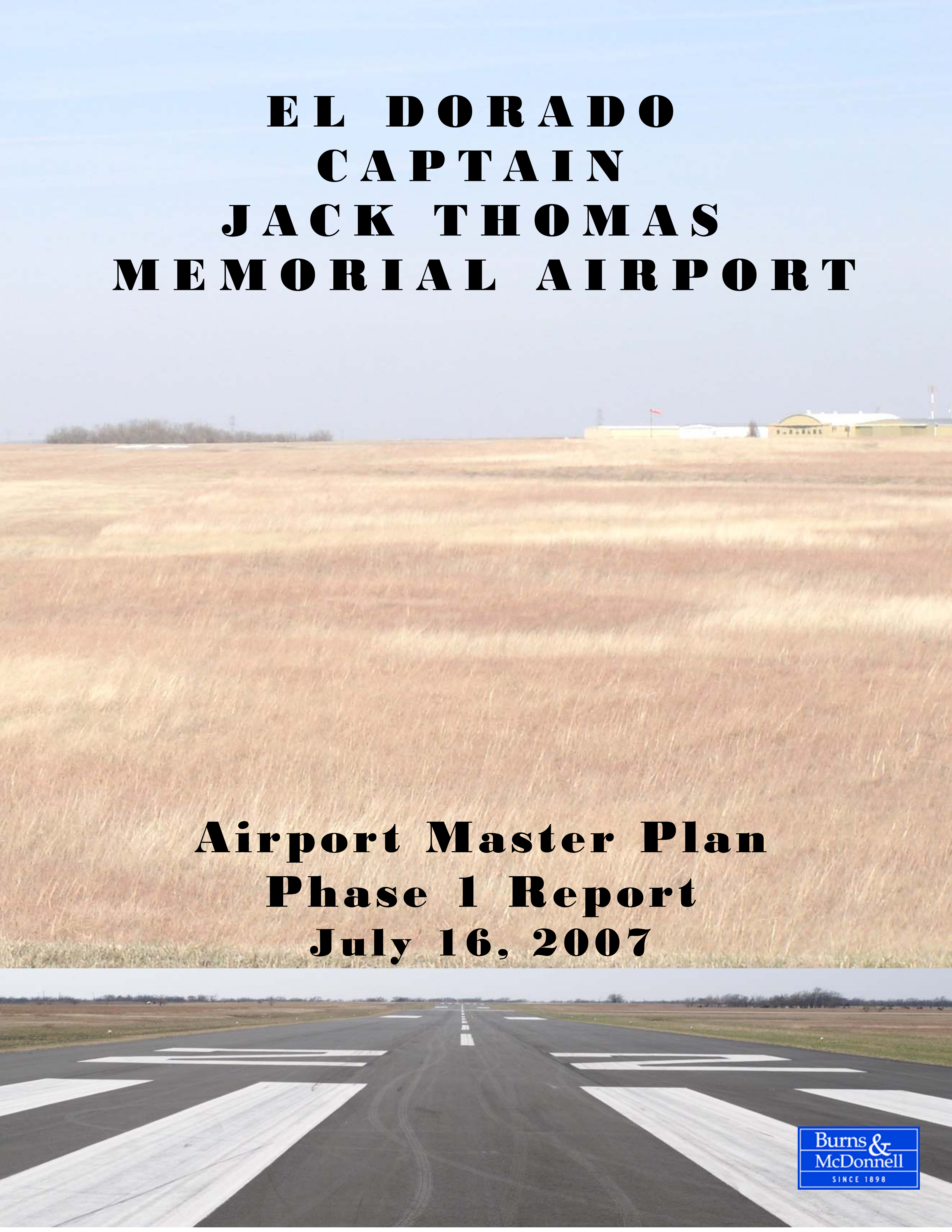
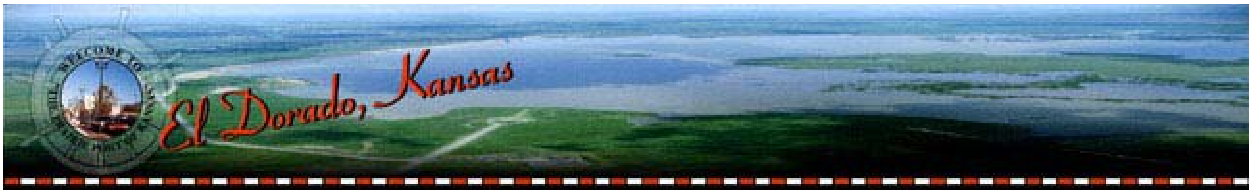
EL DORADO CAPTAIN JACK THOMAS MEMORIAL AIRPORT



Airport Master Plan
Phase 1 Report
July 16, 2007

Burns & McDonnell
SINCE 1898



INTRODUCTION

GENERAL

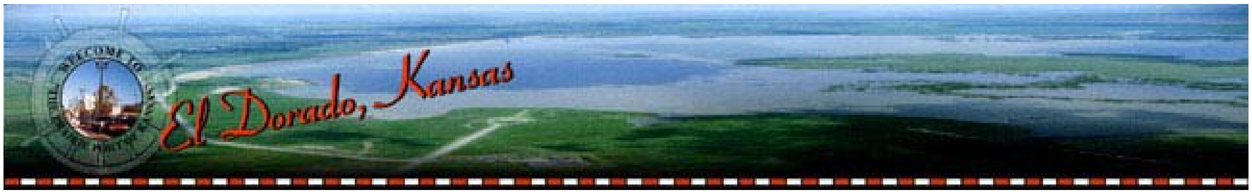
The El Dorado Capt. Jack Thomas Memorial Airport (EQA) Master Plan Study, was initiated by the City of El Dorado, has been undertaken to evaluate the airport's capabilities and role, to forecast future aviation demand, and to plan for the timely development of new or expanded facilities that may be required to meet that demand. The ultimate goal of the master plan is to provide systematic guidelines for the airport's overall maintenance, development, and operation. The plan was funded with a 95 percent Federal Government Grant and 5 percent local matching funds provided by the City. Burns and McDonnell Engineering, Inc. prepared the plan.

The master plan is intended to be a proactive document, which identifies and then plans for future facility needs well in advance of the actual need for the facilities. This is done to insure that the city of El Dorado can coordinate project approvals, design, financing, and construction to avoid experiencing detrimental effects due to inadequate facilities. An important result of the master plan is reserving sufficient areas for future facility needs. This protects development areas and ensures they will be readily available when required to meet future needs. The intended result is a detailed land use concept, which outlines specific uses for all areas of airport property.

The preparation of this master plan is evidence that the City of El Dorado recognizes the importance of air transportation to the community as well as the unique challenges operating an airport presents. The investment in an airport yields many benefits to the community and the region. With a sound and realistic master plan, El Dorado Capt. Jack Thomas Memorial Airport can maintain its role as an important link to the national air transportation system for the community and maintain the existing public and private investments in its facilities.

MASTER PLAN OBJECTIVES

The primary objective of the master plan is to provide the community and its leadership with guidance for operating the airport in a safe and efficient manner while planning for future demand levels. To accomplish this objective requires a comprehensive evaluation of the existing airport and a determination of what actions should be taken to maintain a safe and reliable airport facility while meeting the aviation needs of the region. This master plan will provide a vision for the airport covering the next twenty years. With this vision, the City of El Dorado will have advanced notice of potential future airport funding needs so that appropriate steps can be taken to ensure that adequate funds are budgeted and planned.



Specific objectives of the El Dorado Capt. Jack Thomas Memorial Airport Master Plan are:

- To preserve and protect public and private investments in existing airport facilities;
- To enhance the safety of aircraft operations;
- To be reflective of community and regional goals, needs, and plans;
- To ensure that future development is environmentally compatible;
- To establish a schedule of development priorities designed to meet forecast aviation demand;
- To develop a plan that is responsive to air transportation demands;
- To develop an orderly plan for the use of the airport;
- To meet Federal Aviation Administration (FAA) Standards;
- To coordinate the master plan with local, regional, state, and federal agencies, and;
- To develop active and productive public involvement throughout the planning process.

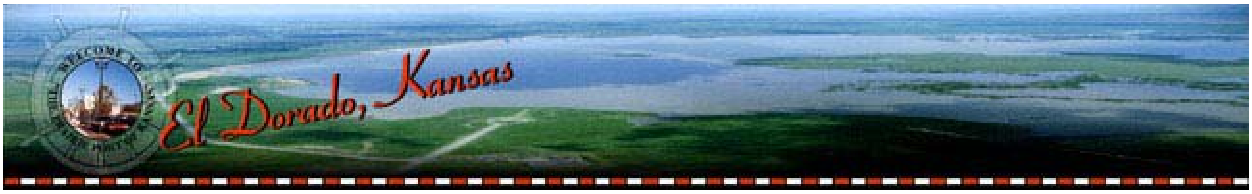
The master plan will accomplish these objectives by carrying out the following:

- Determine projected needs of airport users through the year 2027;
- Identify existing and future facility needs;
- Evaluate future airport facility development alternatives; and
- Develop a realistic plan for use and/or expansion of the airport.

MASTER PLAN ELEMENTS AND PROCESS

The El Dorado Capt. Jack Thomas Memorial Airport Master Plan is being prepared in a systematic fashion following FAA guidelines and industry-accepted principles and practice, as shown on **Figure 1.1.** The master plan has six chapters that are intended to assist in the discovery of future facility needs and provide the supporting rationale for their implementation.

Chapter One – Inventory summarizes the inventory efforts. The inventory efforts are focused on collecting and assembling relevant data pertaining to the airport and the area it serves. Information is collected on existing airport facilities and operations. Local economic and demographic data is collected to define the local growth trends. Planning studies, which may have relevance to the master plan, are also collected and evaluated.



Chapter Two – Forecasts examines the potential aviation demand at the airport. The analysis utilizes local socioeconomic information, as well as national air transportation trends to quantify the levels of aviation activity, which can reasonably be expected to occur at El Dorado Capt. Jack Thomas Memorial Airport through the year 2027. The results of this effort are used to determine the types and sizes of facilities, which will be required to meet the projected aviation demand at the airport through the planning period.

Chapter Three – Facility Requirements comprises the demand capacity and facility requirements analysis. The intent of this analysis is to compare the existing facility capacities to forecast aviation demand and determine where deficiencies in capacities (as well as excess capacities) may exist. Where deficiencies are identified, the size and type of new facilities to accommodate the demand are identified. The airfield analysis focuses on improvements needed to safely serve the type of aircraft expected to operate at the airport in the future, as well as navigational aids to increase the safety and efficiency of operations. This element also examines the general aviation terminal, hangars, aprons, and support needs.

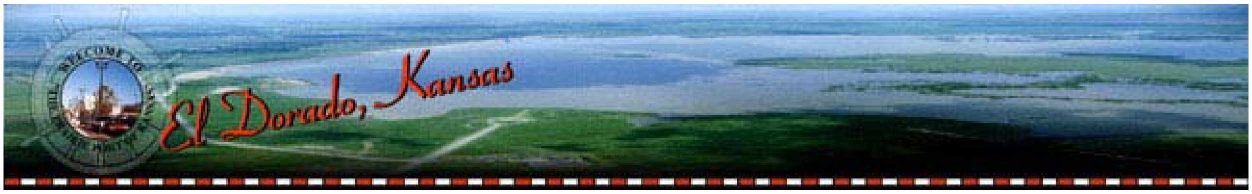
Chapter Four – Alternatives considers a variety of solutions to accommodate the projected facility needs. This element proposes various facility and site plan configurations, which can meet the projected facility needs. An analysis is completed to identify the strengths and weaknesses of each proposed development alternative, with the intention of determining a single direction for development.

Chapter Five – Airport Plans provides both a graphic and narrative description of the recommended plan for the use, development, and operation of the airport. An environmental overview is also provided. The master plan also includes the official Airport Layout Plan (ALP) and detailed technical drawings depicting related airspace, land use, and property data. These drawings are used by the Federal Aviation Administration (FAA) in determining grant eligibility and funding.

Chapter Six – Financial Plan focuses on the capital needs program which defines schedule, costs, and funding sources for the recommended development projects.

COORDINATION

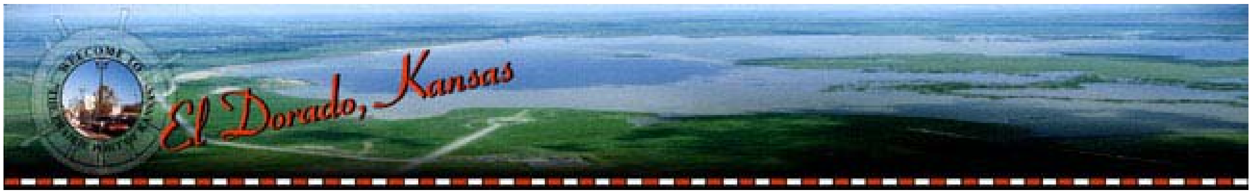
The El Dorado Capt. Jack Thomas Memorial Airport Master Plan is of interest to many within the local community. This includes local citizens, community organizations, airport users, airport tenants, area-wide planning agencies, and aviation organizations. As an important component of the regional, state, and national aviation system, the El Dorado Capt. Jack Thomas Memorial Airport is of importance to both state and federal agencies responsible for overseeing air transportation.



To assist in the development of the master plan, the City of El Dorado has identified a group of community members and aviation interest groups to act in an advisory role in the development of the master plan. Members of the Planning Advisory Committee (PAC) will review phase reports and provide comments throughout the study to help ensure that a realistic, viable plan is developed.

To assist in the review process, draft phase reports will be prepared at the various milestones in the planning process. The phase report process allows for timely input and review during each step within the master plan to ensure that all master plan issues are fully addressed as the recommended program develops.

A series of public information workshops will also be held as part of the plan coordination. The public information workshops are designed to allow any and all interested persons to become informed and provide input concerning the master plan. Notices of meeting times and locations will be advertised through the media as well as local neighborhood associations.



Chapter 1

INVENTORY

GENERAL

The inventory of existing conditions at El Dorado Capt. Jack Thomas Memorial Airport (EQA) will serve as an overview of the airport, its facilities, and its role in the regional and national aviation system, and the relationship to development which has occurred around the airport over the years. The information delineated in this chapter attempts to provide a foundation, or starting point, for all subsequent evaluations.

The master plan required a comprehensive collection and evaluation of information relating to the airport and the surrounding area including the following:

- 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 development and implementation of the airport master plan.

- Background information pertaining to the City of El Dorado, the surrounding counties, and the state of Kansas. Analysis of these areas also includes descriptions of recent development which has taken place on the airport environs and plans for future development which may impact the airport.

- Population and socioeconomic information which provides an indication of the market and possible future development in the region and on airport property.

An accurate and complete inventory is essential to the success of a master plan. The inventory of existing conditions serves primarily as a basis, or foundation, upon which most of the analysis conducted in later chapters is formed. This information was 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 obtained from available studies concerning the airport including the El Dorado Master Plan – 1974 and The Airport Layout Plan Update – 1992.

AIRPORT CHARACTERISTICS

The purpose of this section is to summarize various studies and data collected to provide an understanding of the characteristics of the airport and the regional area. Within this section is a description of the airport setting, the ground access systems near the airport, the existing and future land use around the airport, local climate, and other regional airports. This information is used to develop forecasts which aid in determining what critical airport infrastructure will be needed to support demand over the planning period.

Airport History

Since the early days, the regional economy was focused on farming and ranching. This would all change when, in the fall of 1915, a cable tool drilling rig owned by Wichita Natural Gas began to drill an oil well on the John Stapleton farm north of town. Day after day the tools stomped their way into the solid earth until at a depth of 670 feet oil was discovered. Word spread like a wind-whipped prairie fire and the black gold rush was on. Butler's economy changed almost overnight. Lease prices for land skyrocketed as men sought riches from deep within the earth. New shops and businesses were built to meet the demands of thousands of incoming workers.

The company owned the towns of Oil Hill, Midian, Gordon and Browntown. Oil Hill and El Dorado grew and by 1918 their population totaled almost 20,000. In a single year, more than 28 million barrels of crude oil were produced.

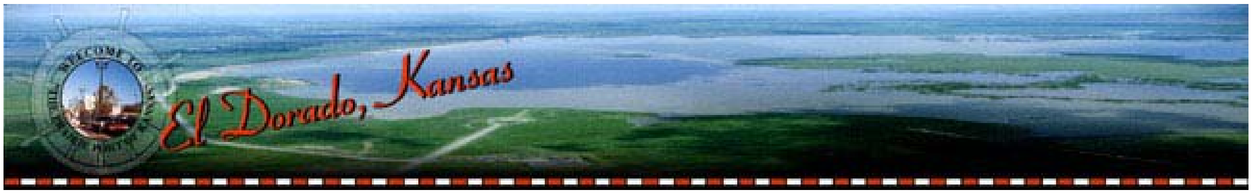
Construction of El Dorado Municipal Airport began in the late 1940's. The original tract of land was 205 acres located on the present airport site, four miles southeast of the central business district. By 1962, the airport consisted of an office and the runway system consisted of a northeast-southwest Runway 4-22 that was 3,150 feet long; and two turf Runways 8-26 and 18-36.

In 1974, the airport had grown to be home of 20 based aircraft. Facilities included eight T-hangars, two conventional hangars and a terminal building.

In 1994, the City of El Dorado constructed a new concrete Runway 15-33. The runway is 4,200 feet long and 75 feet wide. During this time frame both turf runways were abandoned.

The 1970s and 1990s saw further hangar construction and pavement maintenance projects. The city's latest maintenance project occurred in 2005 and entailed resurfacing Runway 4-22.

The most recent airport layout plan update was completed in 1992. Many of the recommended improvements have been completed including new runway and pavement maintenance.



Airport Administration

El Dorado Municipal Airport is owned and operated by the City of El Dorado. El Dorado Municipal Airport is one of three publicly-owned general aviation airports in Butler County. The daily operations of the airport are managed by the Fixed Base Operator (FBO). A written contract signed by the FBO and the City of El Dorado is the basis of the working agreement. The basic terms of the agreement are that the city will continue to maintain and improve airport facilities and the FBO will continue to provide aircraft services at the airport. The city is responsible for routine maintenance and upkeep.

The airport management and the city are advised by a six-member Airport Advisory Committee. Members of the committee and are elected by the City of El Dorado Commissioners and are eligible to serve two full three year terms and an additional partial term. Meetings are held once a month. It is the responsibility of the committee to advise the city and airport management on matters that pertain to the airport.

Airport Location

As depicted on **Exhibit 1A**. El Dorado Municipal Airport is located in the center of Butler County, Kansas. El Dorado, located approximately 25 miles to the northeast of Wichita, Kansas, is the county seat and the largest city in Butler County. The City of El Dorado rests along the banks of the Walnut River, in the Flint Hills grazing area.

Butler County, Kansas consists of primarily rolling grass-covered hills with broad river valleys winding through them. The county encompasses approximately one million acres of land. Elevations range from 1,625 feet on the east Flint Hills escarpment down to 1,148 feet in the Walnut River valley.

The El Dorado Municipal Airport is located approximately four miles to the southeast of the central business district. The airport is not within the city limits of the City of El Dorado and encompasses a total of 255.5 acres and 22.6 acres of avigation easements for runway protection zones.

Airport Access

The City of El Dorado is located in south-eastern Kansas, approximately 25 miles to the northeast of Wichita, Kansas. The next closest large city is Hutchinson, located approximately 60 miles to the northwest. Interstate 35 connects El Dorado to Emporia and Topeka to northeast and Wichita to the southwest. U.S. Highway 54/77 also connects to Interstate 70, approximately 100 miles to the north.

Direct access to the airport is provided by U.S. Highway 54/77 connecting to F.A.S. road 1012, which traverses the northern airport property boundary.

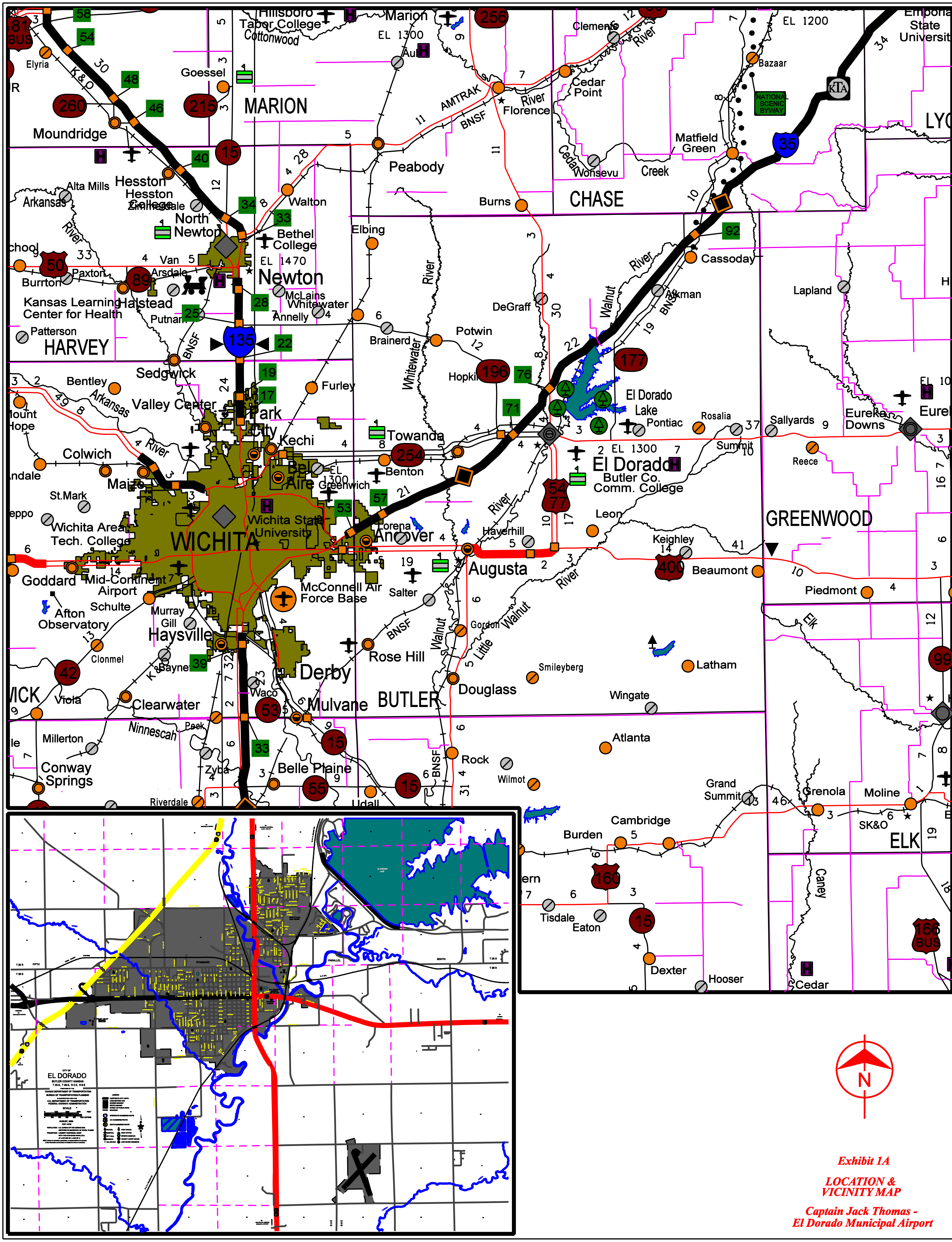


Exhibit 1A

LOCATION & VICINITY MAP

Captain Jack Thomas - El Dorado Municipal Airport

Regional Airports

A review of public-use airport facilities within a 30-nautical mile radius of El Dorado Municipal Airport was conducted to identify and distinguish the types of air service provided in the region. Information pertaining to each airport was obtained from FAA Form 5010, Airport Master Record. The area airspace exhibit presented later in this chapter also identifies the location of most of these airports.

