zone		
Width (ft.)	400	
Length Beyond Runway End (ft.)	200	
Taxiways		
Width (ft.)	40	
OFA (ft.)	131	
Centerline to Fixed or Movable Object (ft.)	66	
Runway Centerline to:		
Parallel Taxiway Centerline (ft.)	400	
Aircraft Parking Area (ft.)	500	
Building Restriction Line (ft.)		
20 ft. Height Clearance	640	
33 ft. Height Clearance	745	
Runway Protection Zones	13	31
Inner Width (ft.)	1,000	1,000
Outer Width (ft.)	1,750	1,510
Length (ft.)	2,500	1,700
Approach Slope	50:1	34:1

The RSA is also centered on the runway extending out a specific distance depending on the approach speed of the critical aircraft using the runway. FAA requires the RSA to be cleared and graded, drained by grading or storm sewers, capable of supporting aircraft, capable of accommodating fire and rescue vehicles, and free of obstacles not fixed by navigational purpose.

FAA criteria call for a cleared and graded area 150 feet wide (centered on the runway) extending 300 feet beyond the runway ends for the existing critical aircraft (ARC B-II). The FAA requirements for the runway OFA also extends 300 feet beyond the runway ends. The required width is 500 feet.

Analysis in the previous section indicated that Runway 13-31 should be planned to accommodate aircraft in ARC C-II and D-II. In order to meet design criteria for ARC C-II and D-II aircraft, the cleared and graded RSA would need to be 500 feet wide (centered on the runway) and extend 1,000 feet beyond each runway end. The OFA would require a cleared area 800 feet on each side of the runway centerline, extending 1,000 feet beyond each runway end.

It appears that Runway 13-31 currently provides adequate area for the required ARC B-II, OFA and RSA standards. Runway extension alternatives in the next chapter will consider the ultimate layout of Runway 13-31 maintaining adequate OFA and RSA standards.

Runway Width

Runway 13-31 is currently 70 feet wide. FAA design criteria call for a runway width of 100 feet to serve aircraft in approach categories C-II and D-II. Thus, future plans will consider widening Runway 13-31 to 100 feet in order to serve the jet aircraft anticipated to utilize the airport in the future.

Runway Strength

As previously mentioned, the pavement for Runway 13-31 is strength rated at 12,500 pounds single wheel gear loading (SWL). However, it was suggested that this load rating is underrated. Therefore, an Airfield Pavement Study by an engineering contractor was conducted in 1997. The results of this study indicate that the surface thickness and the existing subgrade and pavement meet FAA requirements for larger aircraft. The soil type would be the determining factor regarding pavement strength rating. This analysis should be accomplished conclusively to finally determine the rating. As is, the 12,500 single wheel loading would fully accommodate all small aircraft. In the future, the airport will be utilized on a regular basis by a range of business aircraft weighing up to 75,000 pounds DWL. The use of the airport by aircraft in these weight categories will depend upon the corporate make-up in the community and/or near the airport.

For planning purposes, facility planning must consider the possibility of business jets weighing up to 75,000 pounds DWL basing or utilizing the airport in the future. Thus, Runway 13-31 should be planned to ultimately provide 75,000 pounds DWL pavement strength.

TAXIWAYS

Taxiways are constructed primarily to facilitate aircraft movements to and from the runway system. Some taxiways are necessary simply to provide access between the aprons and runways, whereas other taxiways become necessary as activity increases at an airport to provide safe and efficient use of the airfield.

As detailed in **Chapter One**, Runway 13-31 is served by a parallel taxiway, and four entrance/exit taxiways. The centerline of the parallel taxiway is situated at 240 feet east of the runway centerline. The current 240 foot separation will be adequate to accommodate existing needs from all light aircraft through category B-II. However, current FAA design standards require the runway/taxiway separation to be 400 feet for runways serving ARC C-II and D-II aircraft with a published instrument approach with lower than three quarters mile visibility minimums. Design standards are 300 feet of separation for visibility minimums of not less than three quarters mile. Therefore, the parallel taxiway would need to be relocated either 60 feet or 160 feet to the east depending on whether three quarters mile minimums are attained.

The width of the parallel and three of four midfield entrance/exit taxiways is 50 feet. The north entrance/exit taxiway and Taxiway B are 100 feet wide. In order to accommodate Design Group II aircraft, FAA criteria calls for a taxiway width of 35 feet. Currently, all taxiways accommodate FAA criteria.

In order to accommodate all aircraft currently based and expected at Mid Valley Airport in the future, all taxiways serving Runway 13-31 should be 40 feet wide.

NAVIGATIONAL AIDS AND LIGHTING

Airport and runway navigational aids are based on FAA recommendations as depicted in DOT/FAA Handbook 7031.2B, **Airway Planning Standard Number One** and FAA Advisory Circular 150/5300-2D, **Airport Design Standards, Site Requirements for Terminal Navigation Facilities**, and TxDOT's **Policies and Standards**.

Navigational aids provide two primary services to airport operations, precision guidance to specific runway and/or non-precision guidance to a runway or the airport itself. The basic difference between a precision and non-precision navigational aid is that the former provides electronic descent, alignment (course), and position guidance, while the non-precision navigational aid provides only alignment and position location information. The necessity of such equipment is usually determined by design standards predicated on safety considerations and operational needs. The type, purpose and volume of aviation activity expected at the airport are factors in the determination of the airport's eligibility for navigational aids.

Global Positioning System

The advancement of technology has been one of the most important factors in the growth of the aviation industry in the twentieth century. Much of the civil aviation and aerospace technology has been derived and enhanced from the initial development of technological improvements for military purposes. The use of orbiting satellites to confirm an aircraft's location is the latest military development to be made available to the civil aviation community.

Global positioning systems (GPS) use two or more satellites to derive an aircraft's location by a triangulation method. The accuracy of these systems has been remarkable, with initial degrees of error of only a few meters. As the technology improves, it is anticipated that GPS may be able to provide accurate enough position information to allow Category II and III precision instrument approaches, independent of any existing ground-based navigational facilities. In addition to the navigational benefits, it has been estimated that GPS equipment will be much less costly than existing precision instrument landing systems.

Currently, Mid Valley Airport is served by both a VOR/DME and a GPS approach to Runway 13. The GPS Runway 13 approach provides properly equipped aircraft to approach Runway 13 with reported cloud ceilings of at least 400 feet and one mile visibility. It is likely that Mid Valley Airport will be served by an additional GPS instrument approach in the future, which would allow the airport to remain operational with up to Category I (CAT I) weather minimums (200 foot cloud ceilings and one half mile visibility). Therefore, Runway 31 should be planned for a GPS approach, also.

Although currently classified as a General Utility airport, Mid Valley Airport is positioned to serve as a reliever status airport for either or both Harlingen and McAllen airports. Therefore, the airport should be planned to accommodate CAT I minimums. TxDOT's **Policies and Standards** indicates that a reliever airport should provide at least one precision approach with CAT I minimums.

Review of weather conditions in the area indicate that the southerly winds are predominant with low visibility and cloud ceilings. These conditions are typical with spring and summer storm activity. Thus, in order to accommodate poor weather conditions with southerly winds, a CAT I GPS approach should be planned for Runway 13.

Airport Visual Approach Aids

Visual glide slope indicators are a system of lights located at the side of the runway which provide visual descent guidance information during an approach to the runway. Currently, Runways 13-31 are being equipped with a four-box visual approach slope indicator (VASI-4). The four-box systems, are preferred for use by business jet aircraft and will be adequate for the planning period.

Airfield Lighting And Marking

Runway identification lighting provides the pilot with a rapid and positive identification of the runway end. The most basic system involves runway end identifier lights (REILs). REILs are being installed at Mid Valley Airport on both Runways 13-31.

As previously mentioned, Runway 13 should be planned for a CAT I GPS approach. In order to provide for CAT I minimums a medium intensity approach light system with runway alignment indicator lights (MALSR) is required. REILs are adequate for Runway 31. If any runway would be served by a GPS approach with three quarters of a mile visibility, however, an omni-directional approach lighting system (ODALS) or MALS would be required. The medium intensity runway lighting (MIRL) currently serving Runway 13-31 will be adequate for the planning period.

Currently, the taxiway system at Mid Valley Airport is lighted by medium intensity taxiway lighting (MITL). TxDOT's **Policies and Standards** indicates that MITL should be provided at reliever airports with more than 100 based aircraft to better serve nighttime operations. The current nonprecision markings on Runway 13-31 should be ultimately upgraded to precision marking to accommodate the planned approaches.

The airport also presently has lighted wind cones and a segmented circle which provides pilots with information about wind conditions and traffic pattern circulation to pilots. In addition, an airport beacon assists in identifying the airport from the air at night. Each of the facilities should be maintained in the future.

LANDSIDE REQUIREMENTS

Landside facilities are those necessary for handling of aircraft, passengers, and cargo while on the ground. These facilities provide the essential interface between the air and ground transportation modes. These areas will be subdivided into two parts: general aviation and air cargo facilities and support facilities. The capacities of the various components of each area were examined in relation to projected demand to identify future landside facility needs.

GENERAL AVIATION FACILITIES

The purpose of this section is to determine the space requirements during the planning period for the following types of facilities normally associated with general aviation terminal areas:

- Hangars
- Aircraft Parking Apron
- General Aviation Terminal
- Vehicle Access
- Vehicle Parking
- Fuel

Hangars

The space required for hangar facilities is dependent upon the number and type of aircraft expected to be based at the airport. Based upon an analysis of general aviation facilities and the current demand at Mid Valley Airport, percentages representing hangar requirements for various types of general aviation aircraft have been calculated. The analysis indicates that all aircraft at the airport are stored in hangars.

Weather conditions at Mid Valley Airport, including thunderstorm activity and extreme heat in the summer, suggests most based aircraft owners prefer hangar space to outside tie-downs. Since this is their preference, it is necessary to determine what percentages of these aircraft would utilize conventional-type and executive hangars as opposed to individual T-Hangars. T-Hangars are relatively inexpensive to construct and provide the aircraft owner more privacy and greater ease in obtaining access to the aircraft. The principal uses of conventional hangars at general aviation airports are for large aircraft storage, storage during maintenance, and for housing fixed base operator activities. Executive hangars provide a storage area typically larger than T-Hangars allowing for storage of larger aircraft or multiple small aircraft.

As mentioned in Chapter Two, a general aviation survey was mailed to airport users. One question asked aircraft owners about their hangar preferences. Of those who responded to the question, T-Hangars were the preferred storage facility. Individual executive units were also preferred, while typically only those with multiple aircraft preferred conventional space.

Presently, all of the T-Hangar positions on the airfield are occupied and there is a waiting list to obtain space. The airport has recently constructed a T-Hangar storage facility, which provides 10 individual storage units. Analysis of the T-Hangar facilities indicates that these T-Hangar facilities provide an area of 1,350 square feet per individual storage unit, or a total of 13,500 square feet. Another multiple unit storage facility directly adjacent to the T-Hangars has four larger units, with a total square footage of 10,350 square feet, or approximately 2,500 square feet each. Total T-Hangar space available at the airport totals 23,850 square feet of storage space. Analysis of future T-Hangar requirements, as depicted on **Table 3D**, indicates that an additional 108 T-Hangars will be needed within the long range planning horizon.

Multi aircraft or conventional hangars are located on the east side of the airport. There are six of these new facilities, varying in size from 4,800 square feet to 15,200 square feet. Altogether these facilities account for 51,000 square feet of total conventional hangar space.

For purposes of this report, the total 32 hangar facilities on the west side of the Mid Valley Airport may be considered to be executive hangar facilities. These vary in size from rather small to large facilities. The size of the typical unit is 1,200 square feet. There are 23 of these accounting for 27,600 square feet of hangar space. The largest of these hangars range from 3,000 to 3,500 square feet. The remaining nine of these larger hangars account for 24,400 square feet of available hangar space. Together these hangars provide 52,000 square feet of storage and maintenance space.

The executive hangar units are typically less expensive to construct or lease than larger conventional hangars. Typical users of executive hangars are aircraft owners having larger, more sophisticated aircraft and/or own multiple aircraft and wish for a singular storage arrangement. These owners prefer a larger space than provided by individual T-Hangar units but do not want to store their aircraft in a general storage conventional hangar.

From the analysis in **Table 3D**, it appears that the existing T-Hangar and conventional hangar positions do not meet current demands. The older executive facilities may need replacement within the future. The replacements most likely desired will be a mix of T-Hangar and executive hangars. Therefore, short term facility planning may be determined to include all three hangar types. The additional conventional and executive hanger positions that are needed in the intermediate and long terms are indicative of the anticipated increase of larger and more sophisticated aircraft basing at the airport. Furthermore, the airport should always have space available to accommodate corporate hangars as an attraction for new businesses considering relocation to the Mid Valley area.

The final step in the process of determining hangar requirements involves estimating the area necessary to accommodate the required hangar space. Future T-Hangar requirements will use 1,200 square feet per based aircraft to determine future storage space requirements. A planning standard of 2,500 square feet of space for aircraft was then applied to the aircraft to be hangared in conventional and executive hangars.

Also, an area equal to 10 percent of the total hangar space on the airport should be allocated for maintenance shop facilities. It is assumed that this maintenance area would be housed in conventional hangar space. Hangar space requirements are presented in **Table 3D**.

Current requirements to fulfill existing needs are for 62 T-Hangar spaces. The T-Hangar requirements then follow for 73 for the short term, 83 T-Hangar spaces for the intermediate term, and 122 for the long term.

Requirements for the conventional storage facilities are as shown in the table: 26 spaces to fulfill current needs, 22 spaces needed for the short term, 25 spaces to be constructed for the mid term planning period, and 35 spaces to supply needs for the long term.

The need for executive hangar facilities are projected to be 20 spaces for the existing time frame. Needs for the short term are 30 spaces and 37 spaces for the intermediate term. For the long term 51 executive hangar positions will be needed.

TABLE 3D Aircraft Storage Hangar Requirements					
		Future Requirements			
	Existing	Current Need	Short Term	Mid Term	Long Term
AIRCRAFT TO BE HANGARED					
Single Engine	88	na	97	110	152
Multi-Engine	15	na	17	18	25
Turbo Props	0	na	2	3	8
Jets	1	na	2	5	10
Rotorcraft	2	na	2	4	5
Total	106	na	120	140	200
HANGAR STORAGE POSITIONS REQUIRED					
T-Hangar Positions	14	62	73	83	122
Executive Hangar Positions	32	20	26	33	51
Conventional Hangar Positions	6	26	22	25	35
HANGAR AREA REQUIREMENTS					
T-Hangar Area (s.f.)	23,850	73,900	87,300	99,000	145,900
Executive Hangar Storage Area	52,000	45,800	57,600	74,100	117,100
Conventional Hangar Storage Area	51,000	49,500	29,100	33,900	48,500
Total Maintenance Area		18,600	22,600	27,100	41,300
Total Hangar Area (s.f.)	126,850	187,800	196,600	234,100	352,800

Aircraft Parking Apron

A parking apron should be provided for at least support of maintenance operations, as well as transient aircraft. The airport provides 21,400 square yards of total apron space adjacent the terminal building and T-Hangar areas. An additional 2,500 square yards of apron space is located adjacent to Wilson Aviation, the onfield aviation maintenance facility. The west side facilities have an additional 6700 square yards of apron area for maneuvering and tie down.

At the present time, there are no aircraft stored full-time on the ramp, although some aircraft stored in conventional hangars may be moved to the ramp during the day to provide hangar area for aircraft maintenance. In the future, most based aircraft are expected to continue to be stored in hangars.

FAA Advisory Circular 150/5300-13 suggests a methodology by which transient apron requirements can be determined from knowledge of busy-day operations. At Mid Valley Airport, the number of itinerant spaces currently required was determined to be approximately 15 percent of the busy-day itinerant operations. The short term requirement was calculated at 10 percent of the busy day itinerant operations, 12 percent for the mid, or intermediate term, and 15 percent for long term planning needs.

A planning criterion of 700 square yards per aircraft was applied to the number of itinerant spaces to determine future transient apron requirements for single and multi engine aircraft. The criterion of 1600 square yards of apron was applied to the number of transient jet aircraft anticipated for a busy day. The planning criterion of 570 square yards per aircraft was applied to the number of local or maintenance positions. The results of this analysis are presented in **Table 3E.**

TABLE 3E
General Aviation Aircraft Parking Apron Requirements
Mid Valley Airport

	Currently	Short	Intermediate	Long
Itinerant Aircraft Ramp Requirements				
Busy Day Itinerant Operations	77	90	107	155
Single, Multi-engine Itinerant Aircraft Positions	8	6	9	16
Apron Area (s.y.)	5,600	4,400	6,300	11,400
Transient Jet Aircraft	4	3	4	7
Apron Area (s.y.)	6,400	4,300	6,200	11,200
Local Aircraft Ramp Requirements				
Locally-Based Aircraft Positions	2	5	5	5
Apron Area (s.y.)	1,100	2,900	2,900	2,900
Total Positions	14	14	18	28
Total Apron Area (s.y.)	13,100	11,600	15,400	25,500

Based on the available 13,100 square yards of apron spaces, there is adequate space for the short term, as soon as current construction is complete. However, an additional 12,400 square yards of pavement will be required in the intermediate and long terms of the planning period as additional aircraft base at the airport, as itinerant aircraft increase airport use, and as maintenance operations also increase.

General Aviation Terminal Facilities

General aviation terminal facilities have several functions. Space is required for passenger waiting, the pilot's lounge and flight planning area, concessions, management, storage and various other needs. This space is not necessarily limited to a single, separate terminal building but also includes the space offered by fixed base operators for these functions and services. The existing 3,250 square foot general aviation terminal building is located approximately midfield on the airport's east side.

The methodology used in estimating general aviation terminal facility needs was based upon the number of airport users expected to utilize general aviation facilities during the design hour as well as FAA guidelines. A planning average of 1.8 passengers per flight increasing to 2.2 passengers per flight by the end of the planning period was multiplied by the number of design hour itinerant operations to determine design hour itinerant passengers.

Space requirements were then based upon providing a planning criterion of 90 square feet per design hour itinerant passenger. **Table 3F** outlines the general space requirements for existing and future general aviation terminal services at Mid Valley Airport. The analysis presented in **Table 3F** indicates that the current general aviation terminal building space of 3,250 square feet meets the current space requirements. A new addition to the terminal is being constructed that will add approximately 2,000 square feet of space. Together with this additional space the terminal will meet needs until the intermediate term. At that time the facility will be approximately 500 square feet short of recommended space. Ultimately, the general aviation terminal space needs will be 9,700 square feet. Much of the future terminal space needs can be accommodated by FBOs or other specialty operators. Once expanded the terminal facility will be adequate for the planning period.

AIR CARGO

Air cargo, as discussed in the previous chapter, is a small but growing sector of the airport mix of commercial aircraft. For this reason air cargo operations considered for the Mid Valley Airport for the near, intermediate and long terms should emphasize facilities to accommodate a feeder status of smaller type aircraft that fall within ARC B-II, such as Cessna Caravans, the Cessna 441 Conquest, Turbo AeroCommander, the Mitsubishi MU-2, and Beechcraft King Air. Larger aircraft of C-II or C-III designation may operate here on a limited basis. The feeders may shuttle cargo between Mid Valley Airport and some of the larger air cargo facilities, Mexico, or from the Valley to some of the major trucking and air cargo centers, such as Houston, San Antonio, Austin, and Dallas.

The short and intermediate term facility requirement projections would already be inclusive of the short and intermediate term needs for air cargo hangar and apron space. Careful evaluation of the rate of the growth and demand for air cargo will determine the long term airport facility needs. Long term needs may include a sorting and dock facility, increased apron area, and space to be designated for an on field customs service.

TABLE 3F General Aviation Terminal Area Facilities Mid Valley Airport	Available	Short Term	Intermediate Term	Long term
General Aviation Design Hour Itinerant Passengers	36	46	62	108
General Aviation Building Space(s.f.)	3,200	4,100	5,600	9,700

VEHICLE ACCESS

Direct access to Mid Valley Airport is available from US 83 located immediately south of the airport. To access the east side and main terminal area, traffic turns east from the Airport Drive exit onto Mile Eight North Road. Mile Three and a Half West Road intersects with Mile Eight and routes airport traffic north for a short distance until it splits, with airport traffic taking Stephens Boulevard, paralleling the full length of the field. Eastbound Highway 83 traffic can take the exit ramp that precedes Airport Drive and proceed onto Mile Eight Road.

With industrial parks on the right side and airport facilities on the left side of northbound, Joe Stephens Boulevard eventually T's into Mile Nine West Road. Mile Nine West Road runs east-west across the north side of the airport. A service road that extends from Airport Drive to Mile Nine West allows access to the northwest corner of airport property.

Airport Drive should be completed ultimately, creating access to each area of the airport. The other roads route traffic well, but at some intermediate to long term date may be considered for widening.

VEHICLE PARKING

Vehicle parking demands have been determined for Mid Valley Airport. Space determinations were based on an evaluation of the existing airport use as well as the industry standards.

Automobile parking spaces required to meet general aviation demand were calculated by multiplying design hour itinerant passengers by the industry standard of 1.8. Currently, approximately 6 individuals are employed by general aviation operators on either a part-time or full-time basis at the airport. Employee parking spaces typically equals 20 percent of total parking spaces on the airport. Thus, total automobile spaces were determined by adding ten percent to the general aviation spaces. Parking requirements are summarized in **Table 3G**.

Currently, the airport provides approximately 20 automobile parking spaces at the general aviation terminal on the east side of the airport. This provides for employee and transient parking needs. A parking lot is under construction that will provide parking for the hangars and services that are located north of the terminal on the east side, adding approximately 50,000 square feet of parking. The majority of the based aircraft are currently on the west side, with parking being provided in several small lots and individually alongside some hangars. Ultimately parking should be provided as new construction takes place to replace existing aging hangar facilities.

The analysis of parking space requirements presented in **Table 3G** indicates adequate space for the planning period at the terminal. Parking requirements for the short to long term planning periods should reflect the replacement of facilities on the west side.

TABLE 3G
General Aviation Automobile Parking Requirements
Mid Valley Airport

		Future Requirements		
	Available	**Short Term**	**Intermediate Term**	**Long Term**
Design Hour Passengers	16	19	23	33
Terminal Vehicle Spaces	21	25	30	43
Parking Area (s.f.)	8,400	10,000	11,900	17,200
General Aviation Spaces	53	60	70	100
Parking Area (s.f.)	21,200	24,000	28,000	40,000
Total Parking Spaces	74	85	100	143
Total Parking Area (s.f.)	29,600	34,000	39,900	57,200

FUEL STORAGE

Total fuel storage capacity at the airport includes two 12,000 gallon tanks: one for 100LL general aviation fuel and one tank for Jet A fuel. The Mid Valley Airport also owns a 2,200 gallon Jet A fuel truck.

The future fuel storage requirements analysis considers historical fuel sales at the airport. **Table 3H** presents fuel sales at the airport from fiscal year 1993 to August 2000. Total fuel sold at the airport increased from 15,000 gallons in 1993 to 79,300 gallons in 1999. Fuel sales of Avgas (100LL) rose dramatically, then tapered off. For the same period Jet A fuel has risen steadily contributing to continued high sales and profits. Jet A has risen in sales at a higher rate than general aviation fuel, underscoring the fact that Mid Valley is drawing increased itinerant turbine aircraft traffic.

Fuel storage requirements are typically based upon maintaining a one month supply of fuel during an average month. However, more frequent deliveries can reduce the fuel storage capacity requirement. For 1998, monthly fuel sales averaged 3,545 gallons of 100LL, and 1,717 gallons of Jet A. In 1999, the year of highest all time fuel sales and revenue for both 100LL and Jet A, monthly fuel sales averaged 3,471 gallons of 100LL and 3,063 gallons of

Jet A. For the fiscal year 2000 so far (11 of 12 months) monthly fuel sales averaged 3,796 gallons of 100LL and 2,579 gallons of Jet A.

TABLE 3H
Historical Annual Fuel Sales (1993-2000*)
Mid Valley Airport

Fuel Sold in Gallons					
FY	100LL Gal	Monthly Avg.	Jet A Gal	Monthly Avg.	Gross Revenue
1993	12,933.7	1,078	2,065.3	172	$26,733.81
1994	26,397.5	2,200	3,059.7	255	$53,549.00
1995	54,655.3	4,555	7,869.8	656	$113,174.37
1996	45,054.6	3,755	5,329.6	444	$95,941.07
1997	44,899.3	3,742	10,649.2	887	$110,105.31
1998	42,542.4	3,545	20,603.2	1,717	$122,388.85
1999	41,653.4	3,471	36,758.5	3,063	$154,119.07
2000	41,753.0	3,796	28,372.0	2,579	$149,269.32

*2000 = figures available through August only.
Statistics provided by City of Weslaco, Aviation Management

The airport is currently utilized predominantly by aircraft requiring 100LL fuel. Because an increasing percentage of future aircraft utilizing the airport will require Jet A fuel, future fuel storage requirements must consider increasing Jet A fuel requirements. Also, as additional piston aircraft base and utilize the Mid Valley Airport, avgas fuel sales will increase as well.

Forecasts conducted in the previous chapter indicate that ten jet and turbo prop aircraft will base at Mid Valley by the long term planning horizon. As operations by turbine and piston aircraft increase and more aircraft base at the airport, average monthly fuel usage can be expected to increase. It is unlikely, however, that monthly fuel usage will exceed current storage capacities, if bimonthly deliveries are provided. If fuel deliveries are less frequent, however, consideration should be given to additional storage facilities. Therefore, the current storage capacity will be adequate for the planning horizon.

SUMMARY

The intent of this chapter has been to outline the facilities required to meet potential aviation demands projected for Mid Valley Airport for the planning horizon. A summary of the airfield and general aviation facility requirements is presented on **Exhibits 3C** and **3D**.

The following step will be to use this analysis of facility requirements to formulate a direction for development which best meets these projected needs. The remainder of the master plan will be devoted to outlining this direction, its schedule, and its costs.

00MP04-3C-3/21/01

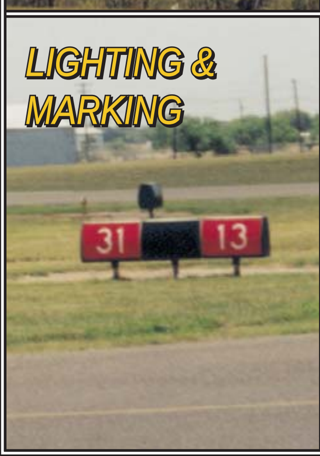
	AVAILABLE	SHORT-TERM	ULTIMATE
RUNWAYS 	**Runway 13-31** 4,998' x 70' 12,500# SWL	**Runway 13-31** Same	**Runway 13-31** 5,800' x 100' 75,000# DWL
TAXIWAYS 	**Runway 13-31** Parallel Taxiway Four Exits	**Runway 13-31** Same	**Runway 13-31** Add exit with runway extension; widen exits to 100'; offset parallel taxiway 160'
NAVIGATIONAL AIDS 	AWOS-3 **Runway 13-31** VASI-4 GPS (13) VOR-DME - A	AWOS-3 **Runway 13-31** Same	AWOS-3 **Runway 13-31** GPS (CAT I-13)
LIGHTING & MARKING 	Segmented Circle Rotating Beacon MITL Lighted Windcones **Runway 13-31** MIRL, Non-Precision Marking, REILs ODALS	Segmented Circle Rotating Beacon MITL Lighted Windcones **Runway 13-31** Same	Segmented Circle Rotating Beacon MITL Lighted Windcones **Runway 13-31** Add: Precision Marking MALSR (13) MALS (31)

Exhibit 3C
AIRFIELD FACILITY REQUIREMENTS

00MP04-3D-9/20/00

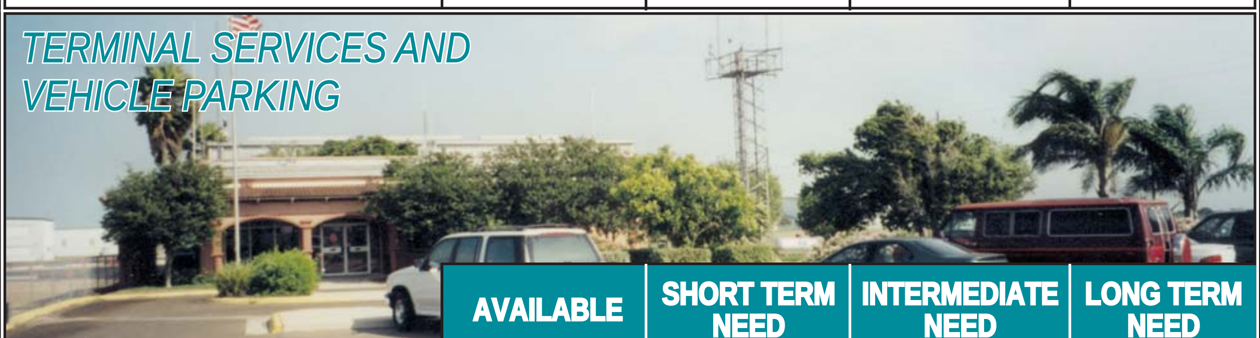
AIRCRAFT STORAGE HANGARS

	AVAILABLE	SHORT TERM NEED	INTERMEDIATE NEED	LONG TERM NEED
T-hangar Positions	14	73	83	122
Conventional Hangar Positions	6	22	25	35
Corporate Hangar Positions	32	26	33	51
T-hangar Area (s.f.)	23,850	87,300	99,000	145,900
Conventional Hangar Area (s.f.)	51,000	29,100	33,900	48,500
Corporate Hangar Area (s.f.)	52,000	57,600	74,100	117,100
Maintenance Area (s.f.)	0	22,600	27,100	41,300
Total Hangar Area (s.f.)	126,850	196,600	234,100	352,800

APRON AREA

	AVAILABLE	SHORT TERM NEED	INTERMEDIATE NEED	LONG TERM NEED
Transient Positions	12	9	13	23
Locally-Based Aircraft Postions	2	5	5	5
Total Positions	14	14	18	28
Total Apron Area (s.y.)	13,100	11,600	15,400	25,500

TERMINAL SERVICES AND VEHICLE PARKING



	AVAILABLE	SHORT TERM NEED	INTERMEDIATE NEED	LONG TERM NEED
Terminal Building Space (s.f.)	3,200	4,100	5,600	9,700
Total Parking Spaces	74	85	100	143
Total Parking Area (s.f.)	29,600	34,000	39,900	57,200

WESLACO MidVALLEY AIRPORT

Exhibit 3D
LANDSIDE REQUIREMENTS

Chapter Four
Airport Development Alternatives

AIRPORT DEVELOPMENT ALTERNATIVES

Prior to defining the development program for the airport it is important to consider development potential and constraints at the airport. In this chapter a series of airport development scenarios are considered for the airport to satisfy the projected demand through the planning period and identify the highest and best uses for airport property, taking into consideration existing physical constraints and appropriate federal design standards, where appropriate. The alternatives analysis is an important step in the planning process since it provides the underlying rationale for the final master plan recommendations.

Any development proposed for a master plan is evolved from an analysis of projected needs for a set period of time. Though the needs were determined by the best methodology available, it cannot be assumed that future events will not change these needs. The master planning process attempts to develop a viable concept for meeting the needs caused by projected demands through the planning period.

The possible combination of alternatives can be endless, so some intuitive judgement must be used to identify the alternatives which have the greatest potential for implementation. The evaluation of alternatives is a process of deciding which options are most compatible with the goals and objectives of the city of Weslaco, airport users, and nearby residents as well as regional and national objectives. After the evaluation process, a selected airport concept can be transformed into a realistic development plan.

While the focus of the analysis summarized in this chapter is identifying future development options for Mid Valley Airport, it is also important to consider the impacts of alternatives to developing the airport to meet future demands. These include: 1) no future development at the airport (no action alternative); 2) transferring aviation demand to another airport; and 3) construction at a new airport site.

DO-NOTHING ALTERNATIVE

The do-nothing, or "no action" alternative essentially considers keeping the airport in its present condition and not providing for any type of improvement to the existing facilities to accommodate future demand. The primary results of this alternative would be the inability of the airport to satisfy the projected aviation demands of the airport service area as well as experience additional economic growth through the development of viable parcels of land. The Mid Valley Airport has experienced periods of little development in the past and lags behind in available facilities and services. Moreover, many airport hangar facilities have neared the end of their useful life and will need to be replaced in the future.

The airport's aviation forecasts and the analysis of facility requirements indicated a potential need for airfield upgrades, runway extension, new instrument approach procedures, and expanded terminal and hangar facilities. Without these improvements to the airport facilities, regular and potential users of the airport would be constrained from taking maximum advantage of the airport's air transportation capabilities.

The unavoidable consequences of the "no action" alternative would involve the airport's inability to attract potential airport users and expand economic development in the city of Weslaco. Corporate aviation plays a major role in the transportation of business leaders. Thus, an airport's facilities are often the first impression many corporate officials will have of the community. If the airport does not have the capability to meet terminal, hangar, apron, or airfield needs of the potential users, the airport's capabilities to accommodate businesses that rely on air transportation will be diminished.

As detailed in Chapter Two, Aviation Demand Forecasts, corporate aviation is becoming an increasing larger portion of total general aviation activity. Without regular maintenance and additional improvements, potential users and business for the local area could be lost. To propose no further development at the airport would be inconsistent with local community goals to expand the economic development of the city of Weslaco, and the Valley as a whole.

TRANSFER AVIATION SERVICES

Transferring aviation services to another airport essentially considers limiting development at Mid Valley Airport and relying on other airports to serve aviation demand for the local area. There are three airports within 20 nautical miles of Mid Valley Airport. Two of these airports, Valley International in Harlingen and McAllen Miller International in McAllen are commercial service airports. Their primary role is the transportation of passengers on commercial airlines. These airports, however, do serve general aviation aircraft activity. As commercial service operations continue to increase at these airports, general aviation activity will likely shift to other nearby airports. Typically, small general aviation aircraft and corporate operators do not wish to mix with heavier aircraft at more congested airports, opting instead to utilize general aviation airports which provide increased convenience and capacity.

