TOWN OF ERIE
1874

Erie Municipal Tri-County Airport
Airport Master Plan
AIP Project No. 3-08-0090-04

Knight Piésold
CONSULTING

Town of Erie
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Project 1683A

Table of Contents

Chapter 1. Facility Inventory 1
1.0 Airport Location and Setting 1
1.1 Airport History 2
1.2 Airside Characteristics 2
1.3 Off-Airport Facilities and Airspace 4
1.4 Landside Characteristics 6
1.5 Through-the-Fence Operations and Off-Airport Facilities 9
1.6 Area Airports 9
1.7 Design Aircraft/Fleet Mix 12
1.8 Federally Funded Projects 12
1.9 Meteorological Conditions 13
1.10 FAR Part 77 Surfaces 16
1.11 Objects Affecting Navigable Airspace 17
1.12 Runway and Taxiway Standards 18
1.13 Socioeconomics 22
Chapter 2. Aviation Demand Forecasts 24
2.0 Introduction 24
2.1 Approach 24
2.2 Aviation Demand Elements 24
2.3 Based Aircraft 25
2.4 Based Aircraft Fleet Mix 27
2.5 Annual Operations 28
2.6 Instrument Approaches 30
2.7 Operational Peaking Characteristics 30
2.8 Airport Reference Code (ARC) Analysis 31
2.9 Forecast Summary 32
Chapter 3. Capacity Analysis and Facilities Requirements 33
3.0 Introduction 33
3.1 Capacity Analysis 33
3.2 Facility Requirements – Airside 34

Table of Contents (Continued)

3.3 Facility Requirements-Landside 39
3.4 Land Acquisition 47
3.5 Airport Zoning 47
3.6 Summary 47
Chapter 4. Alternatives Analysis 50
4.0 Introduction 50
4.1 Identification of Alternatives 50
4.2 Evaluation of Alternatives 52
4.3 Recommendation of Preferred Alternatives 57
Chapter 5. Environmental Overview 68
Chapter 6. Cost Estimates and Development Phasing 76
6.0 Introduction 76
6.1 Cost Estimates by Development Phase 76
Chapter 7. Airport Plans 81
7.0 Introduction 81
7.1 Cover and Index Sheet 81
7.2 Airport Layout Plan 81
7.3 Airport Layout Plan Data Sheet 82
7.4 FAR Part 77 Airspace Plan 82
7.5 Approach and Inner Approach Plan and Profile Drawings (4) 82
7.6 Building Area Plan 82
7.7 Airport Property Map, Exhibit A 82

Chapter 1. Facility Inventory

The Town of Erie owns and operates Erie Municipal Tri-County Airport. The Erie Board of Trustees is the governing body of the airport. The Airport Advisory Board provides advice to the Board of Trustees on airport policy issues.

This facility is an integral component of the community's transportation system. Recognizing the importance of the airport, the town sponsored preparation of this airport master plan to serve as a guide for future development.

This project was financed jointly by the Federal Aviation Administration (FAA), the State of Colorado, and the Town of Erie. The FAA provided assistance with a planning grant (AIP Project No. 03-08-0090-04) under the Airport Improvement Program (AIP) of the Airport and Airway Improvement Act of 1982, as amended. The State of Colorado provided funding through the Colorado Discretionary Aviation Grant (CDAG) program.

1.0 Airport Location and Setting

Erie Municipal Tri-County Airport is located approximately 3 miles south of the Central Business District (CBD) of Erie, Colorado. It is within the Town of Erie, Weld County, and the Denver Metropolitan Area. Figure 1-1 shows the airport's location relative to the surrounding area.

The airport site comprises approximately 115 acres. It is on all or portions of Sections 30 and 31, Township 1 North, Range 68 and 69 West. The field elevation is 5,130 feet above mean sea level, and the Airport Reference Point coordinates are 40E00'18" North and 105E02'37" West. Primary access to the airport is via Colorado State Highway 7 to Airport Drive, the road to the airport facilities.

The airport lies in a valley created by Coal Creek. Topography of the area rises in elevation, especially to the west, to meet the Front Range foothills. Significant mountainous terrain begins approximately 10 nautical miles (nm) due west of the airport. Several mountain peaks exceeding 14,000 feet in elevation are within 35 miles of the airport.

1.1 Airport History

Private developers constructed the original airport in conjunction with an adjacent low-density residential subdivision in 1977. Two lighted runways, a taxiway system, a large apron, and hangar were built.

Additional capital improvement projects were minimal until the airport became eligible for federal funding as a privately owned reliever airport in the late 1980s. The FAA provided a planning grant for the Denver Regional Council of Governments (DRCOG) to study the feasibility of designating the airport as a reliever. It subsequently received this status.

In May 1991, the existing Runway 15/33 and associated taxiways were reconstructed. The project included site preparation, drainage, runway construction, runway edge lighting, and other improvements. Subsequent to these projects, the private owners of the airport filed for bankruptcy. The bankruptcy trustee then listed the airport for sale. No private buyers were found.

The Town of Erie purchased the airport, with FAA Airport Improvement Program assistance, in December 1992. The airport was leased to Crosswind Aviation who operated the airport until March 1999.

The Town of Erie assumed management of the airfield on March 1, 1999. Town staff operated the fuel and tie-down concessions until a lease was entered into with McAir Aviation on June 1, 1999. The Town is currently responsible for the management, operation, and maintenance of the airport; private entities provide direct services to airport users.

1.2 Airside Characteristics

Airside facilities include runways, taxiways, and approach and landing aids. These are discussed below.

Runways. Runway 15/33 is 60 feet wide and 4,700 feet long. The runway is constructed of 5 inches of Portland cement concrete with a rated pavement strength of 12,500 pounds Single Wheel Gear (SWG). The Colorado Division of Aeronautics completed a Pavement Condition Index (PCI) study in 1999. The PCI for this runway averaged 84, or very good.

Runway 9/27 is 60 feet wide and 3,250 feet long. This crosswind runway is constructed of asphalt with unknown pavement strength. The PCI study stated that this runway's pavement strength varies from good to poor near the runway intersection and very poor to failed at the ends.

Taxiways. Taxiway A is a full-length parallel taxiway associated with Runway 15/33. It is 25 feet wide and has a 200-foot centerline-to-centerline separation from Runway 15/33. It has four connecting taxiways to Runway 15/33. Located on the west side of Runway 15/33, this taxiway is in very good to excellent condition. The parallel taxiway and connectors are constructed of Portland cement concrete and are equipped with reflective markers. Taxiway markings are in good to fair condition.

A privately owned, partial parallel taxiway of varying widths and unknown strength is located east of Runway 15/33. It is in very poor to failed condition (this area was not included in the PCI study). This taxiway is the primary access to the airfield for residents of the airpark on the east side of Runway 15/33. It is located on land not controlled by the airport.

Part of the taxiway system associated with Runway 9/27 is located east of Runway 15/33 and is on private property. The partial parallel taxiways have very poor to failed pavement. The southern partial parallel taxiway for Runway 9/27 is approximately 25 feet wide. This taxiway is the primary access to the airfield for those residences located southeast of Runway 9/27. The northern partial parallel taxiway for Runway 9/27 is approximately 25 feet wide. The northern partial parallel taxiway begins near the mid-field runway intersection and terminates at the Runway 27 end.

Numerous access taxiways join the airfield taxiway system allowing access for residential aircraft owners in the general airfield vicinity. A taxiway access to the off-airport hangar facilities and the Rocky Mountain Propeller facility is directly west of the primary apron. In addition, a taxiway crosses Coal Creek to through-the-fence operators west of the airport.

Aprons. Apron and hangar development has occurred only to the southwest of the mid-field runway intersection. Two aprons provide tie-down space for both based and transient aircraft. The primary apron is adjacent to the Fixed Base Operator's (FBO) facility. It consists of approximately 94,220 square yards of Portland cement concrete pavement with 32 tie-down

positions and is in good to excellent condition. The smaller apron, northeast of the FBO facility, consists of approximately 21,700 square yards of asphalt in poor to failed condition. This apron has 12 nonstandard tie-downs. Both apron areas have direct access to Taxiway A and Taxiway B.

Airfield Lighting and Visual Navigation Aids (Navaids). Runway 15/33 is equipped with Medium Intensity Runway Lights (MIRL). Keying the aircraft microphone on radio frequency 123.0 will activate the runway lights. Runway 9/27 was originally equipped with runway edge lighting; however, this system is no longer operational.

The airport has a standard rotating beacon located atop the FBO facility. In addition, the airfield is equipped with a lighted windsock and segmented circle. The segmented circle is approximately 700 feet north-northwest of the midfield runway intersection. The windsock and beacon are scheduled from sunset to sunrise.

Several visual navigational and landing aids are located on the airport. Runway 15 is equipped with a Runway End Identifier Lighting System (REIL), and Runways 15 and 33 are both equipped with Precision Approach Path Indicators (PAPI L-880). The PAPI system provides visual descent guidance information during the final approach to the runway. The PAPI's glidepath provides safe obstruction clearance within ±10° of the extended runway centerline and to 4 nm from the runway threshold.

Airfield Signage and Marking. Runway 15/33 has nonstandard runway marking elements appropriate for a visual runway with no approved straight-in instrument approach procedure. It is not marked in compliance with FAA Advisory Circular 150/5340-1G, *Standards for Airport Markings*. Runway 15/33 markings are in good to fair condition.

Runway 15/33 and its associated taxiways are equipped with airport signage. The current signage is not in compliance with FAA Advisory Circular 150/5340-18C, *Standards for Airport Sign Systems*, or FAA Advisory Circular 150/5345-44F, *Specifications for Taxiway and Runway Signs*. Neither Runway 9/27 nor Taxiway B are marked or equipped with airfield signage.

1.3 Off-Airport Facilities and Airspace

FAA-Operated Facilities and Radio Communication. FAA-operated facilities in the Erie area include the Denver Automated Flight Service Station (AFSS), Denver Air Route Traffic

Control Center (ARTCC), and Denver Terminal Radar Approach Control (TRACON). Erie Municipal is located under the Denver Class B airspace veil. Pilots are required to contact Denver TRACON prior to traversing the Class B Airspace; however, this requirement is not applicable if the aircraft is operated below the Class B Airspace. Denver Automated Flight Service Station provides weather data and other pertinent information to pilots on the ground and en route. Erie Municipal is non-tower airport; therefore, its single aviation communication facility is the Aeronautical Advisory Station (UNICOM) at frequency 123.0 mHZ.

Radio Navigational Aids. A navigational aid (NAVAID) is a visual or electronic device on the surface or airborne that provides point-to-point guidance or position data to aircraft in flight. These include:

- Very-High-Frequency Omnirange (VOR) stations send out directional radio signals. Equipment in an aircraft interprets this signal as a magnetic bearing from the VOR station.
- Distance-Measuring Equipment (DME) has been installed at many VOR stations. It gives a flight deck indication of the slant range distance between the aircraft and DME station.
- TACAN, Tactical Air Navigation, combines azimuth and distance measuring into one unit and is operated in the ultra high-frequency (UHF) band.
- VORTAC is a VOR and TACAN at one site.
- VOR/DME is a VOR and a DME co-located with no TACAN.

There are three radio navigational facilities within 30 nm of Erie Municipal. The Jeffco VOR/DME is located approximately 6 nm southeast. The Mile High VORTAC and the Denver VOR/DME are located approximately 20 nm southeast of the airport. These facilities are shown in Figure 1-2. The area is also traversed by a network of low altitude Victor airways.

Airspace. Airspace is the generic term that describes the different classifications of airspace – Class A, Class B, Class C, Class D, and Class E airspace. The Federal Aviation Regulations define airspace dimensions within which air traffic control service is provided to IFR flights and to VFR flights in accordance with the airspace classification.

Erie Municipal Tri-County Airport is in uncontrolled airspace below 700 feet aboveground level (AGL) with Class E airspace beginning at 700 feet AGL.

Denver Class B airspace begins at 10,000 feet MSL above the airport. Less than 1 nm south of the south end of Runway 15/33, Denver Class B airspace begins at 8,000 feet MSL. While in Class B airspace, pilots must be in radio contact with the Denver TRACON.

Erie Municipal is also located within the 30-nm Mode C arc for Denver International Airport. The Mode C arc defines an area in which an operational Mode 3/A 4096 code capable transponder with Mode C altitude encoding must be installed and operational in aircraft operating within the area. Specific requirements and exemptions to this operating requirement can be found in Federal Aviation Regulation (FAR) Part 91.215.

Instrument Approaches. Erie Municipal Tri-County Airport has a VOR/DME or GPS circle-to-land approach using the Jeffco VOR/DME 023° radial. The ceiling and visibility minimums for the approach are contained in Table 1.1. For airspace and approach planning, this is considered a visual approach. Ceiling elevations are AGL, and visibility is in statute miles.

Table 1.1
Instrument Approach Minimums

Published Approach	Ceiling	Visibility
VOR/DME or GPS-A (Approach Category A)	710 feet	1 mile
VOR/DME or GPS-A (Approach Category B)	730 feet	1 mile
VOR/DME or GPS-A (Approach Category C)	750 feet	2¼ miles

Source: U.S. Terminal Procedures, Southwest (SW) Volume 1 of 2

1.4 Landside Characteristics

For the purposes of this report, landside facilities will include airport buildings, airport tenants, aircraft storage and airport buildings, public safety facilities, snow removal and airfield maintenance, utilities, fuel storage facilities, through-the-fence operations, and off-airport facilities.

Airport Buildings. At the present time, the airport has 15 Port-a-Port Hangars and one large conventional hangar with an attached office building. The offices of the Airport Manager and the

FBO, McAir Aviation, are in the large hangar centrally located near midfield and north of the primary apron.

Airport Tenants. Services available at the airport include aircraft tie-downs, hangar rental, flight instruction, charter operations, fuel sales, propeller repair, engine overhaul and servicing, and airframe and power plant maintenance. Table 1.2 lists the services provided by airport tenants located on or adjacent to the airport.

Table 1.2
Airport Services Provided

Tenant	Services
McAir Aviation	Fuel sales, pilot supplies, and flight instruction
Rocky Mountain Propellers	Propeller repair, overhaul, and service
Alpine Aero Services	Airframe and power plant inspection, repair, and maintenance
AeroSystems	Airframe and power plant inspection, repair, and maintenance; major airframe repair; aircraft modification
Mad Eagle	Aircraft storage and hangars
Tri-County Instruments	Repair and overhaul of aircraft instruments

Source: Personal interviews

Aircraft Storage and Airport Buildings. A number of individuals occupy hangars and tie-down positions on the airport. Table 1.3 identifies the aircraft storage and airport buildings as of November 1999.