Colonel James Jabara Airport (AAO) is 25 miles to the west of EQA. Runway 18-36 is 6,101 feet long by 100 feet wide. It is constructed of concrete and is in good condition.

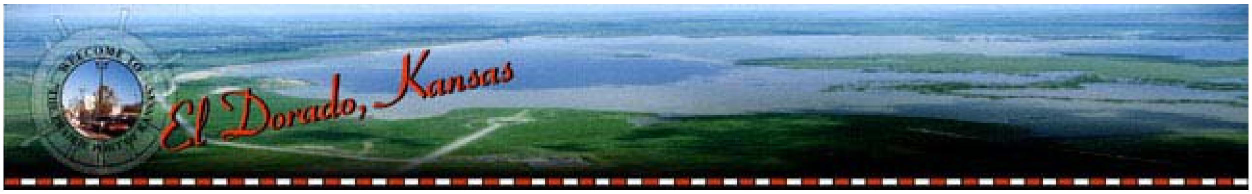
The airport is home to ten jets, 30 multi-engine and 65 single-engine aircraft. It is estimated that the airport accounts for 105 operations per day or roughly 38,000 annual operations. Airport services include Avgas and Jet A fuel, line services and maintenance, rental cars, courtesy cars, and catering. Instrument approaches are provided to all runway ends including a CAT I ILS approach to Runway 18. The CAT I approach provides one-half mile visibility minimums and 200-foot cloud height ceilings. **Table 1.1** provides information related to the regional airports.

Newton City-County Airport (EWK) is 40 miles to the northwest of EQA. Runway 17-35 is the primary runway and is 7,003 feet long by 100 feet wide. It is constructed of concrete with an asphalt overlay and is in good condition. Runway 8-26 is 3,501 feet long by 60 feet wide with an asphalt overlay on concrete.

The airport is home to five jets, 14 multi-engine and 97 single-engine aircraft. It is estimated that the airport accounts for 178 operations per day or roughly 65,000 annual operations. Airport services include Avgas and Jet A fuel, line services and maintenance, rental cars, courtesy cars, and catering. Instrument approaches are provided to all runway ends including a CAT I ILS approach to Runway 17. The CAT I approach provides one-half mile visibility minimums and 200-foot cloud height ceilings. (Shown in Table 1.1)

Eureka Municipal Airport (13K) is located 20 miles to the east of EQA. Runway 18-36 is the primary runway and is 3,503 feet long by 60 feet wide. It is constructed of asphalt and is in fair / good condition. Runway 8-26 is 2,100 feet long by 50 feet wide and is turf. There are 14 single-engine aircraft based at the airport. (Shown in Table 1.1)

Augusta Municipal Airport (3AU) is 18 miles to the southwest of EQA. Runway 18-36 is 4,199 feet long by 60 feet wide. It is constructed of asphalt and is in good condition. Precision approach path indicators (PAPIs) are provided on Runway 18 and Visual approach slope indicators (VASIs) are provided on Runway 36, both to aid pilots in maintaining the correct approach slope. The airport also has a concrete Helipad 30’ x 30’.



The airport is home to one jet, 6 multi-engine and 82 single-engine aircraft. It is estimated that the airport accounts for 99 operations per day or roughly 36,000 annual operations. Airport services include Avgas and Jet A fuel, line services and maintenance, rental cars, courtesy cars, and catering. (Shown in Table 1.1)

Cook Airfield Inc. (K50) is 40 miles to the southwest of EQA and is a privately owned public use airfield. Runway 17-35 is 2,507 feet long by 40 feet wide, constructed of asphalt, and is in good condition. Runway 01-19 is 1,600 feet long by 50 wide and is turf. There are 37 based single-engine, two multi-engine and 2 ultra-light aircraft. (Shown in Table 1.1)

Hamilton Field (1K3) is 40 miles to the southwest of EQA and is a private owned public use airfield. Runway 17-35 is 2,500 feet long by 35 feet wide and is turf. There are 26 based single-engine aircraft. (Shown in Table 1.1)

Lloyd Stearman Field (1K1) is 12 miles to the west of EQA and is a privately owned public use airfield. Runway 17-35 is 2,613 feet long by 60 feet wide, constructed of asphalt, and is in good condition. There are 65 based single-engine aircraft and one multi-engine. (Shown in Table 1.1)

The *Patty Field (9K6)* is a private owned public use airfield, located approximately three miles to the southeast of the City of El Dorado. This airport has two based single engine aircraft. The turf Runway 18-36 is 1,800 feet long by 60 feet wide. There are no runway markings, navigational aids, or instrument approaches.

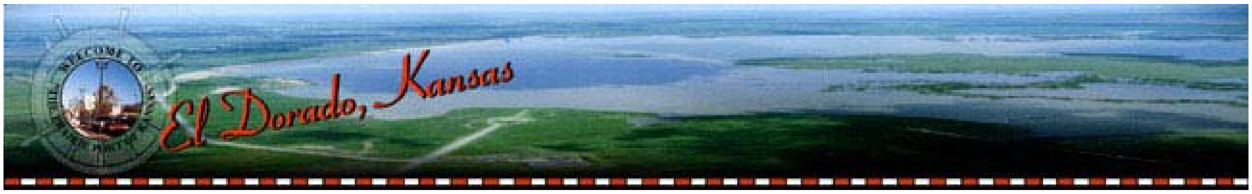
The *Foster Field (SN58)* is a private airfield, located approximately ten miles to the northeast of the City of El Dorado. This airport has one based single engine aircraft. Turf Runway 17-35 is 2,440 feet long by 50 feet wide. There are no runway markings, navigational aids, or instrument approaches.

High Point Airport (3KS5) is a private airfield 25 miles to the west. This airport provides a 2,400-foot by 100-foot turf runway (Runway 17-35). There are 20 single-engine aircraft based at the airport. High Point is a privately owned and operated airport.

Military Activity

Only a small number of the operations at El Dorado Municipal Airport are conducted by military aircraft. Vance Air Force Base (AFB) is located in Enid, Oklahoma, approximately 170 miles to the south of El Dorado. McConnell AFB is 30 miles southwest of El Dorado, in Wichita.

Vance Air Force Base is home to the 71st Flying Training Wing which provides joint specialized undergraduate pilot training for qualified U.S. military officers. The Air Base



provides primary training in two aircraft types; The T1 and the T6. The Beechcraft T-1 Jayhawk, a small jet-powered aircraft, is designed to prepare pilots for active duty, flying tanker and transport aircraft. The Raytheon T-6 is a single-engine turboprop with jet-like handling characteristics. The T-6 is used for entry level aviation students who will potentially move into one of four training tracks; Air Force bomber/fighter; Air Force airlift/tanker or Navy maritime; Navy Strike; or the Air Force Navy helicopter track.

TABLE 1.1
Regional Airports
El Dorado Capt. Jack Thomas Memorial Airport

Airport	ID	Distance (mi)	Longest Runway	Services	Approaches / Visibility
Colonel James Jabara	AAO	25 W	Runway 18-36: 6,101'x100'	Fuel, Full FBO	RNAV –GPS, ILS/1/2 Mile
Newton City-County	EWK	40 NW	Runway 17-35: 7,003'x100'	Fuel, Full FBO	ILS/1/2 Mile
Eureka Municipal	13K	20 E	Runway 18-36: 3,503'x60'	100LL, FBO	VOR, RNAV-GPS/1 MILE
Augusta Municipal	3AU	18 SW	Runway 18-36: 4,199'x60'	Fuel, FBO	VOR, GPS/1 Mile
Cook Airfield Inc	K50	40 SW	Runway 17-35: 2,507'x40'	100LL, FBO	NA
Hamilton Field	1K3	40 SW	Runway 17-35: 2,500'x35'	NA	NA
Lloyd Stearman Field	1K1	12 W	Runway 17-35: 2,613'x60'	Fuel, Full FBO	NA

Source: Airnav.com

Training missions from Vance AFB bring aircraft in the vicinity to El Dorado Municipal Airport on a regular basis. Interviews with airport staff indicate that ILS approaches, runway length, and navigational aids are important features currently not available at EQA that the military has shown interest in exposing to student pilots. Airport staff estimates that if these facilities where available at the airport, the trainers from Vance AFB would consider the use of the airport.

CFR PART 139 Certification

Title 14 of the Code of Federal Regulations (CFR) Part 139, Certification and Operations: Land Airports Serving Certain Air Carriers, provides the minimum standards for airports accommodating air passenger service. The FAA issues operating certificates to airports that meet stringent requirements related to safety, planning, and maintenance. Certificates are issued to airports serving scheduled and unscheduled passenger air service utilizing aircraft with seating capacity greater than nine passenger seats. El Dorado Municipal Airport currently does not meet the stringent FAA requirements and maintains this certification as a Class IV airport under 14 CFR Part 139. This restricts the airport to accommodate unscheduled air passenger service using aircraft with more than 30 passenger seats.

Area Land Use

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. Land uses surrounding El Dorado Municipal Airport are varied and include a mix of rural residential and agricultural development.

Airport Land Use

A variety of land uses exist on airport property.. Airside facilities include the runway and taxiway system as well as the associated navigational aids. Landside facilities include all the structures on airport property.

Airport Height and Hazard Zoning / Ordinance

The City of El Dorado currently does not have zoning restricting the use of land on, or adjacent to, the airport. The zoning regulations provide a means for the city to protect the airport and the necessary airspace, particularly the approaches to the runways. The City of El Dorado does not control zoning around the airport, currently Butler County controls zoning around the airport. Neither the city nor Butler County has adopted specific zoning ordinances based on 14 CFR Part 77, Objects Affecting Navigable Airspace, to limit the height of objects around the airport.

An example of an airport zoning ordinance is provided by the FAA in Advisory Circular 150/190-4A, A Model Zoning Ordinance to Limit Height of Objects Around Airports.

Climate

Weather conditions must be considered in the planning and development of an airport, as daily operations are affected by weather patterns. Temperature is a significant factor in determining runway length needs, while local wind patterns (both direction and speed) influence optimal runway orientation.

El Dorado, Kansas experiences distinct seasonal changes. The area averages 14 inches of snowfall during the winter and an average low temperature of 17 degrees Fahrenheit (F) in January. Spring and summer typically bring thunderstorms and rising temperatures. July is the hottest month, with an average high temperature of 93 degrees. On average, the area receives approximately 30 inches of precipitation per year. The prevailing wind is from the south and southwest. Climate data is summarized in **Table 1.2**.

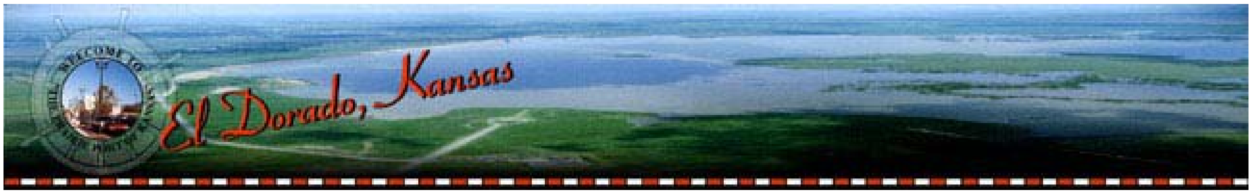


Table 1.2
Climate Summary
El Dorado Capt. Jack Thomas Memorial Airport

	Jan	Feb	Mar	April	May	June	July	Aug	Sept	Oct	Nov	Dec
High Temp Average	39.9	46.8	56.4	66.3	75.4	86.9	92.6	90.8	82.2	70.3	54.2	43
Low Temp Average	17.3	22.3	31.5	41.3	52.3	62.2	67.3	65.6	56.4	43.5	30.6	21
Days with Precip.	5	5	8	8	11	9	8	7	8	6	5	6
Average Precip.(in)	0.7	1.1	2.7	2.7	4.5	4	3.8	3.2	2.9	2.4	1.6	1
Wind Speed (mph)	12	12.5	13.8	14	12.3	12.2	1.3	11.1	11.6	1.9	12.1	1.7
Sunshine (%)	58	61	62	63	64	69	76	75	68	65	58	57
Cloud Free Days	11	8	9	9	8	9	13	13	13	13	11	10
Partly Cloudy Days	6	7	7	8	10	11	11	10	7	7	7	7
Cloudy Days	14	13	15	13	13	10	7	8	10	11	13	14
Snowfall (in)	4.2	3.9	2.9	0.2	0	0	0	0	0	0	1.3	3.3

Source: www.weather.com; www.city-data.com

Airport System Planning Role

Airport planning exists on many levels: local, state, and national. Each level has a different emphasis and purpose. An airport master plan is the primary local airport planning document.

At the national level, El Dorado Municipal Airport is included in the National Plan of Integrated Airport Systems (NPIAS). This plan identifies 3,344 existing airports which are identified by the Federal Aviation Administration (FAA) as significant to the national air transportation system. The NPIAS plan is used by the FAA in administering the Airport Improvement Program (AIP). The NPIAS supports the FAA's strategic goals for safety, system efficiency, and environmental compatibility by identifying specific airport improvements eligible for federal funding. An airport must be included in the NPIAS to be eligible for federal funding assistance through the AIP program.

The 2005-2009 NPIAS identified $39.5 billion for airport development. Of that, approximately 13 percent is identified for general aviation (GA) airports. El Dorado Municipal Airport is classified as a GA airport in the NPIAS and, thus, is eligible for federal funding. The NPIAS includes over $995,448 in development costs for the airport over the five-year period.

Communities that do not receive scheduled commercial service may be included in the NPIAS as sites for GA airports if they account for enough activity (usually at least 10 locally-owned aircraft) and are at least 20 miles from the nearest NPIAS airport. The activity criterion may be relaxed for remote locations or other mitigating circumstances. El Dorado Municipal Airport exceeds both of these thresholds.

The 2,556 GA airports in the NPIAS tend to be distributed on a one-per-county basis in rural areas and are more often located near the county seat. These airports, with an average of 33 based aircraft, account for 40 percent of the nation's general aviation fleet. These airports are the most convenient source of air transportation for about 19 percent of the population and are particularly important to rural areas. El Dorado Municipal Airport has 28 based aircraft and an estimated average of 37 operations per day, thus making the airport further eligible for AIP funding.

At the state level, the State of Kansas, through the Department of Transportation, identifies aviation needs as a model element of the overall transportation infrastructure.

Airport Facilities

Airport Facilities can be functionally classified into two broad categories: airside and landside. The airside category includes those facilities which are needed for the safe and efficient movement of aircraft such as runways, taxiways, lighting, and navigational aids. The landside category includes those facilities necessary to provide a safe transition from surface to air transportation and support aircraft servicing, storage, maintenance, and operational safety.

Airside Facilities

Existing airside facilities are identified on **Exhibit 1B**. **Table 1.3** summarizes airside facility data for El Dorado Municipal Airport.

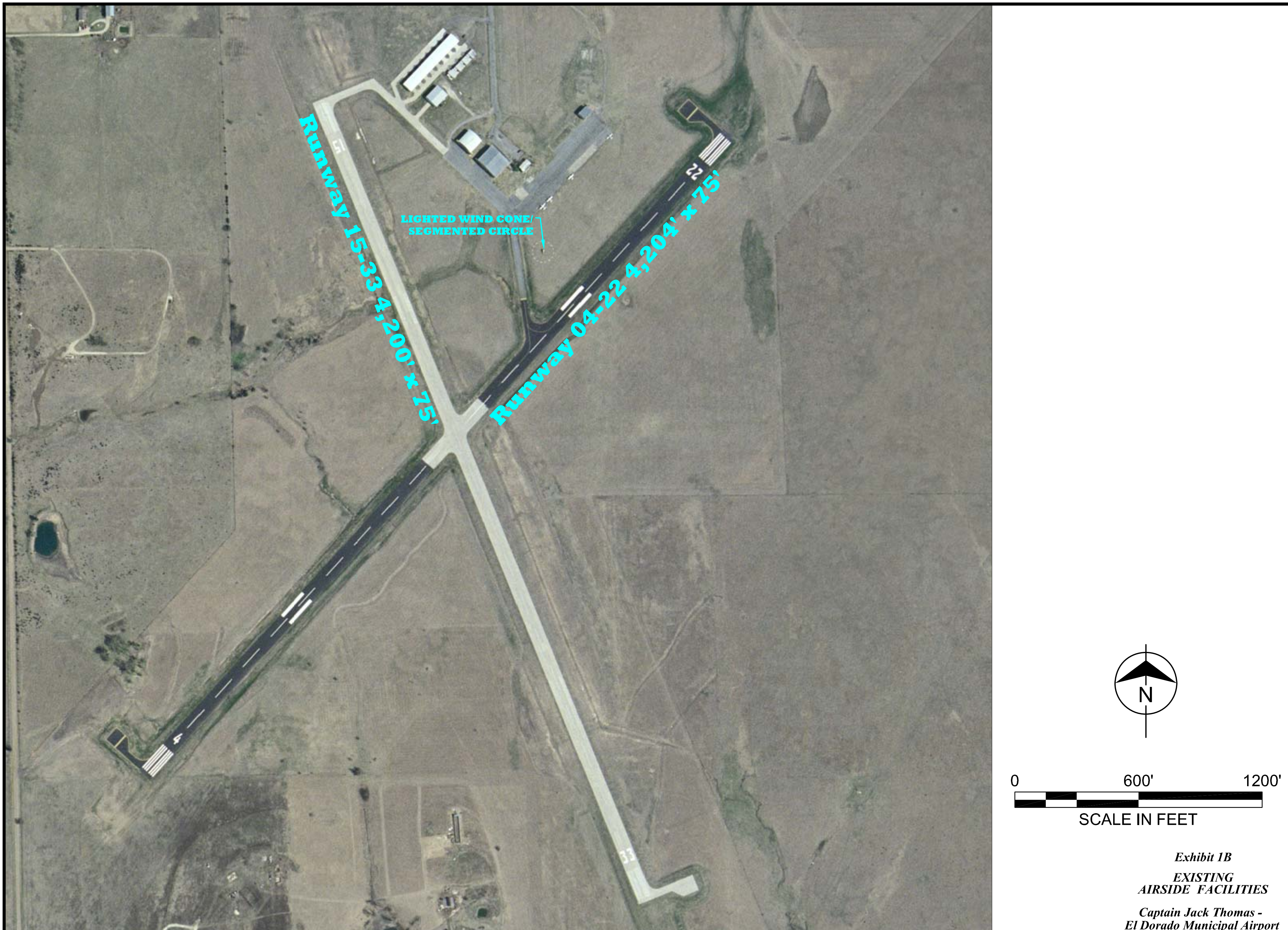


Exhibit 1B

EXISTING AIRSIDE FACILITIES

Captain Jack Thomas - El Dorado Municipal Airport

Table 1.3
Airside Facility Data
El Dorado Capt. Jack Thomas Memorial Airport

	Runway 04-22	Runway 15-33
Runway Length (feet)	4,204	4,200
Runway Width (feet)	75	75
Runway Surface Material	Asphalt	Concrete
Surface Treatment	None	None
Condition	Good	Good
Runway Load Bearing Strength (lbs)		
Single Wheel Loading (SWL)	18,000	12,500
Dual-Wheel Loading (DWL)	23,000	12,500
Dual-Tandem Wheel Loading (DTWL)		
Runway Markings	Non-precision	Non-precision
Runway Lighting	HIRL	MIRL
Taxiway Markings	Centerline / Holdlines	Centerline / Holdlines
Taxiway Lighting	MITL	
Approach Aids	NA	PAPI – 4L
Instrument Approach Aids	GPS RWY 04 GPS RWY 22 NDB RWY 04	GPS RWY 15 GPS RWY 33
Displaced Threshold	NA	NA
Weather Aids	NA	
Visual Aids	Segmented Circle, Lighted Wind Cone, Rotating Beacon	

PAPI – Precision Approach Path Indicator
GPS – Global Positioning System
NDB – Non-Directional Beacon
HIRL & MIRL – High and Medium Intensity Runway Lights
MITL – Medium Intensity Taxiway Lights

Source: Airport Facility Directory; South Central (May 2006).

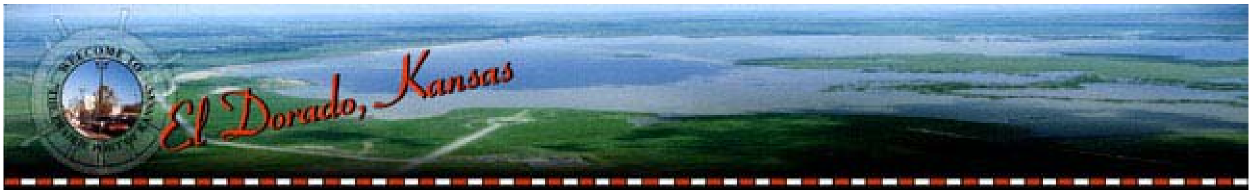
Runways

El Dorado Municipal Airport is served by two intersecting runways. Asphalt Runway 04-22 and concrete Runway 15-33 intersecting at approximately the middle of both runways.

Runway 04-22

Runway 04-22 is 4,204 feet long by 75 feet wide, oriented in a northeast-southwest manner. The asphalt surface is in good condition, the highest rating the FAA designates for runway condition. Runway 04-22 does not provide paved runway shoulders.

Runway 04-22 has a pavement strength of 18,000 pounds single wheel loading (SWL).



SWL refers to the design of certain aircraft landing gear that have a single wheel on each main landing gear strut. Other landing gear configurations would include dual wheel (DWL), dual tandem wheel (DTWL), and double dual tandem wheel (DDTL). Each of these distributes more of the aircraft weight on runway and taxiway surfaces and, thus, the surface itself can support a greater total airplane weight. The dual-wheel strength rating is 23,000 pounds and the dual-tandem-wheel strength rating is not rated.

Runway 15-33

Runway 15-33 is 4,200 feet long by 75 feet wide and oriented in a northwest to southeast manner. The pavement strength rating is 12,500 pounds SWL, 12,500 pounds DWL, and is not rated for DTWL. The runway is constructed of concrete which is in good condition. Runway 15-33 does not provide paved shoulders.

Taxiways

The taxiway system at El Dorado Municipal Airport consists of two non-parallel taxiways. The 35' wide taxiway for Runway 15-33 is connected on the Runway 15 approach end. This concrete taxiway connects directly into the main apron area and is considered to be in good condition.