Also, considering that comparable aviation facilities are not readily available to accommodate the demand from Mid Valley Airport, it cannot be expected that either airport could fulfill the role that Mid Valley Airport provides to the local area. With the facilities in place, it would not be prudent to consider developing another local airport to fulfill the long term aviation needs of the lower Valley region. Shifting demand would further hamper economic growth in the Weslaco area and would serve as a significant inconvenience to airport users. Thus, a shift or transfer of aviation facilities to either McAllen or Harlingen will not be considered.

The Edinburg International was also considered but rejected. The Mid Valley Airport is unique being within a short drive time to either McAllen or Harlingen. Edinburg, on the other hand is too far north to serve Weslaco, and provide an attractive general aviation alternative to those wishing convenient access to both Harlingen and McAllen. As new industries in the community begin to emerge and existing businesses expand, there will be a need for a highly functional airport in Weslaco. This role is not easily replaced by another local airport.

CONSTRUCTION OF A NEW AIRPORT SITE

The alternative of developing an entirely new airport facility to meet the aviation needs of the local area can also been considered. This would essentially consider abandoning the existing airport site and replacing the existing facilities with comparable facilities in a new location.

Development at a new airport site could have some advantages. A new airport site could be chosen which could more centrally locate the airport to the airport service area. Emphasis could be placed on locating the airport with more developable space. However, this will likely require moving a considerable distance from the Weslaco area, especially away from Highway 83 which reduces the convenience of the airport, especially for corporate air travelers.

The development of a new airport is generally considered when an airport reaches capacity and it is cost prohibitive to expand the existing facility. The facility needs evaluation did not indicate that the airport would be severely congested. Therefore, at the present time the capacity of the existing airport has not been reached. However, this does not reflect the fact that expansion of the existing airport site is limited by existing land uses and physical constraints including residential areas, industrial properties, canal, and existing roadways. It is reasonable to assume that at some point in the future, the existing airport site could be maximized.

Constructing an entirely new airport can be a very difficult and costly action requiring a tremendous financial commitment of funds for land acquisition, site preparation and the construction of new airport facilities. The closing of the existing airport site would mean a loss of the substantial public and private investments in the existing facility which may only be partially recovered through the sale of the existing airport. This could put a significant burden on existing tenants of the airport which would need to replace existing facilities. From social, political and environ-mental standpoints, extensive justification would be needed to follow this alternative. A detailed and lengthy study process, beyond the scope of this Master Plan, would need to be completed to prepare sufficient justification of the need for a new facility, its benefits, and its costs.

Extensive environmental review on both the state and federal levels would be necessary as well. This would definitely involve the development of an Environmental Assessment, and quite possibly an Environmental Impact Statement (EIS), before final site approval could be given.

The public sentiment towards new airports in the last few years has been very negative, primarily because a new airport normally requires the acquisition of several large parcels of privately-owned land. Furthermore, the development of a new airport similar to Mid Valley Airport would likely take 10 to 15 years to become a reality and cost over $100 million. The potential exists for significant environmental impacts associated with disturbing a large land area when developing a new airport site.

With continued improvement, Mid Valley Airport should be capable of accommodating the project aviation demands of the Valley region through the planning period of this Master Plan. The airport should be developed in response to those demands. The airport has the potential to continue to develop as a quality airport that could greatly enhance the economic development of the community. Therefore, it is necessary to consider a series of development alternatives for the airport to satisfy projected demands and to improve the ability of the airport to foster additional economic growth in the Weslaco and the lower Rio Grande Valley region.

AIRPORT DEVELOPMENT OBJECTIVES

It is the overall objective of this effort to produce a balanced airside and landside complex to serve forecast aviation demands. However, before defining and evaluating specific alternatives, airport development objectives should be considered. The city of Weslaco provides the overall guidance for the operation and development of the Mid Valley Airport. It is of primary concern that the airport is marketed, developed, and operated for the betterment of its users. With this in mind, the following development objectives have been defined for this planning effort:

- Develop an attractive, efficient, and safe aviation facility in accordance with federal and state safety regulations.
- Develop facilities to efficiently serve general aviation users and encourage increased use of the airport, including increased business and corporate use of the airport.
- Provide sufficient airside and landside capacity through additional facility improvements which will meet the long term planning horizon level of demand of the area.
- Develop a plan environmentally compatible and acceptable to the local area residents.
- Target local economic development through the development of available property.

The remainder of the chapter will describe various development alternatives for the airside and landside facilities. Within each of these areas, specific facilities are required or desired. Although each area is treated separately, planning must integrate the individual requirements so that they complement one another.

AIRFIELD ALTERNATIVES

Airfield facilities are, by nature, the focal point of the airport complex. Because of their primary role and the fact that they physically dominate airport land use, airfield facility needs are often the most critical factor in the determination of viable airport development alternatives. In particular, the runway system requires the greatest commitment of land area and often imparts the greatest influence of the identification and development of other airport facilities. Furthermore, aircraft operations dictate the FAA and TxDOT design criteria that must be considered when looking at airfield improvements. These criteria, depending upon the areas around the airport, can often have a significant impact on the viability of various alternatives designed to meet airfield needs. The following describes in detail the specific requirements considered in the development of the airfield alternatives to follow.

RUNWAY LENGTH

Analysis in the previous chapter indicated that the runway system provides adequate length for small airplanes, but falls short of the requirements for the full range of business aircraft which currently and are forecast to operate at the airport.

As presented in Table 3B, in order to accommodate 75 percent of corporate aircraft (ARC C-II aircraft), FAA runway length design criteria requires 4,800 feet of runway. To fully accommodate 100 percent of business aircraft, the primary runway should be 5,800 feet in length. The table also indicated the need for up to 6,000 feet of runway length would be required to accommodate larger corporate aircraft with trip lengths in excess of 1,000 miles which would include Denver, Phoenix, and Miami.

Analysis also considered the runway length specified by manufacturers of aircraft currently based and forecast to base at the airport in the future. The Citation III aircraft, currently based at the airport, requires 5,500 feet of runway length on hot days at the airport's elevation. Other aircraft such as the Gulfstream III/IV aircraft and the Hawker aircraft require up to 7,000 feet as well.

The airport should be designed to accommodate the critical aircraft currently operating and forecast to operate at the airport in the future. Design standards and adjacent non-aviation facilities, however, could limit the ultimate design of Mid Valley Airport. The previous chapter indicated that the existing critical aircraft to be used for airport design (Cessna Citation III) falls in ARC B-II. **Exhibit 4A** and **Table 4A** present airport design criteria for ARC B-II aircraft. As depicted on the exhibit, the airport currently meets FAA and TxDOT standards for ARC B-II small aircraft.

TABLE 4A
Airfield Safety Area Dimensional Standards for Runway 13-31

Critical Aircraft	***A/B-II***	***C/D-II***
Runway Length	5,500	5,800
Runway Width	75	100
Runway Safety Area		
Width	150	500
Length Beyond Runway End	300	1,000
Object Free Area		
Width	500	800
Length Beyond Runway End	300	1,000
Runway Protection Zone - Not Lower Than One Mile Visibility		
Inner Width	500	500
Outer Width	700	1,010
Length	1,000	1,700
Runway Protection Zone - Not Lower Than 3/4 Mile Visibility		
Inner Width	1,000	
Outer Width	1,510	
Length	1,700	
Runway Protection Zone - Cat I Minimums		
Inner Width	1,000	
Outer Width	1,750	
Length	2,500	

Sources: FAA Airport Design Software Version 4.2D; FAA AC 150/5300-13, Change 5

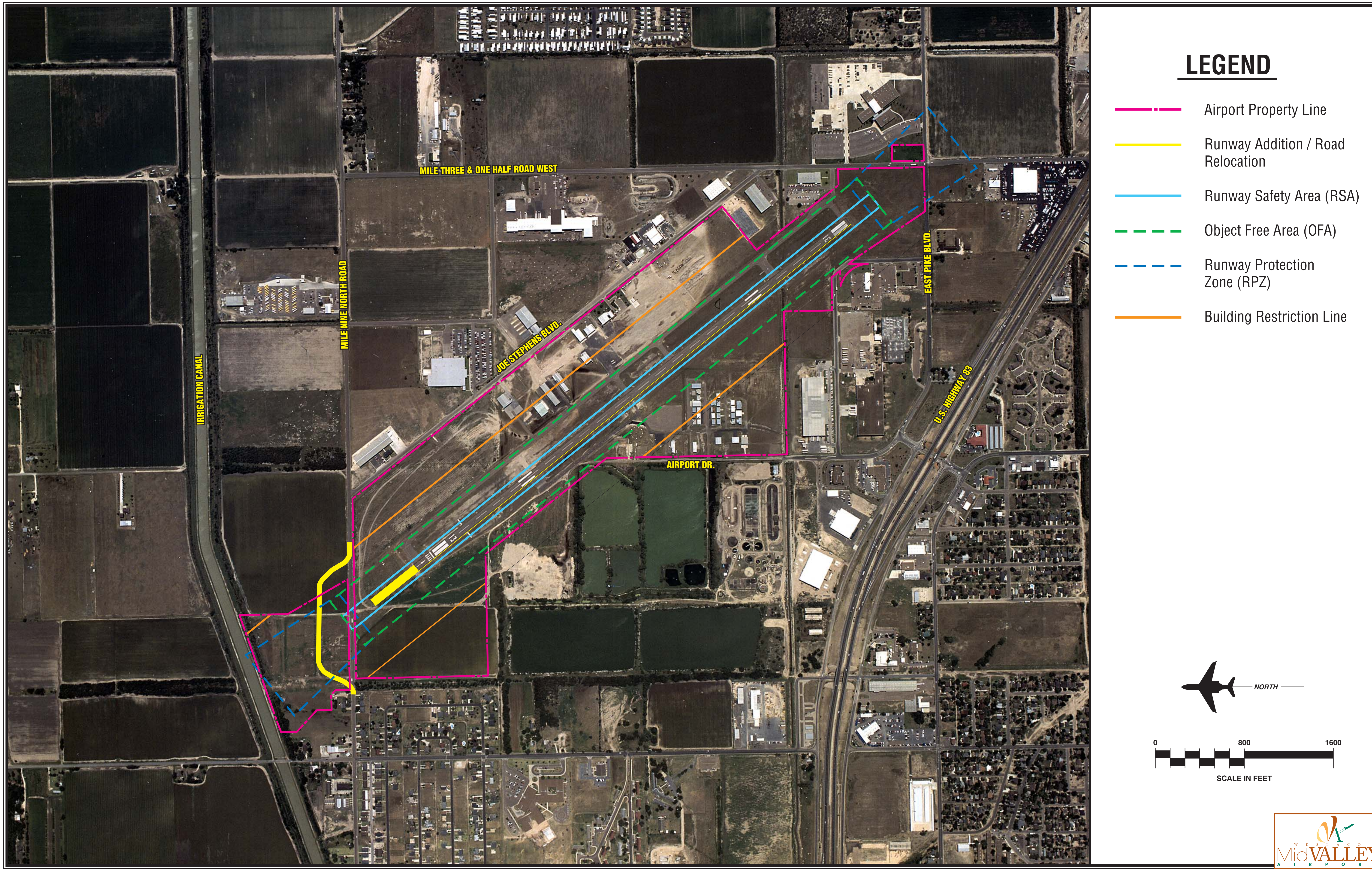


Exhibit 4A
FAA / TxDOT AIRFIELD STANDARDS
FOR ARC B-II AIRCRAFT

As depicted on **Exhibit 4B**, the airport could provide for a 502-foot extension to the north which would require the relocation of Mile Nine North Road. This extension would provide adequate length for all small general aviation aircraft and many medium and large corporate aircraft. This alternative considers ARC B-II aircraft for design and not lower than one mile visibility minimums.

Analysis in the previous chapter indicated that it would be advantageous for the airport to consider increasing its capabilities to meet ARC C/D-II aircraft. Increasing to ARC C/D-II design would allow for the airport to better serve larger aircraft on a more frequent basis, on the order of 250 or more annual operations. Complying with ARC C/D-II aircraft design criteria, however, may not be feasible at Mid Valley Airport. The following sections detail design standard criteria, comparing existing ARC B-II standards with ARC C/D-II standards.

Runway Safety Areas

The design of airfield facilities includes the pavement areas that accommodate landing and ground operations of aircraft, as well as imaginary safety areas that protect aircraft operational areas. Keeping them free of obstructions affects the safe operation of aircraft at the airport. The imaginary safety areas include the runway safety area (RSA) and object free area (OFA).

The FAA defines the OFA as "a two dimensional ground area surrounding runways, taxiways, and taxilanes which is clear of objects except for objects whose location is fixed by function (i.e. airfield lighting)." The RSA is defined as "a defined surface surrounding the runway prepared or suitable for reducing the risk of damage to airplanes in the event of an undershoot, overshoot, or excursion from the runway."

Furthermore, the FAA has placed a higher significance on maintaining adequate RSAs at all airports due to recent aircraft accidents. Under Order 5200.8, effective October 1, 1999, the FAA established a Runway Safety Area Program. The Order states, "The goal of the Runway Safety Area Program is that all RSAs at federally obligated airports and all RSAs at airports certificated under 14 CFR part 139 shall conform to the standards contained in Advisory Circular 150/5300-13 Airport Design, to the extent practical". Under the Order, each regional airports division of the FAA is obligated to collect and maintain data on the RSA for each runway at federally obligated airports. The FAA is in the process of visually inspecting the RSAs at each federally obligated airport. In Texas, TxDOT has been given the responsibility to administer and inspect the RSAs at the state's general aviation airports.

As mentioned in Chapter Three, the airfield currently conforms to FAA's design criteria for RSA considering ARC B-II aircraft. The RSA for a B-II runway extends 75 feet each side of the runway centerline and 300 feet beyond each runway end as depicted on **Exhibit 4A**. The OFA extends 250 feet each side of the runway centerline and

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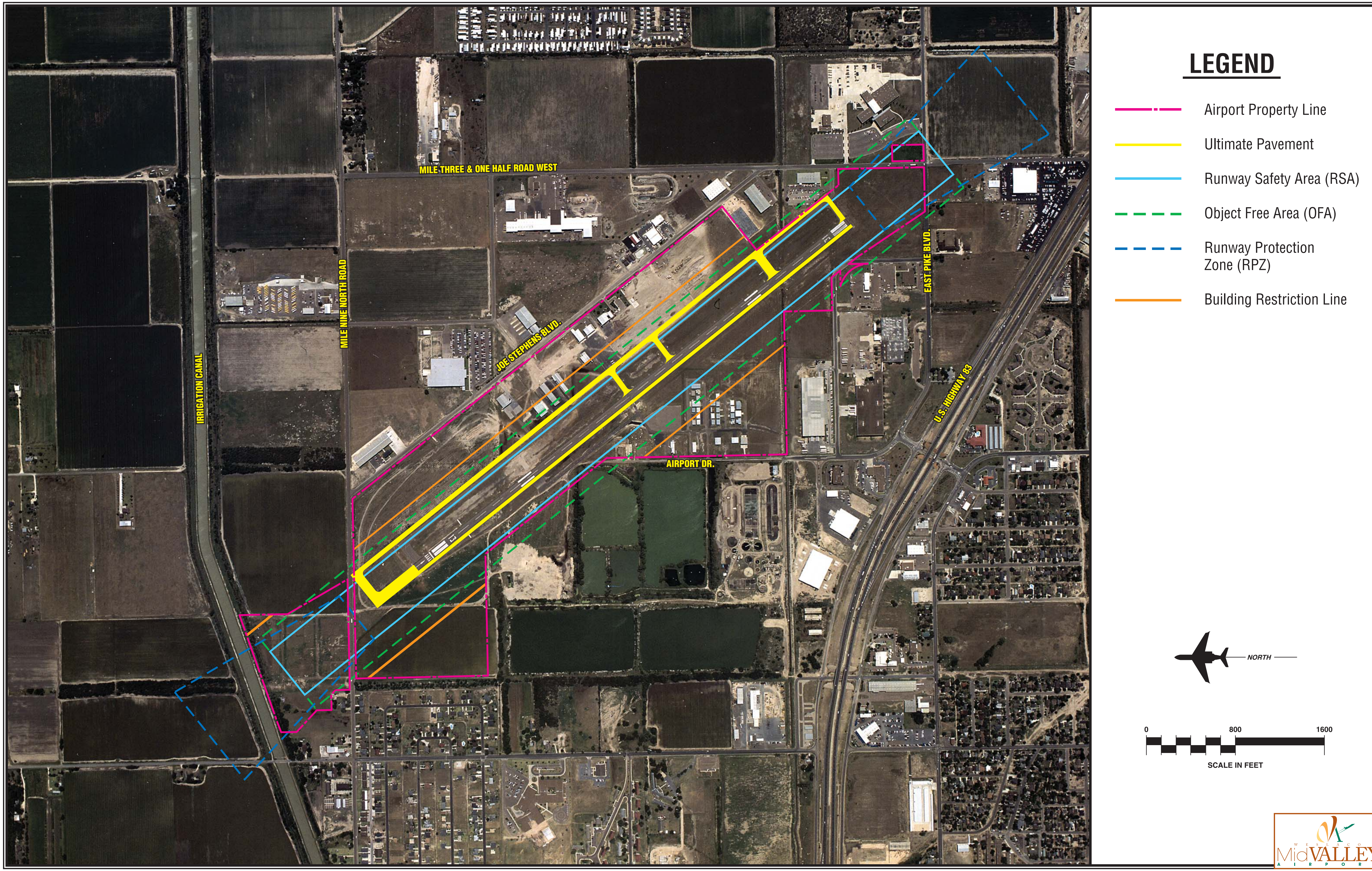


Exhibit 4B
FAA / TxDOT AIRFIELD STANDARDS
FOR ARC C / D-II AIRCRAFT

300 feet beyond each runway end. FAA standards require these areas to be under the control of the airport to ensure that these areas are kept clear of objects which could be hazardous to aircraft operations. **Table 4A** depicts airfield design criteria comparing ARC A/B-II with ARC C/D-II aircraft.

As indicated in the table, upgrading an airfield from ARC A/B-II standards to meet ARC C/D-II standards is sizeable. Both the RSA and OFA increase significantly in width and length beyond the runway. The RSA width increases from 150 feet wide to 500 feet wide, while the length beyond the runway end increases from 300 feet to 1,000 feet. The runway OFA increases to 800 feet wide and 1,000 feet beyond the runway end.

Exhibit 4B depicts the layout of the airfield considering ARC C/D-II design aircraft. To the south, the RSA and OFA extend beyond airport property. The RSA would extend south of the intersection of Three and One Half Mile West Road and East Pike Boulevard and would cut through non-airport property such as the vocational technical school and Army National Guard on the east and commercial property to the west. This alternative would require closing the intersection and relocating both Mile Three and One Half Mile Road and East Pike Boulevard. Relocation of these roads would be costly and would significantly impact vehicular flow south and east of the airport.

The exhibit also depicts the extension of Runway 13-31 to 5,500 feet. As previously discussed, ARC C/D-II aircraft would be better served with a 6,000-foot runway, however, an extension to 5,500 feet would place the safety areas near the irrigation canal. Consideration was given to extending the runway beyond the irrigation canal, or relocating the canal, but the costs associated with bridging the canal or re-routing the canal would far outweigh the benefits of providing only 5,500 feet. This extension, however, would require the closure of Nine Mile North Road east and west of the OFA.

Another consideration is that the OFA is generally where the aircraft parking limit is set. Thus, under B-II design, aircraft can be parked 250 feet to the side of runway centerline. For ARC C/D-II design, however, aircraft parking cannot be closer than 400 feet to the side of runway centerline.

Runway Protection Zones

Another consideration is the FAA requirement for cleared approaches. The runway protection zone (RPZ) is a trapezoidal area centered on the runway typically beginning 200 feet beyond the runway end. The RPZ is a two-dimensional area and has no associated approach surface. FAA design standards limit the types of development within the RPZ to development which is compatible to aircraft operations. FAA design standards limit residential and other types of development which can cause the congregation of people on the ground. Typically, compatible development includes agricultural land uses, golf courses (although consideration is being given to limiting golf course development due to bird strike considerations) or surface parking lots and roadways.

The RPZ has been established by the FAA to provide an area clear of obstructions and incompatible land uses in order to enhance the protection of approaching aircraft as well as people and property on the ground. The dimensions of the RPZ vary according to the visibility minimums serving the runway and, in some instances, the type of aircraft operating on the runway.

The FAA and TxDOT do not necessarily require the fee simple acquisition of the RPZ area, but recommend that airports maintain positive control over development within the RPZ. It is preferred that the airport own the property through fee simple acquisition, however, avigational easements (providing control of designated airspace within the RPZ) can be pursued if fee simple purchase is not possible. It should be noted, however, avigation easements can often cost as much as 80 percent of the land value and may not fully prohibit incompatible land uses from the RPZ. Also, the area encompassed by the RPZ envelopes the required RSA, OFA, and areas needed for installation of approach lighting systems, all of which would be required to be located on property owned in fee simple.

The RPZs under the ARC B-II design are depicted on **Exhibit 4A**. These RPZs consider an ARC B-II critical aircraft with not lower than one mile visibility. As depicted, these RPZs are generally contained on airport property. **Exhibit 4B** depict larger RPZ's associated with ARC C/D-II design aircraft and not lower than one mile visibility. As depicted on the exhibit, additional property (approximately 20 acres south and seven acres north) would need to be acquired, although the RPZ's would not overlay any structures.

RPZ dimensions increase not only with size of aircraft but also with improved instrument approach capabilities. The next section details the RPZ requirements for not lower than three quarters of a mile visibility and Cat I minimums for ARC B-II and ARC C/D-II aircraft.

Instrument Approaches

The evolution of global positioning system (GPS) technology has provided an inexpensive alternative for airports such as Weslaco Mid Valley Airport to be served by instrument approaches. Planning for a precision approach for the airport was recommended in the previous chapter.

The previous chapter indicated that consideration should be given to upgrading at least one runway end to provide full CAT I approach minimums, providing landing availability to properly equipped aircraft with weather minimums of one half mile visibility and 200-foot cloud ceilings. The previous chapter also indicated that plans should also consider providing a GPS approach to the opposite end providing weather minimums of not lower than three quarters of a mile visibility.

Analysis of existing airspace and area airports indicates that an approach or improvements to existing approaches would likely be approved by the FAA. The primary concern with upgrading the approach capabilities of the runway is increased RPZ and approach primary surfaces associated with improved approaches. The RPZs increase in size as the approach minimums are improved. Thus, improved approach capability will require sizable property acquisitions (either in fee or avigational easement).

Exhibit 4C presents a side-by-side layout of design criteria associated with improving approach capabilities to three quarters of a mile visibility minimums for both ARC B-II and C/D-II aircraft. As depicted, the RPZs increase to measure 1,000 feet inner width, 1,510 feet outer width, and 1,700 feet in overall length. As depicted on **Exhibit 4C**, the RPZs for a not lower than three quarters of a mile visibility approach would extend well beyond airport property. To the south, the RPZ would overlay the National Guard building and a commercial facility south and west along Highway 83 for both ARC B-II and C/D-II aircraft. **Exhibit 4D** presents design criteria required for CAT I minimum approach capabilities on Runway 13 for both ARC B-II and C/D-II aircraft. As with the previous alternative, the RPZs would extend well beyond airport property.

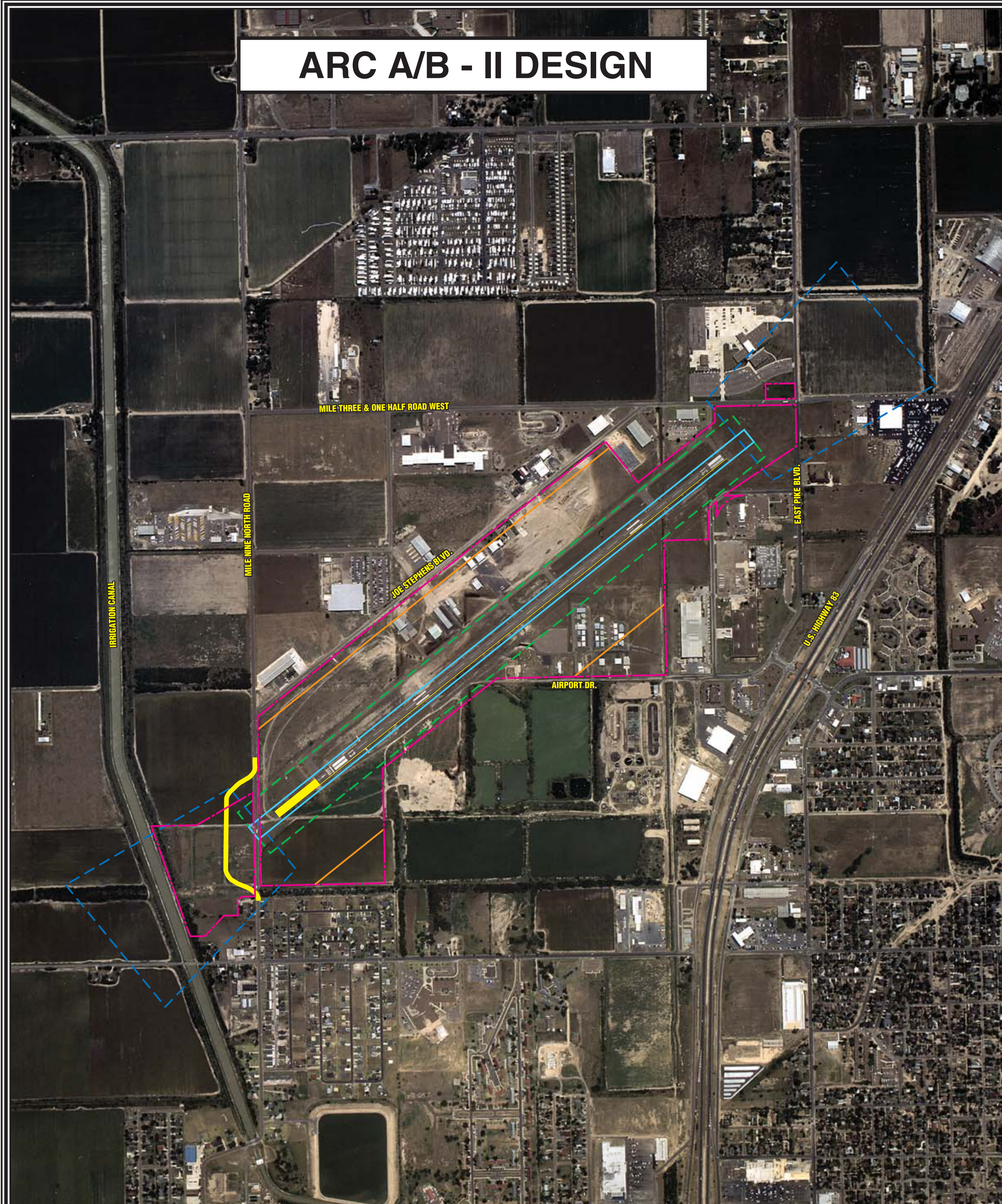
The most significant change involved with upgrading the approach capabilities deals with on airport development potential. This change is significant because the inner width, or primary surface is designated by the FAA as an area which no facilities (other than those required by function) can be placed. In more general terms, the primary surface is considered ground zero. For each seven feet to the side of the primary surface (both east and west) height restrictions increase one foot. Thus, a structure 20-feet taller than the runway elevation would need to be placed 140 feet to the side of the primary surface, or 640 feet to the side of runway centerline with an approach with lower than one mile visibility. The building restriction line (BRL) is generally set at airports at the 35-foot height restriction line, or in this case 745 feet to the side of runway centerline.

Given all factors, improved approaches will actually hamper airport development more than they will spur airport growth. Thus, improved instruments approach capabilities are not recommended.

TAXIWAYS

The taxiway system at Mid Valley is adequate to meet current operational needs. As aviation demand increases and a need to develop aviation facilities, additional taxiways will be needed to serve the new developments.

As with other design standards discussed above, taxiway design criteria also changes with an increase from ARC B-II to C/D-II. Of primary concern is the location of the parallel taxiway in relation to the runway. Currently, the parallel taxiway is located 240 feet east of runway centerline. This layout is adequate to meet ARC B-II standards with not lower than three quarters of a mile visibility. The separation requirement increases to 300 feet for ARC B-II aircraft with lower than three quarters of a mile visibility as depicted



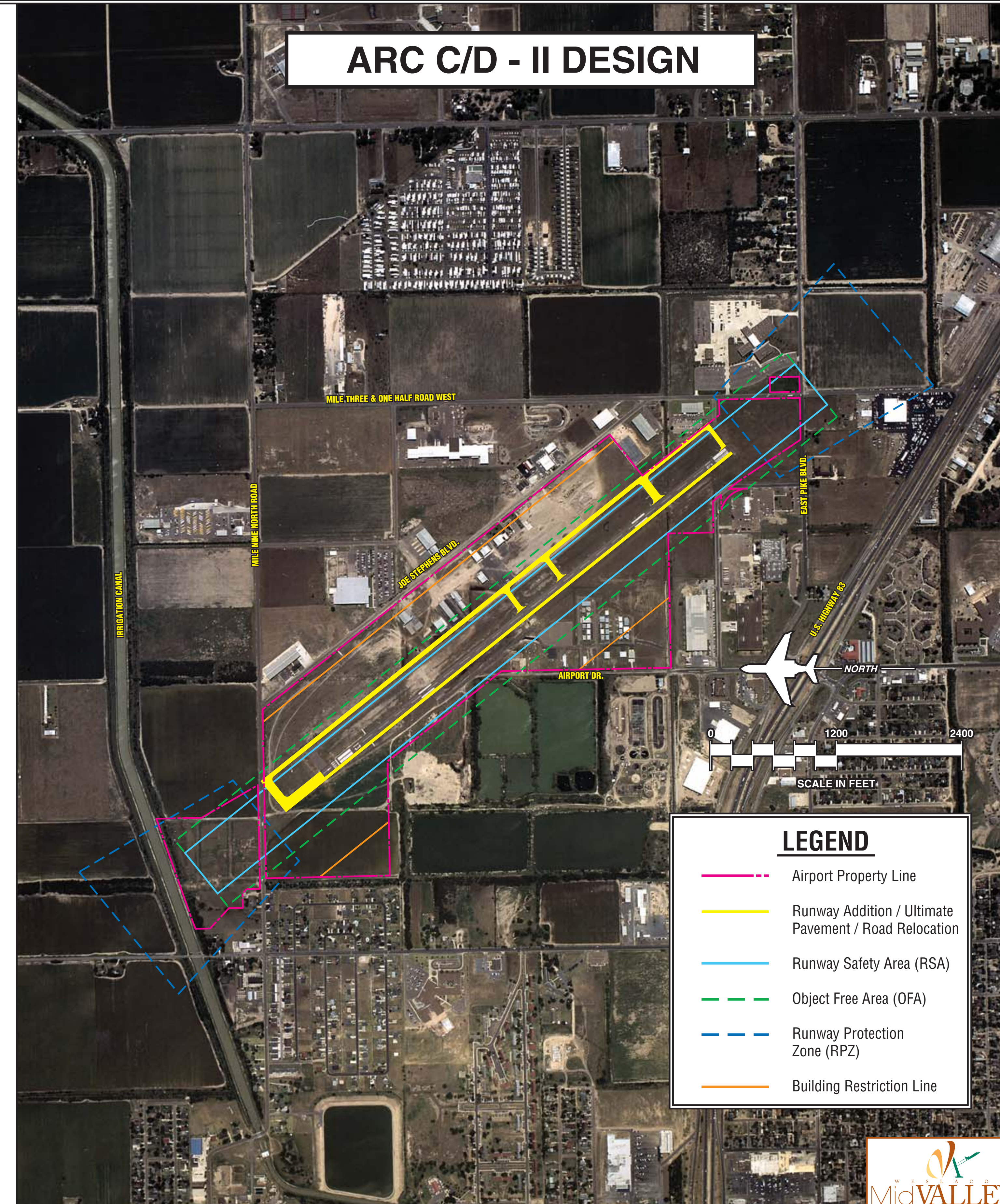


Exhibit 4C
UPGRADE TO NOT LOWER THAN 3/4
MILE VISIBILITY APPROACH MINIMUMS

on **Exhibit 4D**. Thus, increasing to CAT I minimums for ARC B-II aircraft would require relocating the existing parallel taxiway 60 feet east. This relocation would require the acquisition of property to the east on the south end of the airport which is currently a parking lot for the vocational technical school.

FAA requires 300 feet taxiway centerline to runway centerline separation for ARC C/D-II aircraft with not lower than three quarters of a mile visibility. Similar to the previous example, this would require relocating the taxiway and acquiring additional property. Considering CAT I minimums and ARC C/D-II aircraft, the runway/taxiway centerline separation required by FAA is 400 feet.

AIRSIDE SUMMARY

Mid Valley Airport is currently well suited to accommodate the majority of aircraft within ARC B-II. To better serve all ARC B-II aircraft, however, the runway should be extended to 5,500 feet. **Exhibit 4A** depicted the most cost reasonable alternative for providing this length which would require re-routing Nine Mile North Road.

Much discussion was presented on upgrading airfield facilities to meet ARC C/D-II standards. Given the existing constraints of available airport property, roadways, industrial/ commercial development, the National Guard, and the irrigation canal ultimate development should consider maintaining the airport to meet ARC B-II design with not lower than one mile visibility. Increasing to meet ARC C/D-II standards or improving instrument approach capabilities, although attainable, would cost millions and would leave the airport with little real property to develop for these aircraft.

It should be noted that the largest portion of corporate aircraft currently operating today fall within ARC B-II as detailed on Table 3A. This table does not include all business aircraft, but represents the most used of these aircraft.