Table 1.3
Aircraft Storage and Hangars

Building	Number	Condition/Use	Approximate Size (sq. ft.)
Description		Poor/FBO and Hangar	10,000
Hangar Nest 1	1	Good/Aircraft Storage	760
Hangar Nest 1	2	Good/Aircraft Storage	760
Hangar Nest 1	3	Good/Aircraft Storage	760
Hangar Nest 2	4	Good/Aircraft Storage	1,017
Hangar Nest 2	5	Good/Aircraft Storage	1,017
Hangar Nest 2	6	Good/Aircraft Storage	1,017
Hangar Nest 2	7	Good/Aircraft Storage	1,017
Hangar Nest 2	8	Good/Aircraft Storage	1,017
Hangar Nest 2	9	Good/Aircraft Storage	1,017
Hangar Nest 2	10	Good/Aircraft Storage	1,017
Hangar Nest 2	11	Good/Aircraft Storage	1,017
Hangar Nest 2	12	Good/Aircraft Storage	1,017
Hangar Nest 2	13	Good/Aircraft Storage	1,017
Hangar Nest 2	14	Good/Aircraft Storage	1,017
Hangar Nest 3	15	Good/Aircraft Storage	760
Cargo Box		Fair/General Storage	320
Total			**24,547**

Source: Interviews and Site Visit

Public Safety Facilities. Emergency services are provided to the airport by several agencies. The Mountain View Fire Protection District provides fire and rescue services to the airport. American Medical Response (AMR) and the Tri-Area Ambulance District provide Emergency Medical Services. The Erie Police Department is responsible for law enforcement and security at the airport.

Snow Removal and Airfield Maintenance. Airport management performs snow removal and maintenance. A 1995 Dodge 1-ton pickup truck is used for maintenance, operations, and snow removal.

Utilities. The Public Service Company provides electrical and natural gas service. The Left Hand Water District supplies potable water. Septic systems handle sewage. US WEST provides local telephone service.

Fuel Storage Facilities. The fuel system consists of three underground tanks – an 8,000-gallon (100-LL) tank, a 3,000-gallon (Jet-A) tank, and a 3,000-gallon (Mogas) tank. Fueling

operations are conducted from the fueling island located near the main hangar on the primary apron.

1.5 Through-the-Fence Operations and Off-Airport Facilities

The majority of based aircraft at Erie Municipal Tri-County Airport are stored off airport property in privately-owned hangars or on tie-downs on private property. The largest concentration of aircraft is in the Tri-County Hangars storage complex, comprising 99 T-hangars in three structures. Access from this location to the airport is via a private taxiway to the west of the main ramp.

The second largest concentration is the Mad Eagle Hangar Development on the west side of Coal Creek. There is one large conventional hangar and four smaller box hangars. Concrete pads are available for new hangar construction or for use as tie-downs.

AeroSystems, Inc. is located north of the Mad Eagle Hangar Development. They provide airframe and power plant maintenance and aircraft modifications. AeroSystems operates in an 8,000-square-foot hangar.

Rocky Mountain Propellers, Inc. is located due southwest of the primary apron. Rocky Mountain Propellers does not have an aircraft hangar; however, they have a small ramp and tie-downs for three aircraft.

As noted earlier, the airport was originally constructed in conjunction with a residential development. Twenty-seven homes (existing or under construction) have hangars and access taxiways.

1.6 Area Airports

Ten public use airports are within 30 nm of the airport. Table 1.4 identifies these facilities. Figure 1.2 depicts the location of Erie Municipal and its relationship to other area airports and the surrounding airspace, including the Denver Class B Airspace.

Table 1.4
Area Airports

Airport and Designation	Distance From Airport	Direction From Airport	Instrument Approach	Longest Runway
Aurora Airpark (Public/Private) 01V	25	Southeast	No	4,700 ft.
Boulder Municipal (Public 1V5	9	West/Northwest	No	4,100 ft.
Buckley ANG (Military) BKF	23	Southeast	Yes/Military	11,000 ft.
Centennial (Public) APA	28	South/Southeast	Yes	10,000 ft.
Denver International (Public) DEN	20	East/Southeast	Yes	12,000 ft.
Easton/Valley View (Public) 11V	30	North/Northeast	No	4,000 ft.
Fort Collins/Loveland Airport (Public) FNL	27	North	Yes	8,500 ft.
Front Range (Public) FTG	27	East/Southeast	Yes	8,000 ft.
Jefferson County (Public) BJC	7	South/Southwest	Yes	9,000 ft.
Vance Brand/Longmont (Public) 2V2	11	North/Northwest	Yes	4,800 ft.

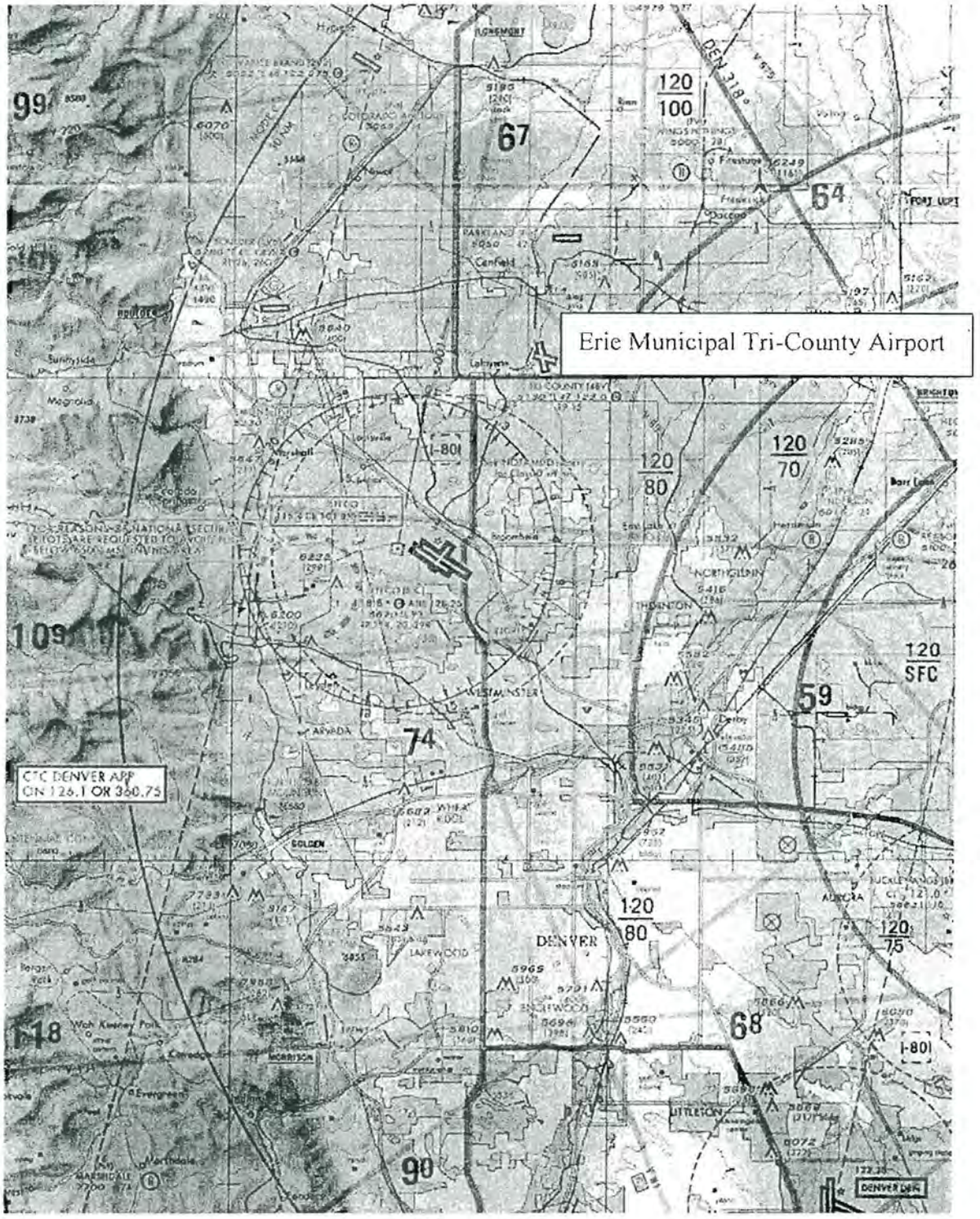


Figure 1-2
Location Map

1.7 Design Aircraft/Fleet Mix

To apply procedures for airport capacity and delay planning, a reasonable understanding of the aeronautical activities being conducted at, or projected for, the airport is required. Using recommendations found in FAA AC 150/5060-5, *Airport Capacity and Delay*, an aircraft fleet mix analysis was prepared. Aircraft fleet mix describes the relative percentage of operations conducted by each of the four classes of aircraft – A, B, C, and D, as identified in Table 1.5. These criteria are used for capacity planning only and differ from the information that defines the Airport Reference Code (ARC). The ARC is described in the following chapter. Operations at Erie Municipal Tri-County Airport consist of Class A and B aircraft.

Table 1.5
Aircraft Classification

Aircraft Classification	Description
Class A	Single-engine: 12,500 pounds or less MCTW
Class B	Multi-engine: 12,500 pounds or less MCTW
Class C	Large multi-engine: 12,500 to 300,000 pounds MCTW; includes corporate jets
Class D	Heavy multi-engine: 300,000 pounds MCTW or more

MCTW – Maximum certified take-off weight
Source: FAA AC 5060-5, Capacity Planning Manual

1.8 Federally Funded Projects

The airport has completed federally-funded projects identified in Table 1.6. AIP 3-08-0090-05 is a current project involving land acquisition and airfield signage.

Table 1.6
FAA Funded Projects

Project No.	Project	Date	Federal Amount
03-08-0090-01	Reconstruct Runway 15/33; install visual descent guidance indicators; reconstruct taxiway; acquire land for airport development	2/24/99	$1,345,000
03-08-0090-02	Acquire existing private airport; Airport Layout Plan	12/92	$797,000
03-08-0090-03	Rehabilitate apron	8/28/97	$814,813
03-08-0090-04	Airport Master Plan Study	10/15/99	$101,438

Source: FAA Denver Airports District Office

1.9 Meteorological Conditions

Meteorological conditions have a direct impact on the operations conducted at an airport. Wind conditions determine the direction in which aircraft take off and land. Ceiling and visibility dictate whether aircraft are operated under visual or instrument flight rules.

Local Data. Climatological conditions impact the use of the runways system at an airport. Weather data have been collected by the Western Regional Climate Center for the City of Boulder. The conditions shown in Table 1.7 are representative of weather expected at Erie Municipal Tri- County Airport.

Table 1.7
Boulder, Colorado
Monthly Climate Summary
Period of Record: 8/1/1948 to 12/31/1999

Record	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
Average Max. Temp. (F))	45.1	48.3	53.8	62.4	71.7	81.8	87.3	85.6	77.6	67.3	53.6	47.1	65.1
Average Min. Temp. (F)	20.1	23.6	27.8	35.6	44.6	53.0	58.6	57.4	49.0	39.2	28.6	23.0	38.4
Average Total Precip. (m)	0.7	0.8	1.7	2.4	3.1	2.2	1.9	1.6	1.6	1.3	1.2	0.7	19.2
Average Total Snowfall (in)	10.9	10.8	17.4	11.9	1.4	0.0	0.0	0.0	1.5	5.2	13.7	10.8	83.7
Average Snow Depth (in)	1.0	1.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0	1.0	1.0

Ceiling and Visibility. Ceiling and visibility dictate whether operations are conducted under visual or instrument flight rules. Pilots may operate under visual flight rules (VFR) at Erie Municipal Tri-County Airport if there is one mile of visibility and the pilot can remain clear of clouds. In the general area around Erie Municipal Tri-County Airport, Class E airspace begins at 700 feet above ground level with the VFR requirements raised to 3 statute miles visibility with 500 feet below, 1,000 feet above, and 2,000 feet horizontal distance from clouds. During VFR operations, the pilot is responsible for separation from other air traffic, maintaining minimum safe altitude, and maintaining clearance of objects and persons on the ground.

If weather conditions are below the minimums for VFR, then pilots must fly under Instrument Flight Rules (IFR). Pilots flying under IFR file an IFR flight plan and receive an appropriate Air Traffic Control (ATC) clearance. During IFR flight, Air Traffic Control (ATC) is responsible

for the separation of air traffic. Instrument rated pilots may elect to operate under IFR while in Visual Meteorological Conditions; however, the pilot continues to have responsibility for separation of air traffic.

Density Altitude. An extremely important meteorological factor to pilots is density altitude. Density altitude is not a height reference; rather it is used as an index of aircraft performance. Air pressure, temperature, and humidity determine air density. As altitude increases, air density decreases. Air density also decreases with high temperatures and high humidity. These effects are cumulative so that aircraft performance is most affected at high altitude airports during periods of high temperature and humidity.

Higher density altitude reduces performance in all types of aircraft. The consequences of high density altitude include an increased take-off and landing roll, a reduced rate of climb, and a lower aircraft service ceiling. Density altitude is a concern at Erie Municipal Tri-County Airport given its high temperatures in the summer, elevation, and rising terrain in the surrounding area. For example, a fully loaded Cessna 172R will take off in 845 feet at sea level at 32 degrees Fahrenheit, the same aircraft will need 1,705 feet to take off at an elevation of 5,000 feet at 90 degrees Fahrenheit.

Runway Wind Coverage. Wind direction and speed determine the desired alignment and configuration of each runway. Aircraft land and take off into the wind in order to reduce the ground roll required. The ability to land and take off in crosswind conditions varies according to pilot proficiency and aircraft type.

The FAA recommends that airports have adequate runways to provide for coverage of 95 percent of all wind directions and velocity specific to and dependent upon the ARC for the critical aircraft. The crosswind component of wind direction and velocity is the resultant vector that acts at a right angle to the runway. It is equal to the wind velocity multiplied by the trigonometric sine of the angle between the wind direction and the runway direction. The allowable crosswind component for runway width and the related ARC is shown in Table 1.8.