The asphalt taxiway used for Runway 4-22 is 30' wide and also connects directly into the main apron. The taxiway is considered to be in good condition on the portion closest to the runway; however, the portion which connects into the apron is in poor condition.

Asphalt turnaround areas are provided on both ends of Runway 4-22 and a concrete turnaround is provided on the Runway 33 end. All turnaround areas are in good condition.

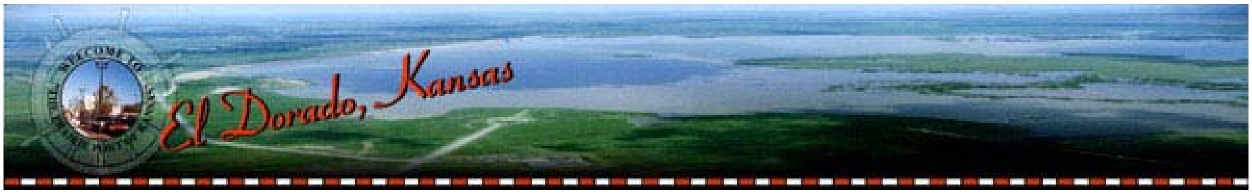
Pavement Markings

Pavement markings aid in the movement of aircraft along airport surfaces and identify closed or hazardous areas on the airport. Both Runway 04-22 and 15-33 have non-precision markings which identify the runway centerline, thresholds, and designations.

Taxiway centerline markings are provided to assist pilots in maintaining proper clearance from pavement edges and objects near the taxiway/taxilane edges. Taxiway markings also include aircraft holding positions. Aircraft movement areas on the apron should also be identified with centerline markings.

Airfield Lighting

Airfield lighting systems extend an airport's usefulness into periods of darkness and/or poor visibility. A variety of lighting systems are installed at the airport for this purpose. These lighting systems, categorized by function, are summarized as follows. All runways are available for nighttime operations.



Identification Lighting: The location of the airport at night is universally identified by a rotating beacon. The rotating beacon projects two beams of light, one white and one green, 180 degrees apart. The rotating beacon at El Dorado Municipal Airport is located on the top of a 50-foot steel pole, approximately 225 feet to the northwest of the terminal building.

Runway and Taxiway Lighting/Signage: Runway and taxiway edge lighting utilizes light fixtures placed near the edge of the pavement to define the lateral limits of the pavement. This lighting is essential for safe operations during night and/or times of low visibility in order to maintain safe and efficient access to and from the runways and aircraft parking areas.

The airport currently does not have a runway/taxiway signage system. The presence of runway/taxiway signage is an essential component of a surface movement guidance control system necessary for the safe and efficient operation of the airport.

Runway 04-22 is equipped with high intensity runway lights (HIRL). Runway 15-33 is served by medium intensity runway lights (MIRL). The two connector taxiways A and B are served by medium intensity taxiway lights (MITL).

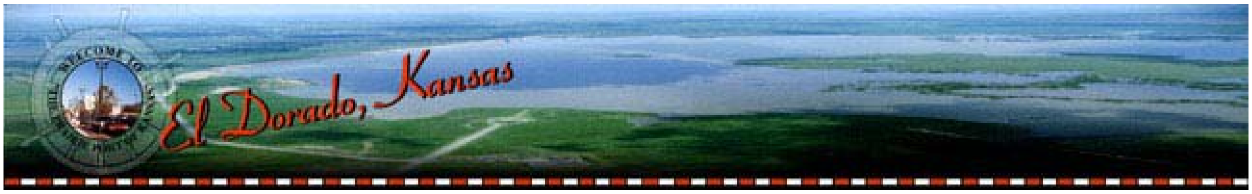
All runway ends are equipped with threshold lighting. Threshold lighting consists of specially designed light fixtures that are red on the departure side and green on the arrival side.

Runway 15-33 is served by the more advanced Precision Approach Path Indicator (PAPI) system, located to the left side of both runways. Both of these four-box units support a three-degree glide slope. When the system of red and green lights are interpreted by the pilot, they are given an indication of being above, below, or on the designated descent path to the runway threshold. A PAPI system has a range of five miles during the day and up to twenty miles at night.

Pilot-Controlled Lighting: During normal operating procedures at El Dorado Municipal Airport, the runway, taxiway, and PAPI lighting systems are turned off. Pilots operating at night have the ability to turn on these systems through use of a radio transmitter. All airfield lights will remain on for 15 minutes.

Weather and Communication Aids

El Dorado Municipal Airport has one lighted wind cone, and a segmented circle. The lighted wind cone provides information to pilots regarding wind conditions, such as direction and intensity. The segmented circle consists of a system of visual indicators designed to provide traffic pattern information to pilots.



El Dorado Municipal Airport is not equipped with an Automated Surface Observing System (ASOS); therefore the Wichita ASOS is used. An ASOS will automatically record weather conditions such as temperature, dew point, wind speed, altimeter setting, visibility, sky conditions, and precipitation. The ASOS updates observations every minute, 24 hours a day, and this information is transmitted to pilots in the airport vicinity via FAA VHF ground-to-air radio. Pilots can receive these broadcasts on frequency 134.025 MHz or via a local telephone number (316-636-2541), where a computer-generated voice will present airport weather information.

El Dorado Municipal Airport has access to the common advisory traffic frequency (CTAF). This radio frequency (122.8 MHz.) is used by pilots in the vicinity of the airport to communicate with each other about approaches to, or departures from the airport. In addition, a UNICOM frequency is also available (122.8 MHz), where a pilot can obtain information pertaining to the airport.

Navigational Aids

Navigational aids are electronic devices that transmit radio frequencies, which pilots of properly equipped aircraft can translate into point-to-point guidance and position information. The types of electronic navigational aids available for aircraft flying to or from El Dorado Municipal Airport include a non-directional beacon (NDB), and the global positioning systems (GPS).

The NDB transmits non-directional radio signals whereby the pilot of an aircraft, equipped with direction-finding equipment, can determine their bearing to or from the NDB facility in order to track to the beacon station. The El Dorado NDB is on the airfield. The Newton NDB is approximately 28 miles to the northwest of the airport. The Wellington NDB is approximately 38 miles to the southwest.

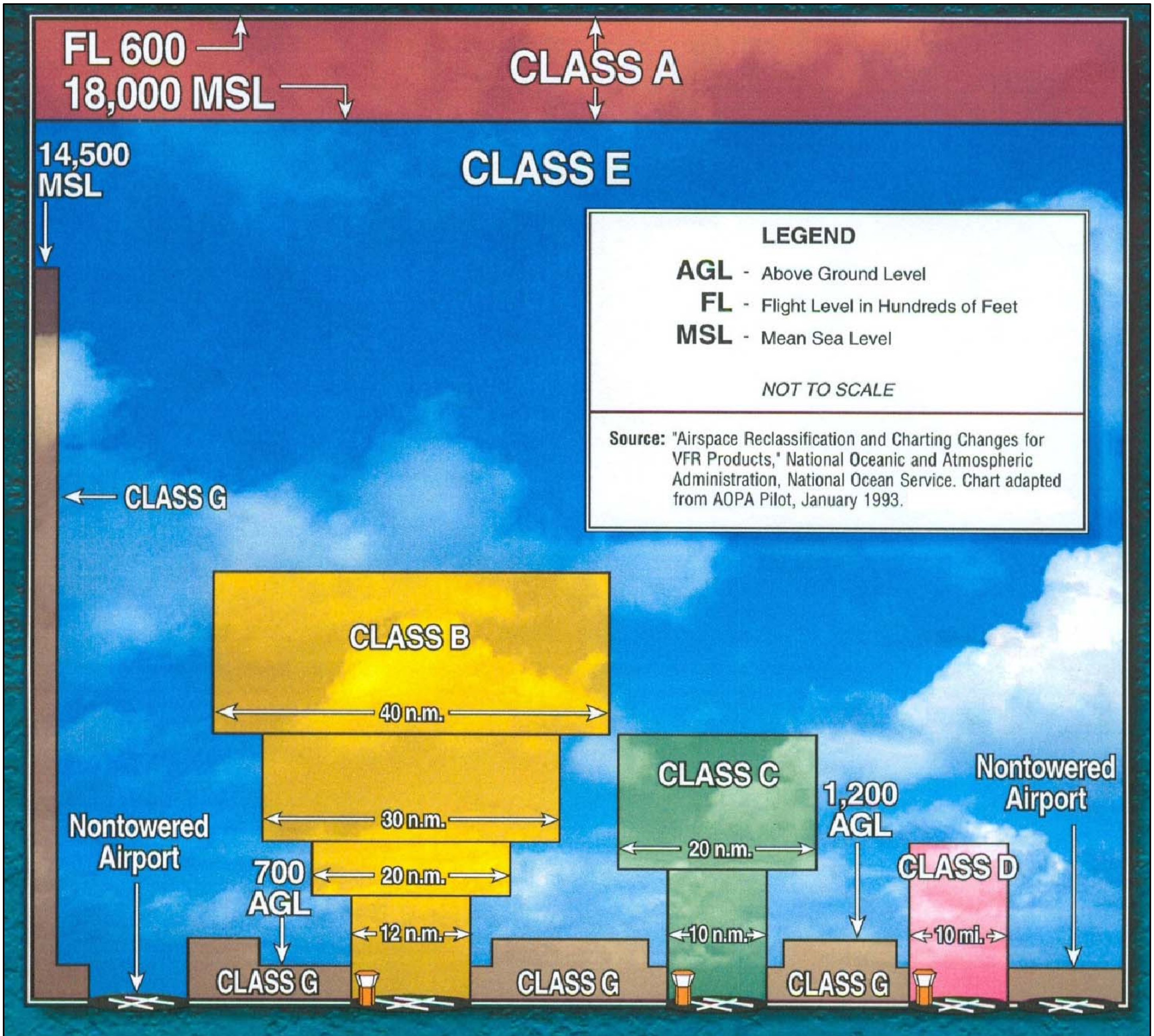
The VOR, in general, provides azimuth readings to pilots of properly equipped aircraft transmitting a radio signal at every degree to provide 360 individual navigational courses. Frequently, distance measuring equipment (DME) is combined with a VOR facility (VOR-DME) to provide distance as well as directional information to the pilot. Military tactical air navigation aids (TACANs) and civil VORs are commonly combined to form a VORTAC. The VORTAC provides distance and direction information to both civil and military pilots. Surrounding VOR's, VOR-DME's, and VORTAC's include Emporia, Chanute, Wichita, and Anthony.

GPS is an additional navigational aid for pilots. GPS was initially developed by the United States Department of Defense for military navigation around the world. GPS differs from a NDB or VOR, in that pilots are not required to navigate using a specific facility. GPS uses satellites placed in orbit around the earth to transmit electronic radio signals, which pilots of properly equipped aircraft use to determine altitude, speed, and other navigational information. With GPS, pilots can directly navigate to any airport in the country and are not required to navigate using a specific navigation facility.

Area Airspace

The Federal Aviation Administration (FAA) Act of 1958 established the FAA as the responsible agent 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 environment for civil, commercial, and military aviation. The NAS is defined as the common network of U.S. airspace including air-navigational 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 as part of this system.

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, controlled and uncontrolled, and identifies them as Classes A, B, C, D, E and G as described below. **Exhibit 1C** generally illustrates each airspace type in three-dimensional form.

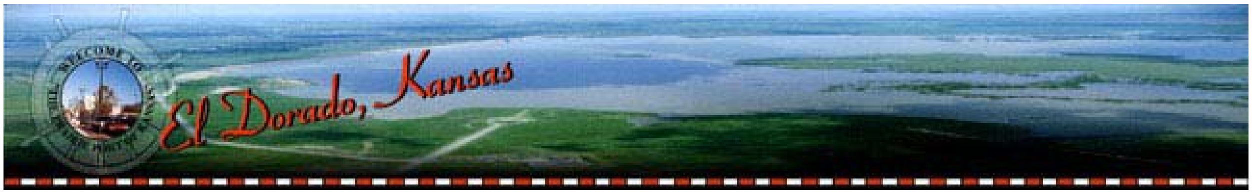


CLASSIFICATION	DEFINITION
CLASS A	Generally airspace above 18,000 feet MSL up to and including FL 600 .
CLASS B	Generally multi-layered airspace from the surface up to 10,000 feet MSL surrounding the nation's busiest airports.
CLASS C	Generally airspace from the surface to 4,000 feet AGL surrounding towered airports with service by radar approach control.
CLASS D	Generally airspace from the surface to 2,500 feet AGL surrounding towered airports.
CLASS E	Generally controlled airspace that is not Class A, Class B, Class C, or Class D.
CLASS G	Generally uncontrolled airspace that is not Class A, Class B, Class C, Class D, or Class E.

Exhibit 1C

AIRSPACE CLASSIFICATION

Captain Jack Thomas - El Dorado Municipal Airport



- Class A airspace is controlled airspace and includes all airspace from 18,000 feet mean Sea level (MSL) to Flight Level 600 (approximately 60,000 feet MSL)

- Class B airspace is controlled airspace surrounding high-activity commercial service airports (i.e., Kansas City International Airport).

- Class C airspace is controlled airspace surrounding lower-activity commercial service (i.e., Wichita Mid-Continent Airport) and some military airports.

- Class D airspace is controlled airspace surrounding low-activity commercial service and general aviation airports with an air traffic control tower (ATCT).

- All aircraft operating within Classes A, B, C, and D airspace must be in constant contact with the air traffic control facility responsible for that particular airspace sector.

- Class E airspace is controlled airspace surrounding an airport 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. While aircraft conducting visual flights in Class E airspace are not required to be in radio contact with air traffic control facilities, visual flight can only be conducted if minimum visibility and cloud ceilings exist.

- Class G airspace is uncontrolled airspace that does not require communication with an air traffic control facility.

Airspace within the vicinity of El Dorado Municipal Airport is Class E airspace and is depicted on **Exhibit 1D**.

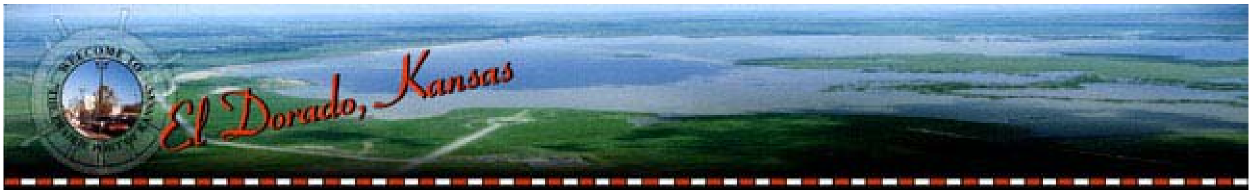
Airport with other than hard-surfaced runways

Airport with hard-surfaced runways 1,500' to 8,069' in length

Exhibit 1D

AREA AIRSPACE

Captain Jack Thomas - El Dorado Municipal Airport



Victor Airways

Victor Airways start at 1,200 feet above ground level (AGL) extending upward to an altitude of 18,000 feet mean sea level (MSL) and measuring eight nautical miles wide. Airways are called “Victor” Airways because they run primarily between VOR facilities. The phonetic alphabet’s term for “V”, as in VOR, is Victor, thus they are referred to as “Victor” Airways.

There are a number of VOR facilities in proximity to El Dorado Municipal Airport. To the northeast is the Emporia VOR. To the southeast is the Chanute VOR/DME and the Oswego VORTAC. To the west is the Witchita VOR. Victor Airways criss-cross the airspace around El Dorado Municipal Airport connecting the VORs.

Military Training Routes

Military training routes, or MTRs, are long, low-altitude corridors that serve as flight paths to a particular destination for military aircraft. The corridor is often 10 miles wide, 70 to 100 miles long, and may range from 500 feet to 1,500 feet above ground level; occasionally, they are higher. MTRs are designed to provide realistic low-altitude training conditions for pilots. In times of conflict, to avoid detection by enemy radar, tactical fighter aircraft are often called upon to fly hundreds of miles at low altitudes over varying terrain. Obviously, navigation is extremely difficult on high-sped low-altitude flights. That’s why it is imperative that fighter pilots have ample opportunity to practice these necessary and demanding skills. There are a number of MTRs within a short distance of El Dorado Municipal Airport. Civilian aircraft are not restricted from operation in the vicinity of the MTRs, although they should be aware of the locations of the MTRs and exercise special caution if they need to cross them. The MTRs in the vicinity of the airport are designated VR356 and VR119.

Military Operational Areas (MOAs)

A MOA is an area of airspace designated for military training use. This is not restricted airspace; pilots can use the airspace, however, they should be on alert for the possibility of military traffic. A pilot may need to be aware that military aircraft can be found in high concentrations, conducting aerobatic maneuvers, and possibly operating at high speed at lower elevations. The activity status of a MOA is announced by a Notice to Airmen (NOTAM) and is indicated on sectional charts.

El Dorado Municipal Airport is located south and southeast of the Bison, Smokey, and ADA West/East MOAs. Vance MOA is located southwest of the airport and Eureka MOA is located east of the airport.

Instrument Approach Procedures

Instrument approach procedures are a series of predetermined maneuvers established by the FAA, using electronic navigational aids to assist pilots in locating and landing at an airport during low visibility and cloud ceiling conditions. The capability of an instrument approach is defined by the visibility and cloud ceiling minimums associated with approach. Visibility minimums define the horizontal distance that the pilot must be able to see to complete the approach. Cloud ceilings define the lowest level a cloud layer (defined in feet above the ground) can be situated for a pilot to complete the approach. If the observed visibility or cloud ceiling is below the minimums prescribed for the approach, the pilot cannot complete the instrument approach.

GPS instrument approaches are available for all four runway ends. Runway 4 also provides a separate instrument approach utilizing the NDB on the airfield.

A circling approach allows pilots to land on any active runway at the airport. While providing flexibility for the pilot to land on the runway most closely aligned with the prevailing wind at that time, a circling approach will have higher visibility and cloud ceiling minimums than other instrument approaches which are aligned with a particular runway end. This is done to provide pilots with sufficient visibility and ground clearance to navigate visually from the approach to the desired runway end for landing.

The lowest visibility minimum provided by the GPS or NDB approaches is one mile with cloud ceiling minimums of 424 feet AGL.

Table 1.4 shows the minimum for each instrument approach approved for use at El Dorado Municipal Airport.

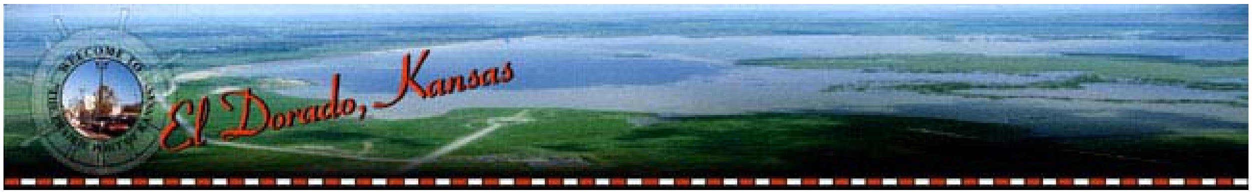
Table 1.4
Published Approaches
El Dorado Capt. Jack Thomas Memorial Airport

Runway	Approach Type	Min. Visibility
4	GPS & NDB	>1 Statute Mile
22	GPS	>1 Statute Mile
15	GPS	>1 Statute Mile
33	GPS	>1 Statute Mile

Local Operating Procedures

El Dorado Municipal Airport is situated at 1,378 feet above mean sea level (MSL). All runways utilize a left-hand traffic pattern.

Obstructions: El Dorado airport currently does not have any known runway obstructions.



Displaced Thresholds: A displaced threshold reduces the available runway length for landing operations. Typically, a threshold will be displaced in order to provide adequate safety area on approach or to provide clearance over potential obstructions. Other factors such as the provision of a safe and efficient runway/taxiway system can lead to implementation of displaced thresholds. FAA Advisory Circular (AC) 150/5300-13, Appendix 2, Change 8, Airport Design, provides guidance for threshold siting requirements. El Dorado currently does not have or need displaced thresholds on any runways.

Hot Spots: The FAA has placed a higher significance on maintaining adequate runway safety area (RSA) at all airports. Under Order 5200.8, the FAA established the 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 certified 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 RSA data for each runway at airports under their jurisdiction.

As part of this program, the FAA Central Region publishes locations on the airport where incursions are more likely to occur due to non-standard airport layout or inadequate safety area. Such areas are termed "Hot Spots," El Dorado Municipal Airport does not have any FAA determined Hot Spots.

Airport Traffic Control

El Dorado Municipal Airport is not supported by an airport traffic control tower (ATCT). Airport communications consists of CTAF/UNICOM on frequency 122.8, Wichita Approach and Departure on frequency 134.8, and ASOS on frequency 134.025. En-route air traffic control services are provided by Kansas City Air Route Traffic Control Center (ARTCC), which controls aircraft traffic in a large multi-state area. Instrument approach and departures are handled by Wichita Approach Control.

The Wichita Flight Service Station (FSS) provides additional services to pilots operating in the vicinity of the airport such as weather information, airport advisory services, flight planning processing, and communication with other air traffic control facilities.

LANDSIDE FACILITIES

Landside facilities are the ground-based facilities that support the aircraft and pilot/passenger handling functions. These facilities typically include the terminal building, aircraft storage/maintenance hangars, aircraft parking aprons and support facilities, such as fuel storage, automobile parking, roadway access, and aircraft rescue and firefighting. Landside facilities are identified on **Exhibit 1E**.

Building Number 1
Conventional Hangar

Building Number 5
Conventional Hangar

Building Number 2
Terminal Building

Building Number 6
T-Hangars

Building Number 3
Conventional Hangar

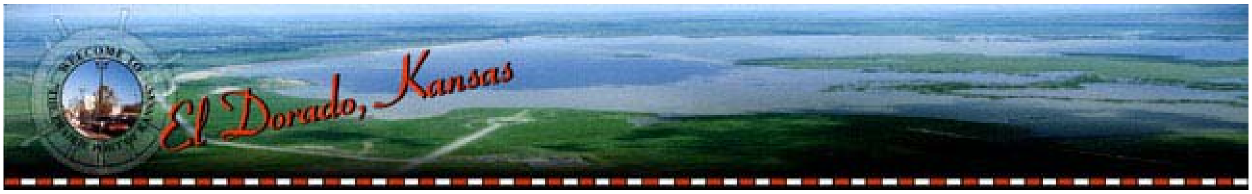
Building Number 7
T-Hangars

Building Number 4
Conventional Hangar

Exhibit 1E

EXISTING LANDSIDE FACILITIES

Captain Jack Thomas - El Dorado Municipal Airport



Terminal Building

The airport terminal building was constructed in the early 1980s and is approximately 1,350 square feet. The structure houses airport administration offices, a small FBO counter / office, a waiting lobby, equipment and restroom facilities. The terminal building is centrally located immediately to the north of the main aircraft apron. The building has been maintained well and is considered to be in good condition.

Aircraft Parking Apron

The main aircraft parking apron area at El Dorado Municipal Airport is located directly to the south of the terminal building and provides space for aircraft parking, tie-downs, and circulation. The apron area totals approximately 11,000 square yards, with 8 aircraft tie-down positions. The tie-down positions on this apron are utilized by transient aircraft and are not intended for long term lease. The apron is in poor condition with cracking and pavement breaking.