Designing the airport to ARC B-II in no way excludes the use of the airport by larger airplanes on an infrequent basis. That is to say, that the airport could be utilized by larger corporate aircraft infrequently, but would not be suited to provide ample landside facilities to accommodate these aircraft on a regular basis. Furthermore, cargo opportunities exist that include aircraft such as the Cessna Caravan which could serve as feeder aircraft providing a link between U.S. cities and Mexico, through further development of foreign trade zones adjacent to the airport.

LANDSIDE ALTERNATIVES

The primary landside facilities to be accommodated at Mid Valley Airport include aviation related facilities such as the general aviation terminal building, aircraft storage and maintenance hangars, aircraft parking apron, runways and taxiways and parcels specifically designed to accommodate businesses requiring airfield access. The interrelationship of these functions is important to defining a long term landside layout for the airport.

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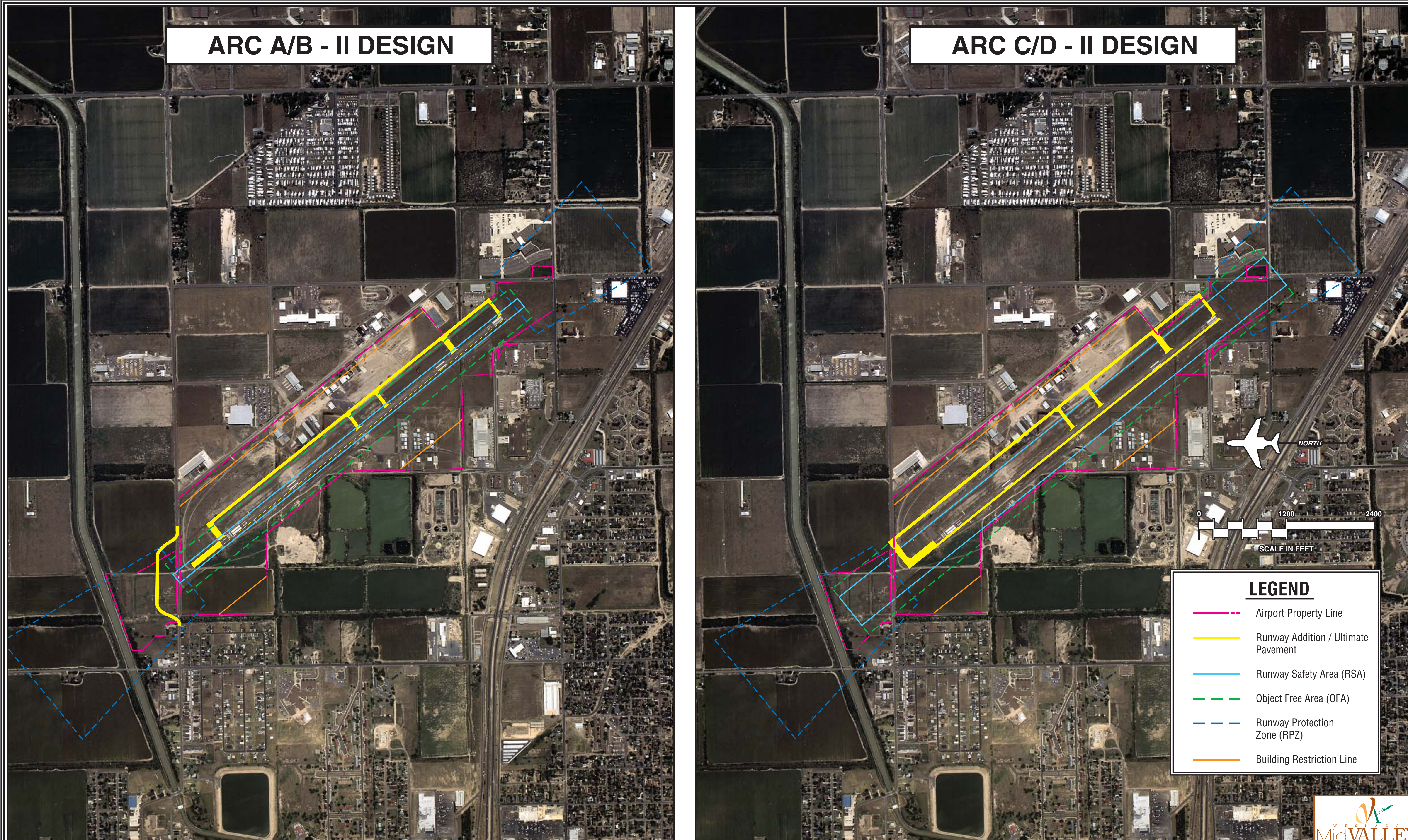

Exhibit 4D
UPGRADE TO CAT I VISIBILITY
APPROACH MINIMUMS

To a certain extent landside uses should be grouped with similar uses or uses that are compatible. Other functions should be separated, or at least have well defined boundaries for reasons of safety, security, and efficient operation. Finally, each landside use must be planned in conjunction with the airfield, as well as ground access that is suitable to the function.

Runway frontage should be reserved for those uses with a high level of airfield interface, or need for exposure. Other uses with lower levels of aircraft movements, or little need for runway exposure can be placed in more isolated locations.

In addition to the functional capability of the airport, the proposed development concept should provide a first class appearance for Mid Valley Airport. Consideration to aesthetics should be given to the entryway as well as public areas when arranging the various activity areas. Architecturally pleasing buildings and landscaping, as well as corporate aircraft found in the high activity areas should be featured in these areas when possible.

Typically, airports face development constraints of one degree or another because of their basic function, causing the alternatives analysis to focus upon specific layouts of landside facilities. This holds especially true for Mid Valley. The airport is bound on the east by a road and industrial park, west side by the city's water treatment facility, the north by the irrigation canal, and the south by roads and industrial/ commercial property.

The airport planning efforts should maximize existing property in an efficient manner that will serve demand well beyond the 20-year planning period as well as provide flexibility for marketing and development. The plan should also consider development of property which will aid in the communities economic growth and financial viability of the airport itself. Maximizing the use of airport property will provide the airport with the financial means to be self sufficient and the community with an "economic engine" to aid in a resurgence of the Weslaco area.

In order to provide a functional facility which meets all potential development needs, areas best suited for specific development should be identified. First, essential development elements to serve airfield, and general aviation needs must be considered which includes support functions such as airport maintenance and fuel storage. Then areas for other land uses can be considered such as aviation-related commercial development.

As a result of the many options available for developing land at Mid Valley Airport, the airport is open to planning efforts which maximize existing property in an efficient manner. Because of this, the landside alternatives to follow will indicate land use areas. Attention will be given to providing areas to accommodate long term demand and provide economic development opportunities for the airport and local community.

Following a review of the development alternatives by the Planning Advisory

Committee, the public, and city officials a land use plan will be developed which defines the highest and best uses for property at Mid Valley Airport considering functional needs, regulatory requirements and development potential and needs.

The primary landside functions to be accommodated at Mid Valley Airport include: general aviation terminal area, terminal support, general aviation storage and service facilities, and aviation related commercial development.

The existing west-side terminal area consists of many aged facilities nearing the end of their useful life. Previous planning efforts focused on establishing a new terminal area on the east side, with much of this already accomplished.

The majority of available space left for development is located on the north side of the airport, both east and west of the Runway 13 end. The west side has limited room available for additional facility development. The southeast side of the airport is currently being partially developed for aircraft parking apron, leaving room for additional development.

LANDSIDE ALTERNATIVE 1

As discussed in the previous sections, Mid Valley Airport will primarily serve the needs of general aviation aircraft, including an increased mix of corporate aircraft. Consideration must also be given for other uses such as Border Patrol facilities, air cargo and other aviation service providers (FBOs).

The first landside alternative follows somewhat of an ease of implementation. The west side is further developed for general aviation purposes. As depicted on **Exhibit 4E**, additional conventional, executive, and T-Hangar facilities could be placed among the existing facilities with no significant changes to existing facilities.

Additional executive hangars are also shown on the east side, among the existing hangar facilities. The primary focus of east side development includes separation of activity levels. The southern portion of the east side could house large conventional hangars for the Border Patrol, airport service providers, and corporate flight departments. The layout of the 100-foot by 100-foot conventional hangars adjacent to the aircraft parking apron would provide ample space for corporate flight departments and FBOs. The northern portion of the east side could be developed for T-Hangar space.

This alternative considers the layout of a small cargo operation in the northernmost portion of the east side terminal area. This layout would be adequate to serve feeder operations, providing a 300-foot by 100-foot sorting facility, parking lot (deep enough for truck docks), and apron space.

LANDSIDE ALTERNATIVE 2

The second landside alternative utilizes some of the same concepts of the first, but significantly modifies the west side terminal area. As depicted on **Exhibit 4F**, the southern portion of the east side could be utilized for the Border Patrol,

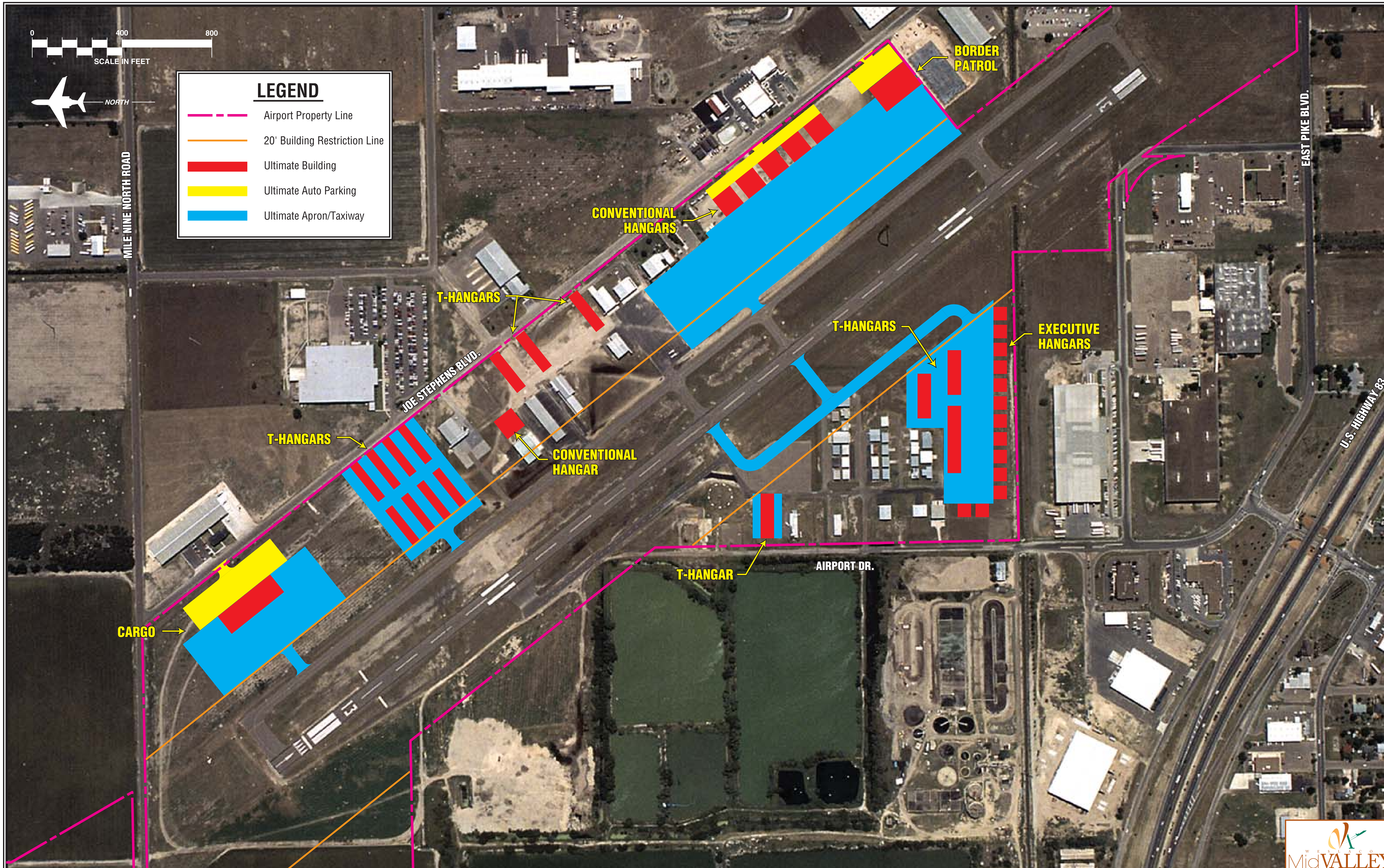

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Exhibit 4E
LANDSIDE ALTERNATIVE 1

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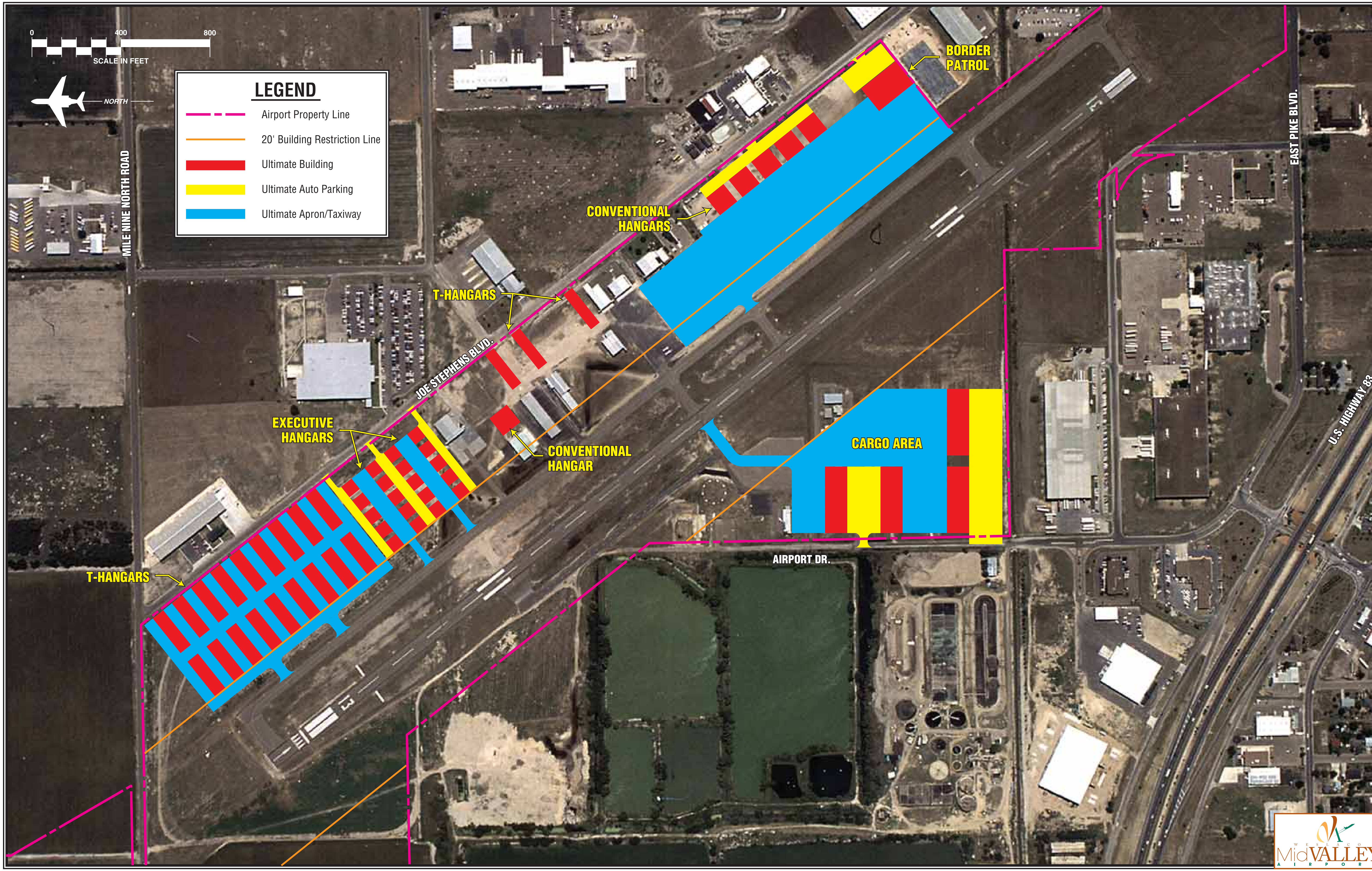

Exhibit 4F
LANDSIDE ALTERNATIVE 2

airport service providers, and corporate flight departments. The northern portion of the terminal area could be developed for 60-foot by 60-foot executive hangars and eight-unit T-Hangar facilities as shown on the exhibit. The area behind the executive hangars provide automobile parking.

The west side development in this alternative includes removing/ relocating all hangars. Once removed, the west side could be developed completely for air cargo, or specialty operations. As depicted on the exhibit, cargo facility development could be phased over time as demand dictates with the first building/parking/apron construction taking place along the southern border on the west side. This would not require that all facilities be relocated at first, most likely only the southernmost hangars. If cargo operations would thrive, the west side could provide ample space for the foreseeable future.

LANDSIDE SUMMARY

Mid Valley Airport can more than accommodate projected demand given adequate steps are taken to ensure proper facility development. Of primary concern is development of additional hangar facilities and terminal services for corporate aviation. As the Valley's commercial service airports continue to thrive, more and more Valley aircraft owners and corporations will see Mid Valley as an attractive alternative for their operation. Thus, it is important for the airport to be developed as a first class aviation facility providing for both small aircraft and business aircraft owners. The Mid Valley Airport can take on the role of the economic engine of the Mid Valley area as an aviation and industrial/commercial gateway to the community.

Although the two alternatives have similarities they also have significant differences. The first alternative would be the most attractive if air cargo never materializes, as additional general aviation hangars could be developed immediately. If cargo becomes a real possibility, however, alternative 2 would provide the best means to ensure that adequate space for the future is available. Alternative 2 also completely separates general aviation activity and cargo operations, which is beneficial.

SUMMARY

The process utilized in assessing the airside and landside development alternatives involved a detailed analysis of short and long term requirements as well as future growth potential. Current airport design standards were considered at each stage of development.

Upon review of this report by the Planning Advisory Committee, the public, and city officials, a final Master Plan concept can be formed. The resultant plan will represent an airside facility that fulfills safety and design standards and a landside complex that can be developed as demand dictates.

The proposed development plan for the airport must represent a means by which the airport can grow in a balanced manner, both on the airside as well as the landside, to accommodate forecast demand. In addition, it must provide (as all good development plans should) for flexibility in the plan to meet activity growth beyond the long term planning period.

The remaining chapters will be dedicated to refining the basic concept into a final plan with recommendations to ensure proper implementation and timing for a demand-based program.

Chapter Five
Airport Plans

AIRPORT PLANS

In the last chapter an evaluation was made of future options for airfield and terminal area development. This resulted in the selection of an alternative for future airport improvements that could accommodate previously identified requirements for airport facilities. The purpose of this chapter is to describe in narrative and graphic form, the recommended development throughout the planning period.

A set of plans, referred to as **Airport Layout Plans**, has been prepared to graphically depict the recommendations for airfield layout, disposition of obstructions, and future use of land in the vicinity of the airport. This set of plans include:

1. Airport Layout Drawing
2. Part 77 Airspace Drawing
3. Approach Zones Drawing
4. Inner Approach Surfaces Drawing
5. Terminal Area Drawing
6. Airport Land Use Drawing
7. Airport Property Map

The airport layout plan set has been prepared on a computer-aided drafting system for future ease of use. The computerized plan set provides detailed information of existing and future facility layout on multiple layers that permit the user to focus in on any section of the airport at any desirable scale. The plan can be used as base information for design, and can be easily updated in the future to reflect new development and more detail concerning existing conditions as made available through design surveys. The plan set is provided in 22-inch x 34-inch reproducible hard copy in accordance with current FAA and TxDOT standards.

RECOMMENDED CONCEPT

The recommended master plan concept incorporates many of the individual elements from the various alternatives presented. The finalized concept provides for both anticipated facility needs over the next 20 years as well as for some facility needs beyond this planning period. The following sections summarize specific airside and landside recommendations incorporated within the final concept. The recommended concept is shown on **Exhibit 5A**.

DESIGN STANDARDS

According to the **NPIAS** the Mid Valley Airport is currently identified as a general aviation airport. The **Texas Airport Facilities Plan (TAFP)** further categorizes Mid Valley Airport in its system plan as a General Utility (GU-II), general aviation airport. This category serves small to large aircraft in approach categories A and B. The airport may also be equipped with precision approach capability. According to the **TAFP**, the minimum design standards for a GU-II airport include a 4,800-foot by 75-foot runway, 30,000 pound single gear wheel (SWL) pavement strength, medium intensity runway lighting, full parallel taxiway, precision approach capability, and terminal services.

The existing GU-II category runway at Mid Valley Airport, at 4,998 feet by 70 feet, is capable of accommodating all small general aviation aircraft, medium sized corporate turboprops, such as the Beech King Air, and some business jets, such as the Cessna Citation. According to recent testing by TxDOT, the strength rating is 12,500 pounds SWL. The design standards that will be used for Mid Valley Airport, and that are applicable to all future development, are summarized in **Table 5A**.

*FAA Advisory Circular 150/5210-13, Change 5***,** *Airport Design* outlines recommended design standards for airports. These design standards are based upon the characteristics of the airplanes that the airport is expected to serve on a regular basis. Most critical to airport design are the weight, wingspan, and approach speed of the design aircraft. As discussed in Chapter Three, an airport's reference code (**ARC**) is based upon a combination of the aircraft approach category and the airplane design group (**ADG**).

Advisory Circulars published by the FAA and TxDOT's TAFP have been used to provide general guidance in the overall planning effort. The guidance materials are designed to provide flexibility in application to ensure the safety, economy, and efficiency of the airport. In order to meet the needs of Mid Valley Airport, the design standards selected were based upon different categories of aircraft and their specific requirements.

As indicated in the table and in preceding chapters, the ultimate design of Runway 13-31 should be planned to accommodate all ARC B-II aircraft. Ultimate planning also considers the needs of these aircraft under higher temperatures, as well as the potential for use of the airport by ARC C-II aircraft. Therefore, to both achieve100 percent use of the runway by large

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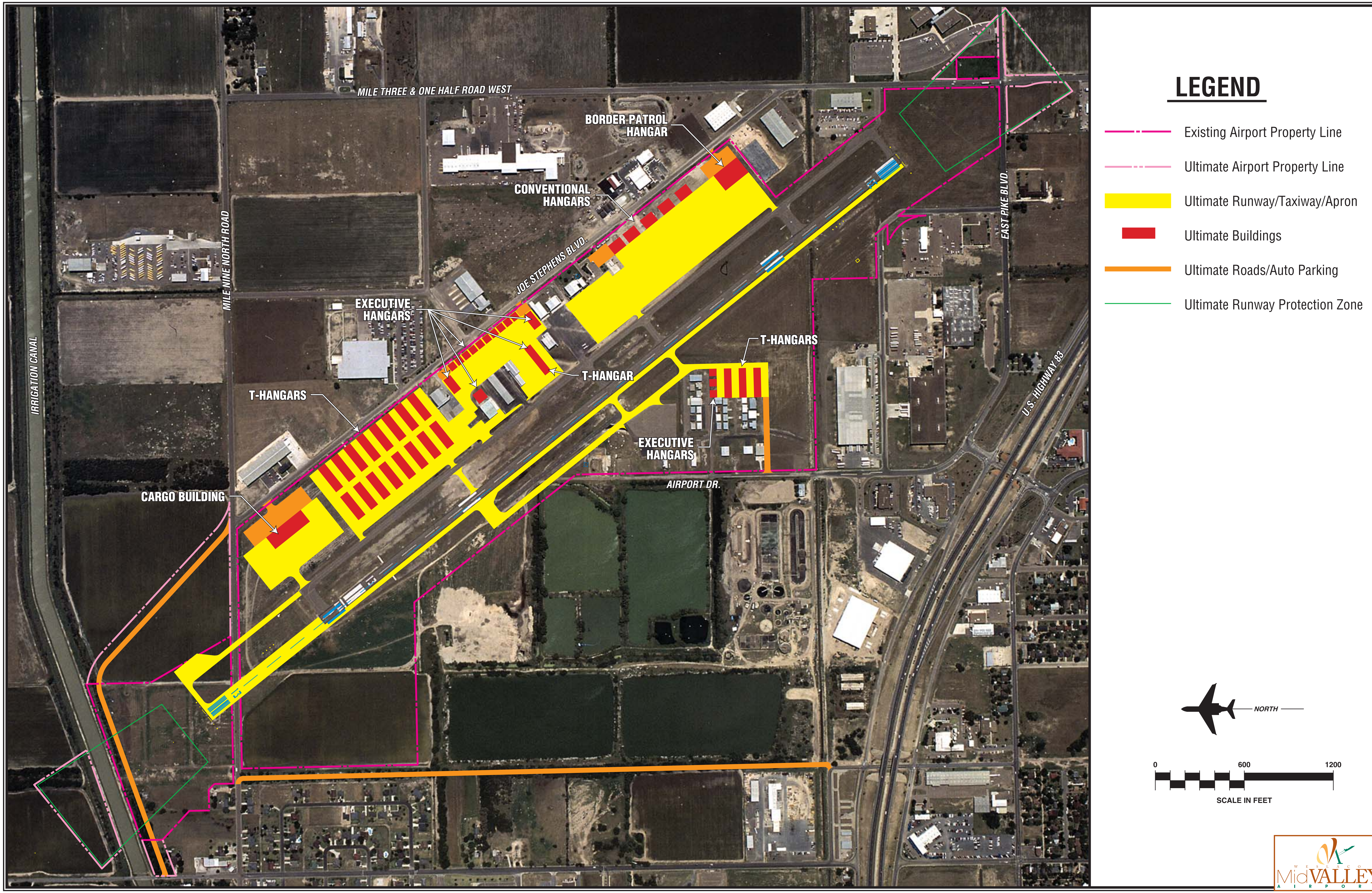


Exhibit 5A
RECOMMENDED MASTER PLAN CONCEPT

aircraft at 60 percent useful load (5,800 feet) and to accommodate future business jets with a 1,000 mile service area, 6,000 feet of runway would be needed. With a view to available land and additional safety margins, the plan depicted here calls for 1,002 feet of extension to an ultimate 6,000 feet in length.

TABLE 5A
Airfield Planning Design Standards (Ultimate)
Mid Valley Airport

	Runway 13-31	
DESIGN STANDARDS		
Airport Reference Code (ARC)	B-II	
Runways		
Length (ft.)	6,000	
Width (ft.)	100	
Pavement Strength (lbs.)		
Single Wheel (SWL)	30,000	
Shoulder Width (ft.)	10	
Runway Safety Area		
Width (feet)	150	
Length Beyond Runway End (ft.)	300	
Object Free Area		
Width (ft.)	500	
Length Beyond Runway End (ft.)	300	
Obstacle Free Zone		
Width (ft.)	400	
Length Beyond Runway End (ft.)	200	
Taxiways		
Width (ft.)	35	
OFA (ft.)	131	
Centerline to Fixed or Movable Object (ft.)	66	
Runway Centerline to:		
Parallel Taxiway Centerline (ft.)	240	
Aircraft Parking Area (ft.)	250	
Building Restriction Line (ft.)		
20 ft. Height Clearance	390	
33 ft. Height Clearance	495	
Runway Protection Zones	**Runway 13**	**Runway 31**
Inner Width (ft.)	500	500
Outer Width (ft.)	700	700
Length (ft.)	1,000	1,000
Approach Slope	20:1	20:1

Given the national trends toward increased production, acquisition, and use of larger corporate aircraft, it is forecast that the airport will experience operations by these aircraft in the near future. Also the rates of growth in population and industry in the mid valley region are forecast to continue their upward trends. Both the McAllen and Harlingen airports will be impacted, increasing all operations. As commercial passenger and air cargo operations increase, general aviation functions become difficult and increasingly expensive to access. According to the FAA a reliever airport is encouraged as a high capacity general aviation airport, relieving congestion in major population centers. As mentioned earlier for the reasons stated above, the Mid Valley Airport seems poised to serve the region in the role of reliever to the two commercial airports. Thus, the 1,002-foot runway extension to an ultimate 6,000-foot will better enable the airport to transition into its future role. As seen earlier in **Table 3A,** virtually all business jet aircraft that can be expected to use Mid Valley Airport, weigh over 12,500 pounds. Strengthening the runway to 30,000 pounds SWL is needed. The current runway width of 70 feet is, likewise, proposed to be upgraded to a 100-foot standard to better serve corporate aircraft.

AIRPORT LAYOUT PLANS

The planning effort culminates in the articulation of the airport needs within the set of drawings required by the FAA and TxDOT and known as the Airport Layout Plans. This section describes the Airport Layout Plan set for the Mid Valley Airport and includes the aforementioned seven drawings.

AIRPORT LAYOUT DRAWING

The Airport Layout Drawing (ALD) graphically presents the existing and ultimate airport layout. It depicts the recommended improvements which will enable the airport to meet forecast aviation demand. The Airport Layout Plan (ALP) additionally shows areas of land acquisition to meet development standards and other requirements. The detailed airport and runway data are provided on the ALD to facilitate the interpretation of the master planning recommendation.

The Airport Layout Drawing (Drawing No. 1) for Mid Valley Airport shows a number of airport improvements associated with both the airfield and terminal area. The improvements in the terminal area are illustrated in more detail and in a larger scale on the Terminal Area Plan drawing and are discussed later in this chapter.

The existing conditions depicted on the drawing include recent improvements to Runway 13-31, including extension and widening to accommodate aircraft in ARC B-II, small aircraft (GU-II).

The depiction on the ALD of ultimate runway conditions establishes three upgrades to Runway 13-31. The relocation of Mile Nine North Road to the north along the irrigation canal, will allow the existing runway to be extended 1,002 feet, while providing adequate runway safety area (RSA) and object free area (OFA).

Secondly, the runway needs to be widened to 75 feet to meet ARC B-II standards. However, the plan, ultimately, considers widening the runway to 100 feet to better serve corporate aircraft, situating the airport to better serve as a reliever. It should be noted that TxDOT will need justification to be provided for the extension and widening, as proposed. If the airport's role remains as a general aviation and not planned for an ultimate upgrade to reliever status, a width of 75 feet will be adequate.

Thirdly, among critical required data on the ALD are existing and ultimate strength ratings. Currently, Runway 13-31 has a pavement strength rating of 12,500 pounds single wheel gear loading (SWL). Initial analysis of pavement strength requirements for the future critical aircraft indicate that a strength rating of 30,000 pounds single wheel loading will allow the runway to serve all B-II and most corporate aircraft on a regular to semi-regular basis.

The plan also calls for approach visibility minimums of greater than one mile. Due to the type of aircraft operating at the airport and the local weather patterns, a non precision GPS approach, providing not lower than one mile visibility, will be adequate for both runway ends. Four-box visual glide slope indicators (i.e. precision approach path indicators) and runway end identifier lights are currently installed on either runway. The *FAA Advisory Circular 150/5210-13, Change 6*, *Airport Design, Table A16-1C* states that MALSR, SSALR, or ALSF are recommended for a nonprecision approach with one mile or greater visibility minimums.

The airport layout drawing depicts the future property required to accommodate the planned extension of Runway 13-31. As indicated on the ALD, most of the land that is needed is currently owned by the airport. Additional property acquisition will be required for the road relocation.

As can also be discerned on the ALD, the runway protection zone (RPZ) for the north end of the airfield will extend beyond city property. The FAA and TxDOT highly recommended that the area within the RPZ be acquired through fee simple purchase so that incompatible land uses (i.e. residential) will not be located in this area. Although fee simple purchase is the preferred method, the *FAA Advisory Circular 150/5210-13, Change 6*, *Airport Design* advises that the city can also obtain avigation easements, or rights of airspace purchases. Avigation easements are not preferred to fee simple ownership because they do not limit the construction of residences, only restrict height to objects. Also, avigation easements can cost nearly as much as the underlying property value. Thus, fee simple acquisition is more cost effective. The airport currently maintains avigation easements to the south and the north of Runway 13-31. It is further recommended that the 6.1 acres north of the irrigation canal and within the proposed RPZ, the 16.7 acres on which the road will be relocated and the 5.1 acres to the south, be obtained in fee simple.

AIRSPACE PLAN

The airspace plan for Mid Valley Airport is based on Federal Aviation Regulation (F.A.R.) Part 77, **Objects Affecting Navigable Airspace.** In order to protect the airspace and approaches to each runway from hazards which would effect the safe and efficient operation of the airport, federal criteria has been established (F.A.R. Part 77) for use by local planning and land use jurisdictions to control the height of objects in the vicinity of the airport.

The F.A.R. Part 77 (Drawing No. 2) Airspace Plan drawing is also used to indicate obstructions which are located within the imaginary surfaces applicable to Mid Valley Airport. The Part 77 Airspace Plan assigns three-dimensional imaginary areas to each runway. These imaginary surfaces emanate from the runway centerline and are dimensioned to protect approaching and departing aircraft from the potential hazard of obstructions. The plan depicts the critical surfaces for nonprecision GPS approaches to each runway end. The Part 77 imaginary surfaces include the primary surface, approach surface, transitional surface, horizontal surface, and conical surface. Part 77 imaginary surfaces are described in the following paragraphs.

Primary Surface

The primary surface is an imaginary surface longitudinally centered on the runway. The primary surface extends 200 feet beyond each runway end and its width is determined by the type of approach established for that runway end (i.e. visual, nonprecision, precision). The elevation of any point on the primary surface is the same as the elevation along the nearest associated point on the runway centerline. Due to existing and/or planned nonprecision instrument approaches, the primary surfaces for Runway 13-31 will be 500 feet wide.

Situated adjacent to the runway and taxiway system, the primary surface must remain clear of unnecessary objects in order to allow unobstructed passage of aircraft. Objects are only permitted within the primary surface if they are fixed by function and constructed on frangible (breakaway) fixtures. Visual glide slope units and windcones are examples of such objects within the category of "fixed by function."