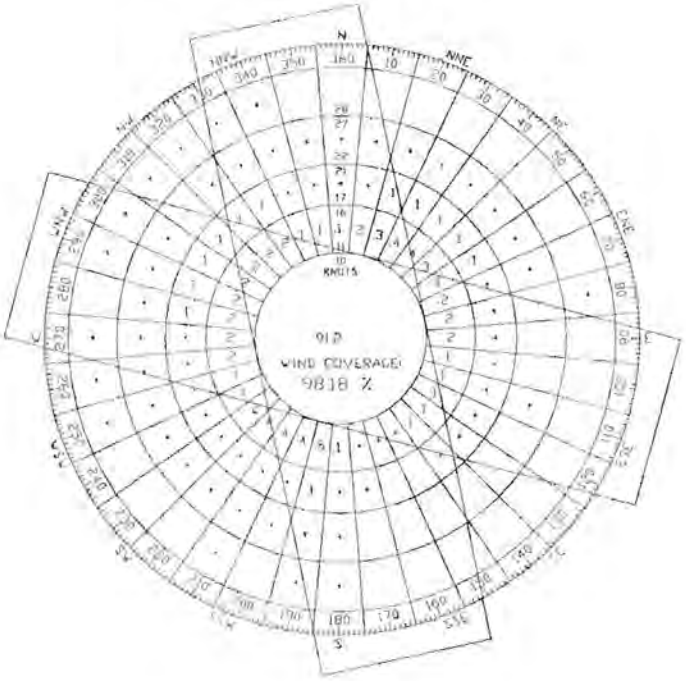
Table 1.8
Acceptable Crosswind Component

Acceptable Crosswind in Knots	Airport Reference Code
10.5	A-I and B-I
13	A-II and B-II
16	A-III, B-III, and C-I through D-III
20	A-IV through D-VI

Source: FAA AC 150/5300-13

As part of the inventory process, an updated wind rose was prepared from a National Oceanic and Atmospheric Administration (NOAA) tower located northeast of the airfield site. This tower provides the closest, most reliable and accurate source of wind information for the airport. This information indicates that the crosswind coverage for a component of 10.5 knots for ARC A-I and B-I is 98.18 percent with the existing combined runway configuration. Analysis of Figure 1.3 indicates that 95 percent of the 10.5-knot crosswind coverage is provided by either runway independent of the other. It should be noted, however, that the available data only cover a nine-month period.

Figure 1.3
All Weather Wind Rose



Source: NOAA Research Tower
March through November 1999

Runway 09/27	Runway 15/33	Combined Crosswind
10.5 Knot Crosswind = 95.18%	10.5 Knot Crosswind = 95.62%	Both Runways 10.5 Knot Crosswind = 98.18%
13 Knot Crosswind = 97.13%	13 Knot Crosswind = 97.65%	With Runway 09/27 - 13 Knot Crosswind & Runway 15/33 - 10.5 knot Crosswind = 98.82%

1.10 FAR Part 77 Surfaces

Federal Aviation Regulation (FAR) Part 77 establishes imaginary surfaces of varying dimensions that are used as a guide to provide a safe operating environment for aircraft operation. These are based upon the type of approach procedure available or planned for the runway and the specific FAR Part 77 runway category criteria. As defined in FAR Part 77, a "Utility Runway" is constructed for use by propeller-driven aircraft of 12,500 pounds maximum gross weight and less. Runway 9/27 and Runway 15/33 are classified as utility runways. Table 1.9 provides the criteria for Part 77 surfaces associated with Erie Municipal.

Table 1.9
Federal Aviation Regulation Part 77

Part 77 Surface	Dimensions
Conical	Extends outward and upward from the periphery of the horizontal surface at a slope of 20 to 1 and for a horizontal distance of 4,000 feet.
Horizontal	The Horizontal plane is 150 feet above the established airport elevation. The perimeter is constructed by swinging arcs of 5,000 feet from the center of the primary surface at each of Runway 15/33 and Runway 9/27.
Transitional	Extends outward and upward at right angles to the runway centerline and extended centerline. Starts at the sides of the primary surface at a slope of 7 to 1.
Approach	All runway ends: Inner width of 250 feet, outer width of 1,250 feet, and extending for a horizontal distance of 5,000 feet at a slope of 20 to 1.
Primary	250 feet wide on centerline extending 200 feet beyond each Runway end.

1.11 Objects Affecting Navigable Airspace

The criteria for objects affecting navigable airspace (obstructions) contained in FAR Part 77 apply to existing and proposed manmade objects, objects of natural growth, and terrain. These criteria indicate the critical areas in the vicinity of airports that should be kept free of obstructions. Secondary areas may contain obstructions if they are determined to be non-hazardous by an aeronautical study and if they are marked and lighted as specified in the aeronautical study determination. Airfield navigational aids, lighting, and visual aids, by nature of their location, may constitute obstructions; but these objects do not violate FAR Part 77 requirements, as they are essential to the operation of the airport.

The 1998 Airport Layout Plan identified Part 77 surface penetrations, including both approach surfaces for Runway 15/33, Runway 9/27, and the 7:1 Transitional Surfaces. A supplemental survey was completed as part of this Master Plan to provide a current complete inventory of obstructions. These obstructions are identified in Table 1.10.

Table 1.10
Part 77, Obstructions to Navigable Airspace

Location and Description	Approximate Penetration	Recommended Disposition
Block 3, Lot 2 *Residence*	16 feet	Install Obstruction Lighting
Block 3, Lot 2 *Residence*	±2 feet	None
Block 3, Lot 18 *Residential Obstruction*	5 feet	Install Obstruction Lighting
Block 3, Lot 18 *Terrain*	±16 feet	
Block 3, Lot 20 *Terracing*	±10 feet	Displace
Block 4, Lot 19 *Residential Obstruction*	23 feet	Install Obstruction Lighting
Block 4, Lot 5/6 *Residence*	±14 feet	Install Obstruction Lighting
Block 4, Lot 4 *Residence*	±2 feet	None
Coal Creek ROW (Southwest primary surface and approach extent of Runway 9) *Tree Obstruction*	Sloping to ±11 feet	Displace
Phillips Subdivision (Northwest primary surface extent of Runway 9) *Tree Obstruction*	7 feet	Remove
Phillips Subdivision (Northwest primary surface extent of Runway 9) *Tree Obstruction*	±37.5 feet	Remove
East ± 1,200 feet of Runway 9/27 Primary Surface *Terrain Obstruction*	±11 feet	Displace

1.12 Runway and Taxiway Standards

The ARC system is used to relate airport design criteria to the operational and physical characteristics of the design aircraft intended to operate at the airport. The design aircraft usually has the largest wingspan and the fastest approach speed. Designation as the design aircraft requires 500 or more operations per year. Aircraft weighing less than 12,500 pounds and having

an ARC of B-I were identified as the design aircraft for Erie Municipal. Table 1.11 provides the FAA standards for runways serving such aircraft.

Table 1.11
FAA Runway/Taxiway Standards
Runway 15/33 and Runway 9/27 (Small Aircraft Exclusively)

Description	Approach Visibility Minimums Not Lower than 3/4 Mile	Existing Dimensions
Runway Width	60 feet wide	60 feet
Runway Obstacle Free Zone (ROFZ)	250 feet in width and 200 feet beyond each runway end	250 feet in width and 200 feet beyond each runway end
Runway Object Free Area (ROFA)	250 feet in width and 240 feet beyond each runway end	250 feet in width and 240 feet beyond each runway end
Runway Safety Area (RSA)	120 feet in width and 240 feet beyond each runway end	120 feet in width and 240 feet beyond each runway end
Runway Protection Zone (RPZ)	Inner width of 250 feet, outer width of 450 feet, and a horizontal distance of 1,000 feet*	Inner width of 250 feet, outer width of 450 feet, and a horizontal distance of 1,000 feet
Holdline**	125 feet from runway centerline	125 feet from runway centerline
Taxiway Width	25 feet wide	25 feet wide
Taxiway Object Free Area (TOFA)	89 feet wide	89 feet wide
Taxiway Safety Area (TSA)	49 feet wide	49 feet wide

* *RPZ dimensions are for approach visibility minimums not lower than one mile; Erie Municipal Tri-County Airport has minimums not lower than one mile.*

** *Holdline distance of 125 feet for ARC B-I (Small Aircraft) includes visual and non-precision runways*

Nonstandard Conditions. Nonstandard Conditions are existing geometric dimensions that do not meet FAA guidelines. These nonstandard conditions are noted in Table 1.12. It is important that disposition be completed on these items as continuing nonstandard conditions may jeopardize future federal funding.

Table 1.12
Nonstandard Conditions

Description/Location	FAA Standard	Existing Conditions
Longitudinal Grade Runway 9/27	Maximum grade change no greater than 2%	Maximum grade change greater than 2% near 27 end
Transverse Grade (Adjacent to and Beyond Safety Area) Runway	Recommended maximum grade of no more than 4 to 1 beyond the limits of the safety areas	More than a 4 to 1 slope beyond the limits of the safety areas
Transverse Grade (Within Safety Area) Runway 9/27, Taxiway B	Recommended 3% grade for safety area shoulder area and 1.5 to 5% grade from the edge of the shoulder to the safety area extent	Exceeds recommended 3% grade for safety area shoulder area and 1.5 to 5% grade from the edge of the shoulder to the safety area extent
Object Free Area Runway 9/27, Taxiway A and B	Acquire land ownership or easement	Maintain airport sponsor control
Runway Protection Zone, Runways 9, 27, 15, and 33	Acquire land ownership or easement for the entire zone, defined as sufficient control	Maintain airport sponsor control
Field Marking Runway 9/27, Taxiway B	Markings in accordance with FAA Advisory Circular 150/5340-1H	Airfield markings are unreadable
Field Lighting/ Reflective Markers Runway 9/27, Taxiway B	Recommend installation of runway and taxiway edge lights or reflective markers	Runway and taxiway edge lights or retroreflective lights are not installed
Field Signage/Markings Runway 15/33, 9/27, Taxiway A and B	Locations and specifications in compliance with FAA guidance	Not properly located and not in compliance with current FAA guidance
Safety Area Grade (Coal Creek) Runway 9	Safety area should be graded to support the occasional passage of aircraft and comply with FAA grading standards	Safety area is not graded to support the occasional passage of aircraft
Runway Visibility Zone	Airport sponsor should maintain land ownership control and remove objects which interfere with RVZ line of sight	The airport sponsor does not have complete control over the land within the RVZ, and objects exist which interfere with line of sight

Table 1.12
Nonstandard Conditions

Description/Location	FAA Standard	Existing Conditions
Access Taxiways Adjacent to Off-Airport Property	Taxiways should be constructed to pavement strength, airfield design criteria, signage and marking, grades, and bridge standards; taxiways should be designed for aircraft traffic only	Taxiways are not constructed to pavement strength, airfield design criteria, signage and marking; grades, and bridge standards; taxiway adjacent western apron allows aircraft traffic and residential traffic to interact
Runway Width, Taxiway B	Maintain 25-foot width	20-foot to 25-foot width
Tie-downs North Apron	Locations in accordance with FAA AC 150/5300-13	Nonstandard design
Port-a-Ports Hangars West of FBO	Locations in accordance with FAA AC 150/5300-13	Nonstandard TOFA separation
Runway North of/Adjacent to FBO and Taxiway Adjacent to Parking Lot	Locations/separations in accordance with FAA AC 150/5300-13	Fence in TOFA near parking lot and electrical vault in TOFA near north apron/FBO
Adjacent/Along Runway 9/27 and Near A3 on Runway 15/33	Non-frangible objects within OFA (old LIRL on Runway 9/27 and sign adjacent A3)	Maintain frangible objects Within OFA

FAA Advisory Circular 150/5300-13 specifies grade tolerances for runway surfaces, both transverse and longitudinal. The longitudinal grade of the runway is measured from runway end to runway end. The transverse grade of the runway is measured on a perpendicular from the runway centerline to each edge. FAA guidance with respect to the former indicates that the maximum longitudinal grade is ± 2 percent. Regarding airfield transverse slope, the guidance specifies, "...transverse slopes should be adequate to prevent the accumulation of water on the surface." This may be translated into specific grades from the runway centerline to the runway safety area edges, and then at a 4 to 1 recommended slope from these safety areas. Runway 15/33, 9/27, Taxiway A, and Taxiway B do not meet FAA standards.

The Safety Area for Runway 9/27 also does not meet FAA design standards. FAA Advisory Circular 150/5300-13 indicates that Safety Areas should be cleared and graded with no potentially hazardous ruts, humps, etc. These areas should be able to support snow removal and aircraft rescue and fire fighting equipment. Occasional passages of aircraft should be possible without causing structural damage to the aircraft under dry conditions.

Runway and Taxiway Object Free (ROFA and TOFA) area standard dimensions are presented in Table 1.11. FAA guidance specifies, "The OFA clearing standard requires clearing the OFA of above ground objects protruding above the runway safety area edge elevation...objects non-essential for air navigation or aircraft ground maneuvering purposes are not to be placed in the OFA." Sufficient control may be defined as fee simple land ownership or an easement. At Erie Municipal, there is insufficient control of the land adjacent to Runway 15/33 to meet standards. In addition, a significant portion of the Object Free Area for Runway 9/27 is not subject to airport sponsor control as previously defined. This portion includes nearly all of the eastern half the pavement area and OFA for Runway 9/27. This condition is also nonstandard.

Advisory Circulars 150/5340-18C, *Standards for Airport Sign Systems*, and 150/5340-1H, *Standards for Airport Markings* identify criteria for airfield marking and signage. Runway 9/27 does not comply with the guidance in either of these circulars. Runway 9/27 and Taxiway B do not have a signage system. Runway 15/33 is equipped with airfield signage that is currently not in compliance. A project is underway to correct deficiencies.

Runway Protection Zones are established near the runway end. The FAA recommends that these be owned by the airport to prevent incompatible objects and activities. Neither end of Runway 9/27 is under control of the Town of Erie. Runways 15 and 33 are partially under control of the Town. Fee simple land acquisition or acquisition easements would bring these areas to standard.

Runway visibility zones involve line-of-sight criteria for airports with intersecting runways. The FAA defines a runway visibility zone as an area in which runway grades, terrain, structures, and permanent objects must be configured such that there will be an unobstructed line of sight between intersecting runways, specific to runway profiles which permit any two points 5 feet above the runway centerline to be mutually visible within this visibility zone. FAA guidance further states that the airport should control the land within the RVZ dimensions. This control should be exercised by fee simple land acquisition or avigation easement. The runway visibility zone at Erie Municipal is identified on the Airport Layout Plan discussed later in this report.

1.13 Socioeconomics

The existing socioeconomic condition of a particular region has historically impacted aviation activity within that area. The two primary socioeconomic indicators that are often analyzed in the preparation of aviation-related studies are population estimates and employment statistics.

Population. Both the Town of Erie and the Tri-County region have demonstrated continued population growth from the early 1930s through the present. The 1990 census indicated that the population of the Town of Erie was 1,258 people. By 2000, the Town's population had grown to 6,291, an increase of 400 percent since 1990.

Census 2000 shows that population levels for the three counties adjacent to the airport are 291,288 for Boulder County; 180,956 for Weld County; and 263,857 for Adams County. Colorado State Demography Section projections for the three counties are as follows:

	2005	2010	2020
Adams County:	379,470	426,034	513,820
Boulder County:	303,331	324,662	363,511
Weld County:	187,976	208,415	250,488

Employment. The U.S. Department of Commerce's *1999 County Business Patterns* indicates the following employment levels for the three counties:

- Adams County: 122,961
- Boulder County: 145,191
- Weld County: 54,202

The top three sectors, by percentage of total employment, vary in these counties. In Adams County, these are retail trade 13 percent, construction 12 percent, and transportation and warehousing 12 percent. In Boulder County, the corresponding sectors are manufacturing 18 percent, professional services 15 percent, and retail trade 12 percent. For Weld County, these are manufacturing 20 percent, retail trade 13 percent, and construction 12 percent.