Aircraft Hangar Facilities

Hangar facilities at El Dorado Municipal Airport are comprised of conventional hangars and T-hangars. T-hangars provide for separate hangar facilities within a larger contiguous facility. One T-hangar structure is available for aircraft storage at the airport and it provides sixteen positions, there are also four single T-hangar units. Conventional hangars provide a large open space, free from rood support structures, and have the capability to accommodate several aircraft simultaneously. The hangar facilities at EQA were identified on Exhibit 1G.

All hangars on the airport are owned by the City of El Dorado, except one corporate hangar owned by Peterson's Performance Plus, Inc. The southernmost three hangars are leased to Wiebe Air Repair and utilized in support of their FBO operations. To the north of the Peterson facility are the T-Hangars which are leased to the tenants by the city. Hangar details are presented in **Table 1.5**

Automobile Parking

There is one main parking lot available for automobile parking at El Dorado Municipal Airport. The airport terminal parking area totals approximately 10,000 square feet and provides approximately 30 total spaces.

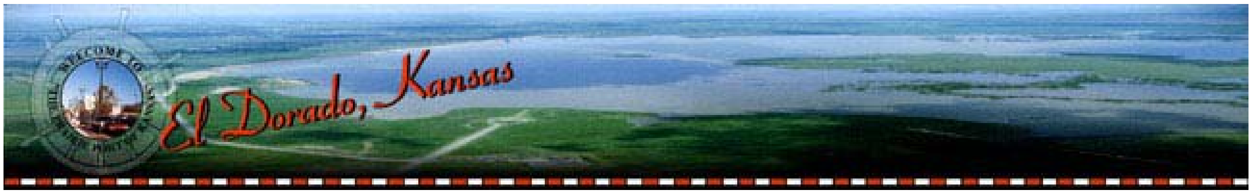


TABLE 1.5 **Airport Hangar Facilities** **El Dorado Capt. Jack Thomas Memorial Airport**					
Hangar Number	**Hangar Style**	**Year Constructed**	**Lessee**	**Aircraft Storage Area (sf)**	**Office Area (sf)**
1	Conventional	1970's	City / Wiebe	2,184	
2	Terminal	1970's	City		1,972
3	Conventional	1970's	City / Wiebe	12,238	
4	Conventional	1970's	City / Wiebe	6,479	
5	Conventional	N/A	Peterson	5,679	
6	T-Hangars	N/A	City	4,532	
7	T-Hangars	N/A	City	18,107	
Source: Airport Records					

Fuel Facilities

The airport has an underground fuel storage facility located between the terminal and main aircraft apron. There are two 6000 gallon capacity tanks containing 100LL and Jet A, and one 4,000 gallon capacity tank containing MOGAS.

Aircraft Firefighting and Rescue (ARFF)

There are no ARFF facilities permanently based at El Dorado Municipal Airport. The City of El Dorado Fire Department provides ARFF services as needed. The Fire Station is located in downtown El Dorado, approximately four miles from the airport.

All El Dorado firefighters are trained and have obtained their ARFF certification.

Utilities

The availability and capacity of utilities and services at the airport are important in determining the development potential of the airport property, as well as the land immediately adjacent to the facility. From information provided, the following utilities are available at the airport:

- Water..Rural Pump
- Sewer System………………………………………………….Septic Tank
- Telephone……………………………………………………….SBC
- Electricity…………………………………………………….Rural Co-Op
- Fire Protection ……..…………………………El Dorado Fire Department
- Snow Removal ……………………………El Dorado Street Department
- Solid Waste Disposal……………………………………City of El Dorado

Airport Businesses

Those businesses that choose to locate on airport property or adjacent to the airport provide a significant economic impact not only to the airport, but also to the region. Encouraging businesses to locate in the vicinity of an airport is a good practice for a number of reasons. First, the business will benefit from being near a commerce and transportation hub. Second, the community will benefit because the airport will develop a buffer of industry and manufacturing that will restrict incompatible land uses, such as residential housing, from locating too close to the airport. Thirdly, business development on and around airports can generate a direct revenue stream to the airport. Some general aviation airports have done this successfully, leading to airport self-sufficiency.

Wiebe Air Repair is the full service FBO for El Dorado Municipal Airport. They lease three hangar structures on the airfield. Services provided include aircraft rentals, charters, flight school, avionics, maintenance, line services, fuel and courtesy cars.

Peterson's Performance Plus, Inc. is nationally known for specializing in custom building 260SE/STOL and Katmai aircraft as well as modifying existing airframes.

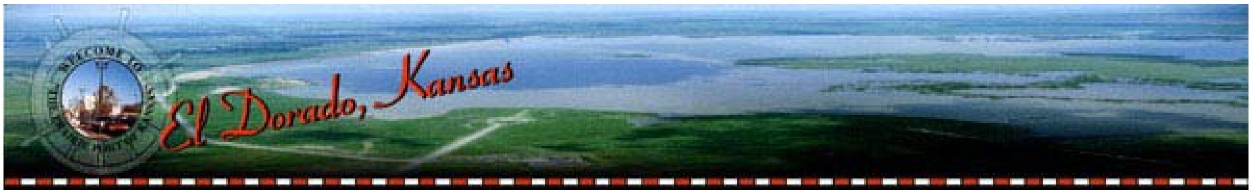
SOCIOECONOMIC CHARACTERISTICS

A variety of historical and forecast socioeconomic data has been collected for use in various elements of this master plan. This information provides essential background for use in determining aviation service level requirements. Aviation forecasts are 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. Historical and forecast data was obtained from a variety of sources including the U.S. Bureau of Economic Analysis, Regional Economic Information System (REIS), the Complete Economic and Demographic Data Source (CEDDS) 2004, which is published by Woods & Poole Economics, Inc., and compiled from data published by the U.S. Department of Commerce and the U.S. Census Bureau.

Community Profile

Located in central Kansas, Butler County is home to more than 63,000 people, as well as some of Kansas' most popular attractions, including the Prairie Rose Chuckwagon, The El Dorado Lake and State Park, and the 1918 Missouri-Pacific Station. The central location allows for a variety of leisure activities to enjoy year-round, including nature areas, wildlife refuges, parks, and reservoirs.

The El Dorado Community is also home to Butler Community College which offers traditional undergraduate course work and vocational/technical classes. Local industries



include business, aerospace, healthcare, specialty vehicle manufacturing, grocery distribution, mining, and food processing. The largest industry growth between 2001-2006 was seen in: management and technical consulting services, management of companies and enterprises, offices of other health practitioners, advertising and related services, building material and supplies dealers.

Population

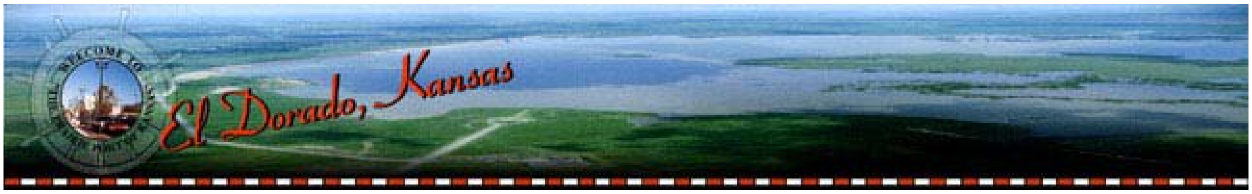
Population is one of the most important elements to consider when planning for future needs of the airport. Historical population data for Butler County and the surrounding counties, as well as the City of El Dorado and the State of Kansas are shown in **Table 1.6**.

As shown in the table, the majority of the counties in the region have shown a negative growth in population over the last 36 years. Sedgwick County has seen the largest growth, adding approximately 120,000 residents over the last 36 years. Sedgwick County includes the City of Wichita. This pattern is indicative of the trend of persons moving from the rural communities to the larger cities.

Butler County has shown the largest annual percentage increase in population over the last 36 years, having added slightly less than 24,500 persons. The City of El Dorado has accounted for most of this increase as it is the largest city in Butler County.

TABLE 1.6
Historical Population Statistics
El Dorado Capt. Jack Thomas Memorial Airport

County Populations	1970	1980	1990	2000	2006	Avg. Annual Growth Rate (1970 – 2006)
Butler	38,510	45,100	50,670	59,690	63,270	1.79%
Harvey	27,290	30,650	31,030	32,880	34,150	.7%
Marion	13,910	13,470	12,880	13,380	12,980	-.19%
Chase	3,410	3,290	3,000	3,030	3,090	-.26%
Greenwood	9,110	8,760	7,830	7,670	7,300	-.55%
Elk	3,820	3,880	3,320	3,230	3,070	-.55%
Cowley	34,950	36,950	36,930	36,280	35,360	.03%
Sedgwick	349,510	368,750	404,610	453,490	470,400	.96%
State Population						
Kansas	2,248,130	2,370,110	2,481,350	2,692,670	2,769,530	.64%
City Population						**Avg. Annual Growth Rate (1970 – 2000)**
El Dorado	12,308	10,510	11,504	13,078	13,500	.27%
Source: U.S. Census Bureau						



Employment

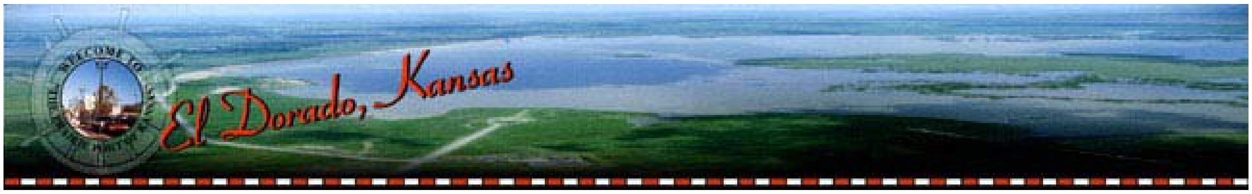
Analysis of a community's employment base can be valuable in determining the overall well-being of that community. In most cases, the community make-up and health are significantly impacted by the availability of jobs, variety of employment opportunities, and types of wages provided by local employers. **Table 1.7** provides historical employment characteristics for Butler County and the State of Kansas from 1985 to the present.

TABLE 1.7
Employment Characteristics
El Dorado Capt. Jack Thomas Memorial Airport

	1985	1990	1995	2000	2001	2002	2003	2004
Civilian Labor Force								
- City		8,772	9,000	9,579	9,492	9,402	9,714	9,637
- County	23,334	26,072	28,976	30,454	30,521	30,807	30,727	31,329
- State	1,237,000	1,276,000	1,338,000	1,408,587	1,408,800	1,425,342	1,447,500	1,463,943
Total Employment								
- City		8,483	8,757	9,301	9,189	8,848	9,190	9,136
- County	21,967	25,156	27,826	29,206	29,285	29,024	8,783	29,425
- State	1,176,000	1,219,000	1,278,500	1,356,326	1,348,506	1,351,738	1,366,100	1,383,654
Unemployment								
- City		289	243	278	303	554	524	501
- County	1,367	916	1,150	1,248	1,236	1,783	1,944	1,904
- State	61,000	57,000	59,500	52,261	60,294	73,604	81,400	80,289
Unemployment Rate								
- City		3.3	2.7	2.9	3.2	5.9	5.4	5.2
- County	5.9	3.5	4.0	4.1	4.0	5.8	6.3	6.1
- State	4.9	4.5	4.4	3.7	4.3	5.2	5.6	5.5

Source: Kansas Department of Labor. Labor Market Information Services
**** Butler County (Data available up to and including 2004)***

Butler County's unemployment rate has historically been in line with the unemployment rate of Kansas (4.5 percent for the county compared to 4.6 percent for the state, respectively, from 1985 to 2004). Table 1.6 also shows that Butler County's employment trend has closely followed the ups and downs of the national economic trend. The lowest unemployment rate was in 1999 when the national economy was experiencing unprecedented growth. The highest unemployment rates correspond to the slow recovery from the economic downturn beginning after September 11th, 2001 and continuing through 2004.



Major Employers

According to data gathered from the U.S. Department of Labor, in Butler County, retail trade, health care, social assistance, and the accommodation and food services sectors are the largest industries in terms of total number of jobs. The retail trade industry is the major employer in the county making up 18 percent of the total county employment. The health care, social assistance and food service sectors provide 17.3 and 13.9 percent of the total jobs respectively.

El Dorado Correctional Facility is the largest employer in El Dorado, with approximately 515 full and part-time positions. Frontier Oil is located in El Dorado and employs 460 people. Other major employers are identified in **Table 1.8**.

TABLE 1.8
Largest Employers
City of El Dorado, KS
(Data represents 1999 numbers)

Company Name	Number of Employees
El Dorado Correctional Facility	515
Frontier Oil	460
USD #490	354
Butler County Community College	306
Butler County Courthouse	234
Pioneer Balloon	208
Dillon's	200
Susan B. Allen Memorial Hospital	193
Wal-Mart	165
Banks Construction	150
City of El Dorado	110
Equilon Pipeline	100
Lakepoint	82
Blackburn, Inc.	80
KGE/KGS	75
Century Plastics	70
Union Tank Car Co.	65

Source: Butler County Economic Development

Income

Table 1.9 compares the per capita personal income (PCPI), adjusted to 1999 dollars, for Butler County, the State of Kansas, and the United States between 1990 and 2000. The average annual growth rate was calculated for each line item for use in forecasting future PCPI. Per capita personal income is a statistical measure of the amount of money available to each individual. Total personal income is the income received by persons from all sources; such as personal income, including all revenue streams, whether from government or private sources.

TABLE 1.9
Personal Income Per Capita (1996 dollars)
El Dorado Capt. Jack Thomas Memorial Airport

	Historical		
Area	**1990**	**2000**	**Avg. Annual Growth Rate**
City of El Dorado	$13,697	$18,370	3.41%
Butler County	$17,043	$20,150	1.82%
State of Kansas	$17,262	$20,506	1.88%
United States	$18,715	$21,587	1.53%

Source: U.S. Bureau of Economic Analysis, Regional Economic Information System (REIS)

ENVIRONMENTAL OVERVIEW

Regional Setting and Surrounding Land Use

The Captain Jack Thomas/ El Dorado Airport is located in the central portion of Butler County and approximately 2.5 miles southeast of the City of El Dorado. Based on a review of 2006 aerial photography, the Captain Jack Thomas/ El Dorado Airport is surrounded by primarily agricultural land uses. In addition to the agricultural land, there are several rural residences within 1,000 feet of the airport property.

Floodplain

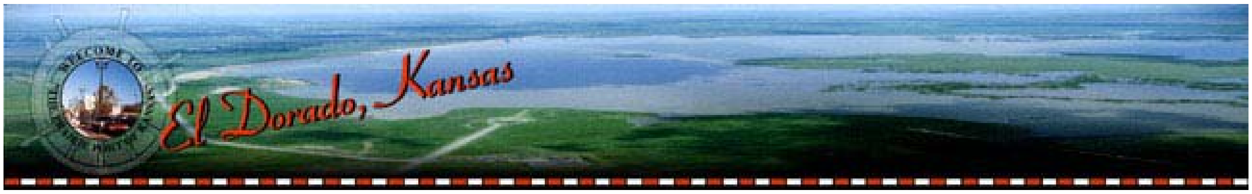
According to the FEMA GIS data, the Captain Jack Thomas/ El Dorado Airport is located in Flood Zone X. Flood Zone X is defined as an area that is outside the 100-year and 500-year floodplains.

Wetlands

National Wetlands Inventory (NWI) maps for this site do not indicate any NWI wetlands. There are several freshwater ponds in the vicinity of the airport that were identified from aerial photography. In addition to these ponds, two unnamed streams were identified from the National Hydrography Dataset. One stream crosses the northern portion of Runway 15-33 and continues west where it feeds into Walnut River. The other stream located in the vicinity of the airport is a tributary to Turkey Creek and runs southeast roughly parallel to Runway 15-33.

Cultural Resources

The Captain Jack Thomas/ El Dorado Airport is located in Township 26 South, Range 6 East, Section 19; and extends into Section 18 and Section 24, Township 26 South, Range 5 East. An online records search conducted by Susan Houghton on February 26, 2007,



indicated that no recorded sites are listed on the Kansas State Historical Society Archaeological Site viewer. However, Smock Sluss Oil Field is shown on the USGS Topographic map in the immediate area of the airport. The oil industry was a vital part of the history of El Dorado and Butler County, and oil field features may remain that could require evaluation as historical elements.

Threatened and Endangered Species

Table 1.10 lists the threatened and endangered species known to occur within Butler County, the Federal and state status, and the preferred habitat of the species. A review of the Kansas Biological Survey GIS data showed that there are no known occurrences of Threatened and Endangered Species at the airport. The same GIS dataset showed the presence of an animal community in the vicinity of the airport that is listed in the Kansas Natural Heritage Inventory database.

Air Quality

Butler County has been designated by the U.S. Environmental Protection Agency (EPA) to be in attainment for all criteria pollutants.

Noise

The location of the airport being southeast of the City of El Dorado and located in an area of agricultural land use reduces the opportunity for noise conflicts. The north to south and northwest to southeast runway orientations of the runways provide for approaches that primarily fly over agricultural land and therefore have limited noise conflicts.

Utilities

Kansas Gas and Electric Company currently operate a 138-kV electrical transmission line northwest of the airport. This line runs perpendicular to Runway 15-33 and is located approximately 0.75 miles from the end of Runway 33.

Section 4(f)/6(f)

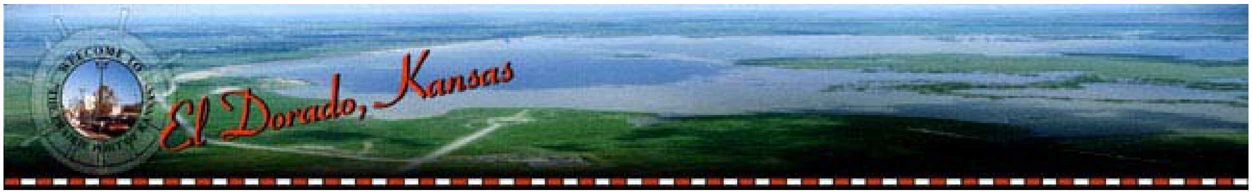
Based on a map search of section 4(f) resources were found in the immediate vicinity of the airport. The nearest 4(f) resources are located within the City of El Dorado located approximately 2.5 miles to the northwest of the airport. A review of the National Park Service Land and Water Conservation Fund database revealed there are no 6(f) resources within 2.5 miles of the airport property.

Table 1.10
Threatened and Endangered Species
Present in Butler County

Species	Status		Habitat
	Federal	State	
Bald Eagle (*Haliaeetus leucocephalus*)	T	T	large impoundments, marshes, and rivers where fish, waterfowl, or other food supplies are abundant with nearby stands of trees containing some tall mature trees
Eastern Spotted Skunk (*Spilogale putorius*)		T	forest edges and upland prairie grasslands, especially where rock outcrops and shrub clumps are present
Eskimo Curlew (*Numenius borealis*)	E	E	plowed fields, heavily grazed or burned-over grasslands, and prairie-dog towns
Least Tern (*Sterna antillarum*)	E	E	barren areas near water such as saline flats in salt marshes, sand bars in river beds, and shores of large impoundments
Peregrine Falcon (*Falco peregrinus*)		E	marshes, lakes, and rivers where concentrations of waterfowl or other birdlife provide ample prey
Piping Plover (*Charadrius melodus*)	T	T	sparsely vegetated shallow wetlands and open beaches and sandbars adjacent to or within streams and impoundments
Sharp Hornsnail (*Pleurocera acuta*)		T	shallow sheltered reaches of larger lakes and streams
Snowy Plover (*Charadrius alexandrinus*)		T	open salt flats, beaches and bars of rivers, and wetlands
Topeka Shiner (*Notropis topeka*)		T	headwaters of small prairie streams with high water quality and cool temperatures typically with gravel substrate
Whooping Crane (*Grus americana*)	E	E	wetlands in level to moderately rolling terrain away from human activity where low, sparse vegetation permits ease of movement and an open view

SUMMARY

The information discussed in this inventory chapter provides a foundation upon which the remaining elements of the planning process will be constructed. Information on current airport facilities and utilization 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 sources were utilized in the inventory process. The following list reflects a partial compilation of these sources. This does not include data provided by airport management as part of their records, nor does it include airport drawings and photographs which were referenced for information. On-site inventory and interviews with staff and tenants contributed to the inventory effort.

Airport/Facility Directory, South Central U.S., U.S. Department of Transportation, Federal Aviation Administration, National Aeronautical Charting Office, September 1, 2006, Edition.

Wichita Sectional Aeronautical Chart, U.S. Department of Transportation, Federal Aviation Administration, National Aeronautical Charting Office, 75th edition, August 4th, 2006.

National Plan of Integrated Airport Systems (NPIAS), U.S. Department of Transportation, Federal Aviation Administration, 2005-2010.

U.S. Terminal Procedures, South Central U.S., U.S. Department of Transportation, Federal Aviation Administration, National Aeronautical charting Office, September 1, 2006, Edition.

El Dorado Municipal Airport Layout Plan Update. Prepared by Bucher, Willis & Ratliff Corporation, 1992.

El Dorado Municipal Airport Layout Plan. Prepared by Wilson & Company, 1974 & 75.

A number of internet web sites were also used to collect information for the inventory chapter. These include the following:

FAA Form 5010 Data:
http://www.gcrl.com/5010web/

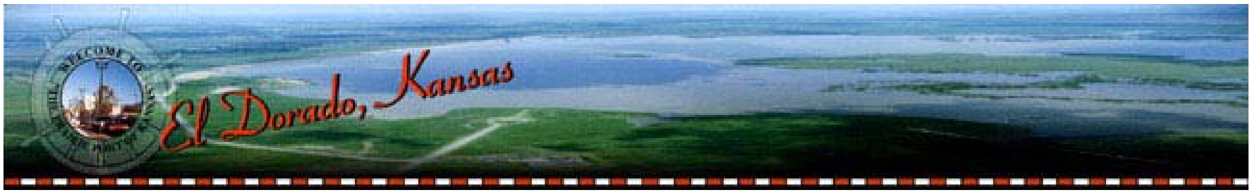
El Dorado Chamber of Commerce:
http://www.eldoradochamber.com/index.htm

U.S. Census Bureau:
http://www.census.gov

Kansas Department of Labor:
http://laborstats.dol.ks.gov/

The City of El Dorado, Kansas:
http://www.eldoradokansas.com/

Butler County
http://www.bucoks.com/



Chapter 2

AVIATION DEMAND FORECASTS

GENERAL

Facility planning begins by defining the demand that may reasonably be expected to occur at the facility over a specific period of time. For El Dorado Capt. Jack Thomas Memorial Airport (EQA), this involves forecasts of aviation activity indicators through the year 2027. In this master plan, forecasts of based aircraft, based aircraft fleet mix, annual aircraft operations, and operational peak periods will serve as the basis for facility development planning.