Approach Surface

An approach surface is also established for each runway. The approach surface begins at the same width as the primary surface and extends upward and outward from the primary surface end centered along an extended runway centerline. The upward slope and length of the approach surface are again determined by the type of approach (existing and/or planned) to the runway end. For Runway 13-31, a nonprecision approach surface is shown. These approach surfaces are more fully described within the section regarding Runway Approach Zone Plans and Profiles.

Transitional Surface

Each runway has a transitional surface that begins at the outside edge of the primary surface at the same elevation as the runway. The transitional surface also connects with the approach surfaces of each runway. The surface rises at a slope of 7 to 1 up to a height which is 150 feet above the highest runway elevation, which is 70 feet above Mean Sea Level (MSL). At that elevation (220 feet MSL), the transitional surface is replaced by the horizontal surface.

Horizontal Surface

The horizontal surface is established at 150 feet above the highest elevation of the runway surface. Having no slope, the horizontal surface connects the transitional and approach surfaces to the conical surface at a distance of 10,000 feet from the primary surfaces of each runway. As stated, at Mid Valley Airport, the horizontal surface will be at an elevation of 220 feet MSL.

Conical Surface

The conical surface begins at the outer edge of the horizontal surface. The conical surface then continues for an additional 4,000 feet horizontally at a slope of 20 to 1. Therefore, at 4,000 feet from the horizontal surface, the elevation of the conical surface is 350 feet above the highest airport elevation, or at 420 feet MSL.

APPROACH ZONES PROFILES

The Approach Zones Profiles (Drawing No. 3) is a profile representation of the approach surfaces of each runway. The drawing depicts the physical features in the vicinity of each runway, including topographic changes, roadways, drainage ditches, and trees. The dimensions and angles of approach surfaces are a function of the runway service category and the approach classification. The non-precision approach to both ends of runway 13-31 requires a 20 to 1 slope beginning 200 feet from the end of the runway.

INNER APPROACH SURFACES

The Runway Protection Zones (RPZ) are depicted on Inner Approach Surface Drawings (Drawing Number 4). These drawings consist of a large scale plan and profile view of the inner portion of the runway approach surfaces. This plan facilitates identification of obstructions, roadways, and buildings that lie within the confines of the critical approach area located off the end of each runway.

As depicted on the plans, the existing airport property boundary encompasses most of the runway protection zone for the primary runway. The ultimate protection zone for all runways is 500 x 1,000 feet x 700 feet maintaining clearances for a 20 to 1 approach slope.

The ultimate protection zones for Runway 13 falls outside of airport property. The fee simple purchase of approximately 6.1 acres would be needed in order to effectively control airspace obstructions in the runway protection zone. An additional 5.1 acres of additional property is needed for the RPZ for Runway 31.

TERMINAL AREA PLAN

The Terminal Area Plan (Drawing No. 5) represents the selected development configuration of future landside facilities at Mid Valley Airport. As depicted on the plan, the terminal building facility will continue to be the center of landside development.

The primary strategy involved in future airside planning includes construction of new hangar facilities on the east side, construction of vehicle parking for the terminal and hangar areas, and reconstructing the older storage hangars on the west side as they are phased out. If cargo operations materialize, construction of storage facilities and apron area should proceed. Replacement of the older hangars as they are phased-out will allow current tenants to maintain hangar storage.

Future construction of additional hangars is shown on the plan. Of the two landside alternatives the second has been selected. This development selection accommodated future growth in a coherent development pattern. This alternative allows for construction of all three hangar types on a demand basis.

Starting at the north end of the airport and on the east side of the runway, T-Hangar growth is accommodated by the construction of 18 units containing eight storage spaces each for a total of 144 T-Hangar spaces. This area would require taxiway access and apron area. An additional three T-Hangars are indicated on the plan just north of the terminal and FBO hangar. Each contains eight storage spaces each. Twenty future executive (corporate) hangars have been planned between the proposed T-Hangars. Apron and taxiway would also accompany construction of these facilities. The plan also shows construction of six conventional hangars. These 100-foot by 100-foot hangars could house maintenance operators, flight schools, or specialty shops.

Location of the cargo area on the west side allows for gradual reconstruction of the west side as new hangar facilities become available on the east side. It is proposed that as cargo needs develop so should the needed facilities. It will be important for airport management to be aware of demand.

AIRPORT LAND USE

The objective of the Airport Land Use Plan, (Drawing Number 6), is to coordinate uses of the airport property in a manner compatible with the functional design of the airport facility. Airport land use planning is important for the orderly development and efficient use of available space. There are two primary considerations for airport land use planning. These are, first, to secure those areas essential to the safe and efficient operation of the airport; and, second, to determine compatible land uses for the balance of the property which would be most advantageous to the airport and community. The plan depicts the recommendations for ultimate land use development on the airport. When on airport development is proposed, it should be directed to the appropriate land use area depicted on this plan.

Several land use categories have been identified including:

Airport Operations **-** The airfield operations area is the most critical category of land use since it includes all areas necessary for the safe operation on the airside of the airport. The included items are runway and taxiway safety areas and navaid critical areas. At the airport, this includes the existing runways, taxiways, and areas within the building restriction lines and runway visibility zone.

General Aviation Terminal Area **-** The general aviation area consists of facilities which provide for aircraft storage, general aviation fueling, maintenance, and aircraft parking. The existing terminal area is located along the east side of the runway system. General aviation activity and development is planned to remain on the east side and ultimately be expanded both to the north and south of its present location.

Commercial/Industrial **-** Both commercial and industrial land uses surround the Mid Valley Airport. Much of this is developed within the Mid-Valley Industrial Park owned by the City of Weslaco. Although this property is not planned to directly access the airfield, utilization of this property provides additional income for the City. The plan indicates approximately 54 acres of land are in industrial use within the Industrial Park east and west of Joe Stephens Avenue and approximately 50 acres of land southwest of the runway and bordered by Airport Drive and Mile 8 North Road. Commercial land uses are also found abutting airport property. These commercial uses are located both southeast and southwest of the runway outside the existing RPZ.

Open Space/Agricultural **-** Currently some 15 acres of land within the airport boundaries are dedicated to agricultural use. These are found west and east of the runway. An open field lies directly north in area which will be developed for runway extension. These areas may be farmed outside the object free areas if proper height clearances are maintained.

OFF-AIRPORT LAND USES

Land that is not needed for the safe use operation of the airport, and which is not under the control of the City of Weslaco, is considered to be off-airport land. The **Land Use Plan** depicts the area adjacent to the airport and provides recommendations for the ultimate development and use of that area. Properties which are impacted to the greatest extent are those that fall within the areas proposed for acquisition (whether by easement or in fee simple) and those that fall within the airport noise contours. Typical compatible land uses include industrial and commercial zoning. Some commercial may not be applicable due to the need for high visibility and direct access. Residential land use is not recommended for development in the surrounding areas. Agricultural land is compatible with the understanding that rezoning of the property should follow recommended land uses.

Land uses that are adjacent to the airport include industrial, commercial, and residential. City owned public property includes the sewage treatment plant and lagoons directly west of the airport. To the north and east of Joe Stephens Drive are the Dickies plant, the Weslaco Independent School District warehouse, and the Hidalgo County annex. These are located in a portion of the Mid Valley Industrial Park that comprises 90 acres of land. South of the airport there are several industrial uses within another portion of the Mid Valley Industrial Park, including the Haggar Company buildings and the General Telephone plant. These comprise 51 acres of land.

The commercial uses adjacent to the airport are also indicated on the Airport Land Use Plan. The tract located southwest of the airport (and partially contained within the easement for the Runway Protection Zone) comprises 42 acres. A church/day care use is located within this area, in addition to a large commercial building. A 11-acre tract directly south of the terminal area on the east side of the airport contains the Vo-Tech School and a large warehouse. The tract south from the Vo-Tech School and across Mile 3 ½ Mile West Road has been developed by the Texas Army National Guard. Two Guard buildings are located on the 29-acre tract.

Agricultural tracts are indicated north ans south of the airport. The north tract contains 32 acres and is south of the irrigation canal and north of Mile 9 North Road. The other tract is directly southeast of the airport and south of the Texas National Guard Armory on 28 acres.

Residential properties are developed west of the airport. The closest residences are east of North Bridge Avenue, buffered from the airport by a row of trees. West of North Bridge Avenue is another residential area. An elementary school is just south of that area. There is a large high density residential area to the east of the airport, La Hacienda North, a trailer park predominantly made up of "Winter Texans".

AIRPORT PROPERTY MAP

The primary purpose of the Airport Property Map (Drawing No. 7) is to provide information analyzing the current and future aeronautical use of land acquired with Federal funds. Existing and future airport features (i.e. runways, taxiways, aprons, runway protection zones, hangars, terminal facilities, etc.) are depicted which indicate the aeronautical need for existing and future property limits. The plan indicates how various tracts of land were acquired (i.e. Federal funds, TxDOT funds, surplus property, local funds only, etc.). Also shown on this plan are easement interests in areas outside the fee property line. The existing airport property at Mid Valley Airport is primarily a combination of aviation and agricultural/open space.

SUMMARY

The recommended master plan concept has been developed in conjunction with the Planning Advisory Committee (PAC), the City of Weslaco, and local citizens. It is designed to assist the city and the aviation department in making decisions on future development and growth of the airport over the next twenty years.

AIRPORT LAYOUT PLANS

FOR

MID VALLEY AIRPORT

WESLACO, TEXAS

VICINITY MAP

NOT TO SCALE

LOCATION MAP

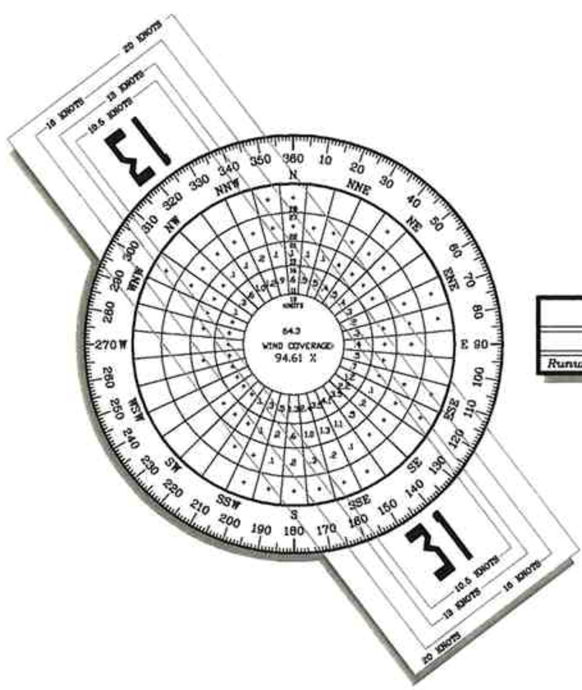
NOT TO SCALE

Prepared for the

City of Weslaco

INDEX OF DRAWINGS

1. AIRPORT LAYOUT DRAWING
2. PART 77 AIRSPACE DRAWING
3. APPROACH ZONE PROFILES
4. ULTIMATE INNER PORTION OF RUNWAY 13-31 APPROACH SURFACE DRAWING
5. TERMINAL AREA DRAWING
6. ON-AIRPORT LAND USE DRAWING
7. AIRPORT PROPERTY MAP



SOURCE:
NOAA National Climatic Center
Asheville, North Carolina
MID VALLEY AIRPORT
Brownsville, Texas

OBSERVATIONS:
83,600 All Weather Observations
1988 – 1997

ALL WEATHER WIND COVERAGE				
Runways	10.5 Knots	13 Knots	16 Knots	20 Knots
Runway 13-31	*94.61%*	*97.55%*	*99.50%*	*99.93%*

5.94° E (September 2000) Magnetic Variance

NO.	REVISIONS	BY	CHK'D	DATE

TEXAS DEPARTMENT OF TRANSPORTATION AVIATION DIVISION

☐ ALP APPROVED ACCORDING TO FAA AC 150/5300-13 CH 5 PLUS THE REQUIREMENTS OF A FAVORABLE ENVIRONMENTAL FINDING PRIOR TO THE START OF ANY LAND ACQUISITION OR CONSTRUCTION AND AN FAA FORM 7460-1 SUBMITTED PRIOR TO ANY CONSTRUCTION ON AIRPORT PROPERTY

☐ ALP APPROVED ACCORDING TO FAA AC 150/5300-13 CH 5 PLUS THE CONDITIONS/COMMENTS IN LETTER DATED:

DIRECTOR, AVIATION DIVISION — DATE

AIRPORT SPONSOR

CURRENT AND FUTURE DEVELOPMENT DEPICTED ON THIS ALP IS APPROVED AND SUPPORTED BY AIRPORT SPONSOR

TITLE, AIRPORT SPONSOR'S REPRESENTATIVE

SIGNATURE — DATE

PREPARED BY: Coffman Associates Airport Consultants

Mike W. Dmylerko — DESIGNED BY	08/08/2001 — DATE
J.A. Erwin — DRAWN BY	08/08/2001 — DATE
Steven G. Benson — CHECKED BY	08/08/2001 — DATE

COVER
MID VALLEY AIRPORT
WESLACO, TEXAS

Texas Department of Transportation Aviation Division

SHEET 0 OF 7

AIRPORT DATA

MID VALLEY AIRPORT (T65)		
CITY: WESLACO, TEXAS — COUNTY: HIDALGO COUNTY, TEXAS	EXISTING	ULTIMATE
AIRPORT SERVICE LEVEL	GU-I	GU-II
AIRPORT CATEGORY	GENERAL AVIATION	SAME
DESIGN AIRCRAFT	CITATION III	SAME
AIRPORT REFERENCE CODE (ARC): RUNWAY CATEGORY/DESIGN GROUP	B-II (SMALL)	B-II
AIRPORT ELEVATION (ABOVE MEAN SEA LEVEL)	70.0'	80.9'
MEAN MAXIMUM TEMPERATURE OF HOTTEST MONTH	96.2° F (August)	SAME
AIRPORT REFERENCE POINT (ARP) COORDINATES (NAD 83) — Latitude	26° 10' 39.50" N	26° 10' 49.92" N
AIRPORT REFERENCE POINT (ARP) COORDINATES (NAD 83) — Longitude	97° 58' 23.00" W	97° 58' 5.914" W
AIRPORT and TERMINAL NAVIGATIONAL AIDS	ROTATING BEACON LIGHTED WINDCONE SEGMENTED CIRCLE VOR/DME (13) GPS (13)	GPS ROTATING BEACON
GPS APPROACH	YES	YES

RUNWAY END COORDINATES (NAD 83)

RUNWAY		EXISTING	ULTIMATE
Runway 13	Latitude	26° 10' 58.837" N	26° 11' 6.464" N
	Longitude	97° 58' 40.041" W	97° 58' 46.956" W
Runway 31	Latitude	26° 10' 20.059" N	26° 10' 19.911" N
	Longitude	97° 58' 5.948" W	97° 58' 6.028" W

MODIFICATIONS FROM FAA AIRPORT DESIGN STANDARDS

DEVIATION DESCRIPTION	EFFECTED DESIGN STANDARD	STANDARD	EXISTING	PROPOSED DISPOSITION
NONE	-	-	-	-

GENERAL NOTES:

1. Depiction of features and objects, including related elevations and clearances, within the runway protection zones are depicted on the INNER PORTION OF THE RUNWAY APPROACH SURFACE DRAWINGS.

2. Details concerning terminal improvements are depicted on the TERMINAL AREA DRAWING.

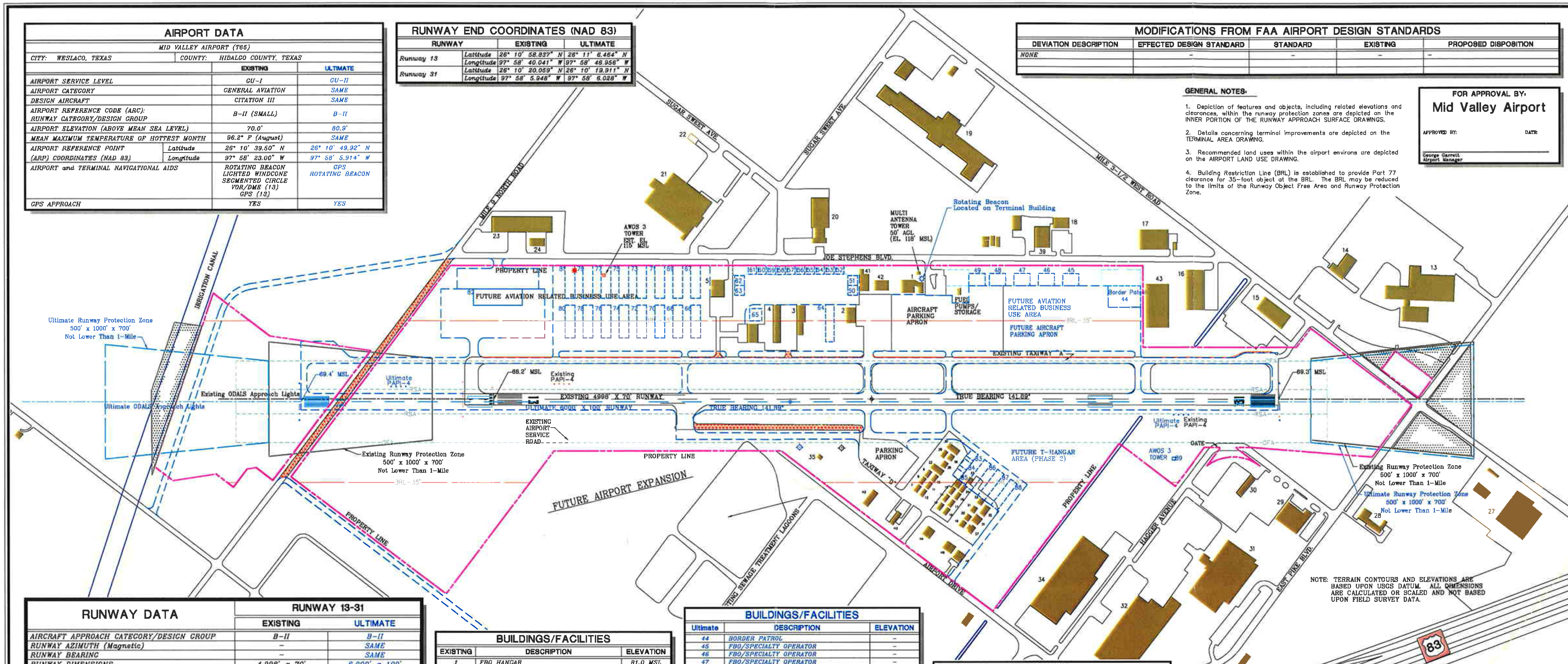
3. Recommended land uses within the airport environs are depicted on the AIRPORT LAND USE DRAWING.

4. Building Restriction Line (BRL) is established to provide Part 77 clearance for 35-foot object at the BRL. The BRL may be reduced to the limits of the Runway Object Free Area and Runway Protection Zone.

FOR APPROVAL BY:
Mid Valley Airport

APPROVED BY: DATE:

George Garrett
Airport Manager



RUNWAY DATA

	RUNWAY 13-31	
	EXISTING	ULTIMATE
AIRCRAFT APPROACH CATEGORY/DESIGN GROUP	B-II	B-II
RUNWAY AZIMUTH (Magnetic)	-	SAME
RUNWAY BEARING	-	SAME
RUNWAY DIMENSIONS	4,998' x 70'	6,000' x 100'
MAXIMUM RUNWAY ELEVATION (above MSL)	70.0'	-
WIND COVERAGE (10.5 Knots in %)	94.61	SAME
APPROACH VISIBILITY MINIMUMS	+1 MILE/+1 MILE	SAME/SAME
FAR PART 77 CATEGORY	Nonprecision/Nonprecision	SAME/SAME
RUNWAY INSTRUMENTATION	Nonprecision/Nonprecision	SAME/SAME
RUNWAY APPROACH SURFACES	20:1/20:1	-
RUNWAY THRESHOLD DISPLACEMENT	172'/NONE	NONE
RUNWAY STOPWAY	NONE	NONE
RUNWAY SAFETY AREA (RSA)	5,598' x 150'	6,600' x 150'
RSA DISTANCE BEYOND EACH RUNWAY END	300'	300'
RUNWAY OBJECT FREE AREA (OFA)	5,598' x 500'	6,400' x 300'
RUNWAY OBSTACLE FREE ZONE (OFZ)	5,398' x 300'	6,600' x 500'
TAKEOFF RUN AVAILABLE (TORA)	4,998'	6,000'
TAKEOFF DISTANCE AVAILABLE (TODA)	4,998'	6,000'
ACCELERATE-STOP DISTANCE AVAILABLE (ASDA)	4,998'	6,000'
LANDING DISTANCE AVAILABLE (LDA)	4,826'	6,000'
RUNWAY PAVEMENT MATERIAL	ASPHALT	SAME
PAVEMENT SURFACE TREATMENT	NONE	NONE
PAVEMENT STRENGTH (in thousand lbs.) [1]	12.5(s)	30(s)
RUNWAY EFFECTIVE GRADIENT (in %)	-	-
RUNWAY LIGHTING	MIRL	SAME
RUNWAY MARKING	NPI	SAME
RUNWAY APPROACH LIGHTING	NONE	NONE
RUNWAY TOUCHDOWN ZONE ELEVATION (TDZE)	80.9'/79.0'	80.0'/80.0'
TAXIWAY PAVEMENT MATERIAL	ASPHALT	SAME
TAXIWAY LIGHTING	CL. REFLECTORS ONLY	SAME
TAXIWAY MARKING	CENTERLINE/EDGE	SAME
TAXIWAY/RUNWAY HOLDING POSITION MARKING	200'	200'
NAVIGATIONAL AIDS	VOR/DME-A GPS (12)	GPS
VISUAL AIDS	PAPI-4L (BOTH) REIL (BOTH)	PAPI-4(BOTH) REIL (BOTH)

[1]Pavement strengths are expressed in Single(S) and Dual(D) wheel loading capacities.

BUILDINGS/FACILITIES

EXISTING	DESCRIPTION	ELEVATION
1	FBO HANGAR	81.0 MSL
2	HANGAR	81.0 MSL
3	T-HANGAR	81.0 MSL
4	T-HANGAR	81.0 MSL
5	HANGAR	81.0 MSL
6	HANGAR	81.0 MSL
7	T-HANGAR	81.0 MSL
8	HANGAR	81.0 MSL
9	HANGAR	81.0 MSL
10	HANGAR	81.0 MSL
11	HANGAR	81.0 MSL
12	BORDER PATROL HANGAR	82.5 MSL
13	ARMY NATIONAL GUARD FACILITY	84.0 MSL
14	ARMY NATIONAL GUARD FACILITY	86.0 MSL
15	BUILDING	88.0 MSL
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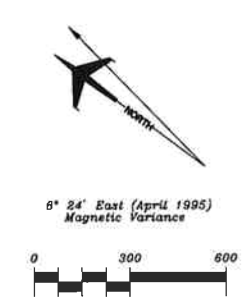
39	BUILDING	81.0 MSL
40	BUILDING	79.8 MSL
41	BUILDING	81.0 MSL
42	BUILDING	81.0 MSL
43	BUILDING	-

BUILDINGS/FACILITIES

Ultimate	DESCRIPTION	ELEVATION
44	BORDER PATROL	-
45	FBO/SPECIALTY OPERATOR	-
46	FBO/SPECIALTY OPERATOR	-
47	FBO/SPECIALTY OPERATOR	-
48	FBO/SPECIALTY OPERATOR	-
49	FBO/SPECIALTY OPERATOR	-
50	CORPORATE HANGAR	-
51	CORPORATE HANGAR	-
52	CORPORATE HANGAR	-
53	CORPORATE HANGAR	-
54	CORPORATE HANGAR	-
55	CORPORATE HANGAR	-
56	CORPORATE HANGAR	-
57	CORPORATE HANGAR	-
58	CORPORATE HANGAR	-
59	CORPORATE HANGAR	-
60	CORPORATE HANGAR	-
61	CORPORATE HANGAR	-
62	CORPORATE HANGAR	-
63	CORPORATE HANGAR	-
64	T-HAGAR	-
65	CORPORATE HANGAR	-
66	T-HAGAR	-
67	T-HAGAR	-
68	T-HAGAR	-
69	T-HAGAR	-
70	T-HAGAR	-
71	T-HAGAR	-
72	T-HAGAR	-
73	T-HAGAR	-
74	T-HAGAR	-
75	T-HAGAR	-
76	T-HAGAR	-
77	T-HAGAR	-
78	T-HAGAR	-
79	T-HAGAR	-
80	T-HAGAR	-
81	T-HAGAR	-
82	CARGO BUILDING	-
83	CORPORATE HANGAR	-
84	CORPORATE HANGAR	-
85	CORPORATE HANGAR	-
86	T-HAGAR	-
87	T-HAGAR	-
88	T-HAGAR	-
89	AWOS TOWER	-

LEGEND

EXISTING	ULTIMATE	DESCRIPTION
		ABANDONED PAVEMENT
		AIRPORT PROPERTY LINE
		AIRPORT REFERENCE POINT (ARP)
		AIRPORT ROTATING BEACON
		AVIGATION EASEMENT (if applicable)
		BUILDING ABANDONMENT
		BUILDING CONSTRUCTION
	BRL	BUILDING RESTRICTION LINE (BRL)
		DRAINAGE
		FACILITY CONSTRUCTION
		FENCING
PAPI-4	PAPI-4	NAVIGATIONAL AID INSTALLATION
		RUNWAY END IDENTIFICATION LIGHTS (REIL)
		RUNWAY THRESHOLD LIGHTS
		SECTION CORNER
		SEGMENTED CIRCLE/WIND INDICATOR
		TOPOGRAPHY (source)
		WIND INDICATOR (Lighted)



NO.	REVISIONS	BY	CHK'D	DATE

TEXAS DEPARTMENT OF TRANSPORTATION
AVIATION DIVISION

☐ ALP APPROVED ACCORDING TO FAA AC 150/5300-13 CH 5 PLUS THE REQUIREMENTS OF A FAVORABLE ENVIRONMENTAL FINDING PRIOR TO THE START OF ANY LAND ACQUISITION OR CONSTRUCTION AND AN FAA FORM 7460-1 SUBMITTED PRIOR TO ANY CONSTRUCTION ON AIRPORT PROPERTY

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DIRECTOR, AVIATION DIVISION DATE

AIRPORT SPONSOR

CURRENT AND FUTURE DEVELOPMENT DEPICTED ON THIS ALP IS APPROVED AND SUPPORTED BY AIRPORT SPONSOR

TITLE, AIRPORT SPONSOR'S REPRESENTATIVE

SIGNATURE DATE

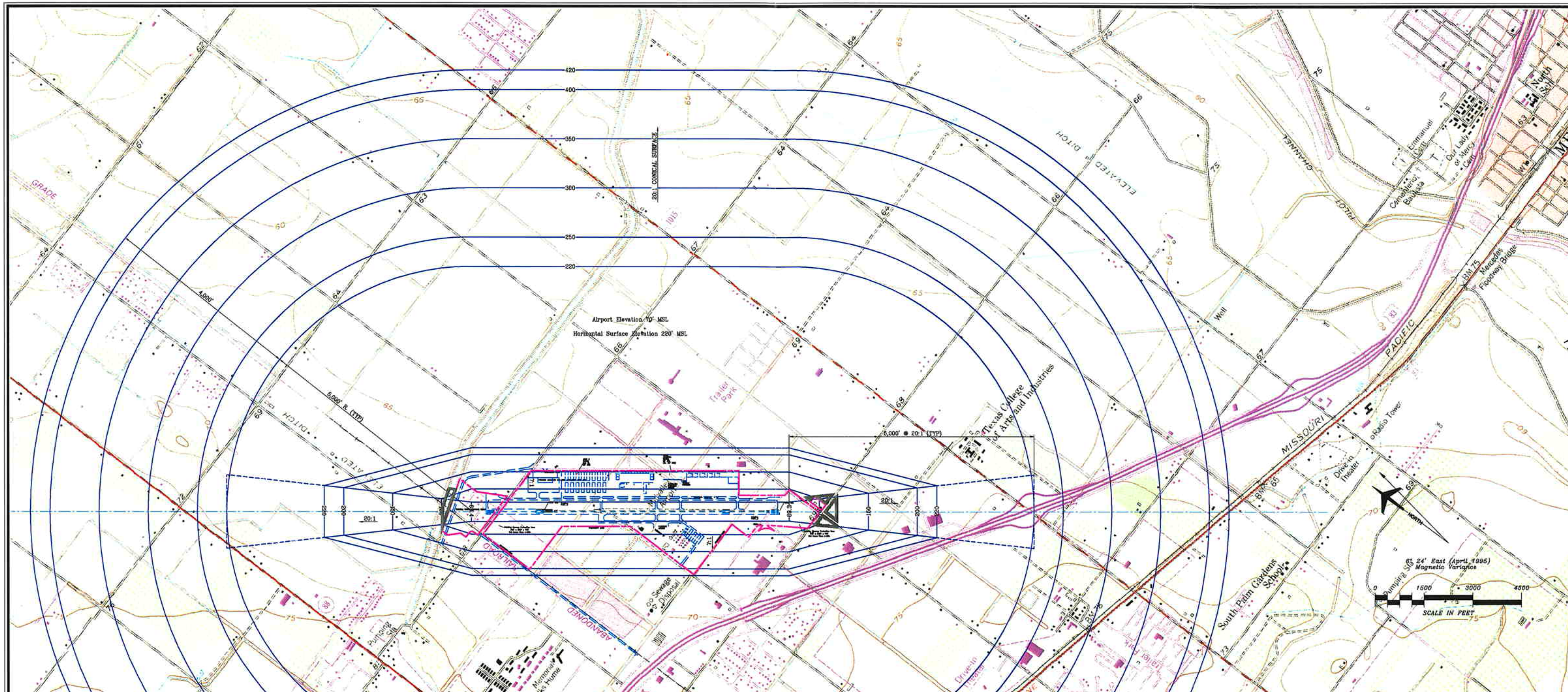
PREPARED BY: Coffman Associates Airport Consultants

Mike W. Dmyterko 08/08/2001
DESIGNED BY DATE
T.A. Erwin 08/08/2001
DRAWN BY DATE
Steven G. Benson 08/08/2001
CHECKED BY DATE

AIRPORT LAYOUT DRAWING
MID VALLEY AIRPORT
WESLACO, TEXAS

Texas Department of Transportation Aviation Division

SHEET 1 OF 7



NO.	REVISIONS	BY	CHK'D	DATE

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Mike W. Dmylerko — 08/08/2001
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T.A. Erwin — 08/08/2001
DRAWN BY — DATE
Steven G. Benson — 08/08/2001
CHECKED BY — DATE

PART 77 AIRSPACE DRAWING
MID VALLEY AIRPORT
WESLACO, TEXAS

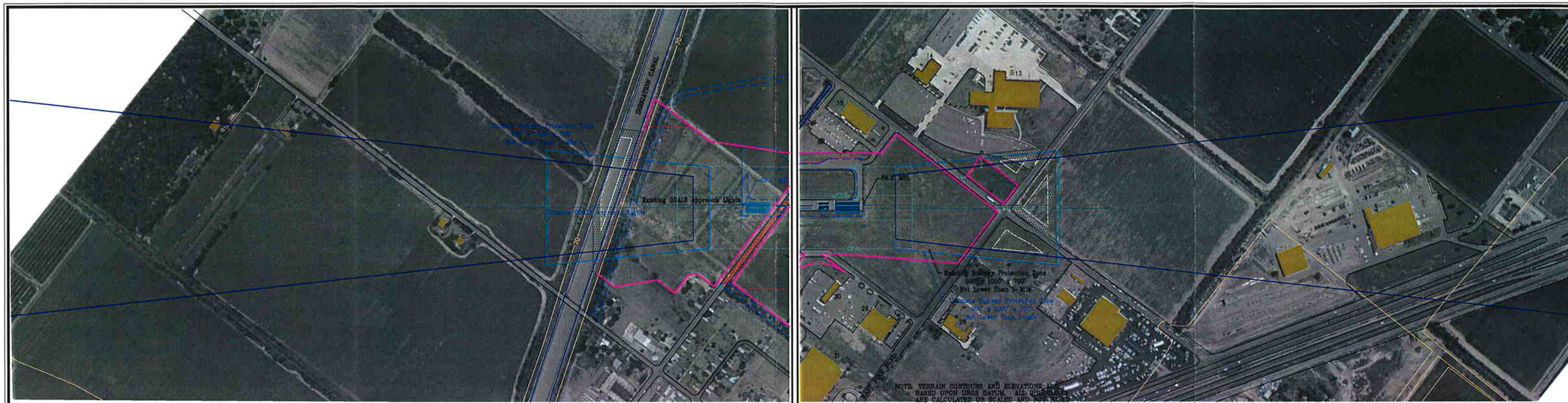
Texas Department of Transportation Aviation Division