Chapter 2. Aviation Demand Forecasts

2.0 Introduction

In order to determine additional facilities that might be needed at an airport, aviation demand must be forecast. Forecasts represent best estimates of future activity; they should be viewed as levels that could reasonably be expected. Their chief value lies in establishing the size and configuration of facilities that will be required when certain activity levels are actually reached. This activity level could be reached earlier or later than the forecast, horizon year, but it is still the point at which facility development should be initiated.

2.1 Approach

The development of aviation demand forecasts proceeds through two distinct phases – the analytical followed by the judgmental. In general, past aviation activity data are examined in anticipation of identifying trends. These may provide indications of future activity levels. Various statistical and non-statistical techniques may be used to prepare alternative projections. The second phase of demand forecasting requires judgment. The analyst examines various growth projections and makes a selection of the preferred forecast.

2.2 Aviation Demand Elements

The key demand components for Erie Municipal are based aircraft, and aircraft operations. Other important elements are typically derived from these basic indicators. For this study, aviation activity forecasts were prepared for:

- Based Aircraft
- Based Aircraft Fleet Mix
- Annual Operations
- Instrument Approaches
- Operational Peaking Characteristics
- Airport Reference Code (ARC) Analysis
- Forecast Summary

The following sections describe the methodologies used to prepare these forecasts and the results obtained.

2.3 Based Aircraft

Historical Data. The Airport Master Record (5010) provides data about airports including the number of based aircraft and operations. Historical Airport Master Records may permit identification of activity trends. Following are the based aircraft data for Erie Municipal. Records were not available for 1989, 1990, 1994, 1995, and 1998.

- 1985: 333
- 1986: 333
- 1987: 350
- 1988: 246
- 1991: 254
- 1992: 267
- 1993: 167
- 1996: 201
- 1997: 201
- 1999: 204

Existing Forecasts. Two forecasts for Erie Municipal were consulted. The first was the FAA's *Terminal Area Forecasts* (*TAF*); the second was the Denver Regional Council of Governments. The FAA's *TAF* provide estimates for various demand elements including based aircraft. *TAF* projections of based aircraft for Erie are as follow:

- 2000: 201 based aircraft
- 2005: 201 based aircraft
- 2010: 201 based aircraft
- 2015: 201 based aircraft

As noted above, the FAA's Form 5010 indicated the presence of 204 based aircraft in 1999.

Forecasts of activity at Erie Municipal have also been prepared by the Denver Regional Council of Governments (DRCOG). The data base upon which these forecasts were based is provided in Table 2.1. Based upon this information, DRCOG prepared forecasts as follows:

- 2008: 164
- 2010: 179
- 2020: 180

Table 2.1
DRCOG AIR Transportation Data File
Based Aircraft

Year	Total Based Aircraft
1978	165
1979	165
1980	150
1981	104
1982	160
1983	251
1984	293
1985	254
1986	213
1987	239
1988	275
1989	288
1990	306
1991	254
1992	270
1993	159
1994	171
1995	179

Source: DRCOG Air Transportation Data File

Planning Forecast. The early 1990s showed based aircraft to be in the mid-200s based on the FAA's Airport Master Records. Actual counts associated with the 1992 Airport Master Plan indicated 267 based aircraft. Changes in management from 1992 to 1993 apparently resulted in a decrease. The number of based aircraft shows a positive growth rate after 1993 with an increase of 37 based aircraft by 1999. The average annual growth rate between 1993 and 1999 was approximately 5 percent. With continuing strong economic conditions, this growth rate could be expected to continue for at least the next five years. Further, the Erie area has experienced significant residential development in recent years. Other factors suggesting such growth at Erie Municipal include population growth in the area as the metropolitan area expands northward and the increasing attractiveness of the airport to small aircraft users as other facilities, such as Jefferson County Airport and Centennial Airport, become more predominantly used by business jets and similar equipment.

Table 2.2 provides the planning forecast of based aircraft. It provides an estimate of based aircraft numbers over the 20-year planning period of this study. Several elements were evaluated in developing the forecast.

The Form 5010 indicates 204 based aircraft in 1999; therefore, the airport has exceeded the forecasts from DRCOG for year 2020 as well as that for 2015 in the *TAF*. The projected growth at the airport is 5 percent annually for the next five years and 2 percent for the following 15 years. The former is consistent with growth from 1993 to 1999. The lower rate for the balance of the planning period reflects potential lower economic and population growth.

Table 2.2
Comparison of Based Aircraft Estimates

Description	2005	2010	2020
Planning Forecast	264	292	322
DRCOG Regional Forecast	164	179	180

2.4 Based Aircraft Fleet Mix

Aircraft mix concerns the types of airplanes that are, or will be, based at the airport as well as transients that will use the facility. Aircraft mix is used in considering the need for and sizing of future facilities, such as hangars. The FAA's Forms 5010 were consulted to identify fleet mix characteristics for based aircraft. This information is presented in Table 2.3.

Table 2.3
Airport Master Records (5010)

Based Aircraft	1992	1993	1996	1997	1998	1999
Single Engine	220	150	192	192	NA	194
Multi Engine	40	4	4	4	NA	5
Jet	0	0	0	0	NA	0
Total	260	154	196	196	NA	199
Helicopters	1	1	1	1	NA	1
Gliders	0	0	0	0	NA	0
Military	0	0	0	0	NA	0
Ultra-Light	6	12	4	4	NA	4

FAA data show that the airport primarily serves users of single-engine piston-powered aircraft. That role is expected to continue throughout the planning period and is reflected in the forecasts of aircraft mix in Table 2.4

Table 2.4
Planning Forecasts
Based Aircraft Fleet Mix

	Piston		Turbine					
Year	Single Engine	Multi Engine	Turboprop	Turbojet	Piston Helicopter	Turbine Helicopter	Other	Total
2005	251	5	2	0	1	0	5	264
2010	277	6	2	0	2	0	6	292
2020	306	6	2	0	2	0	6	322

2.5 Annual Operations

Aircraft operations can be categorized as either local or itinerant depending upon the nature of the flight. The FAA's "Air Traffic Activity" reports, prepared by the FAA's Office of Aviation Policy, Plans, and Management Analysis, define local operations as operations performed by aircraft that:

- Operate in the local traffic pattern or within sight of the airfield
- Are known to be departing for or arriving from flights in local practice areas located within a 20-mile radius of the airfield or sightseeing excursions within the same 20-mile radius

Itinerant operations are defined as all aircraft arrivals and departures other than local general aviation operations. An aircraft operation is defined as either a take-off or a landing. A take-off and a landing constitute two operations.

Because Erie Municipal is a non-tower airport, it was necessary to rely upon FAA Forms 5010 for historical activity data. These are provided in Table 2.5. While the reliability of the information for a specific year is questionable, the annual totals for a period of time may serve to show general tendencies in activity. As the data show, in the case of Erie Municipal, those tendencies have been toward growth.

FAA sources were also consulted regarding existing forecasts of operations. The *TAF* provides such information. As with its forecasts of based aircraft, the value of the *TAF* is questionable because the projections of operations are constant throughout the planning period (29,806 annual operations from 1996-2015). Further, there is a wide disparity between the *TAF*'s forecasts and the estimates of existing activity presented in the Forms 5010 with the latter estimating operations in 1999 at nearly twice the level predicted in 2015 by the *TAF*.

Table 2.5
Historical Aircraft Operations Data

Operations	1985	1986	1987	1988	1991	1992	1993	1996	1997	1998	1999
Air Taxi	1,000		1,000	1,000	1,000	1,000	670				
GA Local	31,000	40,100	40,100	40,100	40,100	40,100	26,851	39,806	39,806	NA	43,200
GA Itinerant	20,000	2,700	27,000	27,000	27,000	27,000	10,079	26,671	26,671	NA	28,660
Military		200	200	200	200	200	134	134	134	NA	140
Total	52,000	67,300	68,300	68,300	68,300	68,300	45,734	66,611	66,611	NA	72,000

Source: FAA Airport Master Records

Given the questionable value of the FAA's forecasts, planning forecasts were prepared for Erie Municipal on the basis of a scenario that reflects trends in the aviation industry as well as the types of future facilities expected to be provided at the airport. The forecasts include consideration of the following:

- Over the past few years, general aviation has rebounded from the declines of the 1980s and 1990s. For a variety of reasons, including relief from product liability litigation and the sale of overly large inventories, manufacturing of single-engine, piston-powered aircraft has returned to this country. This has been concurrent with the economic prosperity of the 1990s.

- Residential growth patterns in the Denver Metropolitan Area have included substantial development in the Erie area thereby increasing the number of potential aircraft owners/users in the vicinity of the airport.

- Other area airports, particularly Jefferson County Airport and Centennial Airport, have increasingly focused upon the larger aircraft sector of the general aviation market.

Using these considerations as background, a planning forecast was prepared for both local and itinerant operations at Erie Municipal. It is presented in Table 2.6. A noteworthy feature of

these projections is the increasing percentage of itinerant operations. This is a reflection of the trend in general aviation toward more aircraft being used for business purposes and less for pleasure flying. These business operations are usually itinerant in nature, and business-use aircraft are usually flown more often than pleasure-use aircraft.

No military aircraft are based at Erie Municipal. Historically, military activity averages less than 1/2 percent of total annual aviation activity operations at Erie Municipal. Forecasts of future military air activity are expected to remain similar to past annual operation averages.

Denver Regional Council of Governments records indicate that historical usage has been approximately 30 percent itinerant and 70 percent local operations. The percentage of itinerant operations is projected to increase by the end of the 20-year planning period.

Table 2.6
Planning Forecast
Annual Operations Forecast

Year	Itinerant	Local	Total
2005	29,406 (32%)	62,488 (68%)	91,894
2010	35,510 (35%)	65,949 (65%)	101,459
2020	41,309 (37%)	70,338 (63%)	111,647

2.6 Instrument Approaches

Erie Municipal Tri-County Airport presently has VOR/DME and GPS-A circle-to-land approaches. These are considered visual approaches. Operations at Erie Municipal Tri-County Airport are expected to remain VFR. Other area airports such as Jefferson County and Vance Brand Municipal (Longmont) serve IFR demand. Based upon these considerations, no instrument approaches were forecast at Erie Municipal.

2.7 Operational Peaking Characteristics

Since many of the airport's facility needs are related to the levels of activity during peak periods, forecasts were developed for peak month and peak hour. Ideally, a comprehensive historical data pool should be analyzed to determine the peaking characteristics. Unfortunately, such information does not exist. The alternative approach taken in developing these activity descriptions is outlined below.

- **Peak Month Operations.** This level of activity is defined as the calendar month when peak aircraft operations occur. Peak month percentages at general aviation airports such as Erie Municipal Tri-County Airport are typically estimated as 10 percent busier than average month operations.

- **Peak Hour Operations.** This level of operations is defined as the peak hour within the design day and is estimated as 15 percent of the average day of the peak month.

Table 2.7 presents the forecasts of peaking characteristics for operations at Erie Municipal Tri-County Airport.

Table 2.7
General Aviation Operational Peaking Forecast

Year	Annual Operations	Peak Month Operations	Peak Hour Operations
2005	91,894	8,424	42
2010	101,459	9,300	46
2020	111,647	10,234	51

2.8 Airport Reference Code (ARC) Analysis

The ARC is a coding system used to relate airport design criteria to the operational and physical characteristics of the aircraft intended to operate at the airport. The ARC has two components relating to the airport design aircraft. The first component, depicted by a letter, is the aircraft approach category and related to aircraft approach speed. The second, indicated by a Roman numeral, is the aircraft design group and relates to aircraft wingspan. Generally, aircraft approach speed applies to runways and runway-related facilities. Aircraft wingspan is primarily related to separation criteria.

The 1996 Airport Layout Plan Update indicated that the ARC for Runways 15/33 and 9/27 is B0I for aircraft weighing 12,500 pounds or less. The forecasts for this plan reconfirmed that ARC.

The design aircraft group usually has the largest wingspan and the fastest approach speed. This design aircraft group should also have more than 500 operations per year to be considered in the design aircraft group. It is important to point out that no one particular type of aircraft must meet these criteria but a group of aircraft which has the same ARC or a combination of aircraft groups representing one or more ARC. The following table presents estimated operations at Erie Municipal Tri-County Airport by ARC for the 20-year planning period. This table does not

include operations by helicopters and, consequently, the totals are less than those for the planning forecasts of annual operations by fleet mix found in Table 2.8.

Table 2.8
Summary of Airport Operations by ARC

Description	2005	2010	2020
A-I and B-I	91,544	101,084	111,222
A-II and B-II	350	375	425
Total	**91,894**	**101,459**	**111,647**

2.9 Forecast Summary

The major forecast elements are summarized in Table 2.9. These forecasts will be used throughout the master planning process beginning in the next chapter with the development of facility requirements.

Table 2.9
Summary of Planning Forecast

	Forecast Year		
Aviation Demand Element	**2005**	**2010**	**2020**
Annual Aircraft Operations			
Itinerant	29,406	35,510	41,309
Local	62,488	65,949	70,338
Total	91,894	101,459	111,647
Instrument Approaches	5,054	5,580	6,141
Peaking Characteristics			
Peak Month Operations	8,422	9,300	10,233
Peak Hour Operations	42	46	51
Based General Aviation Aircraft	264	292	322
Airport Reference Code/Design Aircraft Group – Runway 15/33	B-I*	B-I*	B-I*

**Small Aircraft (less than 12,500 lbs.)*

Chapter 3. Capacity Analysis and Facilities Requirements

3.0 Introduction

One of the primary objectives of an Airport Master Plan report is the determination of future requirements for the airport. This Master Plan was developed to respond to changes in demand within the framework of FAA design criteria.

As discussed earlier, the design aircraft for Runway 15/33 and Runway 9/27 are small aircraft (weighing 12,500 pounds or less) having an ARC of B-I. All future development for Runway 15/33 and Runway 9/27 should be based upon this design group.

3.1 Capacity Analysis

The methodology presented herein provides for the determination of airport capacity based upon the types and mixes of aircraft utilizing the airport, the runway configuration, and existing taxiway configurations.

The Annual Service Volume (ASV) of an airport is a reasonable estimate of an airport's annual capacity. It accounts for differences in runway use, aircraft mix, and weather conditions that would be encountered during a one-year period. Hourly capacity concerns the number of aircraft operations (i.e., landings and take-offs) that can be accommodated at the airport in an hour and is tabulated for VFR and IFR conditions.