It is virtually impossible to predict, with certainty, year-to-year fluctuations of activity when looking 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. Forecasts serve as guidelines, and planning must remain flexible enough to respond to unforeseen facility needs. This is because aviation is affected by many external influences, as well as by the types of aircraft used and the nature of the available services and facilities at the airport.

Recognizing this, it is intended to develop a master plan for El Dorado Capt. Jack Thomas Memorial 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 then dates in time. These planning levels will be established as levels of activity from which specific actions for the airport to consider will be presented.

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

The demand based manner in which this master plan is being prepared is intended to accommodate variations in demand at the airport. Demand based planning relates capital improvements to demand factors, such as based aircraft operations, instead of points in time. This allows the airport to address capital improvement needs according to actual demand occurring at the airport. Therefore, should growth in aircraft operations or based aircraft slow or decline, it may not be necessary to implement some improvement projects.

However, should the airport experience accelerated growth; the plan will have accounted for that growth and will be flexible enough to respond accordingly.

SOCIOECONOMIC PROJECTIONS

The local socioeconomic conditions provide an important baseline for preparing aviation demand forecasts. Local socioeconomic variables such as population, employment, and income can be indicators for understanding the dynamics of the community and, in particular, the trends in aviation growth. The following is a summary of research and projections presented in Chapter One.

Population

Table 2.1 summarizes historical and forecast population estimates for the City of El Dorado, Butler County, and the State of Kansas. The State of Kansas' projections are provided as a point of comparison. Butler County projections are presented since Butler County is the EQA service area.

Population in the City of El Dorado is projected to continue a modest growth trend. From 2006 to 2027, the City is projected to add 3,270 new residents. This represents an annual growth rate of 1.1 percent. Butler County is projected to add slightly more than 17,570 people over the same time frame. This represents an annual growth rate of 1.3 percent. These figures represent a common trend in rural parts of the county where the population is migrating to the cities.

Both Butler County and the City of El Dorado are exceeding the population growth average of the State of Kansas.

TABLE 2.1
Socioeconomic Forecasts
El Dorado Capt. Jack Thomas Memorial Airport

	HISTORICAL		**FORECAST**			**ANNUAL GROWTH RATE**	
	1990	2006	2012	2017	2027	1990 to 2006	2006 to 2027
Butler County							
Population	50,670	63,270	68,535	71,926	80,840	1.5%	1.3 %
Employment	25,156	27,826	31,717	35,950	41,581	3.1%	1.9%
PCPI	$17,043	$26,302	$28,376	$30,153	$34,048	3.4%	1.4%
City of El Dorado							
Population	11,504	13,500	14,388	15,160	16,770	1.1%	1.1%
Employment	8,483	8,997	9,921	10,612	11,739	.38%	1.4%
PCPI	$13,697	$20,336	$22,634	$24,550	$28,385	2.8%	2.8%
State of Kansas							
Population	2,481,350	2,769,530	2,883,030	2,981,208	3,206,163	.73%	.76%
Employment	1,483,040	1,841,340	1,995,227	2,123,394	2,379,220	1.5%	1.4%
PCPI	$21,017	$27,287	$29,622	$31,620	$35,970	1.9%	1.4%

Source: Woods & Poole Economics, U.S. Bureau of Economic Analysis, Regional Information System (REIS)

Employment

Historical and forecast employment data for the region is also presented in Table 2.1. The State of Kansas is projected to show an annual employment growth rate of 1.4 percent between 2006 to 2027. This growth is slightly slower than the 1.5 percent from 1990 to 2006. The City of El Dorado is projected to see an employment growth rate that outpaces the population growth rate.

Per Capita Personal Income (PCPI)

Table 2.1 compares per capita personal income (adjusted to 1996 dollars) for the selected areas of study. From 1990 to 2006, PCPI for Butler County showed a robust 3.4 percent annual average growth rate. The City of El Dorado also showed a strong PCPI growth rate. Forecast PCPI figures show a slight slowing of growth, but personal income is still projected to continue to grow.

Socioeconomic Summary

The overall economic picture for the airport service area, primarily Butler County, is forecasted to show modest growth over the next 20 years. Population is increasing along with employment and personal income. Sedgwick and Harvey Counties to the west of Butler County are also showing gradual growth trends in all three areas. Butler County, although rural in nature, is able to maintain a modest, positive growth trend primarily because of the presence of the City of El Dorado and its proximity to an even larger city, Wichita.

FORECASTING APPROACH

The development of aviation forecasts proceeds through both analytical and judgmental processes as presented in **Exhibit 2A**. A series of mathematical relationships is tested to establish statistical logic and rationale for projected growth. However, the judgment of the forecast analyst, based upon professional experience, knowledge of the aviation industry, and the assessment of local situation, is important in the final determination of a 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.

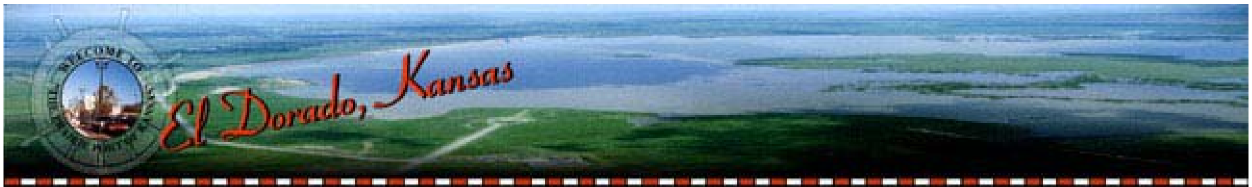


Exhibit 2A
Forecast Methodology

STEP 1	Identify aviation activity parameters and measures to forecast
STEP 2	Collect and review previous airport forecasts

STEP 3	Gather data
	• Determine and identify data sources
	• Historical aviation data
	• FAA forecasts
	  ▪ Terminal area forecasts (TAF)
	  ▪ Other FAA forecasts
	• Collect and evaluation historical and forecast data

STEP 4	Select forecast methods • Regression and trend analysis • Market share analysis • Correlation analysis
STEP 5	Apply forecast methods and evaluate results
STEP 6	Apply local factors and experience
STEP 7	Summarize and document results
STEP 8	Compare airport planning forecasts

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

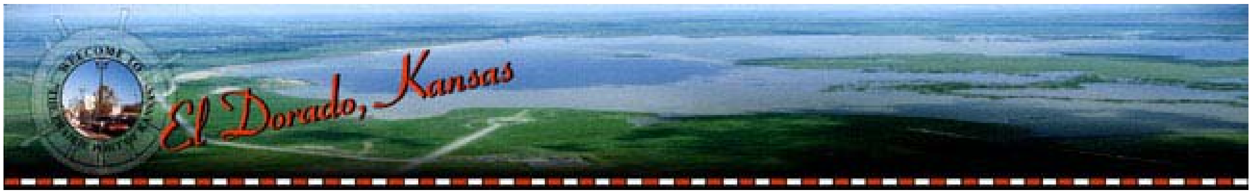
Regression analysis measures the statistical relationship between dependent and independent variables yielding a "correlation coefficient." The correlation coefficient (Pearson's "r") measures association between the changes in a dependent variable and independent variable(s). If the r-squared (r^2) value (coefficient determination) is greater than 0.90, it indicates good predictive reliability. A value below 0.90 may be used with the understanding that the predictive reliability is lower.

Market share analysis involves a historical review of 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 10-year view, 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 is known to influence the aviation industry which can have significant impacts on the extent and nature of air service provided in both the local and national markets. 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 the impact. 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 each aviation demand categories expected at El Dorado Municipal Airport through 2027. Each segment will be examined individually, and then collectively, to provide an understanding of the overall aviation activity at El Dorado Municipal Airport through 2027.



AIRPORT SERVICE AREA

The initial step in determining the general aviation demand for an airport is to define its generalized service area. The airport service area is determined primarily by evaluating the location of competing airports, their capabilities and services, and their relative attraction and convenience. To aid in identifying the general service area for El Dorado Municipal Airport, an analysis of the billing addresses for most of the based aircraft owners was conducted.

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

The proximity and level of service offered by other airports are largely the defining factors when describing the airport service area. A description of nearby airports was completed in Chapter One – Inventory. The nearest general aviation airport with a similar level of service to El Dorado Municipal Airport is the Augusta Municipal Airport, 18 nautical miles to the south. This airport has a 4,199-foot runway, similar to El Dorado.

Eureka and Lloyd Stearman Field have shorter runways and fewer services available then does El Dorado Municipal Airport. It is likely that the primary service area for EQA would extend to these airports as the need for advanced FBO services in these areas would benefit from the level of service at El Dorado Municipal Airport.

Wichita Airports are 25 miles to the west and have 6,000-foot and 7,000-foot runways and Newton City-County Airport, 50 miles to the northwest, has a 7,000-foot runway. There are multiple jets based at both airports; therefore, these airports would limit the extent of the EQA service area to the west and northwest.

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 El Dorado Municipal Airport, some level of general aviation activity might be attracted to the airport from surrounding areas.

In determining the aviation demand for an airport, it is necessary to identify the role of the airport. The primary role of El Dorado Municipal Airport is to serve the needs of general aviation operators in the region. General aviation is a term used to describe a diverse range of aviation activities, which includes all segments of the aviation industry except commercial air carriers and military. This includes recreational flying in a single engine aircraft, up to corporate business jets.

The service area for El Dorado Municipal Airport is primarily the City of El Dorado, with Butler County also being included in the service area. Due to a lack of similar services at other airports, additional areas of service may stretch beyond the Butler County boundary.

AVIATION TRENDS

National Aviation Trends

Each year, the Federal Aviation Administration (FAA) publishes its national forecast. Included in this publication are forecasts for large air carriers, regional air carriers, general aviation, and FAA workload measures. The forecasts are prepared to meet budget and planning needs of the constituent units of the FAA and to provide information that can be used by state and local authorities, the aviation industry, and the general public. The current edition when this chapter was prepared was *FAA Aerospace Forecasts-Fiscal Years, 2006-2017*. The forecast uses the economic performance of the United States as an indicator of future aviation industry growth. Similar economic analyses are applied to the outlook for aviation growth in international markets.

In the seven years prior to the events of 9/11, the U.S. civil aviation industry experienced unprecedented growth in demand and profits. The impacts to the economy and the aviation industry from the events of 9/11 were immediate and significant. However, the economic climate and aviation industry are both experiencing significant upturns. The FAA expects the U.S. economy to experience strong growth over the next few years, with moderate growth thereafter. This will positively influence the aviation industry, leading to passenger, air cargo, and general aviation growth throughout the forecast period (assuming that there will not be any new successful terrorist activity against either U.S. or world aviation).

In the 13 years since the passage of the General Aviation Revitalization Act of 1994 (federal legislation which limits the liability on general aviation aircraft to 18 years from the date of manufacture), it is clear that the Act has successfully infused new life into the general aviation industry. This legislation sparked an interest to renew the manufacturing of general aviation aircraft due to the reduction in product liability, as well as renewed optimism for the industry. Annual shipments of new aircraft rose every year between 1994 and 2000.

The growth in the general aviation industry slowed considerably from 2001 to 2003, having been negatively impacted by the events of 9/11 and economic recession. In 2004, the general aviation industry showed an increase of activity, returning to pre-9/11 levels for most indicators. The FAA forecast assumes that the regulatory environment affecting general aviation will not change dramatically. The forecast also assumes that the fractional ownership market will continue to expand and bring new operators and shareholders into business aviation. It also assumes that another successful terrorist attack on aviation will not occur.

The active general aviation aircraft fleet is expected to increase at an average rate of 1.1 percent over the 10 year forecast period, increasing from 215,259 in 2005, to 240,070 in

2017. This growth includes the addition of the new aircraft category, light sport aircraft, which entered the active fleet in 2005 and are expected to account for 15,410 aircraft in 2017. Light sport aircraft include small fixed-wing airplanes, powered-parachutes, gyro-planes, ultra-lights, and others.

FAA forecasts identify two general aviation economies that follow different market patterns. The turbojet fleet is expected to increase at an average annual rate of 5.4 percent, increasing from 9,057 in 2005 to 15,900 in 2017. Factors leading to this substantial growth include expected strong U.S. and global economic growth; the continued success of fractional ownership programs; and a continuation of the shift from commercial air travel to corporate business air travel by business travelers and corporations. In addition, new micro / very light jets started to enter the fleet in late 2006, and are expected to grow to 4,500 aircraft by 2017. These aircraft are expected to stimulate the market for on-demand air taxis.

Table 2.2 depicts the FAA forecast for active general aviation aircraft in the United States. The number of single engine piston aircraft is projected to reach 148,000 in 2016, which represents an average growth rate of 0.2 percent. During the same time, the number of active multi-engine piston aircraft in the fleet is expected to decline by 0.2 percent, resulting in a total of 17,235 aircraft in 2017. The number of turboprop aircraft is expected to increase at an average annual rate of 3.7 percent over the 10-year forecast period to 8,400 active aircraft. The rotorcraft fleet is forecasted to grow 1.2 percent annually through 2016, while the number of experimental aircraft is projected to increase from 20,825 to 22,157 in 2017. Thereafter, the growth in experimental aircraft is expected to flatten, primarily due to the growth in sport aircraft.

The declines in the aircraft utilization rates experienced in 2000 (down 3.2 percent) and 2001 (down 7.2 percent) were due, in part, to higher fuel prices and the 2001 U.S. economic recession. However, the restrictions placed on general aviation in the aftermath of the 9/11 events contributed heavily to the decline in utilization in 2001. A strong recovery in the U.S. economy in 2004 and 2005 has lead to increased utilization rates for most categories of general aviation aircraft.

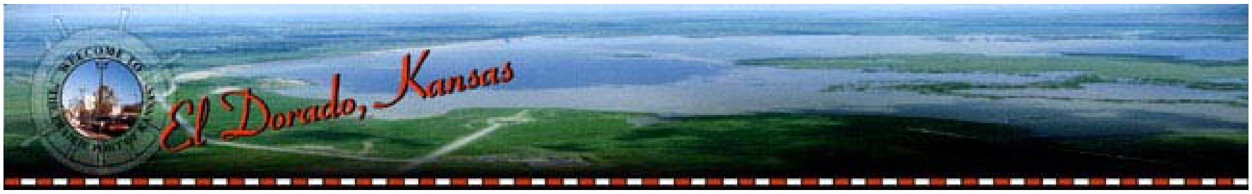


Table 2.2
U.S. ACTIVE GENERAL AVIATION AIRCRAFT (in thousands)

Year	FIXED WING									
	PISTON		TURBINE		ROTORCRAFT					
	Single Engine	Multi-Engine	Turboprop	Turbojet	Piston	Turbine	Experimental	Sport Aircraft	Other	Total
2004	144.0	17.7	7.3	8.4	2.2	4.7	20.8	N/A	6.2	211.3
2008	145.5	17.5	7.7	10.5	2.4	4.9	21.3	10.8	6.1	227.7
2012	147.0	17.4	8.1	13.3	2.5	5.1	21.4	13.2	5.9	233.9
2016	148.0	17.2	8.4	15.9	2.6	5.3	22.2	15.4	5.8	240.1

Source : FAA Aerospace Forecasts, Fiscal Years 2006-2017
Notes: An active aircraft is one that has a current registration and was flown at least one hour during the calendar year.

The total pilot population is projected to increase from an estimated 638,587 in 2006, to 750,260 by 2017, which represents an average growth rate of 1.6 percent. The student pilot population increased 0.7 percent in 2006, and is forecast to increase at an annual rate of 1.8 percent over the 10 year forecast period, reaching a total of 108,800 in 2017. Growth rates for the other pilot categories over the forecast period are as follows: airline transport pilots, up 1.7 percent; recreational pilots, up 1.6 percent; rotorcraft only, up 1.2 percent; and glider only, up 0.2 percent.

The General Aviation Manufacturers Association (GAMA) publishes a yearly outlook on the general aviation industry. A article written in April, 2007 states, “GAMA announced that shipments and billings of general aviation airplanes for the first three months of this year totaled 842 units, in line with last year’s 847 airplanes, while industry-wide billings were $4.5 billion, up 11.3 percent.” GAMA forecasts that the industry will continue a strong growth trend.

Over the past several years, the general aviation industry has launched a series of programs and incentives whose main goals are to promote and assure future growth within the industry. “No Plane, No Gain” is an advocacy program created in 1992 by the General Aviation Manufacturers Association (GAMA) and the National Business Aircraft Association (NBAA) to promote acceptance and increase use of general aviation as an essential, cost-effective tool for businesses. Other programs are intended to promote growth in new pilot starts and introduce people to general aviation. “Project Pilot” sponsored by the Aircraft Owners and Pilot Association (AOPA), promotes the training of new pilots in order to increase and maintain the size of the pilot population. The “Be a Pilot” program is jointly sponsored and supported by more than 100 industry organizations. The NBAA sponsors

"AvKids," a program designed to educate elementary school students about the benefit of business aviation to the community and the career opportunities available to them in business aviation. Over the years, programs such as these have played an important role in the success of general aviation and will continue to be vital to its growth in the future.

AVIATION FORECASTS

To determine the types and sizes of the facilities that should be planned to accommodate general aviation activity, certain elements of this activity must be forecasted. Indicators of general aviation demand include:

- Based Aircraft
- Based Aircraft Fleet Mix
- Annual Operations
- Peak Operations
- Annual Instrument Approaches

The remainder of this chapter will examine historical trends with regard to these areas of general aviation and will project future demand for these segments of general aviation activity at the airport.

Based Aircraft

The number of based aircraft is the most basic indicator of general aviation demand. Based aircraft are those aircraft that are stored at the airport. By first developing a forecast of based aircraft, the trend of other indicators can be projected and other factors characteristic to El Dorado Municipal Airport and the area it serves can be assessed. Based aircraft totals have been derived from city records and lessee records. This information has been used to arrive at the based aircraft data utilized in this analysis.

Based aircraft has remained the same since 1991, at the time the previous airport layout plan update. At that time there were 28 based aircraft, 26 single-engine and two multi-engine. Today there are still 28 based aircraft, all are single-engine. Due to the stagnant annual based aircraft totals, trend line projections are not applicable. Future based aircraft demand has been examined according to population correlations.

Market Share per 1,000 Population

Trends comparing the number of based aircraft with both the population of Butler County and the City of El Dorado were analyzed. **Table 2.3** presents the market share forecasts developed using the population of Butler County. The constant share forecast, which is an average of the last 15 years, result in 31, 33, and 37 based aircraft, while the increasing share forecast results in 31, 37, and 47 based aircraft through 2027.

TABLE 2.3
Based Aircraft vs. Butler County Population
El Dorado Capt. Jack Thomas Memorial Airport

Year	Based Aircraft	Butler County Population	Aircraft per 1,000 Residents
1995	28	55,032	0.50
2000	28	59,690	0.46
2006	28	63,270	0.45
Constant Market Share Projection			
2012	31	66,531	0.47
2017	33	70,428	0.47
2027	37	79,384	0.47
Increasing Market Share Projection			
2012	31	66,531	0.47
2017	37	70,428	0.53
2027	47	79,384	0.59

Source: City and Airport Records, U.S. Census Bureau.

Comparative Forecasts

The FAA *Terminal Area Forecast* (TAF) contains projections of based aircraft for El Dorado Municipal Airport. For 2010, the TAF projects 29 based aircraft, staying steady through 2027. The TAF baseline number for 2005 and 2006 identified 29 based aircraft. This is not unusual as the TAF is sometimes not complete. Due to this flat line projection, the TAF cannot be relied upon for predicting future demand.

The 1992 Airport Layout Plan Update projected 34 based aircraft by 2005 and 36 by 2010. Extrapolation of the trend results in a forecast of 38 based aircraft by 2015 and 42 by 2027.

Based Aircraft Summary

Deciding which forecast or which combination of forecasts to use to arrive at a final based aircraft forecast involves more than just statistical analysis. Recognition of the trends in aviation both locally and nationally are important considerations. The introduction of the new sport aircraft pilot license is projected to have a significant impact on the growth of general aviation. Previously, those interested in flying who may have been prevented from doing so due to medical limitations or financial considerations can now train for this less time consuming and less expensive license.

In addition, the 4,200-foot runways make the airport an attractive alternative to larger airports in the area. The possibility of some of the aircraft based at surrounding airports relocating to El Dorado in the future is also considered. All of these factors contribute to the potential for growth in based aircraft at El Dorado Municipal Airport.

Table 2.4 shows a summary of the based aircraft forecasts as well as the selected forecast. The selected planning forecast projects moderate growth for based aircraft. Based aircraft are projected to grow by one aircraft per year, or at a 2.2 percent rate annually.

TABLE 2.4
Based Aircraft Projections Summary
El Dorado Capt. Jack Thomas Memorial Airport

	2006	2012	2017	2027
Based Aircraft per 1,000 Population (Butler County)				
Constant	28	31	33	37
Increasing	28	31	37	47
Comparative Forecasts				
FAA Terminal Area Forecasts	29	29	29	29
1992 Airport Layout Plan Update*	34	36	38	42
Selected Forecast		***31***	***37***	***47***

*Source: Burns & McDonnell analysis; * 2025 extrapolated from original data.*

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 28 single engine aircraft.

As detailed previously, the national trend is toward a larger percentage of sophisticated turboprop, jet aircraft, and helicopters in the national fleet. Active multi-engine piston aircraft are expected to be the only category of aircraft which shows a decrease in annual growth. Although national trends are taken into account, it is believed that El Dorado Captain Jack Thomas Airport will attract a small number of multi-engine aircraft within the planning horizon. 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.

Currently, single engine aircraft compose the only segment of aircraft type at El Dorado Municipal Airport, making up 100 percent of total based aircraft. Future based aircraft mix will continue to be dominated by single engine aircraft; however, multi-engine, turboprop and turbojet are projected to increase as well.

The projected trend of based aircraft at El Dorado Municipal Airport includes a growing number of aircraft in each category. Moderate growth in jet aircraft, turboprops, and helicopters is expected to follow national trends. The based aircraft fleet mix projection for El Dorado Municipal airport is summarized in **Table 2.5**.

TABLE 2.5
Based Aircraft Fleet Mix Projections
El Dorado Capt. Jack Thomas Memorial Airport

	EXISTING		FORECASTS					
Aircraft Type	2005	%	2012	%	2017	%	2027	%
Single Engine	28	100%	28	90%	30	81%	32	68%
Multi-Engine	0	-	1	3.3%	2	5.4%	2	4%
Turboprop	0	-	1	3.3%	3	8.1%	6	13%
Jet	0	-	1	3.3%	2	5.4%	5	11%
Helicopter	0	-	0	0	0	0	2	4%
Totals	28	100%	31	100%	37	100%	47	100%

Source: Airport Records, Burns & McDonnell analysis

Operations Forecasts

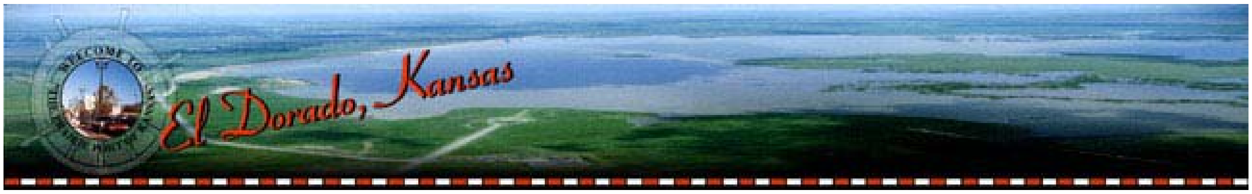
There are two types of operations at an airport: local and itinerant. A local operation is a takeoff or landing performed by an aircraft that operates within sight of the airport, or which executes simulated approaches or touch-and-go operations at the airport. Itinerant operations are those performed by aircraft with a specific origin or destination away from the airport. Generally, local operations are characterized by training operations. Itinerant operations are characterized by aircraft landing at the airport for short stays or departing for other regional/national airports. Itinerant operations are typically those conducting business, tourism, or simply refueling.