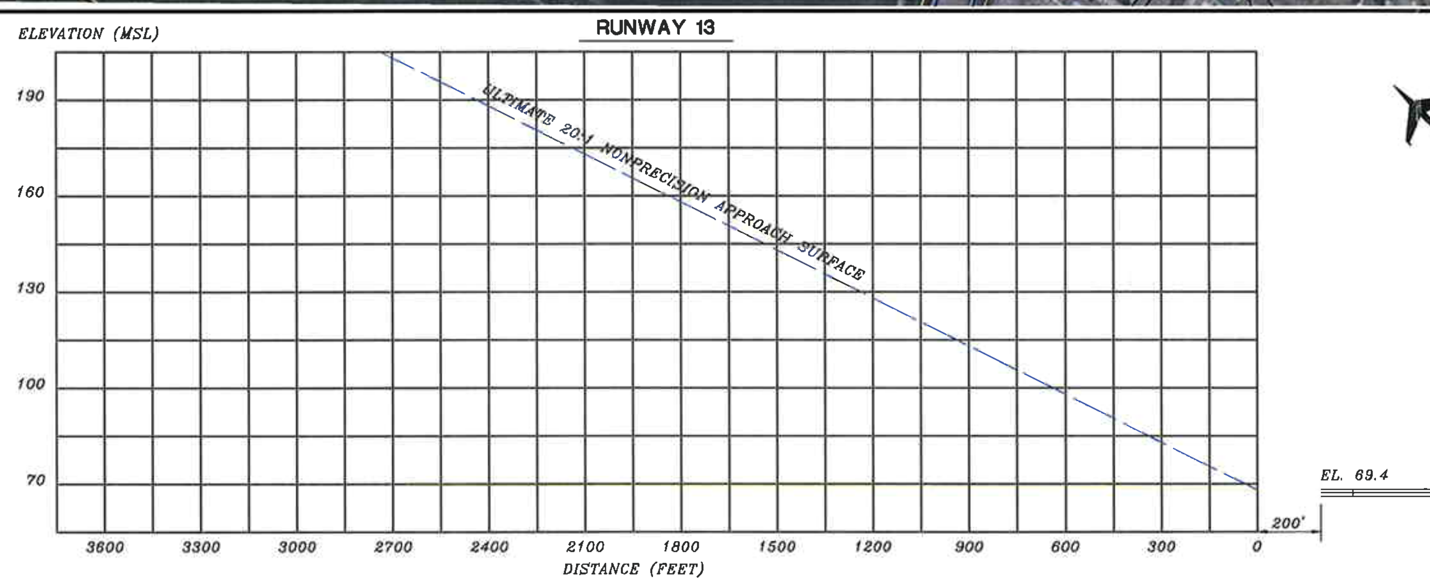
SHEET 2 OF 7

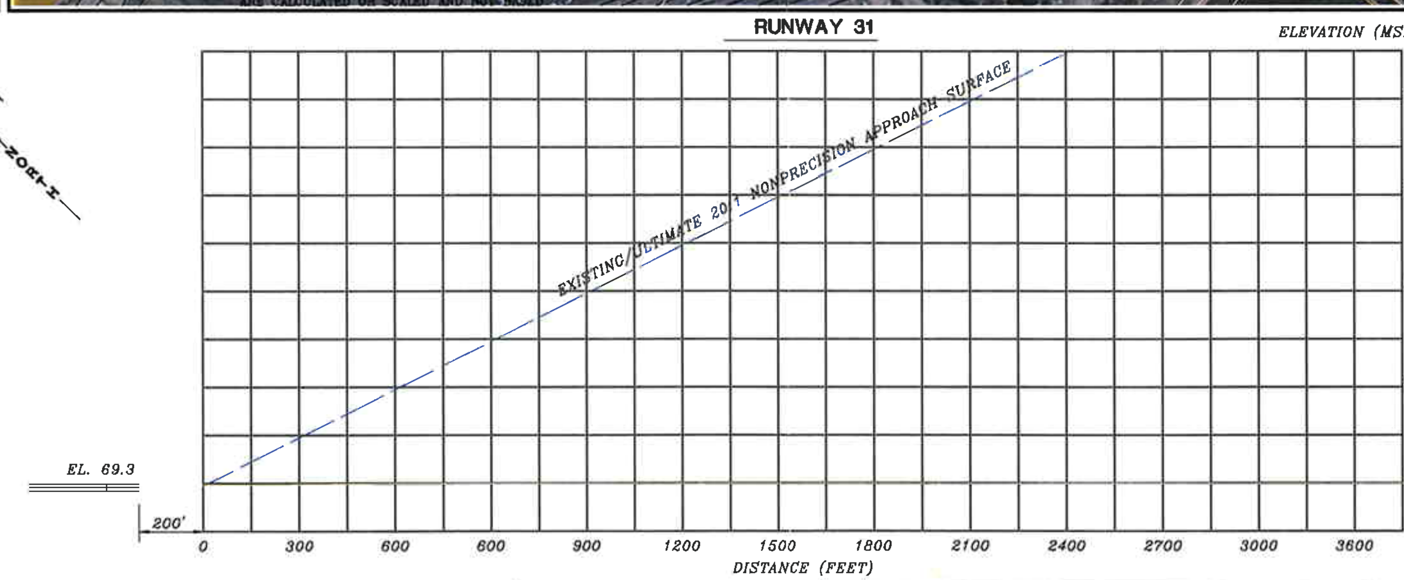
SHEET 3 OF 7

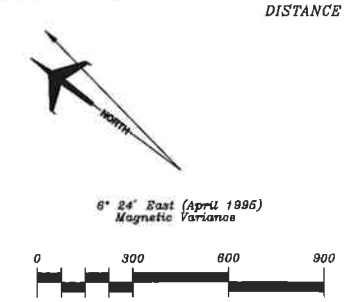
TO BE COMPLETED

AT A LATER DATE

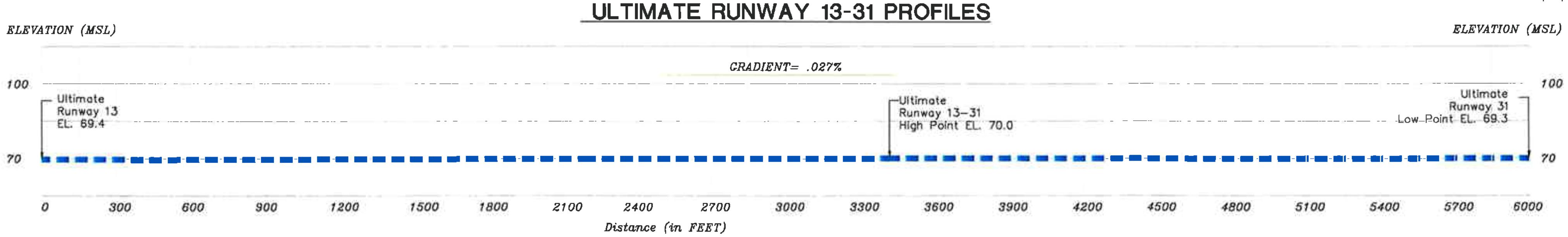








ULTIMATE RUNWAY 13-31 PROFILES



NO.	REVISIONS	BY	CHK'D	DATE

TEXAS DEPARTMENT OF TRANSPORTATION
AVIATION DIVISION

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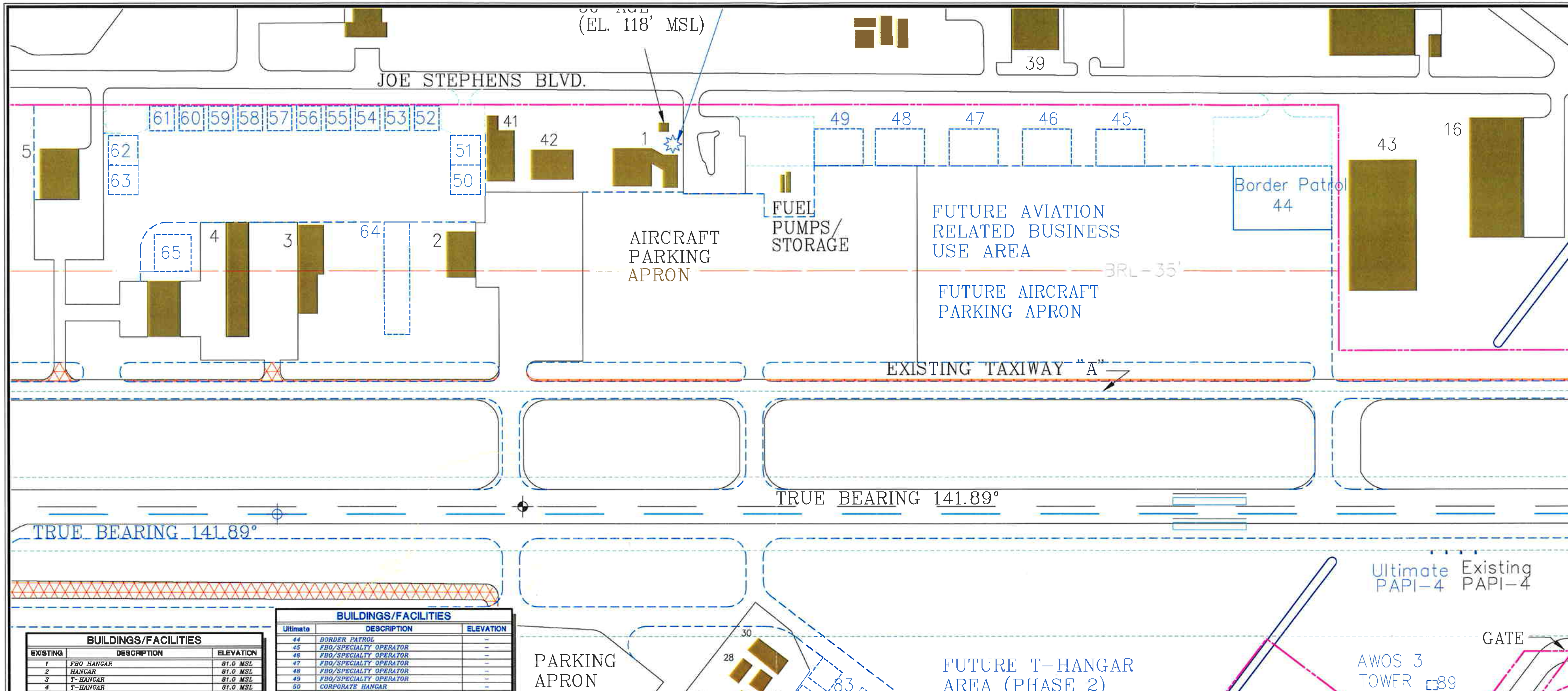
Coffman Associates
Airport Consultants

Mike W. Dmyterko	08/08/2001
DESIGNED BY	DATE
T.A. Erwin	08/08/2001
DRAWN BY	DATE
Steven G. Benson	08/08/2001
CHECKED BY	DATE

ULTIMATE INNER PORTION OF RUNWAY
13-31 APPROACH SURFACE DRAWING
MID VALLEY AIRPORT
WESLACO, TEXAS

Texas Department of Transportation
Aviation Division

SHEET 4 OF 7



BUILDINGS/FACILITIES

EXISTING	DESCRIPTION	ELEVATION
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41	BUILDING	81.0 MSL
42	BUILDING	81.0 MSL
43	BUILDING	-

BUILDINGS/FACILITIES

Ultimate	DESCRIPTION	ELEVATION
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46	FBO/SPECIALTY OPERATOR	-
47	FBO/SPECIALTY OPERATOR	-
48	FBO/SPECIALTY OPERATOR	-
49	FBO/SPECIALTY OPERATOR	-
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51	CORPORATE HANGAR	-
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69	T-HAGAR	-
70	T-HAGAR	-
71	T-HAGAR	-
72	T-HAGAR	-
73	T-HAGAR	-
74	T-HAGAR	-
75	T-HAGAR	-
76	T-HAGAR	-
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89	AWOS TOWER	-

LEGEND

EXISTING	ULTIMATE	DESCRIPTION
		ABANDONED PAVEMENT
		AIRPORT PROPERTY LINE
		AIRPORT REFERENCE POINT (ARP)
		AIRPORT ROTATING BEACON
		AVIATION EASEMENT (if applicable)
		BUILDING ABANDONMENT
		BUILDING CONSTRUCTION
		BUILDING RESTRICTION LINE (BRL)
		DRAINAGE
		FACILITY CONSTRUCTION
		FENCING
VASI-4	PAPI-4	NAVIGATIONAL AID INSTALLATION
		RUNWAY END IDENTIFICATION LIGHTS (REIL)
		RUNWAY THRESHOLD LIGHTS
		SECTION CORNER
		SEGMENTED CIRCLE/WIND INDICATOR
		TOPOGRAPHY (source)
		WIND INDICATOR (Lighted)

NO.	REVISIONS	BY	CHK'D	DATE

TEXAS DEPARTMENT OF TRANSPORTATION AVIATION DIVISION

☐ ALP APPROVED ACCORDING TO FAA AC 150/5300-13 CH 5 PLUS THE REQUIREMENTS OF A FAVORABLE ENVIRONMENTAL FINDING PRIOR TO THE START OF ANY LAND ACQUISITION OR CONSTRUCTION AND AN FAA FORM 7460-1 SUBMITTED PRIOR TO ANY CONSTRUCTION ON AIRPORT PROPERTY

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DIRECTOR, AVIATION DIVISION — DATE

AIRPORT SPONSOR

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SIGNATURE — DATE

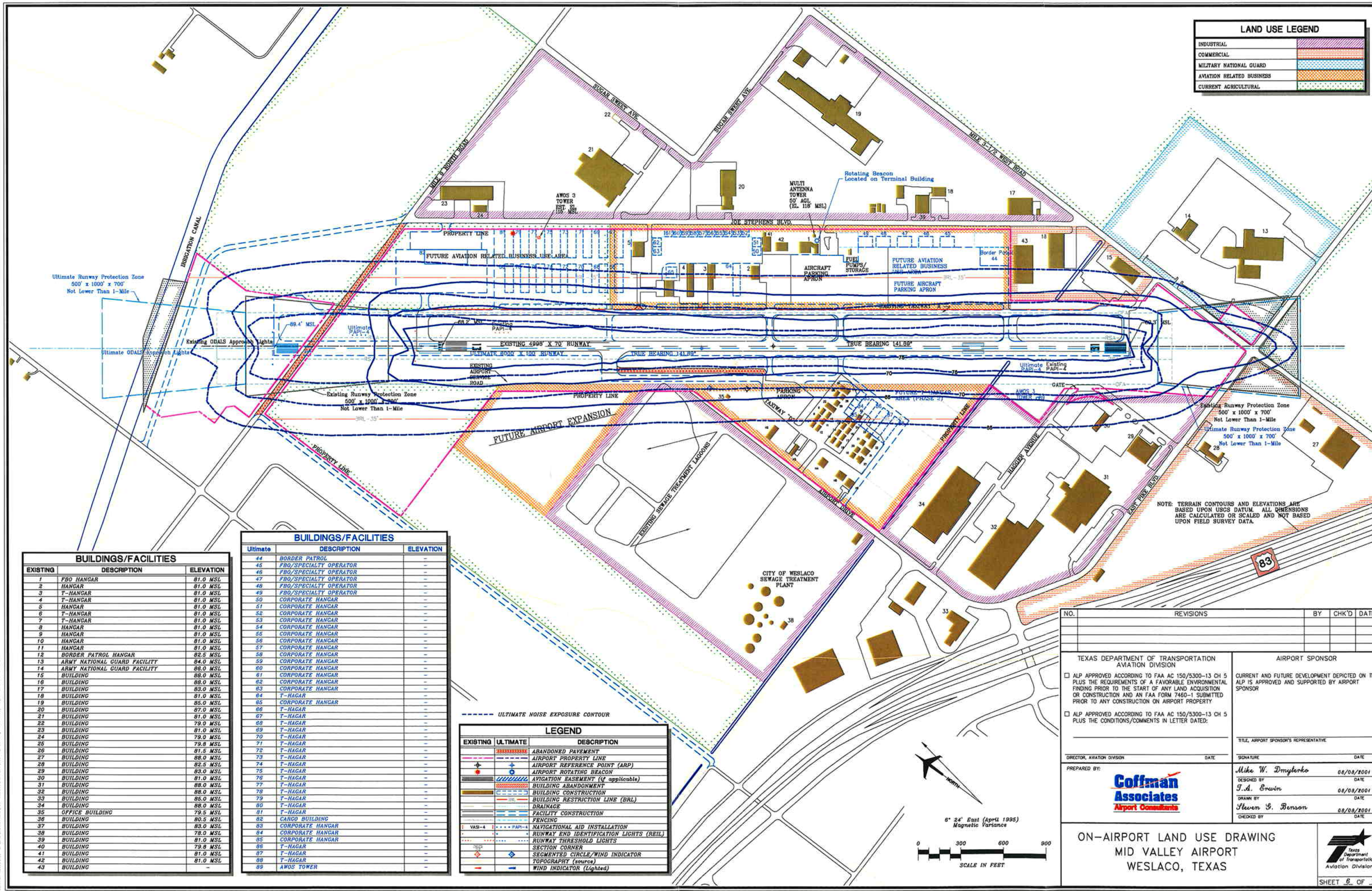
PREPARED BY: Coffman Associates Airport Consultants

Mike W. Dmyterko — 08/08/2001
DESIGNED BY — DATE
T.A. Erwin — 08/08/2001
DRAWN BY — DATE
Steven G. Benson — 08/08/2001
CHECKED BY — DATE

TERMINAL AREA DRAWING
MID VALLEY AIRPORT
WESLACO, TEXAS

Texas Department of Transportation Aviation Division

SHEET 5 OF 7



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BUILDINGS/FACILITIES

Ultimate	DESCRIPTION	ELEVATION
44	BORDER PATROL	-
45	FBO/SPECIALTY OPERATOR	-
46	FBO/SPECIALTY OPERATOR	-
47	FBO/SPECIALTY OPERATOR	-
48	FBO/SPECIALTY OPERATOR	-
49	FBO/SPECIALTY OPERATOR	-
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66	T-HAGAR	-
67	T-HAGAR	-
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69	T-HAGAR	-
70	T-HAGAR	-
71	T-HAGAR	-
72	T-HAGAR	-
73	T-HAGAR	-
74	T-HAGAR	-
75	T-HAGAR	-
76	T-HAGAR	-
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84	CORPORATE HANGAR	-
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88	T-HAGAR	-
89	AWOS TOWER	-

LEGEND

EXISTING	ULTIMATE	DESCRIPTION
		ABANDONED PAVEMENT
		AIRPORT PROPERTY LINE
		AIRPORT REFERENCE POINT (ARP)
		AIRPORT ROTATING BEACON
		AVIGATION EASEMENT (if applicable)
		BUILDING ABANDONMENT
		BUILDING CONSTRUCTION
	BRL	BUILDING RESTRICTION LINE (BRL)
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		TOPOGRAPHY (source)
		WIND INDICATOR (Lighted)

NO.	REVISIONS	BY	CHK'D	DATE

TEXAS DEPARTMENT OF TRANSPORTATION
AVIATION DIVISION

☐ ALP APPROVED ACCORDING TO FAA AC 150/5300-13 CH 5 PLUS THE REQUIREMENTS OF A FAVORABLE ENVIRONMENTAL FINDING PRIOR TO THE START OF ANY LAND ACQUISITION OR CONSTRUCTION AND AN FAA FORM 7460-1 SUBMITTED PRIOR TO ANY CONSTRUCTION ON AIRPORT PROPERTY

☐ ALP APPROVED ACCORDING TO FAA AC 150/5300-13 CH 5 PLUS THE CONDITIONS/COMMENTS IN LETTER DATED:

DIRECTOR, AVIATION DIVISION — DATE

AIRPORT SPONSOR

CURRENT AND FUTURE DEVELOPMENT DEPICTED ON THIS ALP IS APPROVED AND SUPPORTED BY AIRPORT SPONSOR

TITLE, AIRPORT SPONSOR'S REPRESENTATIVE

SIGNATURE — DATE

PREPARED BY:

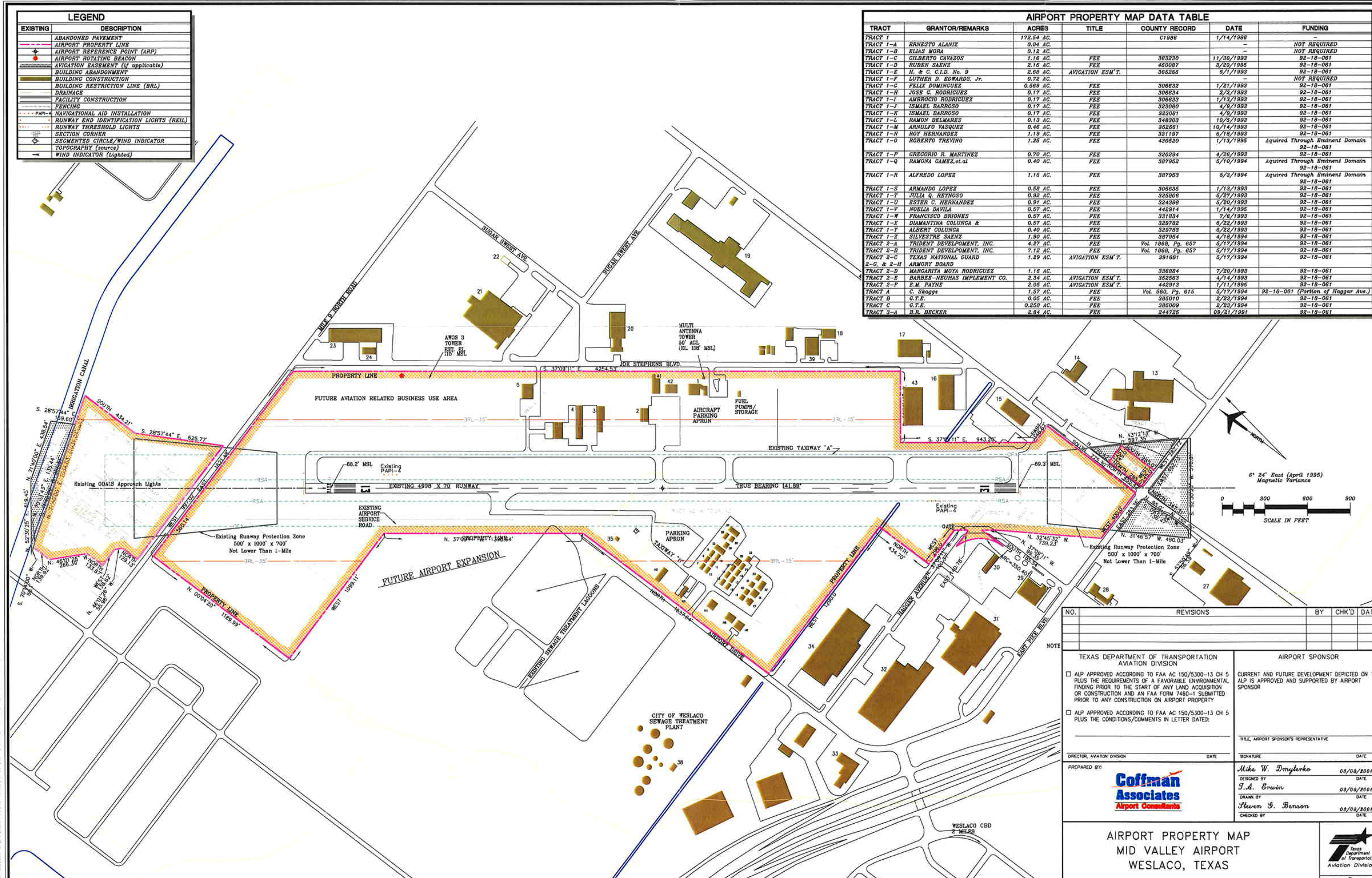
Coffman Associates Airport Consultants

Mike W. Dmytrko — 08/08/2001
DESIGNED BY — DATE
T.A. Erwin — 08/08/2001
DRAWN BY — DATE
Steven G. Benson — 08/08/2001
CHECKED BY — DATE

ON-AIRPORT LAND USE DRAWING
MID VALLEY AIRPORT
WESLACO, TEXAS

Texas Department of Transportation Aviation Division

SHEET 6 OF 7



LEGEND

EXISTING	DESCRIPTION
	ABANDONED PAVEMENT
	AIRPORT PROPERTY LINE
	AIRPORT REFERENCE POINT (ARP)
	AIRPORT ROTATING BEACON
	AVICATION EASEMENT (if applicable)
	BUILDING ABANDONMENT
	BUILDING CONSTRUCTION
	BUILDING RESTRICTION LINE (BRL)
	DRAINAGE
	FACILITY CONSTRUCTION
	FENCING
PAPI-4	NAVIGATIONAL AID INSTALLATION
	RUNWAY END IDENTIFICATION LIGHTS (REIL)
	RUNWAY THRESHOLD LIGHTS
	SECTION CORNER
	SEGMENTED CIRCLE/WIND INDICATOR
	TOPOGRAPHY (source)
	WIND INDICATOR (Lighted)

AIRPORT PROPERTY MAP DATA TABLE

TRACT	GRANTOR/REMARKS	ACRES	TITLE	COUNTY RECORD	DATE	FUNDING
TRACT 1		172.54 AC.		C1986	1/14/1986	–
TRACT 1-A	ERNESTO ALANIZ	0.04 AC.			–	NOT REQUIRED
TRACT 1-B	ELIAS MORA	0.12 AC.			–	NOT REQUIRED
TRACT 1-C	GILBERTO CAVAZOS	1.16 AC.	FEE	363230	11/30/1993	92-18-061
TRACT 1-D	RUBEN SAENZ	2.15 AC.	FEE	450087	3/20/1995	92-18-061
TRACT 1-E	H. & C. C.I.D. No. 9	2.68 AC.	AVICATION ESM'T.	365265	6/1/1993	92-18-061
TRACT 1-F	LUTHER D. EDWARDS, Jr.	0.72 AC.			–	NOT REQUIRED
TRACT 1-G	FELIX DOMINGUEZ	0.569 AC.	FEE	306632	1/21/1993	92-18-061
TRACT 1-H	JOSE G. RODRIGUEZ	0.17 AC.	FEE	306634	2/2/1993	92-18-061
TRACT 1-I	AMBROCIO RODRIGUEZ	0.17 AC.	FEE	306633	1/13/1993	92-18-061
TRACT 1-J	ISMAEL BARROSO	0.17 AC.	FEE	323080	4/9/1993	92-18-061
TRACT 1-K	ISMAEL BARROSO	0.17 AC.	FEE	323081	4/9/1993	92-18-061
TRACT 1-L	RAMON BELMARES	0.13 AC.	FEE	348303	10/5/1993	92-18-061
TRACT 1-M	ARNULFO VASQUEZ	0.46 AC.	FEE	352661	10/14/1993	92-18-061
TRACT 1-N	ROY HERNANDEZ	1.19 AC.	FEE	331197	6/18/1993	92-18-061
TRACT 1-O	ROBERTO TREVINO	1.25 AC.	FEE	430520	1/13/1995	Aquired Through Eminent Domain 92-18-061
TRACT 1-P	GREGORIO R. MARTINEZ	0.70 AC.	FEE	320294	4/26/1993	92-18-061
TRACT 1-Q	RAMONA GAMEZ,et.al	0.40 AC.	FEE	387952	5/10/1994	Aquired Through Eminent Domain 92-18-061
TRACT 1-R	ALFREDO LOPEZ	1.15 AC.	FEE	387953	5/3/1994	Aquired Through Eminent Domain 92-18-061
TRACT 1-S	ARMANDO LOPEZ	0.58 AC.	FEE	306635	1/13/1993	92-18-061
TRACT 1-T	JULIA Q. REYNOSO	0.92 AC.	FEE	325806	5/27/1993	92-18-061
TRACT 1-U	ESTER C. HERNANDEZ	0.91 AC.	FEE	324398	5/20/1993	92-18-061
TRACT 1-V	NOELIA DAVILA	0.57 AC.	FEE	442914	1/14/1995	92-18-061
TRACT 1-W	FRANCISCO BRIONES	0.57 AC.	FEE	331834	7/6/1993	92-18-061
TRACT 1-X	DIAMANTINA COLUNGA &	0.57 AC.	FEE	329782	6/22/1993	92-18-061
TRACT 1-Y	ALBERT COLUNGA	0.40 AC.	FEE	329783	6/22/1993	92-18-061
TRACT 1-Z	SILVESTRE SAENZ	1.90 AC.	FEE	387954	4/18/1994	92-18-061
TRACT 2-A	TRIDENT DEVELPOMENT, INC.	4.27 AC.	FEE	Vol. 1868, Pg. 657	5/17/1994	92-18-061
TRACT 2-B	TRIDENT DEVELPOMENT, INC.	7.12 AC.	FEE	Vol. 1868, Pg. 657	5/17/1994	92-18-061
TRACT 2-C 2-G, & 2-H	TEXAS NATIONAL GUARD ARMORY BOARD	1.29 AC.	AVICATION ESM'T.	391681	5/17/1994	92-18-061
TRACT 2-D	MARGARITA MOYA RODRIGUEZ	1.16 AC.	FEE	336884	7/20/1993	92-18-061
TRACT 2-E	BARBEE-NEUHAS IMPLEMENT CO.	2.34 AC.	AVICATION ESM'T.	352563	4/14/1993	92-18-061
TRACT 2-F	E.M. PAYNE	2.05 AC.	AVICATION ESM'T.	442913	1/11/1995	92-18-061
TRACT A	C. Skaggs	1.57 AC.	FEE	Vol. 560, Pg. 615	5/17/1994	92-18-061 (Portion of Haggar Ave.)
TRACT B	G.T.E.	0.05 AC.	FEE	385010	2/23/1994	92-18-061
TRACT C	G.T.E.	0.258 AC.	FEE	385009	2/23/1994	92-18-061
TRACT 3-A	B.R. BECKER	2.64 AC.	FEE	244725	09/21/1991	92-18-061

NO.	REVISIONS	BY	CHK'D	DATE

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PREPARED BY: Coffman Associates Airport Consultants

Mike W. Dmyterko 08/08/2001
DESIGNED BY DATE

T.A. Erwin 08/08/2001
DRAWN BY DATE

Steven G. Benson 08/08/2001
CHECKED BY DATE

AIRPORT PROPERTY MAP
MID VALLEY AIRPORT
WESLACO, TEXAS

Texas Department of Transportation Aviation Division

SHEET 7 OF 7

Chapter Six
Financial Plan

FINANCIAL PLAN

The analyses conducted in previous chapters evaluated airport development needs based upon forecast activity and operational efficiency. However, the important final element of the master planning process is the application of basic economic, financial, and management rationale to each development item so that the feasibility of implementation can be assured. The purpose of this chapter, therefore, is to provide the financial information which will help airport management to successfully implement the master plan strategy.

The presentation of the financial plan and its feasibility has been organized into three sections. First, the airport development schedule, or capital improvement program (CIP) is presented in narrative and graphic form. Secondly, capital improvement funding sources on the federal, state, and local levels are identified and discussed. Finally, the chapter presents an analysis of the financial feasibility of the recommended CIP considering historical revenues and expenditures, as well as future revenue opportunities.

AIRPORT DEVELOPMENT SCHEDULES AND COST SUMMARIES

Once the specific needs and improvements for the airport have been established, the next step is to determine the costs and a realistic schedule for implementing the plan. This section examines the overall cost of development and presents a development schedule. The recommended improvements are grouped and divided into three planning horizons of short term, intermediate term, and long term. **Table 6A** summarizes the key

The short term planning horizon covers items of highest priority as well as items that should be developed as the airport approaches the short term activity milestones. The FAA and TxDOT use a system whereby airport improvements are given a ranking as to priority. Priority items include improvements related to safety and pavement maintenance. Also included are improvements that relate to meeting new standards and upgrades, as well as to facilities that are inadequate for present demand. Because of their priority, those items will need to be incorporated into the city budgeting process and FAA and TxDOT programming.

When short term horizon activity levels are reached, it will be time to program for the intermediate term based upon the next activity milestones. Similarly, when the intermediate term milestones are reached, it will be time to program for the long term activity milestones.

Due to the conceptual nature of a master plan, implementation of capital projects should occur only after further refinement of their design and costs through architectural and engineering analyses. The cost estimates include a 30 percent increase in allowance for engineering and other contingencies that may be experienced by the project. Capital costs in this chapter should be viewed only as estimates subject to further refinement during design.

Nevertheless, these estimates are considered sufficiently accurate for performing the feasibility analyses in this chapter. Cost estimates for each development project listed in the capital improvement program are presented in current (2001) dollars.

SHORT TERM IMPROVEMENTS

The Texas Department of Transportation (TxDOT) is the source of federal and state grant funding available for planned improvements at Mid Valley Airport. Due to the sizable number of airports and limited funds available, TxDOT's budgeting and grant process typically will provide an airport with intermittent funding assistance. This is to say that TxDOT may provide a grant in the year 2002, but may not be capable of providing additional assistance for several years thereafter. For this reason, development projects for the short term (roughly the first five years) have been planned according to priority needs. Consolidating and grouping projects into one planning period, in lieu of year-by-year project planning, will allow the city and TxDOT to address immediate needs at the airport. Also, as funding for these projects is requested, the potential exists for many of these projects to be funded in one year's grant process.

Projects planned for the short term focus on providing an airport better suited to meeting current airport design standards and accommodating existing demand levels. Of primary concern regarding airside development is the construction of added length, width, and strength to the existing runway, improvement to the approach navigation system, and the associated road relocation. For this reason, the short term program for Mid Valley Airport includes improvements related to

Runway 13-31: the widening of the runway to 100 feet; the strengthening of the runway to 30,000 pounds, single wheel loading (SWL) by applying a three-inch overlay (Type C, 3/4-inch maximum was recommended by the geotechnical engineers) with a 15-foot chip seal shoulder on each runway edge; the construction of access lighting; and navaid relocations. The future runway improvement necessitates the relocation and reconstruction of 3,000 linear feet of roadway of Mile Nine North Road. Coincidental to the road realignment is conveyance of the land on which it is to be relocated. This consists of approximately 16.7 acres of land.

TABLE 6A
Planning Horizon Milestone Summary
Mid Valley Airport

	2000	Short Term	Intermediate Term	Long Term
General Aviation Activity				
Based Aircraft	106	120	140	200
Operations				
Local	16,000	19,800	23,100	33,000
Itinerant	15,400	16,700	19,900	29,000
Total General Aviation Operations	31,400	36,500	43,000	62,000
Total AIA's	-	240	280	400

Also to be accomplished in the short term is the disposition of 6.1 acres of property north of the irrigation canal for the expanded runway protection zone (RPZ). Likewise, the 5.1 acres of land within the RPZ on the south end of the airport should be considered for acquisition. The airport may either acquire this land in fee simple or restrict the airspace use over that land by acquisition of avigation easements.