FAA Advisory Circular 150/5060-5, *Airport Capacity and Delay*, provides the guidance and recommendations to complete the capacity analysis. The assumptions utilized to determine ASV and hourly capacity are as follows:

- Arrivals equal departures.
- The percent of touch-and-go operations is between zero and 50 percent of total operations.
- There is a full-length parallel taxiway with ample exits and no taxiway crossing problems.
- There are no airspace limitations.

- The airport has at least one runway equipped with an Instrument Landing System (ILS) and has the necessary Air Traffic Control (ATC) facilities and services to carry out operations in a radar environment.
- IFR weather conditions occur roughly 10 percent of the time.
- Approximately 80 percent of the time the airport is operated with the runway use configuration that produces the greatest hourly capacity.

Applying the methodology in Advisory Circular 150/5060-5 to conditions at Erie Municipal Tri-County Airport shows that the current and future runway/airfield configuration can accommodate approximately 230,000 operations with a VFR capacity of approximately 98 operations per hour and an IFR capacity of approximately 59 operations per hour.

It is recognized that Erie Municipal Tri-County Airport does not conform to all the assumptions stated above. This results in some loss of capacity from the figures presented. Among the differences between the airport environs and the assumptions is the lack of an ATC tower and ILS. These considerations do not reduce capacity to a point of concern given forecast demand.

As a general guideline, it is recommended that when 60 percent of the ASV is reached, an airport should begin planning ways to increase capacity; and when 80 percent of ASV is reached, construction of facilities to increase capacity should be initiated. Neither condition will occur within the 20-year timeframe of this study.

In addition to operational characteristics, an airport's capability to accommodate the demand is also a function of specific physical characteristics. These include airfield (i.e., runway and taxiway) dimensional criteria and pavement strengths and condition as well as airfield instrumentation and lighting.

3.2 Facility Requirements – Airside

Airside facilities of an airport include the runway(s), the associated taxiway system, the ramp and aircraft parking area, and any visual or electronic aids.

Runway/Taxiway Geometry. The FAA has developed guidelines which relate to the runway environment and airport geometry. The dimensions recommended by the FAA for the ARC of B-I (small aircraft exclusively) are shown in Table 3.1.

Table 3.1
Runway Geometry for ARC
(Small Aircraft Exclusively)

Description	Dimensional Criteria for the Erie Municipal Tri-County Airport
Obstacle Free Zone (OFZ), Runway 15/33 and 9/27	250 feet wide, centered longitudinally about the runway centerline, and extending 200 feet beyond each runway end. *For runways serving small aircraft (weighing less than 12,500 pounds)*
Runway Object Free Area (ROFA), Runway 15/33 and 9/27	250 feet wide, centered longitudinally about the runway centerline, and extending 240 feet beyond each runway end.
Runway Safety Area (RSA), Runway 15/33 and 9/27	120 feet wide, centered longitudinally about the runway centerline, and extending 240 feet beyond each runway end.
Runway Protection Zone (RPZ), Runway Ends 15, 33, 9, 27	Begins 200 feet beyond the end of the area usable for take-off or landing with an inner width of 250 feet, an outer width of 450 feet, and an overall length of 1,000 feet. *(Visual Approaches Only & Not Lower Than One Mile Minimums)*
Holdline Dimensions Runway 15/33 and 9/27	125 foot separation from runway centerline
Taxiway Safety Area (TSA), Taxiways A, B, C, D	49 feet wide
Taxiway Object Free Area (TOFA), Taxiways A, B, C, D	89 feet wide
Part 77 Approach Surface, Runway Ends 15, 33, 9, 27	The Approach Surface has a slope of 20:1 and begins 200 feet beyond the end of the area usable for take-off or landing, an inner width of 250 feet, an outer width of 1,250 feet, and an overall length of 5,000 feet.
Part 77 Primary Surface, Runway 15/33 and 9/27	250 feet wide, centered longitudinally about the runway centerline, and extending 200 feet beyond each runway end.

Source: FAA AC 150/5300-13, Airport Design, Federal Aviation Regulations, Title 14 Part 77

Runway and Taxiway Length, Width, and Strength Requirements. The operational forecasts and the ARC of B-I (small aircraft exclusively) provide direction in recommending runway length requirements at the airport. Runway length, width, and strength are normally based upon the design aircraft which may be expected to use an airport on a regular basis and which require the longest runway or the greatest width or both. Table 3.2 outlines the existing runway length and width for Runway 15/33 and Runway 9/27.

All airside facilities should be constructed to meet a pavement strength of 12,500 pounds. It is also important to maintain all airport pavements in accordance with a pavement maintenance program. The recommended pavement maintenance is included in the Capital Improvement Program.

Table 3.2
FAA Design Recommendations
Runway 15/33 and Runway 9/27 Length, Width, Pavement Strength

Runway	Existing Runway 15/33	Recommended Runway 15/33	Existing Runway 9/27	Recommended Runway 9/27
Length	4,700 feet	4,640 feet	3,280 feet	3,760 feet
Width	60 feet	60 feet	60 feet	60 feet
Pavement Strength	12,500 lbs. SWG	12,500 lbs. SWG	Unknown	12,500 lbs. SWG

Source: Airport Master Record, FAA Form 5010 and site visit
SWG: Single-wheel gear

The information that is required to execute the FAA computer program, Runway Lengths Recommended for Airport Design, includes airfield elevation, maximum mean temperature of the hottest month, and the effective gradient for the runway. The following information pertains to Runway 15/33.

- Field Elevation: 5,116 Feet
- Maximum Mean Temperature of Hottest Month: 88°F
- Effective Gradient of Runway 11/29: 43 Feet

Table 3.3 provides recommendations for future runway lengths.

Table 3.3
Runway Lengths Recommended for Airport Design
Runway 15/33

Description	Runway Length
Small aircraft category weighing 12,500 pounds or less	
Small aircraft with approach speeds of less than 50 knots	1,210 feet
Small aircraft with fewer than ten passenger seats	
75 percent of small aircraft	4,640 feet
95 percent of small aircraft	6,280 feet
100 percent of small aircraft	6,430 feet
Small aircraft with ten or more passenger seats	6,430 feet
*Large aircraft of 60,000 pounds or less	
75 percent of large aircraft at 60 percent of their useful load	7,070 feet
75 percent of large aircraft at 90 percent of their useful load	9,030 feet
100 percent of large aircraft at 60 percent of their useful load	10,980 feet
100 percent of large aircraft at 90 percent of their useful load	11,430 feet
*Aircraft weighing more than 60,000 pounds	6,810 feet

Source: FAA AC 150/5300-13, Airport Design, Version 4.2
**Aircraft in these categories are not anticipated to use the facility*

The existing runway length of 4,700 feet slightly exceeds the FAA's runway length recommendations for small aircraft that operate at the airport. The existing crosswind runway length of 3,280 feet is 480 feet short of the 3,760 feet that meets the FAA-recommended crosswind runway length of 80 percent of the length of the primary runway.

Runway Grades. The FAA-recommended maximum longitudinal grade for approach category A and B runways is 2 percent. Runway 9/27 does not meet this standard.

Taxiway System. As part of the airside facilities, a taxiway system should complement the runway system by providing safe and efficient access to and from the runways and landside areas. Runway 15/33 is provided with a full parallel taxiway 25 feet in width. This is consistent with FAA guidelines and adequate for the planning period.

Airfield Pavements Rehabilitation. The formation of distresses in airport pavements may severely affect the structural integrity, ride quality, and safety of airport pavements. To alleviate the effects of distresses and to improve the airport pavement serviceability, an effective and timely maintenance program and adequate repair procedures should be adopted.

The Capital Improvement Program of this study will provide a planning concept of when rehabilitative projects should occur to airside pavements along with planning cost estimates for each project. A pavement maintenance program for all airside pavements should be developed in coordination with the state and submitted for approval.

Airfield Lighting. Runway 15/33 has a Medium Intensity Runway Lighting (MIRL) system controlled by keying the aircraft microphone a number of times to activate specific intensities. It is recommended that all taxiways be equipped with either a taxiway light system or a series of retroreflective markers. It is also recommended that Distance To-Go signage be installed on Runway 15/33. These lighted signs provide runway pavement remaining in 1,000-foot increments.

Airfield Signage and Marking. Erie Municipal Tri-County Airport requires a full signage and marking update to comply with FAA recommendations. A project to achieve this is underway.

Nonprecision Instrument Approach System/Navigation Aids. GPS is a network of satellites dedicated to transmitting detailed navigation data 24 hours a day everywhere on earth. Developed by the United States Department of Defense for military use, GPS is freely available to private and commercial users alike.

Erie Municipal Tri-County Airport has a GPS circling approach. It also has a VOR/DME circling approach based on the Jeffco VOR/DME equipment located southwest of the airport.

The existing approach minimums for Runway 15 should be maintained, and no further significant reduction in minimums should be expected. Runway End Identifier Lights (REIL) and Precision Approach Path Indicators (PAPI) should be considered to assist pilots on approach to Runway 15 and 33.

In addition to installation of the approach aids and a new lighting system, the airport sponsor should consider the installation of an Automated Weather and Altimeter System. The AWOS-III system provides automated, hourly weather information. In addition, Runway 9, 15, and 33 ends should be equipped with a supplemental wind cone.

Summary of Airside Facility Requirements. Table 3.4 summarizes the airside facility requirement identified for Erie Municipal Tri-County Airport.

Table 3.4
Summary of Airside Facility Requirements

	Existing	Phase I (1999 to 2005)	Phase II (2005 to 2009)	Phase III (2009 to 2019)
Grading				
Runway 15/33	No	Yes	Yes	Yes
Runway 9/27	No	No	Yes	Yes
Marking and Signage				
Runway 15/33	Yes	Yes	Yes	Yes
Runway 9/27	No	No	Yes	Yes
Taxiways	No	Yes	Yes	Yes
To-Go Signage RWY 15/33	No	No	Yes	Yes
Lighting				
Runway 15/33	MIRL	MIRL	MIRL	MIRL
Taxiway A	Reflectors	Reflectors	Reflectors	Reflectors
Runway 9/27	None	Reflectors	Reflectors	Reflectors
Taxiway B	None	Reflectors	Reflectors	Reflectors
Taxiway C	Partial	Reflectors	Reflectors	Reflectors
Taxiway D	None	Reflectors	Reflectors	Reflectors
Apron	Partial	Reflectors	Reflectors	Reflectors
Visual/Electronic Approach Aids				
Runway 15	PAPI, REIL	PAPI, REIL	PAPI, REIL	PAPI, REIL
Runway 33	PAPI	PAPI	PAPI, REIL	PAPI, REIL
Runway 9	None	None	None	None
Runway 27	None	None	None	None

3.3 Facility Requirements-Landside

This section describes the guidelines and methodologies used to develop facility requirements for the landside areas of Erie Municipal Tri-County Airport. The following categories were examined in this analysis:

- Hangar Area
- Apron Area
- FBO Maintenance Area
- Terminal Building
- Fuel Storage
- Auto Parking and Ground Access

Erie Municipal Tri-County Airport is a unique facility in that the majority of based aircraft are not located on airport property. Although the airport is owned and operated by the Town of Erie and its Board of Trustees, the airport still serves a residential airpark. In addition, the town has executed a number of through-the-fence agreements with adjacent property owners who wish to have access to the airfield. These two facts skew the calculations of future space requirements. For purposes of this report, it is assumed that the Town will pursue a philosophy of attracting tenants and aircraft owners to conduct business on the airport. This analysis requires forecast numbers/percentages of based aircraft and operations to formulate future needs specific to the above categories. We have assumed the following ratios of on airport based aircraft to off airport based aircraft for the respective periods of planning and development.

- 25 percent of the based aircraft will locate on airport. Short Term (0-5 years)
- 40 percent of the based aircraft will locate on airport. Intermediate Term (5-10 years)
- 55 percent of the based aircraft will locate on airport. Long Term (10-20 years)

General Aviation Requirements. The number and type of projected general aviation operations and based aircraft can be converted into generalized projections of landside facility needs. Presently, approximately 80 percent of the based aircraft are hangared. It is estimated that approximately 90 percent of the based aircraft will require some type of indoor or covered storage by the end of the planning period. It is recognized that the FBO and/or maintenance-type hangars may accommodate some of the aircraft storage demand. The actual number, size, and location of these large hangars will depend upon user needs.

Access and perimeter roadway locations and land requirements as well as auto parking requirements are included for evaluation. The amount of land necessary for these facilities will be a function of the location of the other facilities and the most effective location of those roadways.

Similar to roadway locations, FBO and terminal requirements will be a function of new FBOs electing to conduct business at the airport and the planned development approved between the airport and future lessee.

Hangar Area. Hangar space requirements were developed based upon the future proportion of based hangared aircraft and those aircraft that occupy tie-down positions. Hangars are preferable to tie-downs due to the duration and severity of strong summer heat and cold winter conditions.

Conventional hangar space was based upon a standard of 1,200 square feet for a single-engine aircraft, 1,400 square feet for a smaller multi-engine piston aircraft, and 1,800 square feet for a turboprop aircraft. Hangar areas were then applied to the based aircraft forecasts to determine the actual hangar area requirements for each hangar type. Table 3.5 provides percentage recommendations regarding the type of hangar needed for each aircraft type, specific to period of development and on airport based aircraft percentages.

Table 3.5
Based Aircraft Hangar Assumptions

Percentage of Aircraft Type Expected to be Hangared		Percentage of On-Airport Aircraft by Period of Development		Percentage of Hangar Type by Period of Development for all Based Aircraft	
				Conventional	T-Hangar
Single-Engine Piston	80%	I, 2000-2005	25%	50%	50%
Single-Engine Piston	80%	II, 2005-2010	40%	40%	60%
Single-Engine Piston	80%	III, 2010-2020	55%	30%	70%
Multi-Engine Piston	100%	I, 2000-2005	25%	100%	0%
Multi-Engine Piston	100%	II, 2005-2010	40%	100%	0%
Multi-Engine Piston	100%	III, 2010-2020	55%	100%	0%
Turbo-Prop	100%	I, 2000-2005	25%	100%	0%
Turbo-Prop	100%	II, 2005-2010	40%	100%	0%
Turbo-Prop	100%	III, 2010-2020	55%	100%	0%

**Remaining percentage of aircraft are expected to be tied down on the based aircraft parking apron or be located off airport.*

Table 3.6 sets forth the demand requirements for hangar space at Erie Municipal Airport. Table 3.6 is formulated by incorporating the assumptions of Table 3.5 along with the forecast of fleet mix previously shown in Chapter 2, Aviation Demand Forecasts, and the square footages previously described. The appropriate percentages of aircraft basing on airport property are then applied to arrive at the recommended hangar area requirements.