Table 2.6 represents historical annual operations as reported by the Airport Master Record. The operations are categorized into local and itinerant operations. Local operations are further categorized into general aviation and military. Although there are no military aircraft based at the airport, they still account for a portion of the local operations as the military will occasionally travel to El Dorado Municipal airport in order to train.

TABLE 2.6
Historical Annual Operations
El Dorado Capt. Jack Thomas Memorial Airport

	Itinerant Operations				Local Operations			
Year	**AT/AC**	**GA**	**Mil**	**Total**	**GA**	**Mil**	**Total**	**Total**
1995	0	3,500	25	3,525	9,700	0	9,700	13,225
2000	0	3,500	25	3,525	9,700	0	9,700	13,225
2001	0	3,500	25	3,525	9,700	0	9,700	13,225
2002	0	3,500	25	3,525	9,700	0	9,700	13,225
2003	0	3,500	25	3,525	9,700	0	9,700	13,225
2004	0	3,500	25	3,525	9,700	0	9,700	13,225
2005	0	3,500	25	3,525	9,700	0	9,700	13,225

Source: Airport Master Records, Airport Records



The table also reflects the historical itinerant operations at the airport. The itinerant category includes general aviation, military, and the additional classification for air taxi/air carrier. Air taxi/air carrier operations are always classified itinerant because, by definition, they are revenue flights with a specific destination to or from the airport. These flights do not conduct training operations. Each classification of aviation operations will be forecast separately in the sections to follow.

General Aviation Operations

General aviation operations account for the greatest percentage of total operations at El Dorado Municipal Airport. Historically there has been approximately a 75/25 split between local and itinerant general aviation operations.

Three forecasts of general aviation activity have been created and are presented in **Table 2.7**. The first is a market share forecast that assumes that the airport will continue to account for a constant share of total local general aviation operations at all towered airports in the United States. The constant share identified is the average of the last seven years of activity. The average is utilized primarily because the events of 9/11 had a negative impact on general aviation activity, which is only now beginning to recover. The constant market share forecast shows a steady increase in operations from 10,000 to 12,000 over the 20-year planning period of the Master Plan.

A second forecast utilizing an increasing market share of total general aviation operations at all airports in the United States is also presented. This forecast assumes that the airport can gain a portion of general aviation activity that would bring their aviation activity back. This forecast has a high level of local general aviation operations (24,000) by the end of the study period.

A third method of forecasting involves examining the number of operations as related to the number of based aircraft. Over the previous seven years, the airport has averaged approximately 346 operations per based aircraft. For a general aviation airport this number is on the lower range. Typically, rural general aviation airports can expect to average somewhere between 300 and 500 operations per year. When utilizing a mid level 400 operations per based aircraft, local general aviation operations are projected to increase to 19,000 by 2027.

The FAA Terminal Area Forecast (TAF) also identifies annual operations for El Dorado Municipal Airport. According to these figures, the airport is projected to realize approximately 9,700 GA operations by 2012, with this figure rising to 9,700 by 2027.

The selected forecast represents the average of the three forecasts presented in Table 2.7. Further examination of these results indicates that they follow the general trend identified in the FAA TAF of an increasing number of operations at the airport. The selected forecast represents a slightly decreasing number of operations per based aircraft. The chapters to follow will utilize the selected forecast of 13,000, 15,000 and 19,000 annual local general aviation operations for the planning years 2012, 2017, and 2027, respectively.

TABLE 2.7
General Aviation Local Operations Forecasts
El Dorado Capt. Jack Thomas Memorial Airport

Year	EQA Local GA*	US Local GA Ops	Market Share	Based Aircraft	Operations Per Based Aircraft
1999	9,700	16,980,200	0.06%	28	346
2000	9,700	17,034,400	0.06%	28	346
2001	9,700	16,193,700	0.06%	28	346
2002	9,700	16,202,700	0.06%	28	346
2003	9,700	15,292,700	0.06%	28	346
2004	9,700	14,948,400	0.06%	28	346
2005	9,700	15,500,000	0.06%	28	346
Constant Market Share of U.S. Local GA Operations					
2012	10,000	16,066,800	0.06%	31	323
2017	11,000	17,020,500	0.06%	37	297
2027	12,000	18,988,300	0.06%	47	255
Increasing in Market Share of U.S. Local GA Operations					
2012	12,000	16,066,800	0.07%	31	387
2017	17,000	17,020,500	0.10%	37	459
2027	24,000	18,988,300	0.12%	47	511
Constant Local GA Operations Per Based Aircraft					
2012	13,000	16,066,800	0.07%	31	400
2017	15,000	17,020,500	0.08%	37	400
2027	19,000	18,988,300	0.10%	47	400
Selected Forecast					
2012	12,000	16,066,800	0.07%	31	387
2017	14,000	17,020,500	0.08%	37	378
2027	17,000	18,988,300	0.09%	47	362

*Source: FAA Aerospace Forecasts 2006-2017. Burns & McDonnell Analysis. *Operations Rounded*

Itinerant general aviation operations have also been forecast and are presented in **Table 2.8.** A constant share of U.S itinerant general aviation operations results in nearly 5,500 operations by 2027. An increasing market share of U.S. itinerant general aviation operations results in nearly 18,000 annual operations by 2027. The third forecast represents a constant number of operations (325) per based aircraft. This results in approximately 15,000 annual itinerant general aviation operations in 2027. The selected forecast is an approximate average of these three forecasting methods.

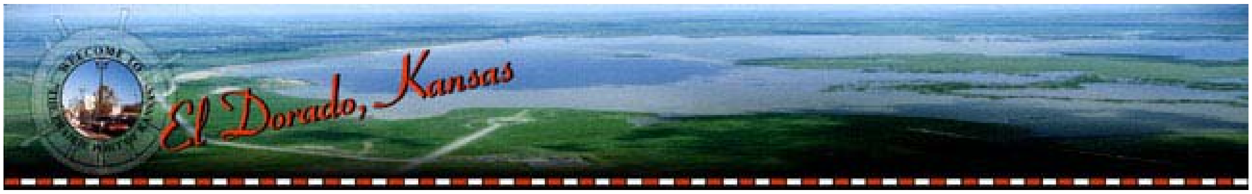


TABLE 2.8
General Aviation Itinerant Operations Forecasts
El Dorado Capt. Jack Thomas Memorial Airport

Year	EQA Itinerant GA *	US Itinerant GA Ops	Market Share	Based Aircraft	Operations Per Based Aircraft
1999	3,525	23,019,400	0.02%	28	126
2000	3,525	22,844,100	0.02%	28	126
2001	3,525	21,433,300	0.02%	28	126
2002	3,525	21,450,500	0.02%	28	126
2003	3,525	20,231,300	0.02%	28	126
2004	3,525	19,989,900	0.02%	28	126
2005	3,525	20,500,000	0.02%	28	126
Constant Market Share of U.S. Itinerant Operations					
2012	4,500	21,961,600	0.02%	31	145
2017	5,000	23,519,000	0.02%	37	135
2027	5,500	25,723,600	0.02%	47	117
Increasing in Market Share of U.S. Itinerant GA Operations					
2012	7,000	21,961,600	0.03%	31	226
2017	12,000	23,519,000	0.05%	37	325
2027	18,000	25,723,600	0.07%	47	383
Constant Itinerant GA Operations Per Based Aircraft					
2012	10,000	21,961,600	0.05%	31	325
2017	12,000	23,519,000	0.05%	37	325
2027	15,000	25,723,600	0.06%	47	325
Selected Forecast					
2012	7,000	21,961,600	0.03%	31	226
2017	12,000	23,519,000	0.05%	37	325
2027	15,000	25,723,600	0.06%	47	325

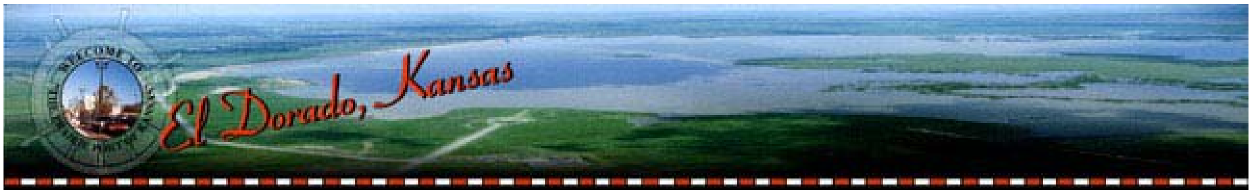
*Source: FAA Aerospace Forecasts 2006-2017. Burns & McDonnell Analysis. *Operations Rounded*

Military Operations

The historical military aviation operations are relatively consistent for itinerant operations. Because the number of military operations is similar year after year, a constant number of both local and itinerant operations will be utilized in future analysis. Itinerant military operations have been projected to have a minimal effect on airport operations.

Air Taxi/Air Carrier Operations

In the post-9/11 environment, many executives have opted to use private jets for their travel needs. Fractional ownership programs were well-positioned to meet this growing demand. There are a number of companies, including Citation Shares, NetJets, Bombardier FlexJet, and Flight Options, which provide this service. Companies or individuals are able to purchase partial ownership, typically one-sixteenth or one-eighth of an aircraft. This gives them a certain allotment of time to use an aircraft. The fractional ownership is much like owning a timeshare.



Analysis of air taxi operators can have a significant impact on the needs of an airport. Fractional ownership companies utilize business jets almost exclusively, and many of these aircraft are the larger business jets. As more of the larger business jets utilized the airport, the necessary design standards for the airport may change. Charter operators use a variety of piston and turboprop, and on occasion, jet-powered aircraft. The type of aircraft using the airport will be a critical element for the airport to prepare for in the future.

Air carrier operations are typically associated with scheduled air passenger service. In order to accommodate such carriers, the airport must meet the stringent requirements of 14 CFR Part 139. El Dorado Municipal Airport does not maintain Part 139 certification.

Total Operations

Total operations are summarized on **Table 2.9.** An adjustment for nighttime operations is included in the total operations figure. Each segment of activity was increased by three percent to account for nighttime operations.

TABLE 2.9
Summary of Aviation Forecasts
El Dorado Capt. Jack Thomas Memorial Airport

	2006	2012	2017	2027
BASED AIRCRAFT FORECASTS				
Single Engine	28	28	30	32
Multi Engine	0	1	2	2
Turboprop	0	1	3	6
Jet	0	1	2	5
Helicopter	0	0	0	2
Total Based Aircraft	**28**	**31**	**37**	**47**
OPERATIONS FORECASTS				
Itinerant GA	3,500	6,975	11,950	14,900
Itinerant Military	25	25	50	100
Total Itinerant	***3,525***	***7,000***	***12,000***	***15,000***
Local GA	9,700	12,000	14,000	17,000
Total Local	***9,700***	***12,000***	***14,000***	***17,000***
Total Annual Operations	**13,225**	**19,000**	**26,000**	**32,000**
AIA's	**--**	**210**	**600**	**750**

Annual Instrument Approaches (AIA's)

An instrument approach, as defined by the FAA, is "an approach to an airport with the intent to land by 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 El Dorado Municipal Airport, aircraft must land at the airport after following one of the published instrument approach procedures and then properly close their flight plan on the ground. The approach must be conducted in weather conditions which necessitate the use of the instrument approach. If the flight plan is closed prior to landing, then the Annual Instrument Approach (AIA) is not counted in the statistics. Forecasts of AIA's provide guidance in determining an airport's requirements for navigational aid facilities. It should be noted that practice or training approaches do not count as AIA's.

Typically, AIA's for airports with available instrument approaches utilized by advanced aircraft will average between one and two percent of itinerant operations. Two percent has been an accepted industry standard for general aviation airports that currently, or are expected to, support corporate jet aircraft, which is the case for El Dorado Municipal Airport. Also, the increased availability of low-cost navigational equipment could allow for smaller and less sophisticated aircraft to utilize instrument approaches. National trend indicate an increasing percentage of annual approaches given the greater availability of approaches at airports with GPS and the availability of more cost-effective equipment. **Table 2.10** summarizes both historical and forecast AIA's for the planning period.

According to the FAA Air Traffic Activity statistics, El Dorado Municipal Airport had 0 AIA's in 2005. This is the absolute minimum number of AIA's conducted at the airport. As previously mentioned, to be counted as an AIA, a flight plan cannot be closed prior to landing, but this practice is common if the airport comes within visual range. The forecast presented in Table 2.10 shows an increasing number of AIA's, up to 2.0 percent of itinerant operations by 2027.

TABLE 2.10
Annual Instrument Approaches (AIA's)
El Dorado Capt. Jack Thomas Memorial Airport

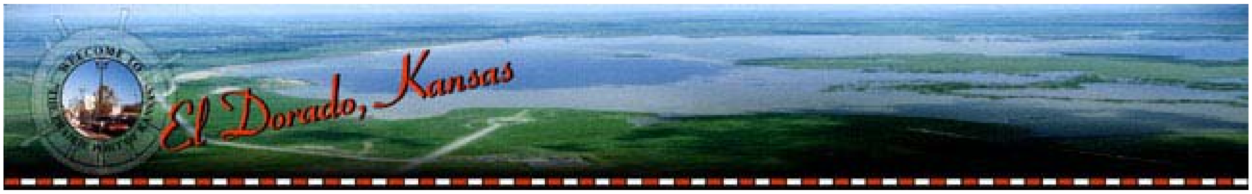
Year	AIAs *	Itinerant Operations	Ratio
2001	0	3,500	0.0%
2002	0	3,500	0.0%
2003	0	3,500	0.0%
2004	0	3,500	0.0%
2005	0	3,500	0.0%
FORECASTS			
2012	210	7,000	3.0%
2017	600	12,000	5.0%
2027	750	15,000	5.0%

*Source: FAA Terminal Area Forecasts. * No Records for EQA*

SUMMARY

This chapter has provided demand-based forecasts of aviation activity at El Dorado Municipal Airport over the next 20 years. An attempt has been made to define the projections in terms of short, intermediate, and long term expectations. Elements such as local socioeconomic indicators, anticipated regional development, and historical aviation data, as well as national aviation trends were considered when determining future conditions.

The next step in the master planning process will be to assess to 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. A summary of aviation forecasts was depicted on Table 2.9.



Chapter 3

AIRPORT FACILITY REQUIREMENTS

GENERAL

To properly plan for the future of El Dorado Capt. Jack Thomas Memorial Airport (EQA), it is necessary to translate the forecasted aviation demand into the specific types and quantities of facilities that can adequately serve the identified demand. This chapter uses the results of the forecasts conducted in Chapter Two, as well as established planning criteria, to determine the airfield (i.e., runways, taxiways, navigational aids, marking and lighting) and landside (i.e., hangars, aircraft parking apron, and automobile parking) 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 the facilities may be needed to accommodate forecasted 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.

Planning Horizons

Cost-effective, safe, efficient and orderly development of an airport should rely more upon actual demand at an airport than a time-based forecast figure. In order to develop a master plan that is demand-based rather than time-based, a series of planning horizon milestones has been established for El Dorado Municipal Airport that take into consideration the reasonable range of aviation demand projections prepared in Chapter Two.

It is important to consider that the actual activity at the airport may be higher or lower than projected activity levels. By planning according to activity milestones, the resulting plan can accommodate unexpected shifts, or changes, in the area's aviation demand. It is important that the plan accommodate these changes so that the airport staff can respond to unexpected changes in a timely fashion. These milestones provide flexibility, while potentially extending this plan's useful life if aviation trends slow over time.

The most important reason for utilizing milestones is that they allow the airport to develop facilities according to needs generated by actual demand levels. The demand-based schedule provides flexibility in development, as development schedules can be slowed or expedited according to actual demand at any given time over the planning period. The resulting plan provides airport officials with a financially responsible and need-based program. **Table 3.1** presents the planning horizon milestones for each aircraft activity category. The planning milestones of short, intermediate, and long term generally correlate to the five-, ten- and twenty-year periods used in the previous chapter.

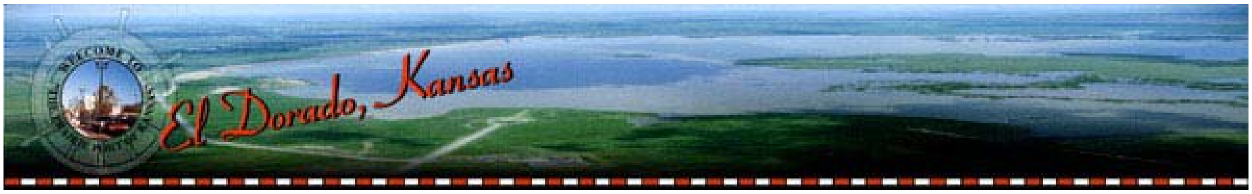


TABLE 3.1
Planning Horizons
El Dorado Capt. Jack Thomas Memorial Airport

	2006	**Short Term**	**Intermediate Term**	**Long Term**
Itinerant Operations				
General Aviation	3,525	6,975	11,950	14,900
Air Taxi/Air Carrier	0	0	0	0
Military	25	25	50	100
Total Itinerant	3,525	7,000	12,000	15,000
Local Operations				
General Aviation	9,700	12,000	14,000	17,000
Military	0	0	0	0
Total Local	9,700	12,000	14,000	17,000
TOTAL OPERATIONS	13,225	19,000	26,000	32,000
TOTAL BASED AIRCRAFT	**28**	**31**	**37**	**47**

Historical Data Source: Airport records / FAA records.
Forecast Source: Burns & McDonnell analysis

In this chapter, existing components of the airport are evaluated so that the capacities of the overall system are identified. Once identified, the existing capacity is compared to the planning horizon milestones to determine where deficiencies currently exist or may be expected to materialize in the future. Once deficiencies in a component are identified, a more specific determination of the approximate sizing and timing of the new facilities can be made.

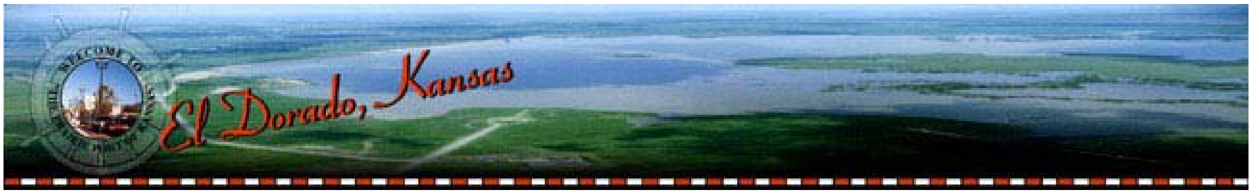
AIRFIELD REQUIREMENTS

Airfield requirements include the need for those facilities related to the arrival and departure of aircraft. The adequacy of existing airfield facilities at El Dorado Municipal Airport has been analyzed from a number of perspectives, including:

- Critical Design Aircraft
- Safety Area Design Standards
- Airfield Capacity
- Runways
- Taxiways
- Navigational Approach Aids
- Airfield Lighting, Marking, and Signage

Critical Design Aircraft

The selection of appropriate Federal Aviation Administration (FAA) design standards for the development and location of airport facilities is based primarily upon the characteristics of



the aircraft which are currently using, or are expected to use, the airport. The critical design aircraft is used to define the design parameters for the airport. The critical design aircraft is defined as the most demanding category of aircraft, or family of aircraft, which conducts at least 500 operations per year at the airport. Planning for future aircraft use is of particular importance since design standards are used to plan separation distances between facilities. These future standards must be considered now to ensure that short-term development does not preclude the long-range potential needs of the airport.

The FAA has established a coding system to relate airport design criteria to the operational and physical characteristics of aircraft expected to use the airport. This 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 characteristics); the second component, depicted by a Roman numeral is the airplane design group and relates to aircraft wingspan (physical characteristics). Generally, aircraft approach speed applies to runways and runway-related facilities, while airplane wingspan primarily relates to separation criteria involving taxiways, taxilanes, and landside facilities.

According to FAA Advisory Circular (AC) 150/5300-13, *Airport Design*, Change 10, an aircraft's approach category is based upon 1.3 times its stall speed in landing configuration at the aircraft's maximum certificated weight. The five approach categories used in airport planning are as follows:

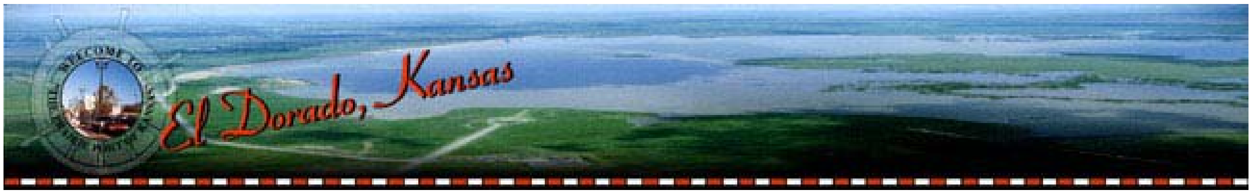
Category A: Speed less than 91 knots.
Category B: Speed 92 knots ore more, but less than 121 knots.
Category C: Speed 121 knots or more, but less than 141 knots.
Category D: Speed 141 knots or more, but less than 166 knots.
Category E: Speed greater than 166 knots.

The Airplane Design Group (ADG) is based upon the aircraft's wingspan. The six ADG's used in airport planning are as follows:

Group I: Up to but not include 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.

The airport does not currently, nor is it expected to, regularly serve aircraft in ARCs, C-III, C-IV, D-III, D-IV or D-V. These categories represent large transport aircraft commonly used by commercial air carriers and air cargo carriers, which do not currently use, nor are they expected to use, El Dorado Municipal Airport through the planning period.

In order to determine airfield design requirements, the critical aircraft and critical ARC should first be determined, and then appropriate airport design criteria can be applied. This begins with a review of aircraft currently using the airport and those expected to use the airport through the planning period.



As detailed in Chapter One, there is some military use of the airport for training operations conducted by aircraft from Vance Air Force Base. This includes the Beechcraft T-1 Jayhawk. The civil version of this aircraft is the Beechcraft 400A which falls within ARC C-1. Military use of the airport also includes the Raytheon T-6A/B. This is an aircraft developed specifically for the military that falls within ARC B-1. Military aircraft conducted less than 100 operations at EQA in 2006.

General aviation aircraft conduct the remainder of operations at EQA. General aviation aircraft using the airport include a variety of small single- and multi-engine piston-powered aircraft, turboprops and turbojet aircraft. While the airport may be used by a limited number of helicopters, helicopters are not included in this determination as they are not assigned an ARC.