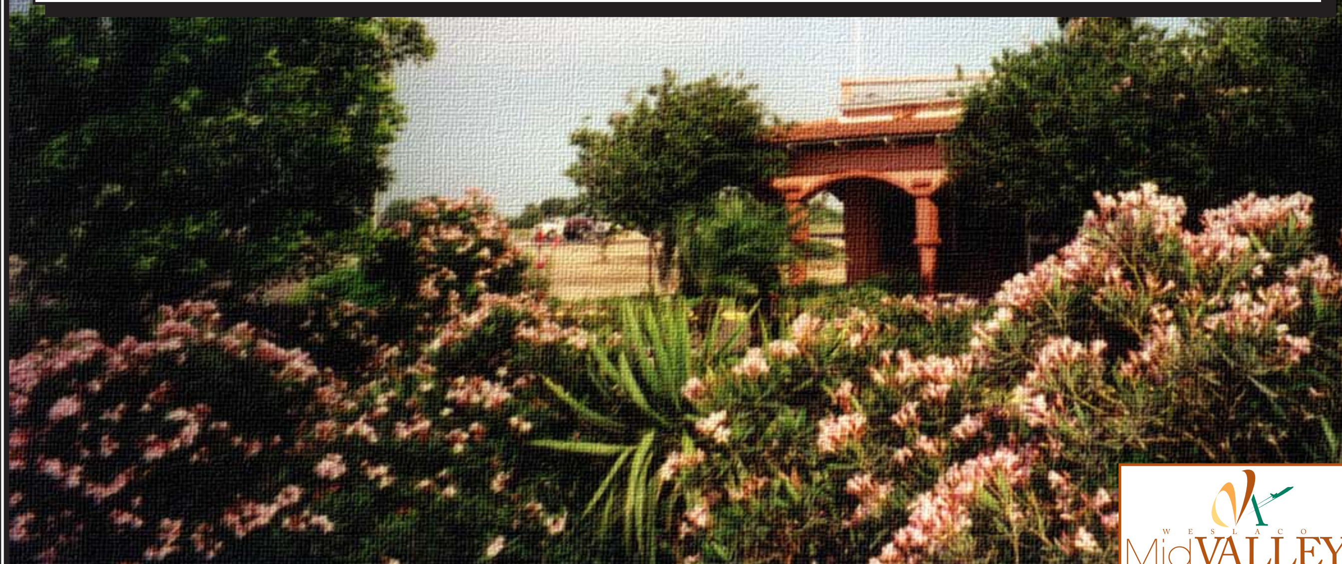
Landside projects proposed for the short term include the construction of T-Hangars (four 8-unit facilities) and one conventional hangar (7,500 square feet) for transient aircraft parking and maintenance needs, and the associated vehicle parking, apron area, and taxiway needed for these. **Short term improvements as presented on Exhibit 6A are estimated at approximately $7.4 million**. **Exhibit 6B** depicts proposed improvements, which are color-coded to correspond to each planning period.

INTERMEDIATE TERM IMPROVEMENTS

The intermediate term encompasses key improvements necessary to meeting projected increases in aviation demand and facility needs. The key airside development item anticipated is the lengthening of the runway.

00MP04-6A-8/6/01

Project Description	Total Cost	FAA/TxDOT Eligible	Local Share
SHORT TERM PLANNING HORIZON			
1. Land Acquisition - 28 Acres	$336,000	$302,400	$33,600
2. Widen/Strengten Runway 13-31 (30 feet west)	4,034,000	3,630,600	403,400
3. Relocate Mile Nine North Road	234,000	210,600	23,400
4. Expand Eastside Hangar Aprons/Taxilanes	1,800,000	1,620,000	180,000
5. Construct Hangars	800,000	0	800,000
Total Short Term Planning Horizon	**$7,204,000**	**$5,763,600**	**$1,440,400**
INTERMEDIATE PLANNING HORIZON			
1. Extend Runway 13-31 (1,002 feet north)	$1,400,000	$1,260,000	$140,000
2. Expand Eastside Hangar Aprons	2,700,000	2,430,000	270,000
3. Precision Marking	50,000	45,000	5,000
4. Utilities Improvements -West Side	250,000	0	250,000
5. Expand Terminal Parking Lot	416,000	374,400	41,600
6. MALSR (Approach Lighting)	350,000	315,000	35,000
Total Intermediate Planning Horizon	**$5,166,000**	**$4,424,400**	**$741,600**
LONG TERM PLANNING PERIOD			
1. Construct Westside Hangar/Apron	$370,000	$333,000	$37,000
2. Construct Westside Partial Parallel Taxiway	720,000	648,000	72,000
3. Construct Eastside Hangar/Cargo Aprons	2,000,000	1,800,000	200,000
4. Runway Pavement Preservation	250,000	225,000	25,000
5. Construct West Drive	35,000	31,500	3,500
Total Long Term Planning Horizon	**$3,375,000**	**$3,037,500**	**$337,500**
TOTAL AIRPORT DEVELOPMENT	**$15,745,000**	**$13,225,500**	**$2,519,500**



Weslaco Mid Valley Airport

Exhibit 6A
CAPITAL IMPROVEMENT PROGRAM

Several landside development projects have been included in the intermediate term to aid in providing for projected increases in based aircraft. It is anticipated that additional corporate and T-Hangar facilities will be needed at this time. For this reason, the intermediate term program includes construction of the aircraft apron and taxiways. Also, to meet higher general aviation demand, construction of additional terminal parking is proposed. **As presented on Exhibit 6A and depicted on Exhibit 6B, the total cost of intermediate term improvements is estimated at approximately $5.0 million**.

LONG TERM IMPROVEMENTS

Development projects will ultimately produce an airport capable of accommodating all of the aviation activity and associated requirements that are anticipated for the planning period.

Landside improvements entail the majority of development items in the long term. Long term improvements include expansion of the aircraft parking apron, some replacement of the older hangars with T-Hangars and corporate style hangars, and air cargo operations improvements on the east and west side. Location of the air cargo facilities on the west side better provides for separation of traffic and allows for new hangar construction to be grouped on the east side. The apron and parking areas would be located near the T-Hangar and corporate hangar development. **The total cost for long term development is estimated at $3.3 million. Exhibit 6B** presents a graphical depiction of planned improvements over the long term planning period.

CAPITAL IMPROVEMENTS FUNDING

Financing capital improvements at the airport will not rely exclusively upon the financial resources of the airport fund of the city of Weslaco. Capital improvements funding is available through various grants-in-aid programs on the state and federal levels. The following discussion outlines the key sources for capital improvement funding.

FEDERAL AID TO AIRPORTS

The United States Congress has long recognized the need to develop and maintain a system of aviation facilities across the country for national defense and promotion of interstate commerce. Various grants-in-aid programs to public airports have been established over the years for this purpose. The most recent legislation was enacted in early 2000 and is entitled the **Wendell H. Ford Aviation Investment and Reform Act for the 21st Century** or **AIR-21**.

This new four-year bill covers fiscal years 2000, 2001, 2002, and 2003. This was breakthrough legislation because it authorized funding levels significantly higher than ever before. Airport improvement program funding was

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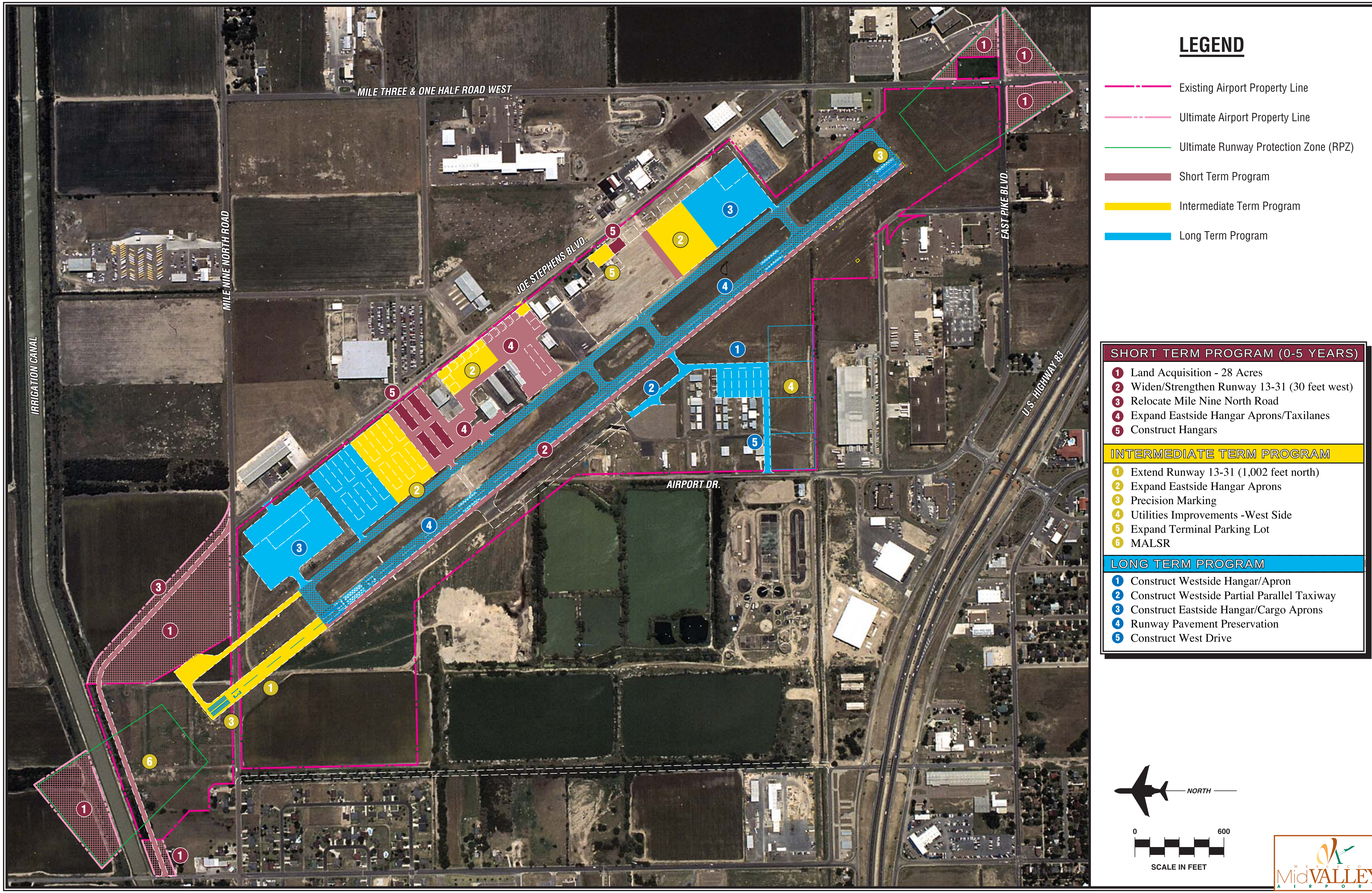

Exhibit 6B
DEVELOPMENT STAGING PROGRAM

authorized at $2.475 billion in 2000, $3.2 billion in 2001, $3.3 billion in 2002, and $3.4 billion in 2003.

The source for AIR-21 funds is the Aviation Trust Fund. The Aviation Trust Fund was established in 1970 to provide funding for aviation capital investment programs (aviation development, facilities and equipment, and research and development). The Trust Fund also finances the operation of the FAA. It is funded by user fees, taxes on airline tickets, aviation fuel, and various aircraft parts.

Nonhub commercial service airport development that meets FAA's eligibility requirements can receive 90 percent federal funding from AIR-21. Property acquisition, airfield improvements, aprons, perimeter service roads, and access road improvements are examples of eligible items. General aviation terminal buildings, cargo buildings, associated automobile parking, hangars, fueling facilities, and most utilities are generally eligible for federal funds.

Funds are distributed each year by the FAA from Congressional appropriations.

FAA FACILITIES AND EQUIPMENT PROGRAM

The Airway Facilities Division of the FAA administers the Facilities and Equipment (F&E) Program. This program provides funding for the installation and maintenance of various navigational aids and equipment of the national airspace system. Under the F&E program, funding is available for enroute navigational aids, on-airport navigational aids, and approach lighting systems. Mid Valley Airport currently has no needs that would meet these criteria.

STATE FUNDING PROGRAM

The State of Texas participates in the federal State Block Grant program. Under the State Block Grant Program, the FAA annually distributes general aviation state entitlement apportionments and discretionary funds to TxDOT. The state then distributes grants to state airports. In compliance with TxDOT's legislative mandate that it "apply for, receive, and disburse" federal funds for general aviation airports, TxDOT acts as the agent of the local airport sponsor. Although these grants are distributed by TxDOT, they contain all federal obligations.

The State of Texas also distributes funding to general aviation airports from the Highway Trust Fund. These funds are appropriated each year by the state legislature. Once distributed, these grants contain state obligations only.

The establishment of a capital improvement program for the state entails first identifying the need, then establishing a ranking, or priority system. Identifying all state airport project needs allows TxDOT to establish a biennial program and budget for development costs. The most recent TxDOT CIP, **Aviation Improvement**

Program 2001-2003, assumed that approximately $32 million annual federal AIP and $17 million state funds would be available.

The TxDOT biennial program establishes a project priority system based upon the following objectives (in order of importance):

- enhance safety
- preserve existing facilities
- bring airport up to standards
- upgrade facilities to aid airport in providing for larger aircraft with longer stage lengths
- improve airport capacity
- new airport construction to provide new access to a previously unserved area
- new airports to provide capacity relief to existing airports

Each airport project for Mid Valley Airport must be identified and programmed into the state capital improvement program and compete with other airport projects in the state for federal and state funds.

In Texas, airport development projects that meet TxDOT's discretionary funds eligibility requirements receive 90 percent funding from the AIP State Block Grant program. Eligible projects include airfield and apron facilities. However, revenue-generating improve-ments such as fuel facilities, utilities, and hangars are not eligible for AIP funding.

TxDOT has also established a program to help airports maintain, and in some circumstances fund, new airport pavements and miscellaneous projects. The Routine Airport Maintenance Program (RAMP) is an annual funding source to airports. With RAMP, TxDOT will provide a 50 percent funding match for projects up to $60,000. The program was initially designed to help airports maintain airside and landside pavements, but has recently been expanded to include construction of new facilities. Examples of new facility construction projects fundable under RAMP include: construction of an airport access road, construction of public vehicular parking, pavement preservation, and replacement of the rotating beacon, etc. These funds are available to general aviation airports on an annual basis.

Newer programs included in TxDOT funding include terminal building and airport traffic control tower (ATCT) funding. TxDOT has funded terminal building facility construction on a 50-50 basis up to $400,000 total project costs. TxDOT has recently considered upgrading the total cost allowance on a case-by-case basis. TxDOT will also be funding the construction of ATCT, likely one to two per year. The amount of funding has yet to be determined. Mid Valley Airport will not likely be one of the airports to be considered for ATCT within the planning period of this master plan.

LOCAL SHARE FUNDING

The balance of project costs, after consideration has been given to the various grants available, must be funded through airport resources. Usually, this is accomplished through the use of airport earnings and reserves, to the extent possible, with the remaining costs financed through general obligation bonding.

The airport operates with the aid of the collection of various rates and charges from general aviation revenue sources. There are, however, restrictions on the use of revenues collected by the airport. All receipts, excluding bond proceeds or related grants and interest, are irrevocably pledged to the punctual payment of operating and maintenance expenses, payment of debt service for as long as bonds remain outstanding, or to additions or improvements to airport facilities.

FINANCING OF DEVELOPMENT PROGRAM

Earlier in this chapter, programmed expenditures were presented in current (2001) dollars. Future expenditures were categorized according to assigned financing responsibilities, with the city of Weslaco's responsible expenditures the primary focus of these feasibility analyses. In this section, the base costs are assumed to be the financing responsibility of the city and are adjusted to reflect the projected local share of these proposed capital expenditures in current (2001) dollars.

It should be remembered that, in practice, projects will be undertaken when demand actually warrants, and, perhaps, changing initial assumptions. Further, the actual financing of capital expenditures will be a function of airport and city circumstances at the time of project implementation. As a result, any assumptions and analyses should be viewed in the context of their primary purpose: to examine whether there is a reasonable expectation that recommended improvements will be financially feasible and able to be implemented.

The following sections will describe the revenues generated and expenses incurred surrounding the operation of Mid Valley Airport. **Table 6B** presents the past five-year revenues and expenditures for the airport.

REVENUES

Operating revenues at the Mid Valley Airport include hangar leases, ground leases of hangar/business facilities, fuel sales, and other income. Fuel sales have historically accounted for 40 to 50 percent of total revenues from 1995 to 2000, as shown in **Table 6C**. As the table indicates, fuel sales declined in 1996 after a very good year for general aviation-1995. Fuel sales continued to grow at a steady pace until 1998 after taking a large upturn, increasing in sales from the previous year from $122,389 to $154,126. In 2000, the airport continued the growth in sales and achieved an all time high fuel sales year for the airport of $165,188.

The next largest revenue source for the airport is tenant rents and leases. This revenue is derived from the rental of city-owned hangars and ground leases for privately-owned hangars and businesses.

Currently, the city charges between $117 and $169 per month for aircraft stored in the airport-owned T-Hangars. Aircraft stored in the conventional communal hangar are charged by aircraft type: $100 per single engine, $125 per light twin, and $150 per medium twin-engine aircraft. The city also charges $400 per month for the lease of the main hangar (4,800 square feet).

TABLE 6B
Historical Revenues and Expenses
Mid Valley Airport

	FY1995	FY1996	FY1997	FY1998	FY1999	FY2000
Revenues						
Annual Fuel Sales	$113,174	$95,941	$110,105	$122,389	$154,126	$165,188
Hangar Leases	$43,485	$46,938	$47,000	$40,788	$42,831	$44,414
Other Income	$4,252	$1,948	$4,927	$2,624	$2,681	$2,600
Total Revenue	$160,911	$144,827	$162,032	$165,801	$199,638	$212,202
Expenses						
Fuel Deliveries	$62,000	$54,511	$67,776	$77,008	$82,300	$103,851
Salaries/Benefits	$56,691	$79,042	$85,566	$85,283	$102,659	$117,744
Office	$7,492	$6,663	$6,901	$8,516	$11,633	$10,469
Telephone, Utilities	$16,200	$21,683	$17,640	$18,107	$16,419	$19,000
Maintenance	$6,102	$14,139	$24,629	$33,212	$15,920	$45,297
Professional Services	$17,370	$17,482	$24,221	$23,999	$27,762	$20,146
Total Operating Expenses	$165,855	$193,520	$226,733	$246,125	$256,693	$316,507

Source: City of Weslaco Mid Valley Airport Records

Airport ground leases to private hangars are $0.10 per square foot per annum. The airport also receives a utility fee on each hangar, $17.50 per hangar per month for east side hangars and $5 per month for west side hangars.

Further airport revenues are made up of tie-down fees ($30 per month) and office space lease ($200 per month).

After review of the current charges for airport tenants and businesses, it appears that these rates are slightly below the amount needed to adequately cover expenses. Hangar lease rates and private ground lease rates are at or slightly below those for airports similar to Mid Valley Airport. The reasonable hangar rental rate, however, is an attractive method of increasing based aircraft. Several tenants indicated in the survey that they base at the airport because of the value obtained per dollar spent. Consideration should be given to reviewing these rates every several years, as maintenance and utility costs will inevitably rise.

New hangar and ground leases will need to be established in such a manner that the city will be capable of amortizing its development costs over a reasonable time period. If the city decides to construct additional T-Hangar facilities, expenses can generally equal $10,000-$20,000 per unit. Thus, a 10-unit T-Hangar facility could cost between $100,000-$200,000 dollars to construct. It is likely that the city would need to bond T-Hangar construction. In order to retire the bond debt service for the construction of a 10-unit facility over a 15-year period at a six percent interest rate, individual hangar rates would need to be $185 per month (based on a $200,000 cost). Of course, this would not include the construction of additional taxilane access to the hangars. Construction of T-Hangar aprons or taxilanes, however, are fundable at 90 percent from TxDOT (state or federal grants-in-aid).

Obviously, if the airport does not fund the construction of these facilities, costs of developing the new hangars will be significantly lower than if they paid for construction. If the city does not construct the proposed hangar facilities, the only capital cost to the city would be 10 percent of the taxilane construction (the remaining 90 percent would come from federal or state grants). The city has allowed the development of privately-owned hangars in the recent past. Privately-owned facilities offer a significant savings.

Assuming that the city does not construct the T-Hangars, future ground lease rates for the proposed construction of 120 additional T-Hangars, as depicted on the airport layout drawing (ALD), could provide an additional $18,000 annually by the long term of the planning period.

It should be noted that existing and future leases should always include provisions for the adjustment of the lease amount due to increases in the consumer price index (CPI) and property values. The typical review period ranges up to five years. It is recommended that the leases include a review of CPI and property value every three years so that necessary adjustments to lease rates can be made.

The revenue projections also consider the city as the sole fuel provider at the airport. The airport has averaged over $50,000 per year in fuel revenue over the past five years. Fuel sales can be expected to increase as airport operations increase.

If an FBO were to locate at the airport and wish to dispense fuel, the airport should consider charging the FBO a fuel flowage fee of $0.06 per gallon. This fee is typical at general aviation airports and should not adversely impact fuel sales potential.

Long term development also includes four two-acre on-airport commercial/ industrial sites. Projections of income should consider a ground lease rental rate of a minimum $0.10 per square foot per year for this property.

EXPENSES

Generalized operating expenses for Mid Valley Airport include fuel deliveries, personnel salaries and benefits, office expenses and supplies, maintenance, utilities, professional services, and general expenses. As indicated in **Table 6B**, airport operating expenses have grown steadily over time as have the demands on the airport.

When considering capital expenditures for airport improvements, the airport has operated with a negative income in the past. Capital expenditures, however, can be expected and should not be considered when trying to identify operating incomes/losses. These costs improve the facility and are always associated with the operation of an airport.

Future expenses will vary depending upon the city's desire to construct additional hangars and associated costs of maintaining existing hangars and landside pavements (local share). Future expenses, however, could be sharply higher if additional bonding is not obtained. The city should anticipate maintenance costs and administrative costs associated with operating hangar facilities. For the sake of this analysis, it is assumed that the city will continue to allow for private development of hangar facilities. Thus, no operating costs of new hangars will be assumed. Of course the city will have to continue to maintain the existing facilities. At some point as the hangars become too aged, however, the city may opt to allow for private redevelopment of hangars in the location of the existing city-owned hangars. The demolition/removal of the conventional communal storage hangar is currently planned for the long term.

The city has an annual debt service obligation for the airport in the amount of $10,220. It is also likely that the proposed capital improvements will exceed the city's ability to fund from general funds. Thus, debt service obligations will likely continue through the long term planning horizon. Projects which may require bonding and subsequent debt service expense include property acquisition and construction of additional runway.

As the airport continues to grow, city-employed staffing of the airport is needed. Most successful general aviation airports maintain at least one full time airport manager and, often, can include up to five additional employees. For Mid Valley Airport, future staffing requirements will likely exceed four employees within the planning period. Administrative costs can be estimated at approximately $120,000 annually for Mid Valley Airport. The administrative costs have historically been below this amount.

Other expenses including utilities and maintenance can be expected to increase slightly over the period. The rather sharp increase in maintenance for 2000 is a one time expense that is not expected to repeat each following year. Utility expenses can be expected to increase as the airport provides additional services requiring the use of electricity, water, telephone, etc. Several proposed improvements will likely cause an increase in utility costs including additional hangar construction.

Finally, consideration should be given to the potential expenses associated with developing four two-acre tracts within the foreign trade zone (FTZ) on the airport. The majority of the expense would be the initial development of the sites. These expenses will include costs of extending city utilities, site preparation, construction of roads, and marketing costs. Also, unlike airport improvement projects, these costs are not eligible for federal or state aviation grants-in-aid. Thus, all costs of development would have to be assumed by the city. It should be noted, however, that local and regional economic development agencies may be capable of attracting various funding sources and could aid in attracting businesses to the park. For planning purposes, it is safe to assume that initial costs of development may exceed initial revenues generated from development. Over the long term, however, the potential exists for revenues to greatly exceed operating expenses.

CASH FLOW ANALYSIS

In a review of the cash flow for Weslaco Mid Valley Airport, it can be seen that, generally speaking, expenses exceed revenues at the current time. Expenses were at a high in 2000 due, in large part, to a reduction of fuel revenue as impacted by the rise in fuel costs. Further associated high costs were those of maintenance and the cost of salaries and benefits. The maintenance costs are, typically seen in this instance as one-time costs, associated with an effort to reduce the problem of having an unfinished apron. In the case of salaries, these are costs that are, typically, associated with the running of a first-class airport operation, and, as mentioned previously, are lower than typical annual management costs. One of the most striking comments from the pilot surveys was the common sentiment that the customer service was better by far at Mid Valley than elsewhere in the region. The pilots, whether transient or local, further attributed their use of the Mid Valley facilities directly to the outstanding service. This kind of word-of-mouth advertising has long been valued as the best kind of advertising for airports. As Mid Valley completes construction of the main terminal apron, it is anticipated that the fuel revenues will continue to rise. The service that is associated with these operations, especially with jet fueling operations, is a critical factor in attracting and keeping customers.

A cash flow analysis assumes that grant-eligible capital costs would be funded either under AIP or TxDOT. If not, projects could be delayed until adequate funding is available. Local costs are typically assumed to be either paid each year or financed at seven percent interest over a 20-year period.

In the short term, it would appear that the airport will continue to require fiscal support. Over the long term, it is possible that the airport will be self-sustaining. However, the important aspect is that the real value of the airport and associated economics has been calculated in the *Economic Impact of Weslaco Mid Valley Airport* study. The benefits and savings to the community of a fine aviation facility is calculated to be over $5 million. The community-at-large experiences a direct impact of the spending of $2,950,000 by on-airport service providers. A good airport can, and often does, mean the difference in the decision to locate businesses.

PLAN IMPLEMENTATION

The successful implementation of the Mid Valley Airport Master Plan will require sound judgment on the part of the city and management with regard to implementation of projects. Experience has indicated that problems have materialized with time-based planning documents. The format used in the development of this Master Plan has attempted to deal with this issue by providing more flexibility in the programming. The primary issues upon which this Plan is based will remain valid for many years into this century.

Appendix A
Environmental Evaluation

Appendix A
ENVIRONMENTAL EVALUATION

Master Plan
Weslaco Mid Valley Airport

Analysis of the potential environmental impacts of proposed airport development is an important component of the airport master plan process. The primary purpose of the environmental evaluation is to assess the proposed development program for Weslaco Mid Valley Airport to identify any potential environmental concerns or "red flags" to development.

An important element of this evaluation was coordination with appropriate federal, state, and local agencies to identify potential environmental concerns that should be considered prior to the design and construction of new facilities at the airport. Agency coordination consisted of a letter requesting comments and/or information regarding the potential environmental effects of proposed airport development over the next 20 years. Issues of concern that were identified as part of this process are presented in the following sections. The letters received from the various agencies are included at the end of this appendix.

Any major improvements planned for Mid Valley Airport (i.e. runway extension) will require compliance with the National Environmental Policy Act of 1969, as amended (NEPA). Compliance with NEPA is generally satisfied by the preparation of an Environmental Assessment (EA) or Environmental Impact Statement (EIS). While this section of the Master Plan is not structured to satisfy NEPA requirements, it is intended to supply a preliminary review of environmental considerations that would need to be analyzed in more detail within the NEPA process.

PROPOSED DEVELOPMENT

As a result of the Master Plan process, a number of improvements have been recommended for implementation during the planning period. The Airport Layout Plan (Chapter Five) illustrates the proposed development for Weslaco Mid Valley Airport. The following is list of major projects recommended for Mid Valley Airport.

- Widen and strengthen Runway 13-31 to 100 feet.
- Acquire approximately 28 (16.7 for road and 11.3 for RPZ) acres of land to protect airfield safety areas and provide for facility expansion.
- Reconstruct Mile Nine North Road.
- Extend Runway 13-31 and parallel taxiway 1,002 feet north.
- Construct eastside T-hangars and associated aprons and taxiway access.
- Construct Conventional hangars and expand existing apron to serve these.
- Extend utilities to west side.
- Expand terminal parking.
- Construct westside T-hangars and associated aprons and taxiway access.
- Construct Cargo operations apron and taxilane.
- Initiate a Pavement Preservation Plan for runway and taxiway maintenance.

ENVIRONMENTAL CONSEQUENCES - SPECIFIC IMPACTS

This environmental evaluation has been prepared using *FAA Order 1050.1D, Policies and Procedures for Considering Environmental Impacts*, and *FAA Order 5050.4A, Airport Environmental Handbook* as guidelines. Several factors are considered in a formal environmental document, such as an Environmental Assessment (EA) or Environmental Impact Statement (EIS), which are not included in an environmental evaluation. These factors include details regarding the project location, historical perspective, existing conditions at the airport, and the purpose and need for the project. This information is available within the Master Plan document. A formal environmental document also includes the resolution of issues/impacts identified as significant during the environmental process. This environmental evaluation only identifies potential environmental issues and does address mitigation or the resolution of environmental impacts. The following subsections address each of the specific impact categories outlined by *FAA Order 5050.4A*.

NOISE

Aircraft sound emissions are often the most noticeable environmental effect an airport will produce on the surrounding community. If the sound is sufficiently loud or frequent in occurrence it may interfere with various activities or otherwise be considered objectionable.

To determine the noise related impacts that the proposed development could have on the environment surrounding Mid Valley Airport, noise exposure patterns were analyzed for both existing airport activity conditions and projected long term activity conditions.

Noise Contour Development

The basic methodology employed to define aircraft noise levels involves the use of a mathematical model for aircraft noise predication. The Yearly Day-Night Average Sound Level (DNL) is used in this study to assess aircraft noise. DNL is the metric currently accepted by the FAA, Environmental Protection Agency (EPA), and Department of Housing and Urban Development (HUD) as an appropriate measure of cumulative noise exposure. These three federal agencies have each identified the 65 DNL noise contour as the threshold of incompatibility, meaning that noise levels below 65 DNL are considered compatible with underlying land uses. Most federally funded airport noise studies use DNL as the primary metric for evaluating noise.

DNL is defined as the average A-weighted sound level as measured in decibels (dB), during a 24-hour period. A 10 dB penalty applies to noise events occurring at night (10:00 p.m. to 7:00 a.m.). DNL is a summation metric which allows objective analysis and can describe noise exposure comprehensively over a large area.

Since noise decreases at a constant rate in all directions from a source, points of equal DNL noise levels are routinely indicated by means of a contour line. The various contour lines are then superimposed on a map of the airport and its environs. It is important to recognize that a line drawn on a map does not imply that a particular noise condition exists on one side of the line and not on the other. DNL calculations do not precisely define noise impacts. Nevertheless, DNL contours can be used to: (1) highlight existing or potential incompatibilities between and airport and any surrounding development; (2) assess relative exposure levels; (3) assist in the preparation of airport environs land use plans; and (4) provide guidance in the development of land use control devices, such as zoning ordinances, subdivision regulations and building codes.

The noise contours for Mid Valley Airport have been developed from the Integrated Noise Model (INM), Version 6.0b. The INM was developed by the Transportation Systems Center of the U.S. Department of Transportation at Cambridge, Massachusetts, and has been specified by the FAA as one of the two models acceptable for federally funded noise analysis.

The INM is a computer model which accounts for each aircraft along flight tracks during an average 24-hour period. These flight tracks are coupled with separate tables contained in the data base of the INM which relate to noise, distances, and engine thrust for each make and model of aircraft type selected.

Computer input files for the noise analysis assumed implementation of the recommended development of the airport as identified on the Airport Layout Drawing. The input files contain operational data, runway utilization, aircraft flight tracks, and fleet mix as projected in the plan. The operational data and aircraft fleet mix are summarized in **Table A**. For more detailed information of the aviation forecasts for Mid Valley Airport refer to Chapter Two, Aviation Demand Forecasts.

TABLE A
Aviation Forecast Summary
Mid Valley Airport

Type of Operation	**1999**	**Long Term**
ITINERANT OPERATIONS		
Single Engine Piston	9,300	13,750
Multi-Engine Piston	4,400	11,000
Turboprop/Business Jet	1,000	3,500
Helicopter	900	2,750
Total Itinerant	15,600	31,000
LOCAL OPERATIONS		
Single Engine Piston	15,200	29,700
Multi-Engine Piston	800	3,300
Total Local	16,000	33,000
Total Operations	15,600	64,000

Other important inputs into the program include the runway use percentages and percentage of day and night operations. The runway use percentages considered that Runway 13 was utilized 70 percent of the time. Also, five percent of all operations were considered for night-time.

Results of the Noise Analysis

Considering existing operational activity, the 65 DNL and all other contours inside the 65 DNL noise contour encompasses approximately 81.4 acres, mostly contained within existing airport property as depicted on **Exhibit A**.