Table 3.6
Hangar Area Demand (Square Feet)

Description	Existing		Phase I Through 2005		Phase II Through 2010		Phase III Through 2020	
Conventional	**Total Airport**	**On-Airport**	**Total Airport**	**On-Airport**	**Total Airport**	**On-Airport**	**Total Airport**	**On-Airport**
Single-Engine	106,300	8,500	122,880	30,720	108,288	43,315	95,471	52,509
Multi-Engine	6,500	1,500	7,000	1,750	8,400	2,100	8,400	4,620
Turbo-Prop	3,600	0	2,700	1,350	7,200	2,880	7,200	3,960
Subtotal Conventional	116,400	10,000	132,580	33,820	123,888	48,215	111,071	61,089
T-Hangar								
Single-Engine	164,727	14,227	122,880	30,720	162,432	64,973	222,767	122,522
Subtotal T-Hangar	164,727	14,227	122,880	30,720	162,432	64,973	222,767	122,522
Grand Total	**281,127**	**24,227**	**255,460**	**64,540**	**286,320**	**113,188**	**333,838**	**183,611**

Source: Knight Piésold and Co.
[1] Existing Conditions are estimated

Aircraft Apron Area. The aircraft apron area consists of the itinerant and based aircraft parking aprons. These apron areas are presented in the following sections.

As selected apron areas are expanded to meet demand, infrastructure and facilities should be constructed as part of the project. These items include apron flood lighting, wildlife/security fencing, adjacent leased buildings or facilities with separations that are compatible with future taxilane dimensions, and utilities such as water, phone, and sewer to individually leased areas adjacent to the apron. In addition, careful consideration should be given to moderation of any environmental impacts due to tenant operational activities.

Itinerant Aircraft Parking Apron. The apron area required to meet itinerant demand was estimated using FAA guidance. Based upon the forecast of itinerant operational activity in Table 2.10, requirements can be formulated with the following notable steps of methodology:

- Step 1 estimates peak month itinerant operations by assuming them equal to 10 percent of annual itinerant operations.
- Step 2 estimates average daily itinerant operations for the peak month by dividing peak month itinerant operations by 30.

- Step 3 assumes that the busy itinerant day is 10 percent more active than the average day of the peak month.
- Step 4 uses the final assumptions that 50 percent of itinerant aircraft will require parking during the busiest day of the peak month.

It should be noted that actual needs should be based on the continuing review of forecast demand in five-year increments. Table 3.7 identifies itinerant apron area requirements.

Table 3.7
Itinerant Aircraft Apron Requirements

Development Phase	Average Day of Peak Month Itinerant Operations	Busy Day Itinerant Operations	Required Itinerant Apron (Square Yards)
Phase I (2000-2005)	98	108	19,440
Phase II (2005-2010)	118	130	23,400
Phase III (2010-2020)	138	151	27,360

Based Aircraft Parking Apron. An area of 300 square yards per aircraft was used to calculate the based aircraft parking requirement. This area should be adequate for all single-engine and light twin-engine aircraft expected to base at the airport. The expected demand for based aircraft apron space is shown in Table 3.8. The table depicts the remaining percentage of single engine piston aircraft, from Table 3.5, not anticipated to be hangared for each planning period. The table includes an adjustment to reflect projected numbers of aircraft stored on the airport.

Table 3.8
Based Aircraft Apron Requirements

Term of Development	Aircraft Tie-Down	Adjustment For On-Airport Aircraft	Required Apron Needs (Square Yards)
Existing	*26	26	7,800
Phase I (2000 to 2005)	51	26	7,800
Phase II (2005 to 2010)	56	22	6,600
Phase III (2010 to 2020)	47	26	7,800

**Indicates 60 percent of total tie-down positions.*

Fixed Base Operator Maintenance Area. FBO and maintenance area requirements will differ according to the services provided. As services are varied, it is difficult to describe the needs of existing airport tenants. It is assumed that for the present time the existing tenant leases are adequate.

Tenants may require additional facilities or square footage as market demands dictate or business strategy suggests. The existing FBO owner suggests that he expects the business to grow and that he will need new or additional facilities to accommodate this growth in the long term. A primary point of concern is the aging facility from which the FBO currently operates. As the end of the useful life of this portion of the facility nears, it is recommended that a new facility be constructed.

Terminal Building. A general aviation terminal building provides space for management and operations offices, lounge areas, rest rooms, and other areas for the needs of pilots and visitors. The FAA has formulated guidelines for calculating general aviation terminal requirements that utilize airport operational peaking characteristics (Table 2.11) to determine terminal area. The method relates the number of peak hour pilots and passengers to the functional areas within the terminal. The analysis then formulates an overall building size. Table 3.9 depicts the standard square footage requirement per passenger. Using these standards, the recommended terminal building size for the each phase of the study period is presented in Table 3.10. The passengers shown in the table were derived by assuming two passengers and pilots per design hour operation.

Table 3.9
General Aviation Terminal Building Area Requirements

Terminal Functional Area	Area Per Peak Hour Pilot/Passenger
Waiting Lounge	15.0 Square Feet
Management/Operations	3.0 Square Feet
Public Conveniences	1.5 Square Feet
Concession Area	5.0 Square Feet
Circulation, Storage, HVAC	24.5 Square Feet
Total	**49.0 Square Feet**

Source: FAA, Aviation Demand, and Airport Facility Requirement Forecast for Medium Air Transportation Hubs (Washington, D.C., 1969)

Table 3.10
Terminal Building Recommendations

Phase	Peak Hour Operations	Peak Hour Pilots and Passengers	Terminal Building Area Needs (Sq. Feet)
Phase I (2000 to 2005)	42	84	4,116
Phase II (2005 to 2010)	46	92	4,508
Phase III (2010 to 2020)	51	102	4,998

Source: Knight Piésold

Fuel Storage Requirements. Aviation fuel is currently distributed for sale by the FBO. Existing facilities consist of storage for Jet-A, Mogas, and 100LL fuel types. The fueling facilities are found near the existing FBO facility. Most fueling operations are conducted via the fuel trucks.

Fuel storage requirements were estimated using the following methodology.

- Step 1 estimates daily operations by dividing total annual operations by 365.
- Step 2 involves assumptions for average fuel required per aircraft operation as follows:
  - 2005: 6 gallons
  - 2010: 7 gallons
  - 2020: 8 gallons
- Step 3 consists of finding the product of the daily operations and the estimated gallons per operation.
- Step 4 provides for peaks in use by increasing average weekly storage requirements by 10 percent.

This analysis produced estimated peak day requirements as follows:

- 2005: 1,663 gallons
- 2010: 2,141 gallons
- 2020: 2,693 gallons

Given reasonable delivery frequency, existing facilities can meet these needs through 2005; thereafter, additional fuel storage may be required.

It should be noted that the future construction and operation of all airport fueling facilities must comply with specified airport rules and regulations, applicable uniform building code standards, fire codes and fuel storage tank regulations and state and federal laws.

Parking and Ground Access. The number of auto spaces required at an airport is primarily dependent upon the level of aircraft activity at the facility. The methodology for determining parking needs relates peak hour pilots and passengers and airport and tenant employees to the number of parking spaces required. Peak hour pilots and passengers were previously derived for the terminal building calculation. The number of employees working at a general aviation airport such as Erie is estimated at one employee for every 10.7 based aircraft with an adjustment for on-airport aircraft. The number of auto parking spaces is equal to the sum of the peak hour pilots/passengers and employees at the airport. This number was then converted into paved area recommendations by using a planning standard of 35 square yards per vehicle space. The results of this analysis are depicted in Table 3.11.

Table 3.11
Auto Parking Area Requirements

Term of Development	Busy Hour Pilots and Passengers	Employee Parking	Parking Space Demand	Automobile Parking Needs (Sq. Yards)
Phase I (2000-2005)	84	9	93	3,255
Phase II (2005 to 2010)	92	10	102	3,570
Phase III (2010 to 2020)	102	11	113	3,955

Airport-related vehicular traffic was examined to determine the type of entrance road required to serve the airport, as well as to measure the impact of airport vehicular traffic upon the surrounding roadways. Under normal conditions, a standard two lane, bi-directional airport road that intersects a collector or arterial highway will be capable of carrying a minimum flow volume of 200 vehicles per hour. Even during snowy and icy road conditions, this type of access roadway is adequate for Erie Municipal Tri-County Airport.

The existing access system does present problems, however, because auto traffic must cross an access taxiway serving a major off-airport T-hangar area. This should be corrected when siting future terminal and FBO hangar facilities.

Utilities and Fencing. As land-side development in the form of terminal construction, apron expansion, hangar construction and access improvement occurs, utilities need to be extended to meet the needs of the infrastructure. Long-term planning for the airport should include utilities, specifically electricity to all landside development. In addition, any new facility, such as an FBO or terminal building should be fully equipped with water, sewer, electricity, phone, access to coaxial cable, and gas/propane services.

3.4 Land Acquisition

Erie Municipal Tri-County Airport requires acquisition through fee simple purchase or easements to comply with FAA recommendations for the safe and efficient operation of the facility. These recommendations are based upon geometry for ARC B-I (small aircraft exclusively) for the airfield. These areas are shown on the Airport Property Map (or Exhibit A) in the master plan drawings.

3.5 Airport Zoning

Erie Municipal Tri-County Airport is forecast to grow over the planning period of this master plan study. Residential development will continue to encroach upon the airport environs. By virtue of receiving federal capital improvement and land acquisition funding, the Town of Erie has signed grant assurances that specify proper use of land. This is further defined as land use zoning that is compatible with aircraft operations. Existing zoning and overlay district language meet these needs.

3.6 Summary

The preceding sections have identified the facility requirements for Erie Municipal Tri-County Airport. Table 3.8 summarizes the recommended items for the existing and future ARC of B-I (small aircraft exclusively).

Table 3.12
Airside and Land-side Facility Requirements Summary

Description	Existing	Phase I 1999 to 2004	Phase II 2004 to 2009	Phase III 2009 to 2019
Airside				
Runway 15/33				
Runway Length	4,700 feet	4,700 feet	4,700 feet	4,700 feet
Runway Width	60 feet	60 feet	60 feet	60 feet
Pavement Strength	12,500 lbs.	12,500 lbs.	12,500 lbs.	12,500 lbs.
Parallel Taxiway	Full-length	Full-length	Full-length	Full-length
Nonprecision Approach	No	No	No	No
PAPI/REILS	15: Both 33: PAPI	15: Both 33: PAPI	15 & 33: Both	15 & 33: Both
Runway Grades	No	No	No	Yes
Marking and Signage	No	No	No	Yes
Lighting	Yes	Yes	Yes	Yes
To-Go Signage	No	No	No	Yes
Runway 9/27				
Runway Length	3,280 feet	2,200 feet	2,200 feet	2,200 feet
Runway Width	±60 feet	±60 feet	±60 feet	±60 feet
Pavement Strength	Unknown	Nonstandard	Nonstandard	Nonstandard
Parallel Taxiway	Partial	Partial	Partial	Partial
Nonprecision Approach	No	No	No	No
PAPI/REILS	No	No	No	No
Runway Grades	No	Yes	Yes	Yes
Marking and Signage	No	No	No	No
Lighting	No	No	No	No
Taxiway A				
Length	4,700 feet	4,700 feet	4,700 feet	4,700 feet
Width	25 feet	25 feet	25 feet	25 feet
Strength	12,500 lbs.	12,500 lbs.	12,500 lbs.	12,500 lbs.
Connectors	No (Partial)	Yes	Yes	Yes
Marking and Signage	No (Partial)	No	No	Yes
Lighting	Yes	Yes	Yes	Yes
Taxiway B				
Length	±2,500 feet	±2,500 feet	±2,500 feet	±2,500 feet
Width	±25 feet	±25 feet	±25 feet	±25 feet
Strength	Unknown	Nonstandard	Nonstandard	Nonstandard
Connectors	No	No	No	No
Marking and Signage	No	No	No	No
Lighting	No	No	No	No

Table 3.12
Airside and Land-side Facility Requirements Summary

Description	Existing	Phase I 1999 to 2004	Phase II 2004 to 2009	Phase III 2009 to 2019
Taxiway C and D				
Length	Variable	Variable	Variable	Variable
Width	25 feet	25 feet	25 feet	25 feet
Strength	Unknown	12,500 lbs.	12,500 lbs.	12,500 lbs.
Marking and Signage	No	No	No	No
Lighting	No	No	No	No
Terminal:				
Rotating Beacon	Yes	Yes	Yes	Yes
Lighted Wind Cone	Yes	Yes	Yes	Yes
Segmented Circle	Yes	Yes	Yes	Yes
AWOS/ASOS	No	No	Yes	Yes
Land Acquisition	Yes	Yes	Yes	Yes
Landside				
Apron (square yards):				
Itinerant	16,540	19,440	23,400	27,360
Hangar (sq. ft):				
Conventional	116,400	132,580	123,888	111,071
T-Hangar	164,727	122,880	162,432	222,767
Total	281,127	255,460	286,320	333,858
Terminal Building	0	4,116	4,508	4,998
Automobile Parking (square yards)	3,111 (Unpaved)	3,255 (Paved)	3,570 (Paved)	3,955 (Paved)

**Aprons used for both based and itinerant aircraft*

Chapter 4. Alternatives Analysis

4.0 Introduction

The analysis of alternatives used a three-step process. First, a variety of plans were identified and reviewed. These were then subjected to evaluation on the basis of several criteria. Finally, the results of the evaluation process were coordinated with the Airport Advisory Board and the Township Trustees. This led to selection of preferred alternatives for airside and landside development. The process and results are discussed below.

4.1 Identification of Alternatives

Alternative development plans were identified for the primary runway (15/33), the crosswind runway (9/27), and landside areas. Because the airfield alternatives heavily influence landside options, these were addressed first to define appropriate separation standards and other applicable FAA requirements. Figures at the end of this chapter depict the alternatives discussed below.

Primary Runway Alternatives. Three alternatives were considered for Runway 15/33. (The crosswind runway was assumed to be reconstructed to standards in each of these three scenarios.) The alternatives examined were as follow:

- **Alternative 1, Maintain Existing Airfield Configuration.** Runways 15/33 and 9/27 would remain at their present nominal lengths. These facilities accommodate small aircraft exclusively, i.e., airplanes with wingspans less than 79 feet, approach speeds of less than 121 knots, and maximum certificated take-off weights of 12,500 pounds or less. (See Figure 4.1.)

- **Alternative 2, Upgrade Runway 15/33 to Full B-I Standards.** This plan would upgrade Runway 15/33 to full B-I standards. No additional runway length would be required; however, the increased lateral separation distances would be required, e.g., from the runway centerline to other facilities such as the parallel taxiway. Tie-down positions along the eastern edge of the apron and associated ramp space would be lost due to the new taxiway separation. This alternative would require additional land acquisition. (See Figure 4.2.)