All of the based aircraft are single-engine, piston-powered aircraft which fall within approach categories A and B and ADG I. The largest aircraft currently based at the airport is the Beechcraft. This aircraft has a wingspan of approximately 48 feet and an approach speed of 129 knots making it an ARC C-I aircraft.

Wide ranges of transient turbojet aircraft operate at the airport. Additionally, business jets conduct operations within the traffic pattern at the airport. These local operations are also not captured on instrument flight plans. This likely increases the number of business jet operations at the airport; however, the number of local turbojet operations is not readily discernable.

Critical Design Aircraft Conclusions

The critical design aircraft is defined as the most demanding category of aircraft which conduct 500 or more operations at the airport each year. In some cases, more than one specific make and model of aircraft comprises the airport's critical design aircraft. One category of aircraft may be the most critical in terms of approach speed, while another is most critical in terms of wingspan affecting runway/taxiway width and separation distances. At El Dorado Municipal Airport, smaller general aviation piston-powered aircraft within Approach Categories A and B and ADG I conduct the majority of operations at EQA; these aircraft comprise the critical design aircraft.

The aviation demand forecasts indicate the potential for continued growth in business jet activity at the airport. This includes the addition of at least five based business jets through the planning period and growth in transient business jet activity. Therefore, it is expected that business turbojets will define the critical design parameters for EQA through the planning period. Aircraft within Approach Category B are expected to conduct more than 500 annual operations at the airport through the planning period. While aircraft within Approach Categories C & D are likely to increase in the number of operations at the airport, this category of aircraft is not expected to surpass the 500 annual operations threshold through the planning period. Business turbojet aircraft within Approach Category D comprise a small portion of the national fleet. Newer business jets are being developed with more efficient wing designs, which reduce the approach speeds.

While the critical approach category is not expected to change through the planning period, facility planning should consider the requirements of the more demanding ADG II. On occasion, aircraft with larger wingspans within ADG II are using the airport. Typically these aircraft will come from the various aircraft manufacturing facilities in Wichita for training and certification. While aircraft within ADG II may not conduct 500 annual operations at the airport, it is important to consider the effect that these larger wingspans have on facility placement. To ensure that the occasional use of aircraft in this category can be accommodated safely at the airport, the future facility planning will consider the requirements of ADG II. Therefore, the future critical design aircraft is best expressed as ARC B-II.

Safety Area Design Standards

The FAA has established several safety surfaces to protect aircraft operational areas and keep them free from obstructions that could affect their safety operation. These include the runway safety area (RSA), object free area (OFA), obstacle free zone (OFZ), and runway protection zone (RPZ).

The entire RSA, OFZ and OFA should be under the direct control of the airport sponsor to ensure these areas remain free of obstacles and can be readily accessed by maintenance and emergency personnel. It is not required that the RPZ be under airport ownership, but it is strongly recommended. An alternative to outright ownership of the RPZ is the purchase of avigation easements (acquiring control of designated airspace within the RPZ) or have sufficient land use control measures in places which ensure the RPZ remains free of incompatible development.

Dimensional standards for the various safety areas associated with the runways are a function of the type of aircraft (ARC) expected to use the runways as well as the approved instrument approach visibility minimums. Each runway can be designed to serve a different type of aircraft based on ARC. At El Dorado Municipal Airport, runways should meet design standards for aircraft in ARC B-II.

Runway Safety Area (RSA)

The RSA is defined in FAA Advisory Circular (AC) 150/5300-13, *Airport Design*, *Change 10* as a "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." The RSA is centered on the runway and dimensioned in accordance to the approach speed of the critical aircraft using the runway. The FAA requires the RSA to be cleared and graded, drained by grading or storm sewers, capable of accommodating the design aircraft and fire and rescue vehicles, and free of obstacles not fixed by navigational purpose.

The FAA has placed a higher significance on maintaining adequate RSAs at all airports. Under Order 5200.8, effective October 1, 1999, the FAA established the *Runway Safety Area Program*. The Order states, "The objective of the Runway Safety Area Program is that all RSAs at federally-obligated airports … shall conform to the standards contained in Advisory Circular 150/5300-13, *Airport Design*, to the extent practicable." Each Regional Airports Division of the FAA is obligated to collect and maintain data on the RSA for each runway at the airport, and perform airport inspections.

For ARC B-II aircraft, the FAA calls for the RSA to be 150 feet wide, centered on the runway, and extend 300 feet beyond the runway ends. Currently both runways do fully meet this standard.

Object Free Area (OFA)

The runway OFA is "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 OFA does not have to be graded and level as does the RSA; instead the primary requirement for the OFA is that no object in the OFA penetrates the lateral elevation of the RSA. The runway OFA is centered on the runway, extending out in accordance to the critical aircraft design category utilizing the runway.

For ARC B-II aircraft, the FAA calls for the OFA to be 500 feet wide, centered on the runway, extending 300 feet beyond each runway end. The OFA behind all runway ends does meet standard.

Obstacle Free Zones (OFZ)

The OFZ is an imaginary surface which precludes object penetrations, including taxiing and parked aircraft. The only allowance for OFZ obstructions is navigational aids mounted on frangible bases which are fixed in their location by function such as airfield signs. The OFZ is established to ensure the safety of aircraft operations. If the OFZ is obstructed, the airport's approaches could be removed or approach minimums could be increased.

For all runways serving small aircraft with approach speeds of 50 knots or more, the OFZ is 250 feet wide, centered on the runway, and extended 200 feet beyond the runway ends. Upon establishing an approach with minimums lower than ¾ miles visibility, the width will be widened to 300 feet. These standards will apply to all runways at EQA. Currently, there are no OFZ obstructions at El Dorado Municipal Airport. Future planning should maintain the OFZ for the appropriate runway type. **Table 3.2** shows the existing and ultimate OFZ dimensions.

Precision Obstacle Free Zone (POFZ)

For runways providing a vertically-guided approach, a precision obstacle free zone (POFZ) is required. The POFZ is defined as "a volume of airspace above an area beginning at the runway threshold, at the threshold elevation, and centered on the extended runway centerline, 200 feet long by 800 feet wide." The POFZ is only in effect when the following operational conditions are met:

- Vertically-guided approach.
- Reported ceiling below 250 feet and/or visibility less than three quarters of a statute mile.
- An aircraft on final approach within 2 miles of the runway threshold.

When these conditions are met, aircraft holding for takeoff must hold in such a position so that neither the fuselage nor the tail of the aircraft penetrates the POFZ. The wings of the aircraft are allowed to penetrate the surface. Currently no runways at EQA are required to meet POFZ requirements.

TABLE 3.2
Safety Area Design Standards and Deficiencies
El Dorado Municipal Airport

	Runway 15-33	**Runway 4-22**
Airport Reference Code (ARC)	**B-II**	**B-II**
Runway Safety Area		
Width (ft)	150	150
Length Beyond Runway End (ft)	300	300
Deficiencies		
Length Provided (ft)	300	300
Area Obstructed	0 acres	0 acres
Object Free Area		
Width (ft)	500	500
Length Beyond Runway End (ft)	300	300
Deficiencies	None	None
Obstacle Free Zone		
Width (ft)	250	250
Length Beyond Runway End (ft)	200	200
Deficiencies	None	None

Source: FAA AC 150-5300-13, Airport Design, Change 10

Runway Protection Zones (RPZ)

The RPZ is a trapezoidal area centered on the runway, typically beginning 200 feet beyond the runway end. 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 the type of aircraft utilizing the runway.

The dimensions of RPZ's at El Dorado Municipal Airport are presented in **Table 3.3**.

TABLE 3.3
Runway Protection Zones
El Dorado Municipal Airport

	RWY 15	RWY 33	RWY 4	RWY 22
Approach Visibility Minimums	1-mile	1-mile	1 mile	1 mile
Inner Width (ft)	500	500	500	500
Outer Width (ft)	700	700	700	700
Length (ft)	1,000	1,000	1,000	1,000

Source: FAA AC 150-5300-13, Airport Design, Change 10

As previously discussed, where possible the airport should have positive control over all safety areas. Currently the airport owns all the land within the RPZ for Runways 15/33 and 4/22.

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. El Dorado Municipal Airport's multi-runway system can provide up to 230,000 annual operations under ideal conditions. Due to times when the airport is closed, typically due to weather, a more reasonable capacity is identified as approximately 220,000 annual operations.

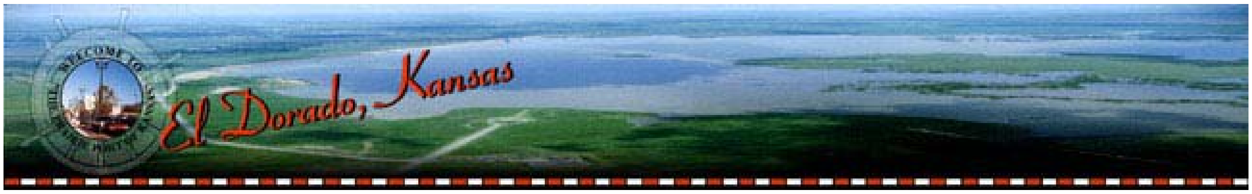
FAA Order 5090.3B, *Field Formulation of the National Plan of Integrated Airport Systems (NPIAS)*, indicates that improvements to capacity should be considered when operations reach 60 percent of the airfield's annual service volume (ASV). If the projected long-range planning horizon level of 32,000 operations comes to fruition, the airfield's ASV will reach 14.5 percent. As a result, there is not a need for additional runways.

Runways

The airport is served by two intersecting runways. Runway 15-33 is orientated in a northwest to southeast manner, intersecting Runway 4-22. Runway 4-22 is oriented from the southwest to the northeast

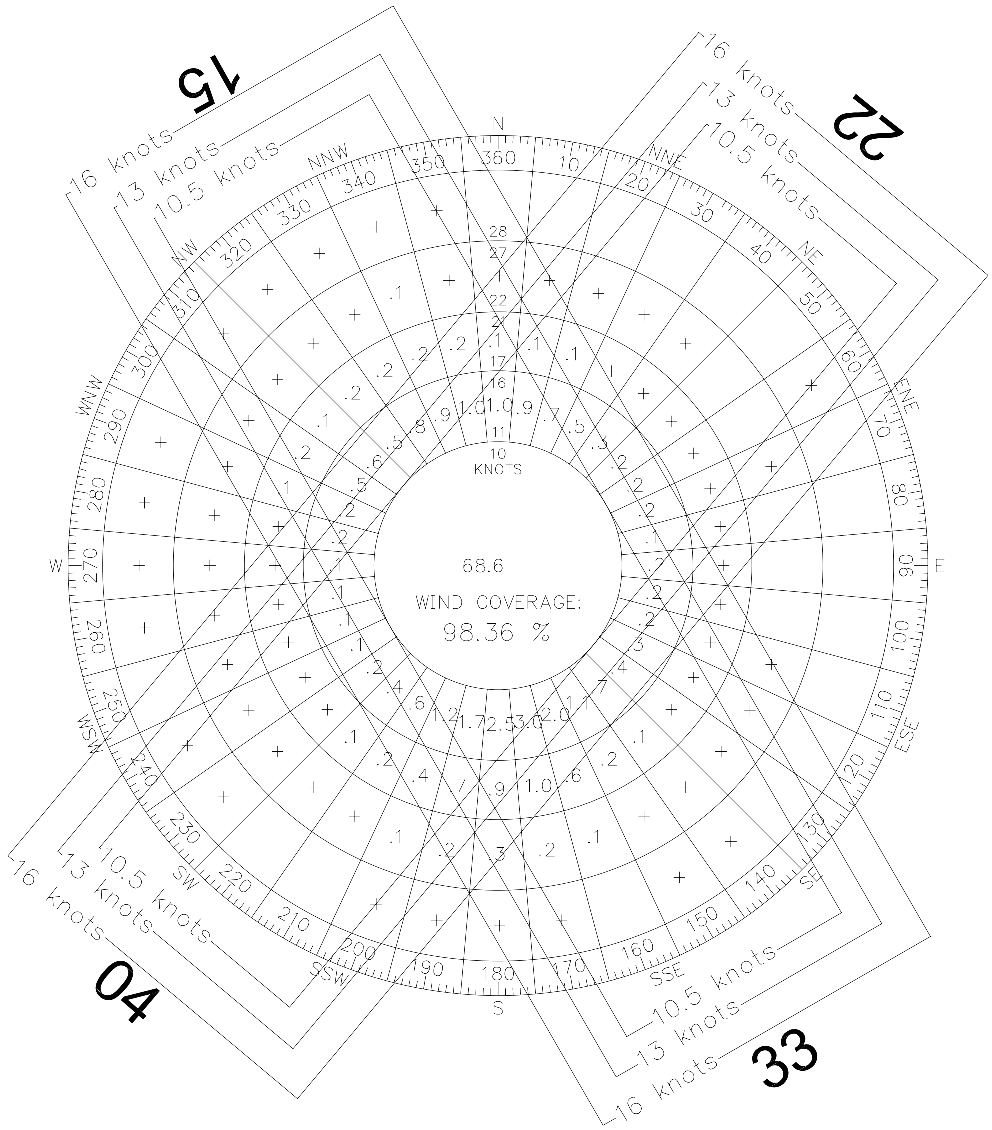
For the operational safety and efficiency of an airport, it is desirable for the primary runway to be oriented as close as possible to the direction of the prevailing wind. This reduces the impact of wind components perpendicular to the direction of travel of an aircraft that is landing or taking off.

FAA Advisory Circular 150-5300-13, *Airport Design*, *Change 10*, recommends that a crosswind runway should be made available when the primary runway orientation provides for less than 95 percent wind coverage for specific crosswind components. The 95 percent wind coverage is computed on the basis of the crosswind component not exceeding 10.5 knots (12 mps) for ARCs A-I and B-I; 13 knots (15 mph) for ARCs A-II and B-II; and 16 knots (18 mph) for ARC C-I through D-II.



All-weather wind data specific to EQA is depicted on **Exhibit 3A**. Runway 04-22 provides 96.12 percent wind coverage for 10.5-knot crosswinds, 98.27 percent coverage at 13 knots, and 99.43 percent at 16 knots. This runway provided more than the FAA required 95 percent wind coverage for the 10.5-knot and 13.0-knot crosswind conditions; however, a additional runway orientation is available at EQA.

Runway 15-33 currently serves as a crosswind runway, accommodating aircraft operations when the winds are more directly aligned with this runway. Runway 15-33 provides 92.84 percent coverage for 10.5-knot crosswinds and 96.72 percent coverage for 13.0-knot crosswind situations, and 99.10 percent at 16 knots. The combination of the two runways provides 98.36 percent wind coverage for 10.5-knot crosswinds, 99.58 percent coverage at 13 knots, and 99.90 percent at 16 knots. This exceeds FAA standards for wind coverage requirements.



SOURCE:
NOAA National Climatic Center
Asheville, N.C.
Hutchinson, Kansas

OBSERVATIONS:
80,407 All Weather Observation
1996 – 2005

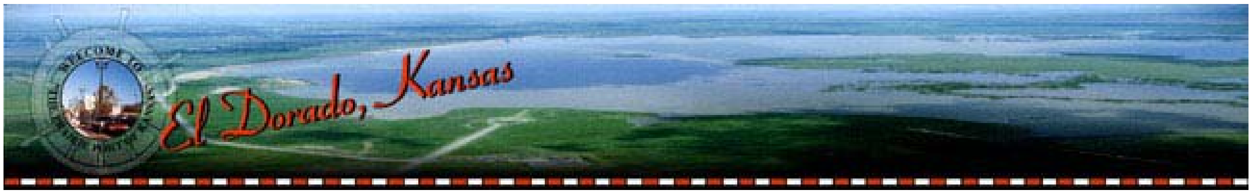
WIND % COVERAGE DATA			
RUNWAY	10.5 KTS	13 KTS	16 KTS
04–22	96.12 %	98.27 %	99.43 %
15–33	92.84 %	96.72 %	99.10 %
COMBINED	98.36 %	99.58 %	99.90 %

Burns & McDonnell
SINCE 1898

Exhibit 3A

CAPTAIN JACK THOMAS MEMORIAL AIRPORT
EL DORADO, KS.

ALL WEATHER WIND ROSE



Runway Length

FAA Advisory Circular (AC) 150/5235-4B, *Runway Length Requirements for Airport Design*, provides guidelines to determine runway lengths for civil airports. Quoting from the AC: "For airport projects receiving federal funding, the use of this AC is mandatory." AC 5325-4B provides the procedure and rationale for determining the runway length. The five steps and the applicability to El Dorado Municipal Airport are as follows:

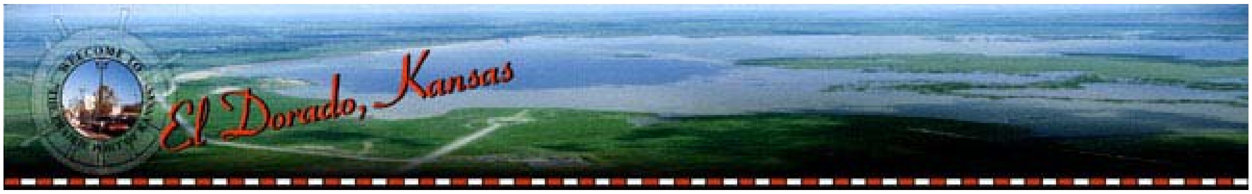
Step 1. ***Identify the list of critical design airplanes that will make regular use of the proposed runway and establish a planning period of at least five years***. Regular use is defined in AC 150-5325-4B as at least 500 or more annual itinerant operations.

For El Dorado Municipal Airport, Runways 04-22 and 15-33 are used by multiple categories of aircraft utilizing the airport, each with different runway length requirements. Small single- and multi-engine piston-powered aircraft conduct the majority of operations on Runway 04-22. No additional length is needed on Runway 04-22 and 15-33 to serve these aircraft now or into the future.

The increased use of the airport by privately-owned business jets must be considered in this analysis. Business jets have proved themselves to be an asset to corporations by meeting the needs of executives for flexibility in scheduling, speed and privacy. In response to these types of needs, AC 150-5325-4B recommends that "GA airports that receive regular use by large airplanes over 12,500 pounds, in addition to business jets, should provide a runway length comparable to non-GA airports." Currently the amount of jet traffic doesn't necessitate the need to conform runway parameters to meet jet performance requirements. If jet operation levels continue to increase, then measures should be taken to allow for safe jet aircraft operations at the airport.

Step 2. ***Identify the airplanes that will require the longest runway length at maximum certificated takeoff weight (MTOW)***. The MTOW of aircraft with less than 10 passenger seats determines runway length requirements based on a "family grouping of airplanes" having similar performance characteristics and operating weights. For EQA, the majority of aircraft operations were conducted by aircraft with less than 10 passenger seats. Therefore, the runway length requirements for the family of general aviation aircraft carrying less than 10 passenger seats are critical for determining runway length for EQA.

Step 3. ***Determine methodology for establishing the recommended runway length***. Having established in Steps 1 and 2 that aircraft with less than 10 passenger seats are critical for determining the length requirements for Runways 04-22 and 15-33, the appropriate methodology from AC 150-5325-4B must be applied to determine runway length needs. The design procedure in AC 150-5325-4B requires the following information: airport elevation above mean sea level (MSL), mean daily maximum temperature of the hottest month, and the critical design aircraft under evaluation and their useful load. El Dorado Municipal Airport is situated at 1,378 feet MSL, and the mean daily maximum temperature of the hottest month is 93 degrees and this occurs in July.



AC 150-5325-4B stipulates that the critical design aircraft actually be a grouping of airplanes with similar operating characteristics. The AC provides two separate "family grouping of airplanes" each based upon their representative percentage of aircraft in the national fleet. Having established the critical "family grouping of airplanes," the useful load must be determined. Useful load consists of the fuel, passengers, baggage, and cargo that can be carried. The useful load is reduced at airports where there is not sufficient runway length for departure and landing operations. During the warmest summer months, aircraft operators may have to reduce fuel or passenger loading to ensure that they can depart on the available runway length. This increases operator costs as they must stop enroute to their final destinations. Instrument flight plans confirm that many of the current users at EQA currently conduct long non-stop trips form the airport. This requires maximizing useful load. Non-stop destinations on the east and west coasts are not uncommon for aircraft operating from EQA. This capability is currently provided by the primary runway length at EQA. Consistent with the use of the airport now, and to ensure that operators can reach their intended destinations in the future, just the same as they are now, without reducing fuel and/or passenger loading, runway length requirements for El Dorado Municipal Airport are determined assuming aircraft are loaded to 90 percent useful load.

Step 4. ***Determine the recommended runway length***. Using the information determined in Step 3 above, the recommended critical runway length for EQA per AC 150-5325-4B is 4,220 feet.

Step 5. ***Apply any necessary adjustments to the runway length obtained in Step 4 to determine the final runway length***. As the primary runway, Runway 04-22 should provide the necessary runway length for the critical design aircraft at EQA. The 4,220 feet of length determined in Step 4 is based on a 2 foot difference in runway end elevations. This 2 foot difference in elevation is referred to as effective runway gradient. Effective runway gradient is defined as the difference between the highest and lowest elevations of the runway centerline divided by the runway

Crosswind Runway Lengths

The determination of the length of a crosswind runway must consider its role, the type of aircraft regularly using the runway, and wind coverage requirements. Aircraft included in these crosswind components include a wide variety of general aviation aircraft from single- and multi-engine piston-powered aircraft to turboprops and some light turbojet aircraft under 12,500 pounds. Using AC 150/5325-4B, the appropriate runway length for this category of aircraft is 3,580 feet.

In many cases, the role of the crosswind runway is not only to meet wind coverage requirements, but also serve as a backup runway when the primary runway is closed for maintenance or other reasons. Runway 15-33 serves as the backup runway for Runway 4-22. In a backup role, the crosswind runway should be able to safely accommodate the critical design aircraft for landings, but may not need to provide the full useful load capabilities provided by the primary runway. This is the case at EQA where Runway 15-33 supports less aircraft weight than Runway 04-22 and therefore cannot provide the same loading capabilities for landings. For a backup runway, runway length requirements for 95 percent of small airplanes with less than 10 passenger seats have been determined using AC 150/5325-4B. For 95 percent of the fleet of small aircraft with less than 10 passenger seats AC 150-5325-4B recommends a runway length of 3,580 feet. At 4,200 feet, Runway 4-22 exceeds this runway length requirement.

Runway Width

Both Runways 04-22 and 15-33 are 75 feet wide. Runway 04-22 is constructed of asphalt and Runway 15-33 is constructed of concrete. FAA design standards call for a runway width of 100 feet for ARC B-II runways with lower than ¾ statute mile visibility minimums. It is recommended that El Dorado pursue getting an LPV approach at the airport and reducing their minimums to this standard. As a result, it is recommended that widening the runways to a width of 100 feet should be considered.