Considering projected ultimate operational activity, the 65 DNL noise contour and other contours encompasses approximately 130.7 acres as depicted on **Exhibit B**. The primary reason for the increase is due to projected increase use of the airport by corporate aircraft. The ultimate 65 DNL contour would extend beyond airport property

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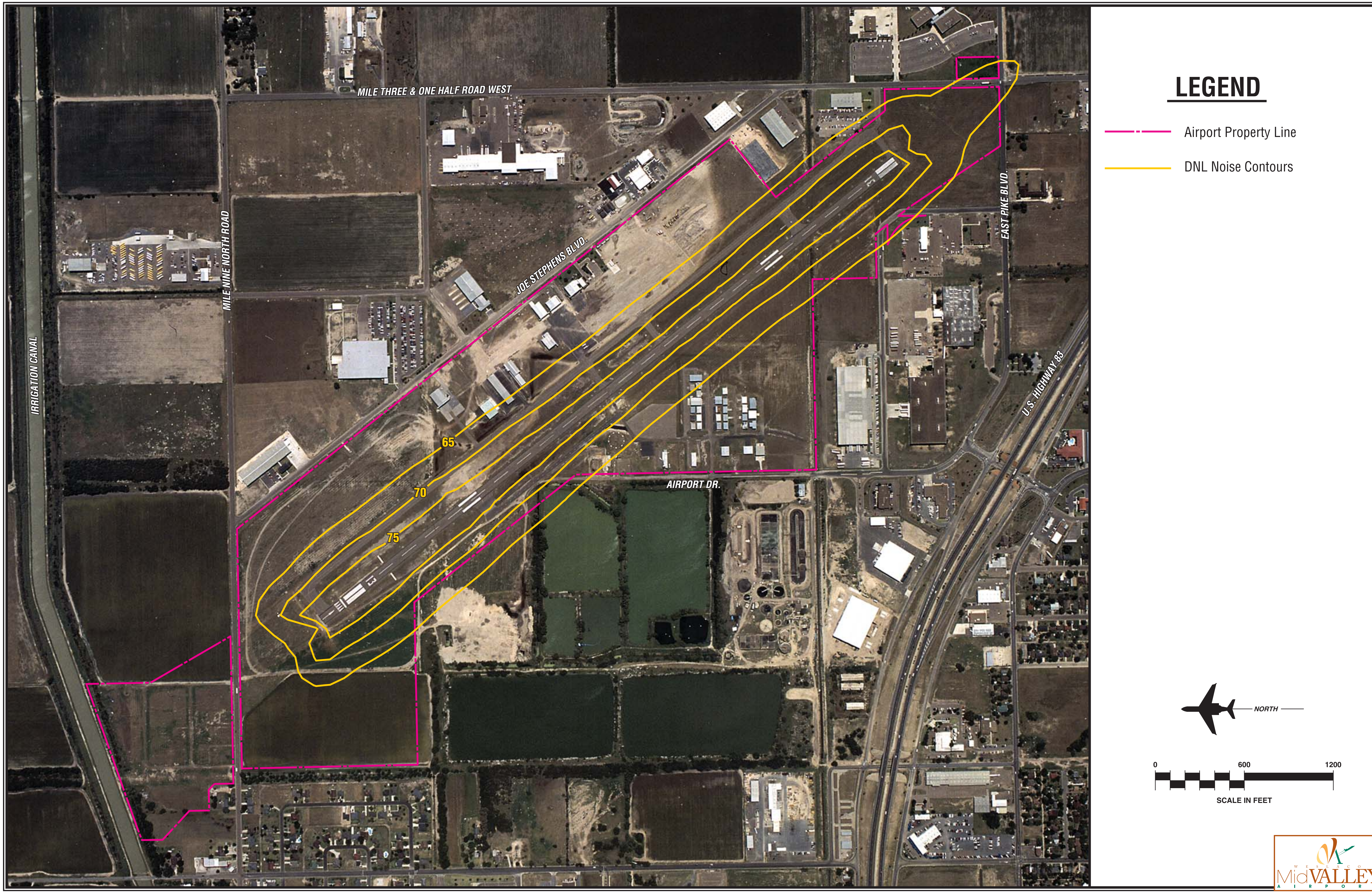

Exhibit A
2001 AIRPORT
NOISE EXPOSURE CONTOURS

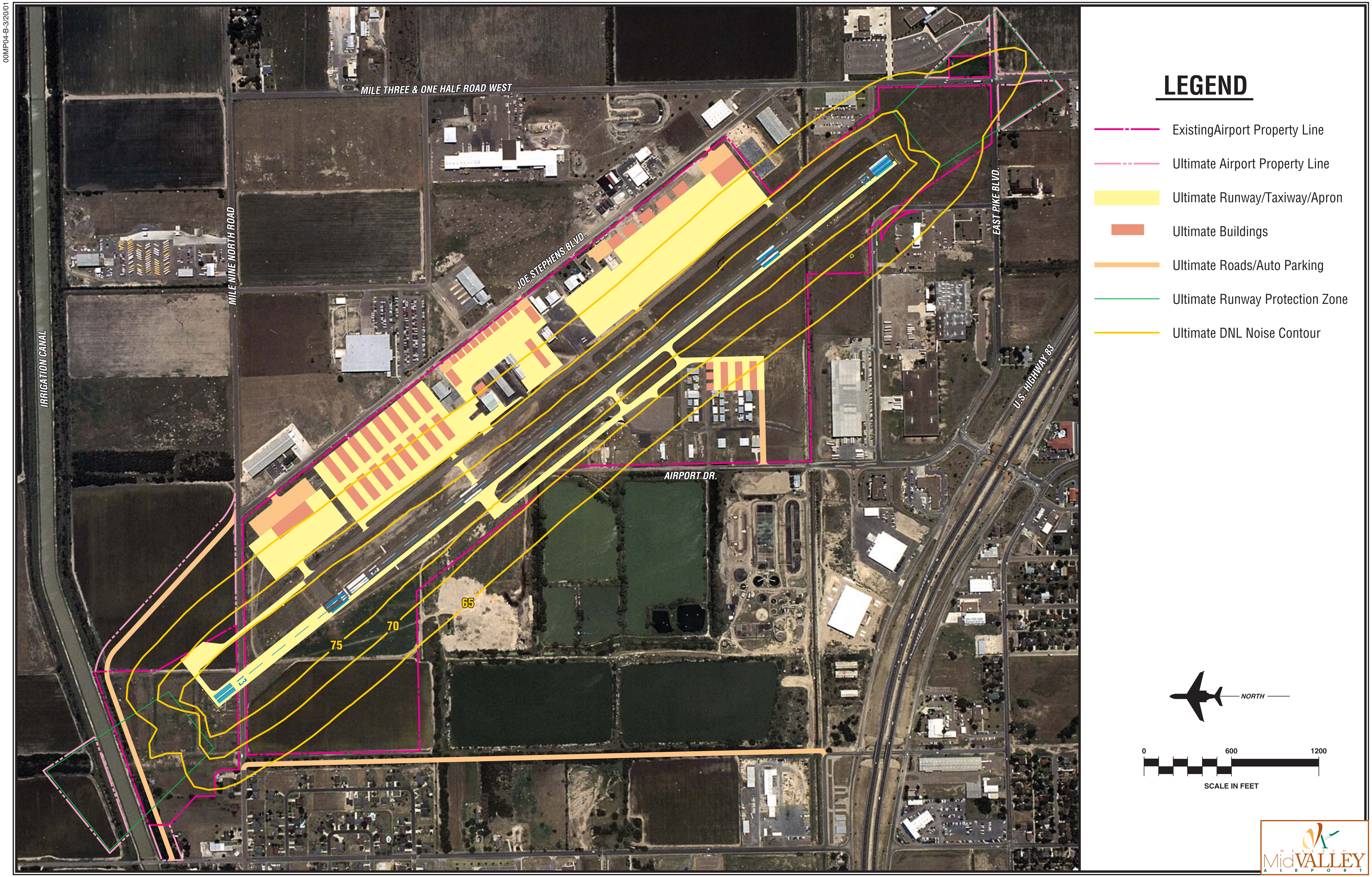

Exhibit B
ULTIMATE AIRPORT
NOISE EXPOSURE CONTOURS

only north of the runway. Obviously this is due to the fact that the runway will extend beyond existing property. It should be noted that under the ultimate scenario, the contour will be contained on airport property since the City will be required to obtain this property to extend the runway.

COMPATIBLE LAND USE

Federal Aviation Regulations (F.A.R.) Part 150 recommends guidelines for planning land use compatibility within various levels of aircraft noise. As the name indicates, these are guidelines only; F.A.R. Part 150 explicitly states that determinations of noise compatibility and regulation of land use are purely local responsibilities.

Based upon the results of the noise modeling efforts, the 65 DNL noise contour is expected to remain on airport property and no existing residences, or other noise sensitive land uses (e.g. hospitals, nursing homes, schools, etc.) are located within either the existing or ultimate noise exposure contour; therefore, no significant noise impacts are expected as a result of the proposed development.

The primary goal of compatible land use planning is to achieve and maintain compatibility between the airport and its surrounding community. Inherent in this goal is the assurance that the airport can maintain or expand its size and level of operations to satisfy existing and future aviation demand. The protection of the investment in a facility such as an airport is of great importance. At the same time, a person who lives, works, or owns property near an airport should be able to enjoy the location without infringement by noise or other adverse impacts of the airport. The City does not currently have an airport noise compatibility plan. Recognizing the importance of the airport, however, the city has planned most of the areas surrounding the airport as commercial/industrial and low density residential.

Within one half mile west of the airport environs are city settling ponds . These are also identified bird habitat. It is uncertain at this time if bird activity will adversely impact flight safety. No recommended improvements will result in bringing aviation activity closer to the ponds than currently happens. It is recommended that the City request an extended study of bird activity before the runway is to be extended. A bird study and associated environmental assessment will take approximately one year to complete. This can be included in the environmental assessment process.

SOCIAL IMPACTS

Social impacts known to result from airport improvements are often associated with relocation activities or other community disruptions, including alterations to surface transportation patterns, division or disruption of existing communities, interference with orderly planned development, or an appreciable change in employment related to the project. Social impacts are generally evaluated based on areas of acquisition and/or areas of significant project impact.

The proposed land acquisition as a part of airport development is currently undeveloped and used primarily for agricultural purposes.

FAA Order 5050.4A provides that where the relocation of a residence, business or farmland is involved, the provisions of the *Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970 (URARPAPA)* must be met. The Act requires that home owners and tenants be offered assistance in finding a new home or new site, and in relocation costs. Relocation assistance includes help in finding a comparable replacement dwelling which meets the FAA's "decent, safe, and sanitary" criteria and in moving costs. Due to the developing nature of the Weslaco area and the presence of similar properties or homes, it is expected that landowners affected by the implementation of the development program would be able to find comparable housing or land within the greater Weslaco area.

FAA Order 5050.4A also provides that if businesses or farm operations would be relocated as a result of an airport-related project, *URARPAPA* would again apply. The Act requires that the owner of the business or farm operations also be offered assistance in finding a location and reestablishing the business.

The City of Weslaco will need to comply with *FAA Advisory Circular 150/5100-17, Land Acquisition and Relocation Assistance for Airport Improvement Program Assisted Projects*. This document describes the process necessary to comply with *URARPAPA*.

INDUCED SOCIOECONOMIC IMPACTS

Induced socioeconomic impacts address those secondary impacts to surrounding communities resulting from the proposed development, including shifts in patterns of population movement and growth, public service demands, and changes in business and economic activity to the extent influenced by the airport development. According to *FAA Order 5050.4A*, "Induced impacts will normally not be significant except where the area also has significant impacts in other categories, especially noise, land use or direct social impacts."

Significant shifts in patterns of population movement or growth or public service demands are not anticipated as a result of the proposed development. It is expected, however, that the proposed new airport development would potentially induce positive socioeconomic impacts for the community over a period of years. The airport, with expanded facilities and services would be expected to attract additional users. It is expected to encourage tourism, industry, and trade and to enhance the future growth and expansion of the community's economic base. Future socioeconomic impacts resulting from the proposed development would be expected to be primarily positive in nature.

AIR QUALITY

The federal government has established a set of health-based ambient air quality standards (NAAQS) for the following six pollutants: carbon monoxide (CO), nitrogen dioxide (NO_x), sulphur dioxide (SO_x), ozone, lead, and PM10 (particulate matter of 10 microns or smaller). Currently, only airports in nonattainment and maintenance areas must meet the requirements of the General Conformity Rule provided in the Federal Clean Air Act; airports in attainment areas are assumed to conform.

According to Texas Natural Resource Conservation Commission (TNRCC) website data Hidalgo County is an attainment for national ambient air quality standards.

WATER QUALITY

Airport activities can have a major impact on water quality. The Clean Water Act provides the authority to establish water quality standards, control discharges into surface and subsurface waters, develop waste management treatment plans, and issue permits for discharges and for dredged or fill materials.

Construction of the proposed improvements will result in an increase in impermeable surfaces and a resulting increase in surface runoff from both landside and airside facilities. The proposed development might result in short-term impacts on water quality, particularly suspended sediments, during and shortly after precipitation events during the construction phase.

Recommendations established in FAA Advisory Circular 150/5370-10 *Standards for Specifying Construction of Airports, Item P-156, Temporary Air and Water Pollution, Soil Erosion and Siltation Control* should be incorporated in project design specifications to mitigate potential impacts. These standards include temporary measures to control water pollution, soil erosion, and siltation through the use of fiber mats, gravel, mulches, slope drains, and other erosion control methods.

In accordance with Section 402(p) of the *Clean Water Act*, a *National Pollution Discharge Elimination System* (NPDES) General Permit is required from the Environmental Protection Agency. NPDES requirements apply to industrial facilities, including airports and all construction projects that disturb five or more acres of land.

With regard to construction activities, the City of Weslaco and all applicable contractors will need to comply with the requirements and procedures of the NPDES General Permit, including the preparation of a *Notice of Intent* and a *Stormwater Pollution Prevention Plan*, prior to the initiation of project construction activities.

The construction program, as well as specific characteristics of project design, should incorporate *Best Management Practices* (BMPs) to reduce erosion, minimize sedimentation, control non-stormwater discharges, and protect the quality of surface water features potentially affected. BMPs are defined as nonstructural and structural practices that provide the most efficient and practical means of reducing or preventing pollution of stormwater. The selection of these practices at Weslaco Mid Valley Airport should be based on the site's characteristics and focus on those categories of erosion factors within the contractor's control, including: (1) construction scheduling, (2) limiting exposed areas, (3) runoff velocity reduction, (4) sediment trapping, and (5) good housekeeping practices. Inspections of the construction site and associated reporting may be required.

Spills, leaks and other releases of hazardous substances into the local environment are often a concern at airports due to fuel storage, fueling activities and maintenance of aircraft. Stormwater flowing over impermeable surfaces may pick up petroleum product residues and, if not controlled, transport them off site.

Also of crucial concern would be spills or leaks of substances that could filter through the soils and contaminate groundwater resources. As growth in aviation activity occurs, additional fuel storage facilities will be necessary. Fuel storage facilities must be designed, constructed and maintained in compliance with Federal, State and local regulations, and must be registered with TNRCC. These regulations include standards for underground storage tank construction materials, the installation of leak or spill detection devices, and regulations for stormwater discharge.

Currently, the airport has two 12,000 gallon above ground fuel storage tanks, meeting EPA recommended standards for placement. Six previous underground storage tanks have been sealed in place with concrete.

DEPARTMENT OF TRANSPORTATION ACT, SECTION 4(F) LANDS

Paragraph 47e, *FAA Order 5050.4A* provides the following.

> *(7)(a) "Section 4(f) provides that the Secretary shall not approve any program or project which requires the use of any publicly-owned land from a public park, recreation area, or wildlife and waterfowl refuge of national, state or local significance, or any land from an historic site of national, state or local significance as determined by the officials having jurisdiction thereof unless there is no feasible and prudent alternative to the use of such land and such program includes all possible planning to minimize harm."*
>
> *(7)(b) "...When there is no physical taking but there is the possibility of use of or adverse impacts to Section 4(f) land, the FAA must determine if the activity associated with the proposal conflicts with or is compatible with the normal activity associated with this land. The proposed action is compatible if it would not affect the normal activity or aesthetic value of a public park, recreation area, refuge, or historic site. When so construed, the action would not constitute use and would not, therefore, invoke Section 4(f) of the DOT Act."*

The proposed airport development is not anticipated to impact any Section 4(f) properties.

HISTORIC, ARCHITECTURAL, ARCHAEOLOGICAL AND CULTURAL RESOURCES

The Texas State Historic Preservation Officer (SHPO) was contacted regarding the potential presence of cultural resources within the area of the proposed development. In their response, the SHPO stated "While we know of no historic properties or cultural resource concerns at the current airport, this does not mean that none exist." The SHPO recommended that they be contacted with specific construction or demolition plans well in advance of any planned undertaking. A cultural resources survey may be required prior to further development at the airport. Further agency coordination will be necessary.

BIOTIC COMMUNITIES AND THREATENED AND ENDANGERED SPECIES OF FLORA AND FAUNA

As part of this evaluation, the U.S. Department of the Interior, Fish and Wildlife Service (USFWS) and the Texas Parks and Wildlife Department were contacted to request information regarding potential impacts to threatened or endangered species, species of special concern, or habitat areas of concern.

In their response, the USFWS noted five (5) federally-listed species within Hidalgo County. The only species located, was noted to be four to five miles from the airport.

COASTAL MANAGEMENT PROGRAM AND COASTAL BARRIERS

The proposed development of Mid Valley Airport is not located within the jurisdiction of a State Coastal Management Program. The Coastal Zone Barrier resources system consists of undeveloped coastal barriers along the Atlantic and Gulf Coasts. These resources are outside of the sphere of influence of the airport and its vicinity, and do not apply to the proposed development. This was confirmed by the Texas General Land Office, which indicated that the City of Weslaco is not in the Texas Coastal Management Program (CMP) boundary.

WILD AND SCENIC RIVERS

The proposed development of Mid Valley Airport is not located within the vicinity of a designated wild and scenic river. No impacts to wild and scenic rivers is anticipated as a result of the proposed airport development.

WATERS OF THE U.S., INCLUDING WETLANDS

Prior to any development activities, the City of Weslaco should request a jurisdictional delineation from the U.S. Army Corps of Engineers for the development area including the future proposed airport property. This delineation would identify any waters of the U.S., including wetlands and intermittent streams, under jurisdiction of this agency. If the proposed construction could directly or indirectly affect any waters of the U.S., the project might require a U.S. Army Corps of Engineers permit per *Section 404 of the Clean Water Act*.

FLOODPLAINS

Per a phone conservation with representatives from the City of Weslaco, the airport is within Floodplain Zone C as indicated on the Flood Insurance Rate Map which is outside of the 100-year floodplain. This zone is characterized by minimal flooding.

FARMLAND

Correspondence from the United States Department of Agriculture is not available at this time. It should be noted, that proposed development will require acquisition of adjacent farmland. Prior to acquisitions, it will be necessary to complete Form AD-1006, Farmland Conversion Impact Rating before acquiring agricultural land. The completed Form AD-1006 will need to be submitted to Natural Resources Conservation Service (NRCS) under the U.S. Department of Agriculture. They will need to comply with the Farmland Protection Policy Act.

ENERGY SUPPLY AND NATURAL RESOURCES

No concern regarding existing energy production facilities or known energy resource supplies was expressed by the agencies for this proposed development. A slight increase in energy demand will likely occur as a result of the proposed project. Additional electricity will be needed for the proposed runway and taxiway extensions, new/relocated navigation lights, the terminal building, hangars and parking areas. In addition to this electric demand, expenditures of manpower, fuel, electricity, chemicals, water and other forms of energy will be necessary to construct the improvements and to provide for maintenance and operation of the facilities.

LIGHT EMISSIONS

There are no new proposed lighting improvements for the airport. However, extension of the existing runway will also extend the ODALS further into the RPZ. Because of the distance from the airfield to light-sensitive land uses, impacts associated with any new light emissions are not expected to be significant.

SOLID WASTE

Slight increases in the generation of solid waste are anticipated as a result of the proposed development and overall growth in aviation activity. Because landfills can attract birds for feeding, the location of landfills near airports is not desired. Normally, landfills are discouraged within a five miles of a runway end or within 10,000-foot radius of jet airports and a 5,000-foot radius of non-jet airports. The existence of a former landfill adjacent to the airport is of no impact due to the fact that the refuse is buried.

CONSTRUCTION IMPACTS

Construction activities have the potential to create temporary environmental impacts at an airport. These impacts primarily relate to noise resulting from heavy construction equipment, fugitive dust emissions resulting from construction activities, and potential impacts on water quality from runoff and soil erosion from exposed surfaces.

A temporary increase in particulate emissions and fugitive dust may result from construction activities. The use of temporary dirt access roads would increase the generation of particulates. Dust control measures, such as watering exposed soil areas, will need to be implemented to minimize this localized impact.

Any necessary clearing and grubbing of construction areas should be conducted in sections or sequenced to minimize the amount of exposed soil at any one time. All vehicular traffic should be restricted to the construction site and established roadways.

The provisions contained in *FAA Advisory Circular 150/5370-10, Standards for Specifying Construction of Airports, Temporary Air and Water Pollution, Soil Erosion, and Siltation Control* should be incorporated into all project specifications. During construction, temporary dikes, basins, and ditches should be utilized to control soil erosion and sedimentation and prevent degradation of off-airport surface water quality. After construction is complete, slopes and denuded areas should be reseeded to aid in the vegetation process.

CONCLUSION

Based on the review of correspondence provided by various federal, state and local agencies, potential environmental issues and considerations anticipated as a result of the development and operation of Weslaco Mid Valley Airport have been identified. As a result of the NEPA process, mitigation measures may be recommended to limit the potential impacts related to a number of these resources including water quality, wetlands (waters of the U.S.), and archaeological and cultural resources. Please note that as more specific information is gathered through a formal EA process, additional issues may arise.

Appendix B
Glossary and Abbreviations

Appendix B
GLOSSARY

Included in the following pages are a number of terms with appropriate definitions to assist the reader in understanding the technical language included in this document.

Air carrier: an operator which: (1) performs at least five round trips per week between two or more points and publish flight schedules which specify the times, days of the week and places between which such flights are performed; or (2) transport mail by air pursuant to a current contract with the U.S. Postal Service. Certified in accordance with Federal Aviation Regulation (FAR) Parts 121 and 127.

Air taxi: An air carrier certificated in accordance with FAR Part 135 and authorized to provide, on demand, public transportation of persons and property by aircraft. Generally operates small aircraft "for hire" for specific trips.

Air traffic control tower (ATCT): a central operations facility in the terminal air traffic control system, consisting of a tower, including an associated IFR room if radar equipped, using air/ground communications and/or radar, visual signaling, and other devices to provide safe and expeditious movement of terminal air traffic.

Air route traffic control center (ARTCC): a facility established to provide air traffic control service to aircraft operating on an IFR flight plan within controlled airspace and principally during the enroute phase of flight.

Airport Elevation: the highest point on an airport's usable runway expressed in feet about mean sea level (MSL).

Approach lighting system (ALS): an airport lighting facility which provides visual guidance to landing aircraft by radiating light beams by which the pilot aligns the aircraft with the extended centerline of the runway on his final approach and landing.

Azimuth: horizontal direction or bearing; usually measured from the reference point of 0 degrees clockwise through 360 degrees.

Base leg: a flight path at right angles to the landing runway off its approach end. The base leg normally extends from the downwind leg to the intersection of the extended runway centerline.

Compass locator (LOM): a low power low/medium frequency radio-beacon installed in conjunction with the instrument landing system at one or two of the marker sites.

Displaced threshold: a threshold that is located at a point on the runway other than the designated beginning of the runway.

Distance measuring equipment (DME): equipment (airborne and ground) used to measure, in nautical miles, the slant range distance of an aircraft from the DME navigational aid.

DNL: day-night noise level. The daily average noise metric in which that noise occurring between 10:00 p.m. and 7:00 a.m. is penalized by 10 times.

Downwind leg: a flight path parallel to the landing runway in the direction *opposite* to landing.

Duration: length of time, in seconds, a noise event such as an aircraft flyover is experienced. (May refer to the length of time a noise event exceeds a specified threshold level.)

Enplaned passengers: the total number of revenue passengers boarding aircraft, including originating, stop-over, and transfer passengers, in scheduled and non-scheduled services.

Fixed base operator (FBO): a provider of service to users of an airport. Such services include, but are not limited to, fueling, hangaring, flight training, repair and maintenance.

General aviation: that portion of civil aviation which encompasses all facets of aviation except air carriers holding a certificate of convenience and necessity, and large aircraft commercial operators.

Glide slope: electrical equipment that emits signals which provide vertical guidance by reference to airborne instruments during instrument approaches such as an ILS, or visual ground aids, such as VASI, which provide vertical guidance for a VFR approach or for the visual portion of an instrument approach and landing.

Global positioning system (GPS): a navigational technology based on a constellation of satellites orbiting approximately 11,000 miles above the surface of the earth.

Ground effect: the excess attenuation attributed to absorption or reflection of noise by man-made or natural features on the ground surface.

Instrument approach: a series of predetermined maneuvers for the orderly transfer of an aircraft under instrument flight conditions from the beginning of the initial approach to a landing, or to a point from which a landing may be made visually. It is prescribed and approved for a specific airport by competent authority.

Instrument flight rules (IFR): rules governing the procedures for conducting instrument flight. Also a term used by pilots and controllers to indicate type of flight plan.

Instrument landing system (ILS): a precision instrument approach system which normally consists of the following electronic components and visual aids: localizer, glide slope, outer marker, middle marker, and approach lights.

Localizer (LOC): providing horizontal guidance to the runway centerline for aircraft during approach and landing by radiating a directional pattern of radio waves modulated by two signals which, when received with equal intensity, are displayed by compatible airborne equipment as an "on-course" indication, and when received in unequal intensity are displayed as an "off-course" indication.

Localizer type directional aid (LDA): a facility of comparable utility and accuracy to a localizer, but is not part of a complete ILS and is not aligned with the runway.

Medium intensity approach light system with runway alignment lights (MALSR): a 2,400-foot medium intensity approach lighting system (ALS) with runway alignment indicator lights (RAILs). It is an economy ALS system approved for Category I (200-foot cloud ceilings and one-half mile visibility) approaches.

Microwave landing system (MLS): an instrument approach and landing system that provides precision guidance in azimuth, elevation, and distance measurement.

Missed approach: an instrument approach not completed by landing. This may be due to visual contact not established at authorized minimums or instructions from air traffic control, or other reasons.

Non-directional beacon (NDB): a radio beacon transmitting non-directional signals that a pilot of an aircraft equipped with direction finding equipment can determine his/her bearing to or from the radio beacon and "home" on or track to or from the station. When the radio beacon is installed in conjunction with the instrument landing system market, it is normally called a compass locator.

Nonprecision approach procedure: a standard instrument approach procedure in which no electronic glide slope is provided, such as VOR, TACAN, NDB, or LOC.

Operation: a take-off or a landing.

Outer marker (OM): an ILS navigation facility in the terminal area navigation system located four to seven miles from the runway edge on the extended centerline indicating to the pilot, that he/she is passing over the facility and can begin final approach.

Precision approach path indicator (PAPI): an airport lighting facility in the terminal area navigation system used primarily under VFR conditions. The PAPI provides visual decent guidance to aircraft on approach to landing through a single row of two to four lights, radiating a high intensity red or white beam to indicate whether the pilot is above or below the required approach path to the runway. The PAPI has an effective visual range of 5 miles during the day and 20 miles at night.

Precision approach procedure: a standard instrument approach procedure in which an electronic glide slope is provided, such as ILS.

Precision instrument runway: a runway having a existing instrument landing system (ILS).

Reliever airport: an airport to serve general aviation aircraft which might otherwise use a congested air-carrier served airport.

Runway end identification lights (REIL): an airport lighting facility in the terminal area navigational system consisting of one flashing white high intensity light installed at each approach end corner of a runway and directed toward the approach zone, which enables the pilot to identify the threshold of a usable runway.

Runway Protection Zone (RPZ): an area off the runway end to enhance the protection of people and property on the ground.

Runway Safety Area (RSA): a defined surface surrounding the runway prepared or suitable for reducing the risk of damage to airplanes in the event of an undershoot, overshoot, or excursion from the runway.

Runway Threshold: the beginning of that portion of the runway available for landing. In some instances, the landing threshold may be displaced.

Threshold Elevation: the elevation of the runway threshold, expressed in feet above mean sea level (MSL).

Touch-and-Go Operations: aircraft executing simulated approaches or low passes at the airport.

Touchdown Zone: the first 3,000 feet of runway beginning at the threshold.

Vector: a heading issued to an aircraft to provide navigational guidance by radar.

Victor airway: a control area or portion thereof established in the form of a corridor, the centerline of which is defined by radio navigational aids.

Visual approach: an approach wherein an aircraft on an IFR flight plan, operating in VFR conditions under the control of an air traffic facility and having an air traffic control authorization, may proceed to the airport of destination in VFR conditions.

Visual approach slope indicator (VASI): an airport lighting facility in the terminal area navigation system used primarily under VFR conditions. It provides vertical visual guidance to aircraft during approach and landing, by radiating a pattern of high intensity red and white focused light beams which indicate to the pilot that he/she is above, on, or below the glide path.

Visual flight rules (VFR): rules that govern the procedures for conducting flight under visual conditions. The term **VFR** is also used in the United States to indicate weather conditions that are equal to or greater than minimum VFR requirements. In addition, it is used by pilots and controllers to indicate type of flight plan.

VOR/Very high frequency omnidirectional range station: a ground-based electronic navigation aid transmitting very high frequency navigation signals, 360 degrees in azimuth, oriented from magnetic north. Used as the basis for navigation in the national airspace system. The VOR periodically identifies itself by Morse Code and may have an additional voice identification feature.

VORTAC/VHF Omnidirectional range/tactical air navigation: a navigation aid providing VOR azimuth, TACAN azimuth, and TACAN distance-measuring equipment (DME) at one site.

ABBREVIATIONS

AGL: above ground level

ALS: approach lighting system

ARTCC: air route traffic control center

ATCT: air traffic control tower

DME: distance measuring equipment

DNL: day-night noise level

DW: runway weight bearing capacity for aircraft with dual-wheel type landing gear

DTW: runway weight bearing capacity for aircraft with dual-tandem type landing gear

FAA: Federal Aviation Administration

FAR: Federal Aviation Regulation

FBO: fixed base operator

GPS: global positioning system

GS: glide slope

IFR: instrument flight rules (FAR Part 91)

ILS: instrument landing system

LMM: compass locator at middle marker

LOC: ILS localizer

LOM: compass locator at outer marker

MALSR: medium intensity approach lighting system with runway alignment lights

MLS: microwave landing system

MM: middle marker

MSL: mean sea level

NAVAID: navigational aid

NDB: non-directional beacon

OM: outer marker

PAPI: precision approach path indicator

SEL: sound exposure level

SW: runway weight bearing capacity for aircraft with single-wheel type landing gear

TRACON: terminal radar approach control

VASI: visual approach slope indicator

VFR: visual flight rules (FAR Part 91)

VHF: very high frequency

VOR: very high frequency omnidirectional range

VORTAC: (see VOR and TACAN)

Appendix C
Geotechnical Investigation for Mid Valley Airport

Rodriguez Engineering Laboratories

Construction Materials Engineering Testing

Geotechnical Investigation For
Mid Valley Airport
Weslaco, Texas

Submitted to:

Ms. Jeanette V. Coffman
Coffman Associates
237 N.W. Blue Parkway, Suite 100
Lee's Summit, MO 64063

July 13, 2001

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Geotechnical Investigation For Mid Valley Airport
Weslaco, Texas

Submitted to:

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Submitted by:

Rodriguez Engineering Laboratories
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Austin, TX 78728

July 13, 2001

STATE OF TEXAS
OSCAR H. RODRIGUEZ
71396
REGISTERED
PROFESSIONAL ENGINEER

Oscar H. Rodriguez, P.E.

Jose Melendez.

Geotechnical Investigation For Mid Valley Airport Weslaco, Texas

Table of Contents

Geotechnical Investigation For
Mid Valley Airport
Weslaco, Texas

INTRODUCTION

The purpose of this investigation is to determine the strength of the existing pavement structure at the Mid Valley Airport. The investigation included soil exploration (drilling boreholes) to obtain information by securing representative soil samples that will be tested to determine the appropriate pavement improvements. The samples collected were tested in the laboratory to determine the engineering properties. The results of those laboratory tests were then analyzed and summarized in this report.

SUBSURFACE INVESTIGATIONS

The subsurface investigation was performed by Oscar H. Rodriguez, P.E. providing the inspection and logging, for the subject investigation of subsurface conditions for the proposed improvements of Mid Valley Airport, by drilling 15 borings 5 ft. depth below existing grade in locations selected by Rodriguez Engineering Laboratories (REL). Appendix B contains a map of the borehole locations. Appendix A contains the information on each borehole along with the laboratory results for Moisture Content, Atterberg Limits, Sieve Analysis and Unified Soil Classification. The borings were drilled with a Giddings trailer mounted drill rig with a six- (6) inch diameter flight auger at the selected locations.

LABORATORY TESTING

The soil samples obtained during the exploration were sealed at the site and transported to the Rodriguez Engineering Laboratories located at Austin, Texas. A testing program was conducted on the sealed samples to aid in classification and evaluation of the engineering properties required for analysis. The laboratory tests were performed by experienced laboratory technicians and monitored by the geotechnical engineer. The parameters were determined by the following laboratory tests:

- Potential volumetric shrinkage characteristics of the cohesive soils were determined by the Standard Test Methods for Liquid Limit, Plastic Limit, and Plasticity Index of Soils (ASTM D 4318).

- Material gradation for soil classification was determined by the Standard Practice for Classification of Soils for Engineering Purposes (Unified Soil Classification System) (ASTM D 2487).

- Material moisture content was determined by the standard test method for Laboratory Determination of Water (Moisture) Content of Soil and Rock by Mass (ASTM D 2216).

The data can be found in Appendix A.

SITE AND SUBSURFACE CONDITIONS

Site Conditions

The Mid Valley Airport is located in Weslaco, Texas. Appendix B includes an area map of the geological survey provided by the University of Texas at Austin Bureau of Economic Geologic as well as a site map of the borehole locations.

Subsurface Conditions

Borings to depth were generally advanced with ease. The material sampled varied from Non-plastic silty sands to medium plasticity sandy clays. The subgrade in some of the paved areas was lime treated. (This is detailed in Appendix A). No groundwater was found at the time of drilling operations but however water levels may vary with seasonal moisture changes.

CONCLUSIONS AND RECOMMENDATIONS

The following conclusions are based on the data obtained from the borings and laboratory testing of the soil samples and experience with similar soils and site conditions.

The pavement evaluation was made using a CBR value of less than 3. This assumption is based on experience with similar soil and site conditions.

Based on our findings the Mid-Valley Airport should be rated for 12,500 pounds SWL aircraft. The pavement structure varies in thickness throughout the airport. The following table indicates the required thickness of an HMAC overlay to raise the pavement strength from 12,500 pounds SWL to 30,000 pounds SWL.