- **Alternative 3, Upgrade Runway 15/33 to Full B-II Standards.** This alternative features extension of Runway 15/33 to a total length of 6,280 feet. All new pavement would be constructed from the 15 end. This upgrade would also require that the runway be widened to 75 feet, and a runway centerline-to-parallel taxiway separation standard of 240 feet would be applied. This would necessitate

abandonment of the existing parallel taxiway. Tie-down positions along the eastern edge of this apron and associated ramp space will be lost due to the new taxiway separation. This alternative will require more land acquisition. (See Figure 4.3.)

Identification of Crosswind Runway Alternatives. Alternatives 4, 5, 6, and 7 address potential changes to Runway 9/27. Under each of these scenarios, Runway 15/33 would remain at its present length.

- **Alternative 4, Close Crosswind Runway.** Under this approach, the crosswind runway would be closed. Taxiway access west of Ruwnay 15/33 will be maintained. Taxiway access to Coal Creek will be maintained. (See Figure 4.4.)
- **Alternative 5, Runway 9/27 with FAA Recommended Length of 3,760 Feet.** This alternative provides for upgrading Runway 9/27 to FAA standards. The length would be 3,760 feet (80 percent of the length of Runway 15/33). (See Figure 4.5.)
- **Alternative 6, Paved Runway 9/27, 2,200 Feet Long.** This approach includes the reconstruction of Runway 9/27 to a paved length of 2,200 feet. (See Figure 4.6.)
- **Alternative 7, Turf Runway 9/27, 2,200 Feet Long.** Under this approach, Runway 9/27 would be redeveloped as a turf runway that is 2,200 feet long. (See Figure 4.7.)

Idenfification of Landside Alternatives. Alternatives 8, 9, and 10 concern development of landside facilites such as hangar, ramp, and related areas. They also compare and contrast opportunities for aviaton and non-aviation development to meet forecast demand.

- **Alternative 8, Short-Term Landside Development with Runway 9/27 Closed.** This alternative shows the features of short-term development within a new development area and on existing airport property. (See Figure 4.8.) It includes:
  - Acquires land for aviation and non-aviation development
  - Shows landside development that includes north/south T-hangar complex
  - Maintains existing Taxiway C access to fuel pumps
  - Shows T-Hangar Complex west of FBO
  - Shows terminal building near parking lot
  - Shows existing auto parking
  - Shows development that extends ramp and hangar complex across closed runway
- **Alternative 9, Landside Development with Turf Runway.** This alternative shows the development within a new development area and on existing airport property with a 2,200-foot turf runway. (See Figure 4.9.) This alternative is similar to the option of

landside development with a 2,200-foot paved runway to permit the conclusions to apply to both.

- **Alternative 10, Landside Development with Paved Crosswind Runway at its Current Length.** This alternative shows the shows development within a new development area and on existing airport property with the current runway length. (See Figure 4.10.)

4.2 Evaluation of Alternatives

The alternatives identified were evaluated using several criteria. These include:

- Ability to meet local aviation needs
- Airspace and approaches
- Costs
- Environmental factors
- Community compatibility

The results of this process are discussed below.

Ability to Meet Local Aviation Needs. Based upon the forecasts and facility requirements presented earlier, all alternatives for the primary runway (1, 2, and 3) will meet the needs of the design aircraft group (B-I small aircraft exclusively) for the 20-year term. Although Alternative 1 fully meets forecast needs, Alternatives 2 and 3 were evaluated because they provide additional airfield capability in the event unforeseen changes in airport traffic occur. These would include additional traffic by larger airplanes. Alternatives 2 and 3 introduce airfield geometric standards recommended for the increased aircraft size and approach speed. Alternative 3 also provides for an extension on Runway 15/33. In spite of the greater capabilities presented by Alternatives 2 and 3, the three alternatives were judged equal in their ability to accommodate local needs. These rankings are shown in Table 4.1.

Table 4.1
Primary Runway Alternatives Ranking

Alternative Number	Ability to Meet Local Aviation Needs	Airspace and Approaches	Costs	Environmental Factors	Community Compatibility
1	1	1	1	1	1
2	1	2	2	2	3
3	1	3	3	3	2

Alternative 4, which provides for closure of the crosswind runway, was formulated as a result of weather data that showed Runway 15/33 providing more than 95 percent of coverage for crosswinds. The principal advantages of this approach are reduced costs and the increased availability of areas for future landside development.

FAA standards recommend that the crosswind runway length should be 80 percent of the length of the primary runway. Alternative 5 provides this 3,760-foot length; however, it exacerbates existing nonstandard conditions.

Alternatives 6 and 7 feature runway lengths of 2,200 feet. Alternative 6 does so with a paved runway; Alternative 7 includes a turf/aggregate runway. Both alternatives move the RVZ on Runway 9/27; both alternatives relocate the Runway 9 end safety area out of the Coal Creek depression; both alternatives address nonstandard grades near the Runway 27 end. Discussions with the Airport Advisory Board indicated that that these alternatives would address the needs of small aircraft users under crosswind conditions. As shown in Table 4.2, three crosswind runway alternatives were judged equally capable of serving local needs.

Table 4.2
Crosswind Runway Alternatives Ranking

Alternative Number	Ability to Meet Local Aviation Needs	Airspace and Approaches	Costs	Environmental Factors	Community Compatibility
4	2	4	1	3	2
5	1	3	4	4	3
6	1	2	3	2	1
7	1	1	2	1	1

Airspace and Approaches. Although Alternative 1 does not address residential and terrain obstruction issues associated with the runways, these are obstructions that would be addressed regardless of the alternatives selection process. Current approach minima and approach surface dimensions will remain under Alternative 1.

Alternative 2 depicts an upgrade in design standards, and Alternative 3 includes extension of Runway 15 and an upgrade in design standards. These alternatives move the approach, horizontal, and conical surfaces closer to the Town of Erie. Alternative 3 also provides a

straight-in GPS approach to either or both ends of Runway 15/33. This doubles the width of the primary surface. New residential and terrain obstructions will be created by this alternative, and the approach surface dimensions will increase. As a result of these conclusions, the alternatives for primary runway development were ranked as shown in Table 4.1.

Alternative 4 has no airspace or approach issues because the crosswind runway would be closed. Alternative 5 moves the approach, surface, horizontal surface, and conical surface toward the Vista Ridge annexation and County Line road on either end. Existing penetrations to imaginary surfaces at the Runway 27 end are increased, and new structure obstructions are created near the Runway 9 end.

Alternatives 6 and 7 address both residential and terrain obstructions. Although they are not completely removed, the penetrations are reduced. The differences between these two alternatives are the locations of the approach surfaces and runway protection zones. Alternative 6 includes a paved runway surface with the standard 200-foot displacement from runway end, while Alternative 7, with a turf/aggregate runway, shows the approach surface and RPZ beginning at the runway end. This will reduce land acquisition needed to comply with standards.

Rankings for these alternatives with respect to airspace and approaches are shown in Table 4.2.

Costs. The focus of the comparison of development costs was upon variable costs, i.e., those unique to each alternative. There are no variable costs associated with Alternative 1. Costs that would be incurred to upgrade to standards would be common to all alternatives for the primary runway.

The costs associated with Alternative 2 include, but are not limited to, earthwork and grading associated with the new taxiway separation and connector extension; pavement associated with the taxiway separation and connector extension construction; marking, lighting, and signage updates for the extension; land acquisition; and an environmental assessment. These costs total $2,106,000.

The costs associated with Alternative 3 include, but are not limited to, earthwork and grading for the runway extension; earthwork and grading for the runway; taxiway and connector extensions and taxiway and connector separations; pavement associated with the runway extension;

pavement associated with the taxiway extension and connector construction; marking, lighting, and signage updates for extension and separation; relocation of existing landing aids; land acquisition; and an environmental assessment. These costs total $5,563,000.

The costs associated with Alternative 4 include, but are not limited to, marking of runway closure and removal of runway pavement east of Runway 15/33. These costs total $170,000.

The costs associated with Alternative 5 include, but are not limited to, earthwork and grading for the Runway 9 and 27 extensions and taxiway and connector extensions; pavement associated with the runway extensions; pavement associated with the taxiway extension and connector construction; marking, lighting, and signage updates for extension and separation; relocation of existing landing aids; land acquisition; and an environmental assessment. These costs total $1,292,000.

The costs associated with Alternative 6 include, but are not limited to, earthwork/removal for taxiway construction and connectors; pavement associated with the runway construction; pavement associated with the taxiway and connector construction; marking, lighting, and signage updates. These costs total $534,000.

The costs associated with Alternative 7 include, but are not limited to, earthwork/grading for taxiway construction and connectors. These costs total $260,750.

The costs associated with Alternative 8 include but are not limited to clear and grade aviation and non-aviation areas for development, construct hangar apron, construct hangars, utilities to new apron areas, relocation of existing hangars, and an environmental assessment. These costs total $682,500.

Alternative 9 includes, but is not limited to, clear and grade development area, construct hangar apron, construct hangars, utilities to new apron areas, and relocation of existing hangars. Estimated costs total $267,500.

The costs associated with Alternative 10 include, but are not limited to, clear and grade development area, construct hangar apron, construct hangars, utilities to new apron areas, and relocation of existing hangars. These costs total $840,000.

Environmental Factors. Federally-funded airport construction projects are subject to a review by the FAA environmental office. This review assists in determining the need for additional analyses and environmental reporting. The following chapter in this report addresses comments received from the various environmental agencies with respect to the alternative improvements at the airport; however, several possible impacts are noteworthy.

Alternatives 2 and 3 feature increased runway centerline-to-taxiway centerline separation that would require land acquisition. The increased runway length in Alternative 3 would increase the airport's noise contour footprint. Alternative 3 could require an environmental assessment if final design showed a requirement to relocate Coal Creek on the Runway 15 end.

Community Compatibility. Forecasts prepared for this study show an increasing number of operations through the 20-year planning period. This will produce some additional noise impact; however, as shown by the noise contours presented in the Airport Plans set, the overall effects of noise at the airport are slight with the Ldn 65 contour limited to the immediate runway area. Overall, with respect to this criterion, no substantial differences were identified between Alternatives 1 and 2 while Alternative 3 imposed a larger noise contour. For this reason, it was rated lowest among the three primary runway alternatives. Alternative 2 was ranked lower than Alternative 1 because the former requires land acquisition to achieve needed runway-to-taxiway separation.

A primary concern of residential aircraft owners is Runway 9/27. Many comments have been forwarded to retain this runway in some form. Considerable westerly winds often occur on the front range of Colorado, and Erie Municipal Tri-County Airport is no exception. In spite of its poor condition, Runway 9/27 is reportedly used under these westerly wind conditions. The current Runway 9/27 location is a safety concern for the local community and the airport sponsor.

Regarding the crosswind, Alternatives 6 and 7 were considered superior because they combine the continued availability of a crosswind runway with a reduction in effects on surrounding residences.

4.3 Recommendation of Preferred Alternatives

These results suggested that Alternative 1 provided the most reasonable and appropriate plan among the primary runway alternatives. Using this approach, Runway 15/33 would remain at its current length and would be intended to accommodate small aircraft (12,500 pounds or less maximum certificated take-off weight).

Runway 9/27, with dimensions of 3,250 feet × 60 feet, has historically served as a crosswind runway at the airport. Its current average pavement condition of "very poor to failed," in the consultant's opinion, renders much of its length unusable as a runway.

A paved 2,200-foot crosswind runway as shown in Alternative 6 or 7 is recommended as a replacement for existing Runway 9/27. This conclusion is consistent with the results of coordination meetings with the Airport Advisory Board and the Town of Erie's Board of Trustees.

Landside development is necessary for Erie Municipal Tri-County Airport to meet forecast demand. Alternative 9 provides an area to meet this demand and recommends acquisition of a non-aviation development area to supplement aviation development, all specific to the 2,200-foot crosswind runway.

NOTES:

1. LIMITS FUTURE LANDSIDE DEVELOPMENT ON EXISTING OR FUTURE AIRPORT PROPERTY
2. SIGNIFICANT COSTS ASSOCIATED WITH THIS ALTERNATIVE
3. DOES NOT IMPACT EXISTING RESIDENTIAL DEVELOPMENT
4. OFF AIRPORT TAXIWAYS AND CONNECTORS HAVE NOT BEEN INCLUDED FOR EVALUATION IN THIS ALTERNATIVE
5. THIS ALTERNATIVE SHOWS RUNWAY 15/33 AND RUNWAY 9/27 MEETING STANDARDS FOR ARC B-I (SMALL AIRCRAFT EXCLUSIVELY) AIRCRAFT
6. TIEDOWNS ADJACENT APRON ON THE WESTERN EDGE WILL NEED TO BE RELOCATED
7. NON-STANDARD CONDITIONS WHICH HAVE BEEN ADDRESSED
   - RUNWAY AND TAXIWAY LIGHTING (TAXIWAY REFLECTORS NOT SHOWN)
   - RUNWAY AND TAXIWAY MARKING
   - RUNWAY AND TAXIWAY SIGNAGE (NOT SHOWN)
   - RUNWAY 9/27 LONGITUDINAL GRADE. THIS ALTERNATIVE EXPRESSLY IMPLIES THAT THIS GRADE WILL MEET STANDARDS. AT A SIGNIFICANT COST TO THE SPONSOR IMPLEMENTATION OF THIS ALTERNATIVE WILL REQUIRE SIGNIFICANT EARTHWORK TO COMPLY WITH SAFETY AREA GRADES AND APPROACH/TRANSITIONAL SURFACE OBSTRUCTIONS RECOMMENDATIONS
   - THIS ALTERNATIVE SHOWS NO SHORTENED RUNWAY LENGTH AT THE RUNWAY 9 END. THE ALTERNATIVE EXPRESSLY IMPLIES THAT THE AREA WITHIN THE SAFETY AREA WILL BE CLEARED AND GRADED, INCLUDING RELOCATION OF COAL CREEK
   - CLEAR AND GRADE RUNWAY 9/27 SAFETY AREA ALONG RUNWAY
   - ACQUIRE "SUFFICIENT INTEREST" IN RUNWAY OBJECT FREE AREA AND TAXIWAY OBJECT FREE AREA NEAR THE RUNWAY 15/33 AND 9/27 ENDS. WILL REQUIRE FEE SIMPLE/EASEMENT
   - ACQUIRE "SUFFICIENT INTEREST" IN RUNWAY PROTECTION ZONES AT EACH RUNWAY END. 8.035 ACRES EACH
   - RELOCATE TIEDOWNS ADJACENT APRON EDGE NEAR MIDFIELD TO COMPLY WITH RUNWAY VISIBLITY ZONE STANDARD (NOT SHOWN)
8. RESIDENTIAL AND TERRIAN OBSTRUCTIONS ASSOCIATED WITH RUNWAY 9/27 REMAIN
9. MEETS ARC B-I STANDARDS FOR SMALL AIRCRAFT ONLY
10. DOES NOT MEET FAA RECOMMENDED CROSSWIND/SECONDARY RUNWAY LENGTH OF 80% 3,760'