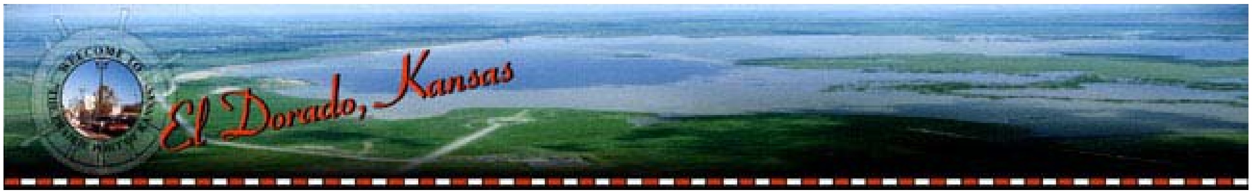
Runway Strength

The FAA pavement strength rating for Runway 04-22 is 18,000 pounds single-wheel loading (SWL). As previously mentioned, SWL refers to the aircraft weight based upon the landing gear configuration with a single wheel on the landing strut. The strength rating for dual-wheel configurations (DWL) is 23,000 pounds. The FAA pavement strength rating for Runway 15-33 is 12,500 pounds for both SWL and DWL.

The strength rating of a runway does not preclude aircraft weighing more than the published strength rating from using the runway. All federally-obligated airports must remain open to the public and it is typically up to the pilot of the aircraft to determine if a runway can support their aircraft safely. An airport sponsor cannot restrict an aircraft from using the runway simply because its weight exceeds the published strength rating. On the other hand, the airport sponsor has an obligation to properly maintain the runway and protect the useful life of the runway, typically for 20 years.

According to the FAA published *Airport/Facility Directory*, "(runway strength rating) is not included as a maximum allowable weight or an operating limitation. Many airport pavements are capable of supporting limited operations with gross weights in excess of the published figures." The directory goes on to say that those aircraft exceeding the pavement strength should contact the airport sponsor for permission to operate at the airport.

The strength rating of a runway can change over time. Regular usage by heavier aircraft can decrease the strength rating, while periodic runway resurfacing can increase the strength rating. The current strength ratings of the runways are adequate to serve the critical aircraft in ARC B-II as well as occasional operations by larger aircraft. As heavier aircraft begin to utilize the airport, possible strengthening of the runway(s) should be considered at that time.



Runway/Taxiway Separation

FAA Advisory Circular 150/5300-13, *Airport Design*, Change 9, also discusses separation distances between a taxiway centerline and various areas on the airport. The separation distances are a function of the approaches approved for the airport and the critical design aircraft. For Runways 04-22 and Runway 15-33 being ARC B-II and the existing GPS and NDB instrument approach (visibility of one mile), a parallel taxiway centerline should be at least 240 feet from the runway centerline. Upon implementation of a lower than ¾ mile visibility approach minimum, the taxiway should be constructed to a minimum distance of 300 feet centerline to centerline.

The edge of aircraft parking areas should be at least 250 feet from the runway centerline. These standard dimensions increase to 400 feet with the lower than ¾ statute mile approach.

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.

To improve safety at the airport, parallel taxiways should be considered for both runways. Parallel taxiways increase safety at the airport by reducing and/or eliminating the need to back-taxi on the runways. This results in an increase of airfield capacity and a reduction of aviation related mishaps and accidents.

Recommended taxiway width is determined by the Airplane Design Group (ADG) of the most demanding aircraft to use the taxiway. For the proposed taxiways in mention, ADG II requires a 35-foot-wide taxiway.

A taxiway object-free area (TOFA) applies to taxiways and taxilanes. The width of the TOFA is dependent on the wingspan of critical aircraft. For ADG II aircraft, the TOFA is 131 feet wide, 65.5 feet on either side of centerline. The separation distance between the taxiway/taxilane and any fixed or movable object is half of the TOFA. The taxiway shoulder width requirements are 10 feet for Group II aircraft. The shoulders need to be traversable by vehicles and aircraft, should they veer off the taxiway. Often a smooth grass surface is provided. Taxiway design standards are presented in **Table 3F**.

TABLE 3F Taxiway Design Standards El Dorado Municipal Airport	
	Airplane Design Group
	Group II (49’ to 79’ Wingspan)
Taxiway Width (ft)	35
Shoulder Width (ft)	10
Object Free Area (ft)	
Taxiway (OFA	131
Taxilane OFA	115
Separation Distances (ft)	
Taxiway Centerline to Object	65.6
Taxilane Centerline to Object	57.5
Source: FAA AC 150-5300-13, Airport Design, Change 9	

NAVIGATIONAL AND APPROACH AIDS

Airport and runway navigational aids are based on FAA recommendations as defined 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*.

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; no elevation information is given. 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 second half of the twentieth century. Much of 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.

The Global Positioning System (GPS) uses three or more satellites to derive an aircraft’s location by a triangulation method. The accuracy of these systems has been remarkable, with initial 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 approaches, independent of any existing ground-based navigation facilities. In addition to the navigational benefits, it has been estimated that GPS equipment will be much less costly than existing precision approach landing systems. At El Dorado Municipal Airport there are four published GPS approaches.

Instrument Approaches

Instrument Approach Procedures (IAP) are a series of predetermined maneuvers established by the FAA, using electronic navigational aids that assist pilots in locating and landing at an airport during low visibility and cloud ceiling conditions. At El Dorado Municipal Airport, there is one published instrument approach procedure.

The capability of an instrument approach is defined by the visibility and cloud ceiling minimums associated with the approach. Visibility minimums define the horizontal distance that the pilot must be able to see to complete the approach. Cloud ceilings define the lowest level of cloud layer (defined as feet above the ground) can be situation for a pilot to complete the approach. If the observed visibility or cloud ceiling is below the minimums prescribed for the approach, the pilot cannot complete the instrument approach.

As previously discussed in Chapter One, the lowest visibility minimum available is 1 mile. This is offered by the four individual GPS approaches and the one NDB approach to Runway 4.

Under the current airfield configuration, these approaches meet the needs of airport users. However, as operations, complexity, and size of aircraft continues to increase as forecasted, reduced approach minimum approaches should be considered. An LPV approach is recommended at El Dorado Municipal Airport.

Visual Approach Aids

To provide pilots with visual glideslope and descent information, visual approach slope indicators (VASIs) or precision approach path indicators (PAPIs) are commonly found to the side of the runway. These systems can consist of either a two- or four-box unit. Four-box PAPIs are recommended for runways, utilized by business jet aircraft.

Runway 15-33 is served by a four-box PAPI on the left of the runway. A four-box PAPI system should be considered for Runway 4-22 to accommodate aircraft in crosswind situations. The existing PAPIs are sufficient and should be maintained through the planning period.

Runway end identification lighting (REIL) provides rapid and positive identification of the approach end of the runway. The REIL system consists of two synchronized flashing lights, located laterally on each side of the runway threshold facing the approaching aircraft. A

REIL lighting system should be considered at El Dorado Municipal Airport.

The airport beacon provides positive airport location information to pilots at night. The existing airport beacon should be maintained through the planning period.

Weather Reporting Aids

El Dorado Municipal Airport has one lighted wind cone and a segmented circle. The lighted wind cone provides information to pilots regarding wind conditions, such as direction and intensity. The segmented circle consists of a system of visual indicators designed to provide traffic pattern information to pilots. These should be maintained through the planning period.

El Dorado Municipal Airport currently is not equipped with an Automated Surface Observing System (ASOS) or an Automated Weather Observing System (AWOS). These systems will automatically record weather conditions such as temperature, dew point, wind speed, altimeter setting, visibility, sky condition and precipitation. The ASOS updates observations every minute, 24 hours a day, and this information is available to pilots in the airport vicinity via FAA VHF ground-to-air radio or telephone. It is recommended that El Dorado consider adding a weather reporting system at the airport.

AIRFIELD LIGHTING AND MARKING

There are a number of lighting and pavement marking aids serving pilots using the airport. These aids assist pilots in locating the airport and runway at night or in poor visibility conditions. They also assist in the ground movement of aircraft.

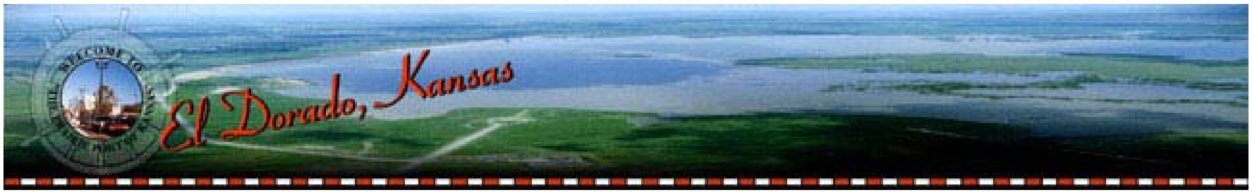
Runway and Taxiway Lighting

Runway identification lighting provides the pilot with a rapid and positive identification of the runway and its alignment. Runway 04-22 is equipped with High-Intensity Runway Lighting (HIRL). Runway 15-33 is served by Medium-Intensity Runway Lighting (MIRL). Each of these systems are adequate and should be maintained.

Medium-intensity taxiway lighting (MITL) is provided on both connector Taxiways A and B. This lighting system is adequate and should be maintained.

Pavement Markings

Runway markings are designed according to the type of instrument approach available on the runway. FAA AC 150-5340-1F, *Marking of Paved Areas on Airports*, provides guidance necessary to design an airport's markings. Both Runways 04-22 and 15-33 have non-precision markings which identify the runway centerline, thresholds, and designations. These markings should be properly maintained throughout the planning period.



LANDSIDE REQUIREMENTS

Landside facilities are those necessary for the handling of aircraft and passengers while on the ground. These facilities provide the essential interface between the air and ground transportation modes. The capacity of the various components of each area was examined in relation to projected demand to identify future landside facility needs. This includes components for general aviation needs such as:

- Aircraft Hangars
- Aircraft Parking Aprons
- General Aviation Terminal
- Auto Parking and Access
- Airport Support Facilities

HANGARS

Utilization of hangar space varies as a function of local climate, security and owner preferences. The trend in general aviation aircraft, whether single or multi-engine, is toward more sophisticated aircraft (and consequently, more expensive aircraft); therefore, many aircraft owners prefer enclosed hangar space to outside tie-downs.

The demand for aircraft storage hangars is dependent upon the number and type of aircraft expected to be based at the airport in the future. For planning purposes, it is necessary to estimate hangar requirements based upon forecast operational activity. However, hangar development should be based upon actual demand trends and financial investment conditions.

While a majority of aircraft owners prefer enclosed aircraft storage, a number of based aircraft will still tie down outside (due to the lack of hangar availability, hangar rental rates, and/or operational needs). Therefore, enclosed hangar facilities do not necessarily need to be planned for each based aircraft. At El Dorado Municipal Airport, all based aircraft are currently stored in hangars. The primary reason for this is the availability of both T-hangars and bulk storage in conventional hangars.

El Dorado Municipal Airport offers 19 T-hangar spaces. T-hangers are individual spaces within a larger structure. For T-hangars, a planning standard of 1,200 square feet per based aircraft will be used to determine future space requirements.

Conventional and executive hangars are open-space facilities with no supporting structure interference. There is a total of 26,580 square feet of conventional/executive hangar storage space. In addition, there is 1,972 square feet of terminal space dedicated to management and office needs. Conventional hangars are also used for maintenance activity; this activity limits the available space for aircraft storage. A planning standard of 175 additional square feet per based aircraft is considered for maintenance activities.

Table 3G provides a summary of the aircraft storage needs through the planning period.

TABLE 3G
Aircraft Storage Hangar Requirements
El Dorado Municipal Airport

		Future Requirement		
	Available	**Short Term**	**Intermediate Term**	**Long Term**
Total Based Aircraft	28	31	37	47
Aircraft to be Hangared	28	31	37	47
T-Hangar Positions	19	21	25	32
Conventional Hangar Positions	13	10	12	15
T-Hangar (1,200 s.f. per aircraft)	22,639	25,200	30,000	38,400
Conventional Hangars (2,000 s.f. per aircraft)	26,580	20,000	24,000	30,000
Total Hangar Area (s.f.)	**49,160**	**45,200**	**54,000**	**68,400**

Additional aircraft storage space is necessary to address forecast demand during each period of the analysis. In the short term, conventional/executive hangar space is adequate however 2,561 square feet of T-hangar space is needed. Through the long-term planning period, more than 19,240 square feet of combined storage / office space is needed.

AIRCRAFT PARKING APRON

A parking apron should provide space for a number of locally-based aircraft that are not stored in hangars, transient aircraft, and for maintenance activity. As discussed in the previous section, there are 8 aircraft tie-down arrangements provided for transient aircraft. A planning criterion of 650 square yards per aircraft was used to determine the apron requirements for local aircraft.

FAA Advisory Circular 150-5340-13, *Airport Design*, Change 9, suggests a methodology by which transient apron requirements can be determined from knowledge of busy-day operations. At El Dorado Municipal Airport, the number of itinerant spaces required was determined to be approximately 18 percent of the busy-day itinerant operations. A planning criterion of 800 square yards per aircraft was applied to determine future transient apron requirements for single- and multi-engine aircraft. For business jets (which can be much larger), a planning criterion of 1,600 square yards per aircraft position was used. For planning purposes, 85 percent of these spaces are assumed to be utilized by non-jet aircraft, which is in line with national trends.

Total apron parking requirements are presented in Table 3H. Currently, apron area at the airport totals approximately 11,000 square yards, with approximately 8 total tie-down positions. As shown in the table, there will likely be a need for more apron space throughout the planning period. As itinerant operations increase, especially by turbine aircraft, consideration should be given to constructing more apron space. In addition, the current apron is in poor condition and is need of total reconstruction.

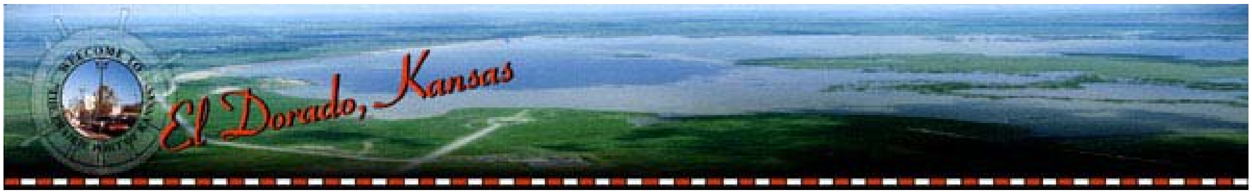


TABLE 3H Aircraft Apron Parking Requirements El Dorado Municipal Airport				
		Future Requirement		
	Available	Short Term	Intermediate Term	Long Term
Single-, Multi-engine Transient Aircraft Positions Apron Area (s.y.)	8 6,400	8 6,400	9 7,200	10 8,000
Transient Business Jet Positions Apron Area (s.y.)	0 0	2 3,200	3 4,800	4 6,400
Locally-Based Aircraft Positions Apron Area (s.y.)	0 0	0 0	0 0	0 0
Total Positions	**8**	**10**	**12**	**14**
Total Apron Area (s.y.)	**11,000**	**9,600**	**12,000**	**14,400**

GENERAL AVIATION TERMINAL FACILITIES

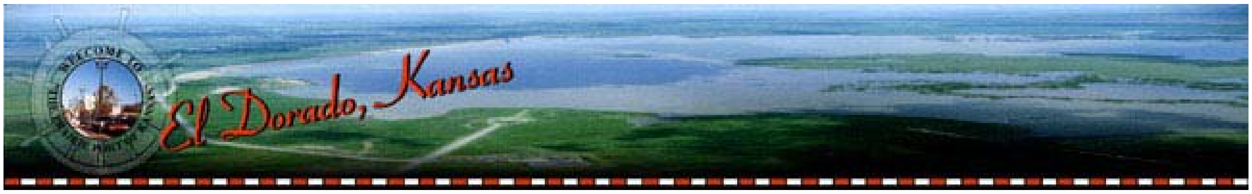
General aviation terminal facilities have several functions. Space is required for a pilots' lounge, flight planning, concessions, management, storage, and various other needs. This space is not necessarily limited to a single, separate terminal building, but can include space offered by fixed base operators (FBOs) for these functions and services.

The methodology used in estimating general aviation terminal facility needs is based on the number of airport users expected to utilize general aviation facilities. Terminal and pilot facility growth projections were based on forecasted itinerant operation levels. **Table 3J** outlines the general aviation terminal facility space requirements for El Dorado Municipal Airport.

TABLE 3J General Aviation Terminal Area Facilities El Dorado Municipal Airport					
	Current	Short Term	Intermediate Term	Long Term	% Annual Increase
Terminal Area	1,972	1,972	2,500	3,000	2.6%
Itinerant Operations	3,525	7,000	12,000	15,000	16.3%

As presented in the table, the existing public spaces appear adequate through the short term and into the intermediate term of the plan. By the long term, there may be a need for additional space.

An additional consideration for terminal space is the anticipated emergence of a new class of aircraft. A number of aircraft manufacturers are producing low-cost Very Light Jets (VLJ). The VLJ's typically have a capacity of up to six passengers. New companies, such as Pogo, Inc., are positioning themselves to utilize the VLJ's for on-demand air taxi services. The air



taxi businesses are banking on a desire by business travelers to avoid delays at major commercial service airports by taking advantage of the nationwide network of general aviation airports such as El Dorado Municipal Airport.

General aviation airports with appropriate terminal building services are better positioned to meet the needs of this new class of business traveler. The current terminal building serving El Dorado Municipal Airport should be adequate to meet these needs. As operations continue to increase, terminal/FBO expansion and construction should be considered. Standard up-keep and maintenance should continue at the existing facility.

SUPPORT REQUIREMENTS

Various facilities that do not logically fall within classifications of airside or landside facilities have also been identified. These other areas provide certain functions related to the overall operation of the airport and include:

- Automobile Parking
- Fuel Storage
- Aircraft Rescue and Firefighting
- Snow Removal
- Utilities
- Wash Rack
- Perimeter Fencing

AUTOMOBILE PARKING

General aviation vehicular parking demands have been determined for El Dorado Municipal Airport. Space determinations were based on an evaluation of existing airport use, as well as industry standards. Terminal automobile parking spaces required to meet general aviation itinerant demands were determined based on current parking capacity in relation to annual itinerant operations and comparing forecasted operations with the resulting capacity needs. It is projected that there will be a need for more terminal vehicle parking within the long term forecasted period..

The parking requirements of based aircraft owners should also be considered. Although some owners prefer to park their vehicles in their hangars, safety can be compromised when automobile and aircraft movements are intermixed. For this reason, separate parking requirements, which consider one-half of based aircraft at the airport, were applied to general aviation automobile parking space requirements. Parking requirements for the airport are summarized in **Table 3K**.

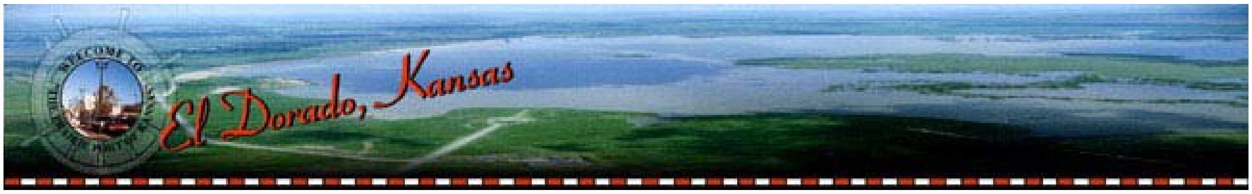


TABLE 3K **Vehicle Parking Requirements** **El Dorado Municipal Airport**				
		Future Requirement		
	Current	**Short Term**	**Intermediate Term**	**Long Term**
Itinerant Operations	3,525	7,000	12,000	15,000
Based Aircraft	28	31	37	47
Total Parking Spaces	**30**	**32**	**36**	**40**
Total Parking Area (s.f.)	**10,000**	**10,600**	**12,000**	**13,320**

Throughout the planning period, additional parking spaces are forecast to be needed. Future planning will develop more dedicated parking areas, with the goal of limiting the potential interaction of aircraft and vehicles. Locating parking in useful locations is critical for a general aviation airport. If a parking area is not conveniently located, then airport users will continue to drive on aircraft surfaces.

FUEL STORAGE

The fuel farm is located underground and between the terminal and main aircraft apron. There are two 6,000 gallon capacity tanks containing 100LL and Jet A, and one 4,000 gallon capacity tank containing MOGAS. The fuel farm is owned and operated by The City of El Dorado.

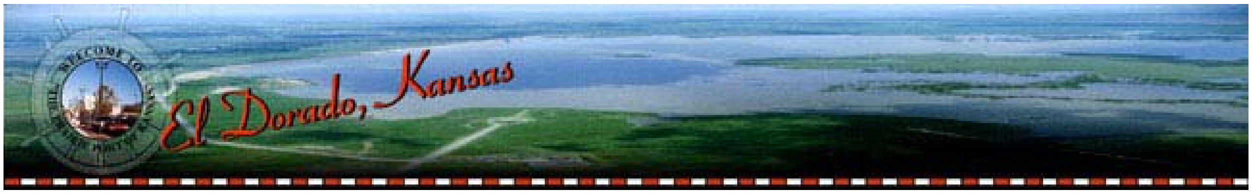
Fuel storage requirements are typically based upon maintaining a 2-week supply of fuel during an average month. However, more frequent deliveries can reduce the fuel storage capacity requirement.

Growth in operations and based aircraft will not significantly impact fuel storage requirements; however, forecasted operations suggest additional fuel storage may be required within the 20 year planning horizon. With the existing storage mix, the airport will be able to maintain a 2-week supply of both Avgas and Jet A fuel for the short and intermediate time periods.

AIRCRAFT RESCUE AND FIREFIGHTING (ARFF)

There are no ARFF facilities permanently based at El Dorado Municipal Airport. The City of El Dorado Fire Department provides ARFF services as needed. The Fire Station is located in downtown El Dorado, approximately four miles from the airport.

All El Dorado firefighters are trained and have obtained their ARFF certification.



SNOW REMOVAL

No snow removal equipment is maintained on the airport site. During periods of snowfall, the airport must be closed until city maintenance crews complete the clearing of vehicle access roads. With this arrangement, the clearing of the runways is considered secondary to the clearing of roads.

UTILITIES

Electrical, water and sanitary sewer services are available at the airport. Electrical service is provided by Rural Co-Op. Water is rural and the sewer system consists of an airport septic tank. SBC provides telephone service. No utility deficiencies have been identified; therefore, it is expected that there is sufficient availability of utilities to support any new or expanded facilities.

PERIMETER FENCING/GATES

Airport fencing and restricted access gating provides an additional level of safety beyond what the FAA requires for general aviation airports. With the threats of vandalism, theft, and even terrorism, it is prudent to maintain security fencing. By limiting access to the airport from non-aviation related traffic and pedestrians, community safety and security is enhanced. Perimeter security fencing is recommended at the airport.

SUMMARY

The intent of this chapter has been to outline the facilities required to meet potential aviation demands projected for El Dorado Municipal Airport for the planning horizon.

Following the facility requirements determination, the next step is to determine a direction of development which best meets these projected needs. The remainder of the master plan will be devoted to outlining this direction, its schedule and its cost.