This recommendation is in accordance to FAA Advisory Circular No. 150/5320-6D. (See attachment), with the exception that an equivalent factor of 1" asphalt to 2" base, and 1" base to 2" select fill was used.

Borehole No.	Borehole Location (See Appendix C)	HMAC Required (inches)
1	Runway	0.0
2	Runway	1.6
3	Runway	1.1
4	Runway	3.0
5	Runway	2.1
6	Stub Taxiway	4.9
7	Stub Taxiway	0.9
8	Stub Taxiway	0.7
9	Stub Taxiway	0.5
10	Stub Taxiway	1.0
11	Taxiway	0.5
12	Taxiway	0.5
13	Taxiway	1.7
14	Taxiway	1.0
15	Taxiway	1.4

NOTE: The existing-pavement evaluation was made using an equivalency factor of (1: 0.7) Caliche Base to TxDOT Item 247 and, (1 : 1) TxDOT Item 247 to FAA Item P-209 respectively. This assumption is based on experience with similar materials.

LIMITATIONS

This investigation was performed in accordance with accepted geotechnical engineering practice for the exclusive use of Coffman Associates in the preparation of the pavement design, construction, drawings, and specifications for the proposed improvements at the Mid Valley Airport. Verification of subsurface conditions for purposes of determining difficulty of excavation, dewatering, trafficability, etc., is the responsibility of others specializing in those areas. In the event that any changes in the nature, design or locations of these structures are made from those assumed herein, the conditions and recommendations contained in this report shall not be considered valid until the changes are reviewed and the conclusions are verified in writing.

Appendix A

Bore Log Data

Geotechnical Investigation for
Mid Valley Airport
Weslaco, Texas
Bore Hole: 1

Location:	Runway (South Extension)	Boring Depth:	5 feet
Date Drilled:	04/16/01	Water Level:	N/A
Elevation:	N/A	Drilling Method:	A= Auger

Depth (feet)	Symbol	Sample	Material Field Description (Laboratory Classification)	Drilling Method	Blows/ Penetration	Pocket Pen (TSF)	Moisture (%)	Liquid Limit	P.I.	Linear Shrinkage (%)	Sieve Analysis	Depth (feet)
		N / S	5" HMAC	A								
0.5 1.0		1-1	11 3/4" Lime Treated Caliche BASE. Dark Grayish Brown, Silty SAND with Gravel. Group Symbol= SM	A			5.8		NP		Sieve # %Passin -3/4" 100.0 -3/8" 95.0 -No4 77.1 -No10 55.1 -No40 34.4 -No200 17.6	0.5 1.0
1.5 2.0		N / S	Lime Treated Subgrade.	A								1.5 2.0
2.5 3.0 3.5 4.0		1-2	Brown, Sandy Lean CLAY. Group Symbol= CL	A			15.6	39	17		Sieve # %Passin -3/8" 100.0 -No4 98.7 -No10 95.7 -No40 91.6 -No200 56.0	2.5 3.0 3.5 4.0
4.5 5.0		N / S	Light Brown, Clay. Boring terminated at 5 ft.	A								4.5 5.0

Geotechnical Investigation for
Mid Valley Airport
Weslaco, Texas
Bore Hole: 2

Location: Runway (Original Section)
Date Drilled: 04/16/01
Elevation: N/A

Boring Depth: 5 feet
Water Level: N/A
Drilling Method: A= Auger

Depth (feet)	Symbol	Sample	Material Field Description (Laboratory Classification)	Drilling Method	Blows/ Penetration	Pocket Pen (TSF)	Moisture (%)	Liquid Limit	P.I.	Linear Shrinkage (%)	Sieve Analysis	Depth (feet)
0.0–0.5		N / S	5 1/2" HMAC	A								
0.5–1.0		2-1	6" Gravelly BASE. Very Dark Brown, Poorly Graded SAND with Clay & Gravel. Group Symbol= SP-SC	A			2.2	21	4		Sieve # / %Passin -3/4" 100.0 -3/8" 95.2 -No4 70.3 -No10 45.5 -No40 24.8 -No200 8.1	0.5
1.0–4.0		2-2	Brown, Clayey SAND. Group Symbol= SC	A			10.2	27	13		Sieve # / %Passin -3/4" 100.0 -3/8" 98.1 -No4 92.2 -No10 83.9 -No40 77.5 -No200 38.7	1.0
4.0–5.0		N / S	Light Brown, Clay Boring terminated at 5 ft.	A								4.0

Depth scale: 0.5, 1.0, 1.5, 2.0, 2.5, 3.0, 3.5, 4.0, 4.5, 5.0

Geotechnical Investigation for
Mid Valley Airport
Weslaco, Texas
Bore Hole: 3

Location: Runway (Original Section)
Date Drilled: 04/16/01
Elevation: N/A

Boring Depth: 5 feet
Water Level: N/A
Drilling Method: A= Auger

Depth (feet)	Symbol	Sample	Material Field Description (Laboratory Classification)	Drilling Method	Blows/ Penetration	Pocket Pen (TSF)	Moisture (%)	Liquid Limit	P.I.	Linear Shrinkage (%)	Sieve Analysis	Depth (feet)
0.0–0.5		N / S	5" HMAC	A								0.5
0.5–1.25		3-1	9" Fine Grade Primer Oil Stabilized BASE, Very Dark Gray, Silty-Clayey SAND w/Gravel. Group Symbol= SC-SM	A			4.4	21	6		Sieve # %Passin -3/4" 100.0 -3/8" 95.5 -No4 71.5 -No10 48.6 -No40 31.4 -No200 14.3	1.0
1.25–4.0		3-2	Brown, Clayey SAND. Group Symbol= SC	A			11.6	27	10		Sieve # %Passin -3/4" 100.0 -3/8" 98.7 -No4 95.7 -No10 91.3 -No40 86.9 -No200 40.6	1.5, 2.0, 2.5, 3.0, 3.5, 4.0
4.0–5.0		N / S	Light Brown, Clay. Boring terminated at 5 ft.	A								4.5, 5.0

Geotechnical Investigation for
Mid Valley Airport
Weslaco, Texas
Bore Hole: 4

Location: Runway (Original Section)
Date Drilled: 04/16/01
Elevation: N/A

Boring Depth: 5 feet
Water Level: N/A
Drilling Method: A= Auger

Depth (feet)	Symbol	Sample	Material Field Description (Laboratory Classification)	Drilling Method	Blows/ Penetration	Pocket Pen (TSF)	Moisture (%)	Liquid Limit	P.I.	Linear Shrinkage (%)	Sieve Analysis	Depth (feet)
0.0–0.5		N / S	4 3/4" HMAC	A								
0.5–1.0		4-1	4 1/4" Fine Grade Primer Oil Stabilized BASE. Very Dark Gray, Silty-Clayey SAND w/Gravel. Group Symbol= SC-SM	A			4.3	21	5		Sieve # %Passin -3/4" 100.0 -3/8" 91.1 -No4 69.9 -No10 46.8 -No40 30.7 -No200 15.1	0.5
1.0–3.0		4-2	Dark Gray, Sandy Lean CLAY. Group Symbol= CL	A			20.6	36	20		Sieve # %Passin -3/4" 100.0 -3/8" 99.7 -No4 98.4 -No10 95.4 -No40 92.6 -No200 58.1	1.0–3.0
3.0–5.0		4-3	Gray, Lean CLAY with Sand. Group Symbol= CL	A			23.4	40	23		Sieve # %Passin -3/4" 100.0 -3/8" 98.7 -No4 97.9 -No10 97.0 -No40 95.8 -No200 70.4	3.0–5.0
5.0			Boring terminated at 5 ft.									5.0

Geotechnical Investigation for
Mid Valley Airport
Weslaco, Texas
Bore Hole: 5

Location: Runway (North Extension)
Date Drilled: 04/16/01
Elevation: N/A

Boring Depth: 5 feet
Water Level: N/A
Drilling Method: A= Auger

Depth (feet)	Symbol	Sample	Material Field Description (Laboratory Classification)	Drilling Method	Blows/ Penetration	Pocket Pen (TSF)	Moisture (%)	Liquid Limit	P.I.	Linear Shrinkage (%)	Sieve Analysis	Depth (feet)
		N / S	3 3/4" HMAC	A								
0.5 1.0		5-1	9 1/2" Caliche BASE. Brown, Clayey SAND. Group Symbol= SC	A			9.2	27	9		Sieve # %Passin -3/4" 100.0 -3/8" 97.5 -No4 88.0 -No10 72.9 -No40 59.3 -No200 46.5	0.5 1.0
1.5 2.0 2.5 3.0 3.5 4.0 4.5 5.0		5-2	Tannish Gray, Lean CLAY with Sand. Group Symbol= CL Boring terminated at 5 ft.	A			19.5	48	31		Sieve # %Passin -3/8" 100.0 -No4 99.7 -No10 98.8 -No40 96.4 -No200 79.8	1.5 2.0 2.5 3.0 3.5 4.0 4.5 5.0

Geotechnical Investigation for
Mid Valley Airport
Weslaco, Texas
Bore Hole: 6

Location:	Stub Taxiway-A	Boring Depth:	5 feet
Date Drilled:	04/16/01	Water Level:	N/A
Elevation:	N/A	Drilling Method:	A= Auger

Depth (feet)	Symbol	Sample	Material Field Description (Laboratory Classification)	Drilling Method	Blows/ Penetration	Pocket Pen (TSF)	Moisture (%)	Liquid Limit	P.I.	Linear Shrinkage (%)	Sieve Analysis	Depth (feet)
		N / S	4" HMAC	A								
0.5 1.0		6-1	12 1/4" Lime Treated Caliche BASE. Dark Grayish Brown, Silty SAND with Gravel. Group Symbol= SM	A			7.2	34	9		Sieve # %Passin -3/4" 100.0 -3/8" 96.3 -No4 80.3 -No10 60.2 -No40 37.9 -No200 16.8	0.5 1.0
1.5 2.0		N / S	8" Lime Treated Subgrade.	A								1.5 2.0
2.5 3.0 3.5		6-2	Dark Brown, Sandy Lean CLAY. Group Symbol= CL	A			18.6	32	15		Sieve # %Passin -3/4" 100.0 -3/8" 99.5 -No4 98.5 -No10 97.1 -No40 94.2 -No200 51.2	2.5 3.0 3.5
4.0 4.5 5.0		N / S	Light Brown, Clay. Boring terminated at 5 ft.	A								4.0 4.5 5.0

Geotechnical Investigation for
Mid Valley Airport
Weslaco, Texas
Bore Hole: 7

Location:	Stub Taxiway-B	Boring Depth:	5 feet
Date Drilled:	04/16/01	Water Level:	N/A
Elevation:	N/A	Drilling Method:	A= Auger

Depth (feet)	Symbol	Sample	Material Field Description (Laboratory Classification)	Drilling Method	Blows/ Penetration	Pocket Pen (TSF)	Moisture (%)	Liquid Limit	P.I.	Linear Shrinkage (%)	Sieve Analysis	Depth (feet)
		N / S	4 1/2" HMAC	A								
0.5 1.0		7-1	11" Caliche BASE. Grayish Brown, Clayey SAND. Group Symbol= SC	A			8.5	31	13		Sieve # %Passin -3/4" 100.0 -3/8" 97.6 -No4 86.3 -No10 70.6 -No40 53.1 -No200 35.8	0.5 1.0
1.5 2.0 2.5 3.0 3.5		7-2	Very Dark Grayish Brown, Sandy Lean CLAY. Group Symbol= CL	A			16.7	34	19		Sieve # %Passin -3/8" 100.0 -No4 99.8 -No10 99.0 -No40 97.3 -No200 58.8	1.5 2.0 2.5 3.0 3.5
4.0 4.5 5.0		N / S	Light Brown, Clay. Boring terminated at 5 ft.	A								4.0 4.5 5.0

Geotechnical Investigation for
Mid Valley Airport
Weslaco, Texas
Bore Hole: 8

Location: Stub Taxiway-C
Date Drilled: 04/16/01
Elevation: N/A

Boring Depth: 5 feet
Water Level: N/A
Drilling Method: A= Auger

Depth (feet)	Symbol	Sample	Material Field Description (Laboratory Classification)	Drilling Method	Blows/ Penetration	Pocket Pen (TSF)	Moisture (%)	Liquid Limit	P.I.	Linear Shrinkage (%)	Sieve Analysis	Depth (feet)
		N / S	4" HMAC	A								
0.5 1.0		8-1	13" BASE with Primer Oil, Dark Gray, Silty SAND, Group Symbol= SM	A			4.6		NP		Sieve # %Passin -3/4" 100.0 -3/8" 99.1 -No4 88.1 -No10 65.9 -No40 37.2 -No200 14.8	0.5 1.0
1.5 2.0 2.5 3.0		8-2	Brown, Sandy Lean CLAY. Group Symbol= CL	A			19.6	35	17		Sieve # %Passin -3/8" 100.0 -No4 99.4 -No10 98.0 -No40 94.9 -No200 52.7	1.5 2.0 2.5 3.0
3.5 4.0 4.5 5.0		N / S	Light Brown, Clay. Boring terminated at 5 ft.	A								3.5 4.0 4.5 5.0

Geotechnical Investigation for
Mid Valley Airport
Weslaco, Texas
Bore Hole: 9

Location:	Stub Taxiway-D	Boring Depth:	5 feet
Date Drilled:	04/16/01	Water Level:	N/A
Elevation:	N/A	Drilling Method:	A= Auger

Depth (feet)	Symbol	Sample	Material Field Description (Laboratory Classification)	Drilling Method	Blows/ Penetration	Pocket Pen (TSF)	Moisture (%)	Liquid Limit	P.I.	Linear Shrinkage (%)	Sieve Analysis	Depth (feet)
		N / S	4 1/2" HMAC	A								
0.5 – 1.0		9-1	12" Caliche BASE. Light Brown, Clayey SAND. Group Symbol= SC	A			9.7	36	17		Sieve # %Passin -3/4" 100.0 -3/8" 98.2 -No4 87.9 -No10 73.2 -No40 55.0 -No200 39.5	0.5 – 1.0
1.5 – 2.5		9-2	Brown, Sandy Lean CLAY. Group Symbol= CL	A			17.1	39	20		Sieve # %Passin -3/8" 100.0 -No4 99.8 -No10 99.1 -No40 97.4 -No200 54.0	1.5 – 2.5
3.0 – 5.0		N / S	Light Brown, Clay. Boring terminated at 5 ft.	A								3.0 – 5.0

Geotechnical Investigation for
Mid Valley Airport
Weslaco, Texas
Bore Hole: 10

Location: Stub Taxiway-A (North End)
Date Drilled: 04/16/01
Elevation: N/A

Boring Depth: 5 feet
Water Level: N/A
Drilling Method: A= Auger

Depth (feet)	Symbol	Sample	Material Field Description (Laboratory Classification)	Drilling Method	Blows/ Penetration	Pocket Pen (TSF)	Moisture (%)	Liquid Limit	P.I.	Linear Shrinkage (%)	Sieve Analysis	Depth (feet)
		N / S	4" HMAC	A								
0.5 1.0		10-1	12" Caliche BASE, Grayish Brown, Clayey SAND. Group Symbol= SC	A			9.6	35	17		Sieve # %Passin -3/4" 100.0 -3/8" 98.5 -No4 92.2 -No10 79.3 -No40 62.4 -No200 46.6	0.5 1.0
1.5 2.0 2.5 3.0		10-2	Brown, Sandy Lean CLAY. Group Symbol= CL	A			18.1	28	14		Sieve # %Passin -3/8" 100.0 -No4 99.9 -No10 99.5 -No40 98.5 -No200 54.3	1.5 2.0 2.5 3.0
3.5 4.0 4.5 5.0		N / S	Light Brown, Clay. Boring terminated at 5 ft.	A								3.5 4.0 4.5 5.0

Geotechnical Investigation for
Mid Valley Airport
Weslaco, Texas
Bore Hole: 11

Location:	N/A	Boring Depth:	5 feet
Date Drilled:	04/16/01	Water Level:	N/A
Elevation:	N/A	Drilling Method:	A= Auger

Depth (feet)	Symbol	Sample	Material Field Description (Laboratory Classification)	Drilling Method	Blows/ Penetration	Pocket Pen (TSF)	Moisture (%)	Liquid Limit	P.I.	Linear Shrinkage (%)	Sieve Analysis	Depth (feet)
		N / S	4 1/2" HMAC	A								
0.5 1.0		11-1	12" Lime Treated BASE. Dark Grayish Brown, Silty SAND with Gravel. Group Symbol= SM	A			7.3	31	6		Sieve # %Passin -3/4" 100.0 -3/8" 95.5 -No4 76.5 -No10 54.9 -No40 35.3 -No200 16.8	0.5 1.0
1.5 2.0		11-2	Dark Grayish Brown, Lime Treated Subgrade.	A			12.0	31	12		Sieve # %Passin -3/8" 100.0 -No4 97.3 -No10 93.0 -No40 88.3 -No200 44.8	1.5 2.0
2.5 3.0 3.5 4.0 4.5 5.0		11-3	Brown, Clayey SAND. Group Symbol= SC Boring terminated at 5 ft.	A			13.6	38	17		Sieve # %Passin -3/4" 100.0 -3/8" 99.8 -No4 98.5 -No10 96.5 -No40 93.6 -No200 49.1	2.5 3.0 3.5 4.0 4.5 5.0

Geotechnical Investigation for
Mid Valley Airport
Weslaco, Texas
Bore Hole: 12

Location: Taxiway
Date Drilled: 04/16/01
Elevation: N/A

Boring Depth: 5 feet
Water Level: N/A
Drilling Method: A= Auger

Depth (feet)	Symbol	Sample	Material Field Description (Laboratory Classification)	Drilling Method	Blows/ Penetration	Pocket Pen (TSF)	Moisture (%)	Liquid Limit	P.I.	Linear Shrinkage (%)	Sieve Analysis	Depth (feet)
		N / S	4 1/2" HMAC	A								
0.5 – 1.0		12-1	12" Caliche BASE Light Brown, Clayey SAND. Group Symbol= SC	A			10.0	35	18		Sieve # %Passin -3/4" 100.0 -3/8" 97.6 -No4 87.4 -No10 72.6 -No40 59.3 -No200 45.8	0.5 – 1.0
1.5 – 3.5		12-2	Dark Gray, Sandy Lean CLAY. Group Symbol= CL	A			14.7	28	21		Sieve # %Passin -3/8" 100.0 -No4 99.1 -No10 97.9 -No40 95.8 -No200 54.6	1.5 – 3.5
4.0 – 5.0		12-3	Brown, Sandy Lean CLAY. Group Symbol= CL Boring terminated at 5 ft.	A			17.7	35	21		Sieve # %Passin -3/8" 100.0 -No4 99.7 -No10 99.1 -No40 98.3 -No200 60.5	4.0 – 5.0

Geotechnical Investigation for
Mid Valley Airport
Weslaco, Texas
Bore Hole: 13

Location:	Taxiway	Boring Depth:	5 feet
Date Drilled:	04/16/01	Water Level:	N/A
Elevation:	N/A	Drilling Method:	A= Auger

Depth (feet)	Symbol	Sample	Material Field Description (Laboratory Classification)	Drilling Method	Blows/ Penetration	Pocket Pen (TSF)	Moisture (%)	Liquid Limit	P.I.	Linear Shrinkage (%)	Sieve Analysis	Depth (feet)
		N / S	4" HMAC	A								
0.5 1.0		13-1	10" Caliche BASE, Brown, Clayey SAND. Group Symbol= SC	A			10.5	27	9		Sieve # %Passin -3/4" 100.0 -3/8" 97.4 -No4 88.5 -No10 73.8 -No40 58.9 -No200 42.8	0.5 1.0
1.5		N / S	6" Lime Treated Subgrade.	A								1.5
2.0 2.5 3.0 3.5		13-2	Brown, Sandy Lean CLAY. Group Symbol= CL	A			18.2	37	21		Sieve # %Passin -3/8" 100.0 -No4 99.8 -No10 99.5 -No40 98.6 -No200 59.1	2.0 2.5 3.0 3.5
4.0 4.5 5.0		N / S	Light Brown, Clay. Boring terminated at 5 ft.	A								4.0 4.5 5.0

Geotechnical Investigation for
Mid Valley Airport
Weslaco, Texas
Bore Hole: 14

Location:		Taxiway (North Extension)	Boring Depth:		5 feet
Date Drilled:	04/16/01		Water Level:		N/A
Elevation:	N/A		Drilling Method:		A= Auger

Depth (feet)	Symbol	Sample	Material Field Description (Laboratory Classification)	Drilling Method	Blows/ Penetration	Pocket Pen (TSF)	Moisture (%)	Liquid Limit	P.I.	Linear Shrinkage (%)	Sieve Analysis	Depth (feet)
		N / S	4" HMAC	A								
0.5 1.0		14-1	12" Caliche BASE. Tannish Brown, Clayey SAND. Group Symbol= SC	A			12.9	29	8		Sieve # %Passin -3/4" 100.0 -3/8" 97.5 -No4 89.4 -No10 75.4 -No40 60.9 -No200 46.4	0.5 1.0
1.5		N / S	6" Lime Treated Subgrade.	A								1.5
2.0 2.5 3.0 3.5		14-2	Very Dark Gray, Sandy Silty CLAY. Group Symbol= CL-ML	A			20.3	27	6		Sieve # %Passin -3/8" 100.0 -No4 99.1 -No10 97.4 -No40 95.1 -No200 65.6	2.0 2.5 3.0 3.5
4.0 4.5 5.0		N / S	Light Brown, Clay Boring terminated at 5 ft.	A								4.0 4.5 5.0

Geotechnical Investigation for
Mid Valley Airport
Weslaco, Texas
Bore Hole: 15

Location: Taxiway (North Extension)
Date Drilled: 04/16/01
Elevation: N/A

Boring Depth: 5 feet
Water Level: N/A
Drilling Method: A= Auger

Depth (feet)	Symbol	Sample	Material Field Description (Laboratory Classification)	Drilling Method	Blows/ Penetration	Pocket Pen (TSF)	Moisture (%)	Liquid Limit	P.I.	Linear Shrinkage (%)	Sieve Analysis	Depth (feet)
		N / S	4 1/2" HMAC	A								
0.5 – 1.0		15-1	9 1/2" Caliche BASE. Light Brown, Clayey SAND. Group Symbol= SC	A			9.6	32	17		Sieve # %Passin -3/4" 100.0 -3/8" 98.2 -No4 88.4 -No10 73.8 -No40 59.8 -No200 45.7	0.5 – 1.0
1.5 – 3.0		15-2	Very Dark Grayish Brown, Sandy Lean CLAY. Group Symbol= CL	A			17.3	33	14		Sieve # %Passin -3/8" 100.0 -No4 99.8 -No10 99.1 -No40 97.5 -No200 61.4	1.5 – 3.0
3.5 – 5.0		N / S	Light Brown, Clay. Boring terminated at 5 ft.	A								3.5 – 5.0

LEGEND OF TERMINOLOGY

GRAVELS More than half of Coarse fraction is LARGER than No. 4 Sieve Size	Clean Gravels (little or no fines)	GW	Well-Graded, gravel-sand mixtures, mixtures, little or no fines
		GP	Poorly-Graded gravels, gravel-sand mixtures, little or no fines
	Gravels w/ fines (Appreciable amt. of fines)	GM	Silty gravels, gravel-sand-silt mixtures
		GC	Clayey gravels, gravel-sand-clay Mixtures
SANDS More than half of Coarse fraction is SMALLER than No. 4 Sieve Size	Clean Sands (little or no fines)	SW	Well-Graded sands, gravely sands, little or no fines
		SP	Poorly-Graded sands, gravely sands little or no fines
	Sands w/ fines (Appreciable amt. of fines)	SM	Silty sands, sand-silt mixtures
		SC	Clayey sands, sand-clay mixtures
SILTS AND CLAYS Liquid Limit Less Than 50		ML	Inorganic silts & very fine sands, rock flour, silty or clayey fine sands or clayey silts w/slight plasticity
		CL	Inorganic clays of low to medium plasticity, gravely clays, sandy clays
		OL	Organic silts & organic silty clays of low plasticity
SILTS AND CLAYS Liquid Limit Greater Than 50		MH	Inorganic silts, micoceous or diatomaceous fine sand or silty soils, elastic silts
		CH	Inorganic clays of high plasticity, fat clays
		OH	Organic clays of medium to high plasticity, organic silts
Highly Organic Soils		PI	Peat & other highly organic soils

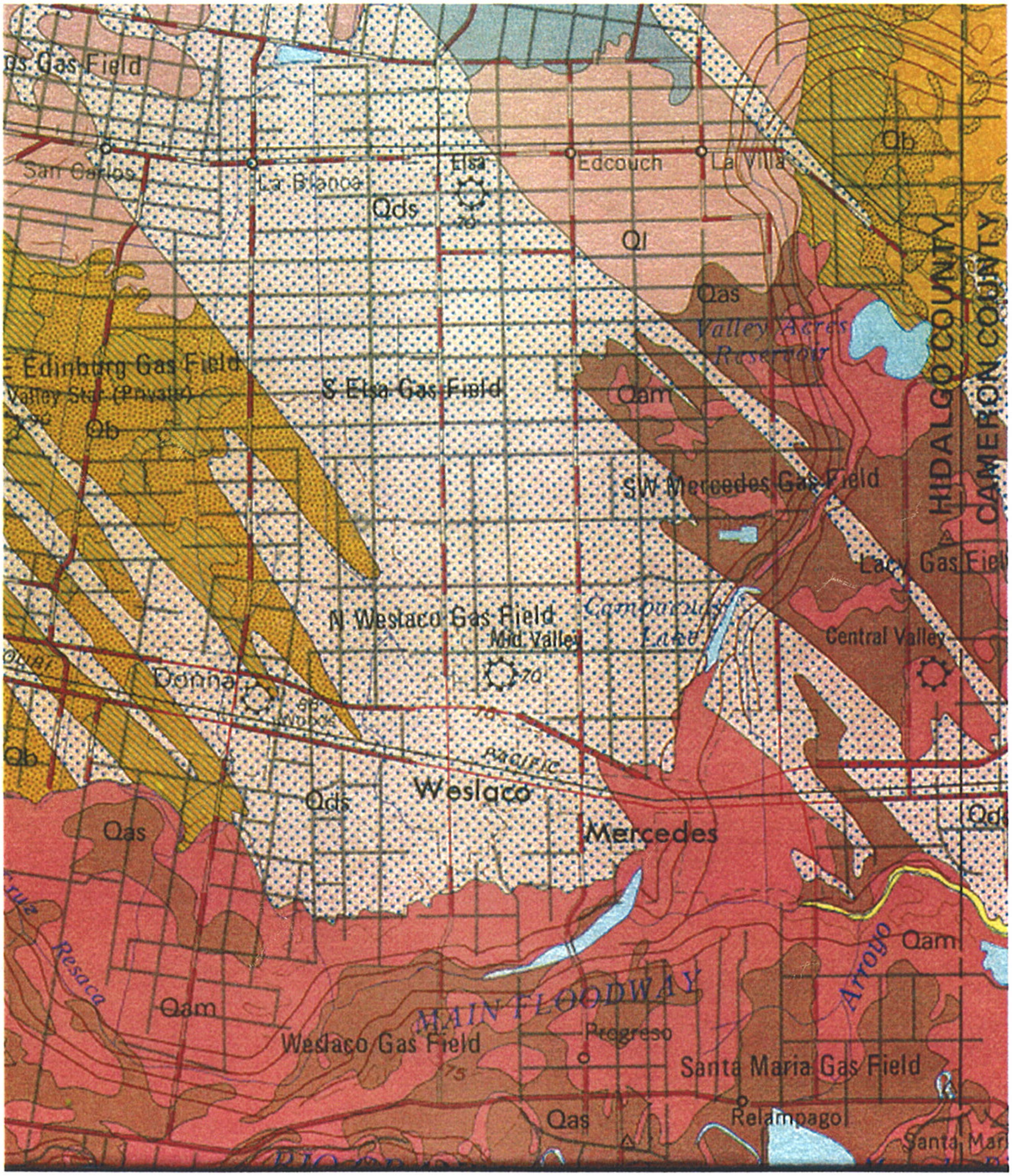
LEGEND OF SYMBOLS

	HMAC
	Lime Treated Subgrade
	Base
	Sandy Lean Clay
	Lean Clay with Sand
	Clayey Sand
	Clay
	Sandy Silty Clay

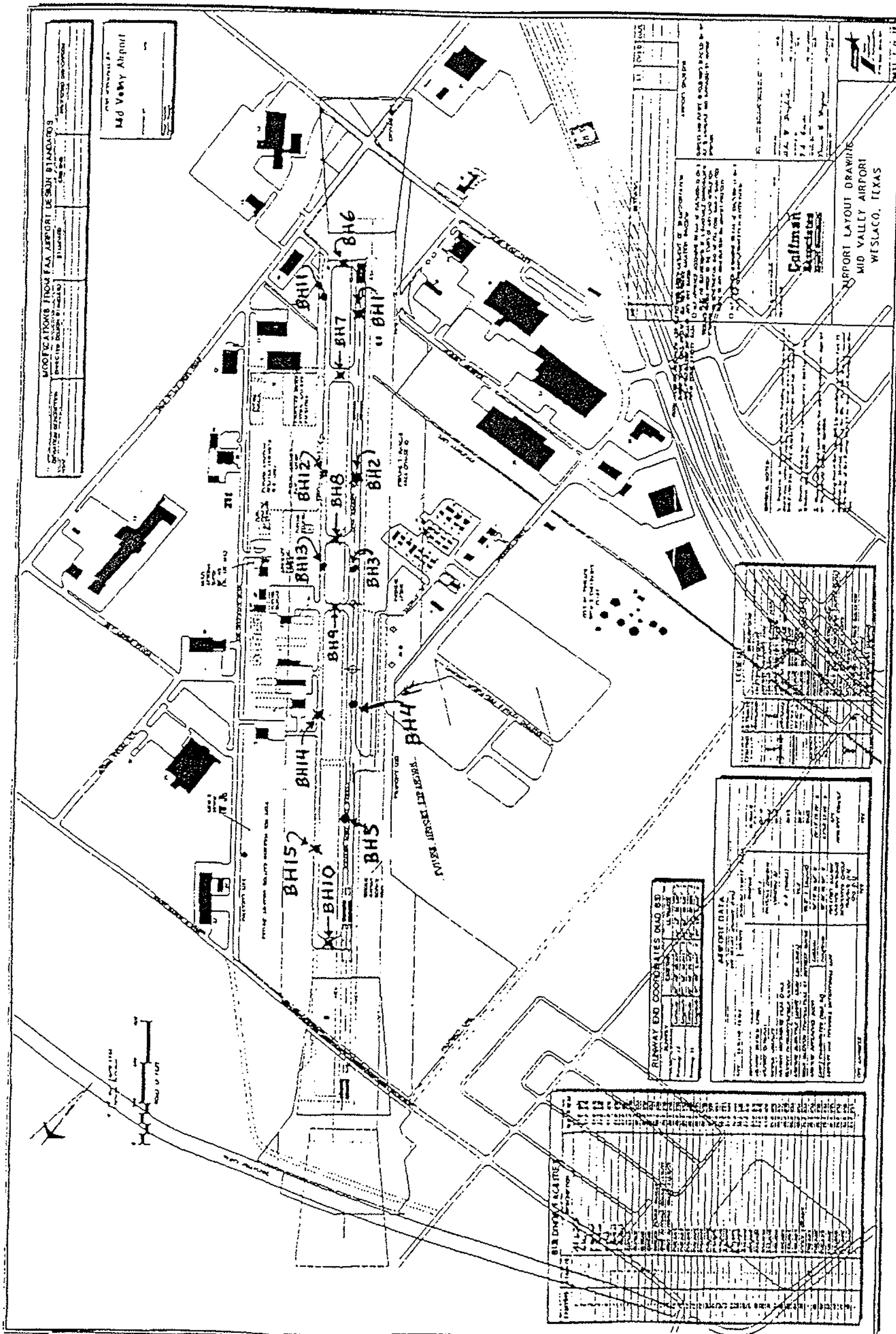
Appendix B

University of Texas at Austin, Bureau of Economic Geologic map
&
Site Map of Borehole Locations

Mid Valley Airport
Weslaco, Texas



The University of Texas at Austin, Bureau of Economic Geology,
Geological Atlas of Texas, McAllen-Brownsville Sheet, 1976


BH1
BH2
BH3
BH4
BH5
BH6
BH7
BH8
BH9
BH10
BH11
BH12
BH13
BH14
BH15
Mid Valley Airport
AIRPORT LAYOUT DRAWING
MID VALLEY AIRPORT
WESLACO, TEXAS
RUNWAY END COORDINATES
AIRPORT DATA

Appendix C

Flexible Pavement Design Results

```
=====================================================
        FLEXIBLE PAVEMENT DESIGN PROGRAM
                ( F 8 0 6 F A A )
          DEPARTMENT OF TRANSPORTATION
        FEDERAL AVIATION ADMINISTRATION
                WASHINGTON, D.C.
=====================================================
   REFERENCES: ADVISORY CIRCULAR 150/5320-6
-----------------------------------------------------


       Mid Valley Airport.  (Weslaco,TX)

----------------- DESIGN  PARAMETERS ---------------
----------------- FOR LIGHT AIRCRAFT ---------------
          DESIGN FOR
-----------------------------------------------------
    < 1 >  AIRCRAFT LOAD               =  30000.00
    < 2 >  SUBGRADE FROST CODE         =  F - *
    < 3 >  SUBGRADE CBR                =      3.00
    < 4 >  DEGREE DAYS                 =       .00
    < 5 >  DRY DENSITY(#/CU. FT.)      =       .00
           FROST PENETRATION           =       .00
           65% OF FROST PENETRATION    =       .00
-----------------------------------------------------
```

```
SURFACE THICKNESS =   2.0
BASE CBR          =  80.0
BASE THICKNESS    =   5.8
SUBBASE CBR       =  20.0
SUBBASE THICKNESS =  17.2
SUBGRADE CBR      =   3.0
```

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