LEGEND:

- EXISTING GROUND SURFACE CONTOUR AND EL. FT.
- EXISTING PROPERTY LINE & (E)
- WATERWAY/CULVERT
- OFF AIRPORT ACCESS TAXIWAY
- EXISTING LANDSIDE/PUBLIC ROAD
- RUNWAY SAFETY AREA (E), (F), (RSA)
- OBJECT FREE AREA (E), (F), (OFA)
- OBSTACLE FREE ZONE (E), (F), (OFZ)
- RUNWAY PROTECTION ZONE (E), (F), (RPZ)
- RUNWAY VISIBILITY ZONE (E), (F), (RVZ)
- RUNWAY APPROACH SURFACE
- AIRFIELD PAVEMENT AND MARKINGS
- POWER LINES AND POLES
- FUTURE AVIGATION EASEMENT
- EXISTING BUILDING
- SEGMENTED CIRCLE WITH LIGHTED WIND CONE
- SUPPLEMENTAL WIND CONE
- THRESHOLD LIGHTS
- ROTATING BEACON
- RUNWAY LIGHT

PLAN

400 0 400 800 FEET

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A	10/31/01	ISSUED FOR CLIENT REVIEW	CDT

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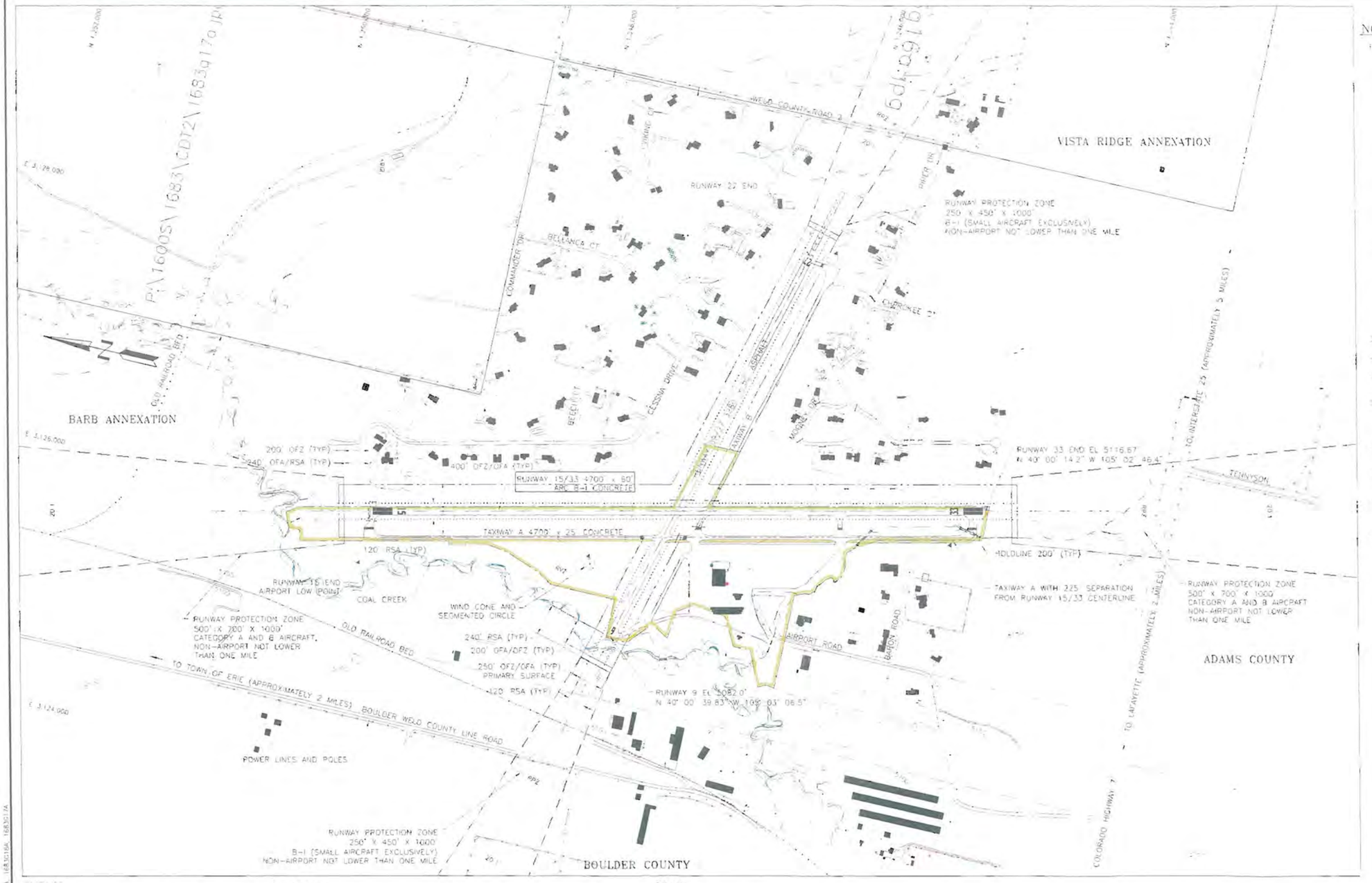
CLIENT: TOWN OF ERIE
ERIE MUNICIPAL TRI-COUNTY AIRPORT

PROJECT: AIP PROJECT NO. 3-08-0090-04

TITLE: AIRSIDE ALTERNATIVE NO. 1

Knight Piésold CONSULTING

DESIGNED BY	SPM	CHECKED BY		DRAWING NO	REV
DRAWN BY	CDT	APPROVED BY		1683M14A - A100	A



NOTES:

1. 100% STANDARD CONDITIONS WHICH HAVE BEEN ADDRESSED
   - RUNWAY AND TAXIWAY LIGHTING (TAXIWAY REFLECTORS NOT SHOWN)
   - RUNWAY AND TAXIWAY MARKING
   - RUNWAY AND TAXIWAY SIGNAGE (NOT SHOWN)
   - ACQUIRE "SUFFICIENT INTEREST" FOR ARC B-I IN RUNWAY OBJECT FREE
   - TAXIWAY OBJECT FREE AREA NEAR THE RUNWAY ENDS
   - CLEAR AND GRADE RUNWAY 15/33 SAFETY AREA AND AT ENDS ALONG RUNWAY
   - ACQUIRE "SUFFICIENT INTEREST" IN RUNWAY OBJECT FREE AREA AND TAXIWAY OBJECT FREE AREA NEAR THE RUNWAY ENDS WILL REQUIRE FEE SIMPLE/EASEMENT
   - ACQUIRE "SUFFICIENT INTEREST" IN RUNWAY/TAXIWAY OBJECT FREE AREA ALONG THE RUNWAY/TAXIWAY (NOT SHOWN) WILL REQUIRE FEE SIMPLE/EASEMENT
   - ACQUIRE "SUFFICIENT INTEREST" IN RUNWAY PROTECTION ZONES AT EACH RUNWAY END
   - RELOCATE RESIDENCE AND TIEDOWNS ADJACENT APRON EDGE NEAR MIDFIELD TO COMPLY WITH RUNWAY VISIBILITY ZONE STANDARD (NOT SHOWN)
2. SIGNIFICANT COSTS ASSOCIATED WITH THIS ALTERNATIVE
3. IMPACTS EXISTING RESIDENTIAL DEVELOPMENT
4. THIS ALTERNATIVE SHOWS RUNWAY 15/33 MEETING STANDARDS FOR ARC B-I AIRCRAFT
5. RELOCATION OF TAXIWAY A AND THE EAST PARALLEL (OFF AIRPORT PROPERTY) TAXIWAY TO A 225' SEPARATION BETWEEN RUNWAY AND TAXIWAY CENTERLINES WILL NEED TO BE COMPLETED
6. WILL IMPACT EXISTING RESIDENTIAL DEVELOPMENT. LARGER AND FASTER AIRCRAFT WILL USE RUNWAY 15/33
7. OFF AIRPORT TAXIWAYS AND CONNECTORS HAVE NOT BEEN INCLUDED FOR EVALUATION IN THIS ALTERNATIVE
8. TO MEET STANDARDS FOR THIS UPGRADE IN ARC, THE RUNWAY PROTECTION ZONE, OBJECT FREE AREA, OBSTACLE FREE ZONE AND RUNWAY VISIBILITY ZONE DIMENSIONS WILL INCREASE
9. THIS ALTERNATIVE EXPRESSLY IMPLIES THAT COAL CREEK WILL BE RELOCATED OUT OF THE SAFETY AREA AT THE RUNWAY 9 END

LEGEND:

- EXISTING GROUND SURFACE CONTOUR AND EL. FT.
- EXISTING PROPERTY LINE (E)
- WATERWAY/CULVERT
- OFF AIRPORT ACCESS TAXIWAY
- EXISTING LANDSIDE/PUBLIC ROAD
- RUNWAY SAFETY AREA (E), (F), (RSA)
- OBJECT FREE AREA (E), (F), (OFA)
- OBSTACLE FREE ZONE (E), (F), (OFZ)
- RUNWAY PROTECTION ZONE (E), (F), (RPZ)
- RUNWAY VISIBILITY ZONE (E), (F), (RVZ)
- RUNWAY APPROACH SURFACE
- AIRFIELD PAVEMENT AND MARKINGS
- POWER LINES AND POLES
- FUTURE AVIGATION EASEMENT
- FUTURE AIRFIELD PAVEMENT
- EXISTING BUILDING
- SEGMENTED CIRCLE WITH LIGHTED WIND CONE
- ROTATING BEACON
- RUNWAY LIGHT
- THRESHOLD LIGHTS
- SUPPLEMENTAL WIND CONE

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CLIENT: TOWN OF ERIE
ERIE MUNICIPAL TRI-COUNTY AIRPORT

PROJECT: AIP PROJECT NO. 3-08-0090-04

TITLE: AIRSIDE ALTERNATIVE NO. 2

Knight Piésold CONSULTING

DESIGNED BY	SPM	CHECKED BY		DRAWING No.	REV
DRAWN BY	CDT	APPROVED BY		1683M24A - A120	A

NOTES:

1. NON-STANDARD CONDITIONS WHICH HAVE BEEN ADDRESSED
   - * RUNWAY AND TAXIWAY LIGHTING (TAXIWAY REFLECTORS NOT SHOWN)
   - * RUNWAY AND TAXIWAY MARKING
   - * RUNWAY AND TAXIWAY SIGNAGE (NOT SHOWN)
   - * CLEAR AND GRADE RUNWAY 15/33 SAFETY AREA AND AT ENDS ALONG RUNWAY
   - * ACQUIRE "SUFFICIENT INTEREST" IN RUNWAY OBJECT FREE AREA AND TAXIWAY OBJECT FREE AREA NEAR THE RUNWAY ENDS. WILL REQUIRE FEE SIMPLE/EASEMENT
   - * ACQUIRE "SUFFICIENT INTEREST" IN RUNWAY OBJECT FREE AREA ALONG RUNWAY (NOT SHOWN) WILL REQUIRE FEE SIMPLE/EASEMENT
   - * ACQUIRE "SUFFICIENT INTEREST" IN RUNWAY PROTECTION ZONES AT EACH RUNWAY END
   - * RELOCATE RESIDENCES AND TIEDOWNS ADJACENT APRON EDGE NEAR MIDFIELD TO COMPLY WITH RUNWAY VISIBILITY ZONE STANDARD (NOT SHOWN)
2. RESIDENTIAL OBSTRUCTIONS ASSOCIATED WITH THE RUNWAY VISIBILITY ZONE ARE NON-STANDARD
3. MEETS ARC B-II STANDARDS
4. LIMITS FUTURE LANDSIDE DEVELOPMENT ON EXISTING OR FUTURE AIRPORT PROPERTY
5. SIGNIFICANT COSTS ASSOCIATED WITH THIS ALTERNATIVE
6. IMPACTS EXISTING RESIDENTIAL DEVELOPMENT
7. OFF AIRPORT TAXIWAYS AND CONNECTORS HAVE NOT BEEN INCLUDED FOR EVALUATION IN THIS ALTERNATIVE
8. THIS ALTERNATIVE SHOWS RUNWAY 15/33 MEETING STANDARDS FOR ARC B-II AIRCRAFT, INCLUDING A 1580' RUNWAY EXTENSION AND IMPLEMENTATION OF A STRAIGHT-IN GPS APPROACH
9. MANY RESIDENCES ALONG RUNWAY 15/33 WILL BECOME OBSTRUCTIONS, ALONG WITH THE TERRAIN NEAR THE END OF RUNWAY 33
10. RUNWAY 15/33 WILL NEED TO BE WIDENED RUNWAY TO 75' TAXIWAY A WILL NEED TO BE WIDENED TO 35'
11. RELOCATION OF TAXIWAY A TO A 240' SEPARATION BETWEEN RUNWAY AND TAXIWAY CENTERLINES WILL NEED TO BE COMPLETED
12. TIEDOWNS ADJACENT APRON ON THE WESTERN EDGE WILL NEED TO BE RELOCATED, AS WILL 2 RESIDENCES
13. WILL IMPACT EXISTING RESIDENTIAL DEVELOPMENT, LARGER AND FASTER AIRCRAFT WILL USE RUNWAY 15/33
14. REQUIRES AN ENVIRONMENTAL ASSESSMENT FOR THE RUNWAY EXTENSION
15. CLEAR AND GRADE FOR THE ARC OF B-II
16. MORE OPERATIONS MAY BE EXPECTED ON RUNWAY 15/33, AND THE RUNWAY WILL REQUIRE MORE PREVENTATIVE MAINTENANCE

LEGEND:

- EXISTING GROUND SURFACE CONTOUR AND EL. FT
- EXISTING PROPERTY LINE & (E)
- WATERWAY/CULVERT
- OFF AIRPORT ACCESS TAXIWAY
- EXISTING LANDSIDE/PUBLIC ROAD
- RUNWAY SAFETY AREA (E), (F), (RSA)
- OBJECT FREE AREA (E), (F), (OFA)
- OBSTACLE FREE ZONE (E), (F), (OFZ)
- RUNWAY PROTECTION ZONE (E), (F), (RPZ)
- RUNWAY VISIBILITY ZONE (E), (F), (RVZ)
- RUNWAY APPROACH SURFACE
- AIRFIELD PAVEMENT AND MARKINGS
- POWER LINES AND POLES
- FUTURE AVIGATION EASEMENT
- FUTURE AIRFIELD PAVEMENT
- EXISTING BUILDING
- SEGMENTED CIRCLE WITH LIGHTED WIND CONE
- ROTATING BEACON
- RUNWAY LIGHT
- THRESHOLD LIGHTS
- SUPPLEMENTAL WIND CONE

PLAN

400 0 400 800 FEET

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CLIENT: TOWN OF ERIE
ERIE MUNICIPAL TRI-COUNTY AIRPORT

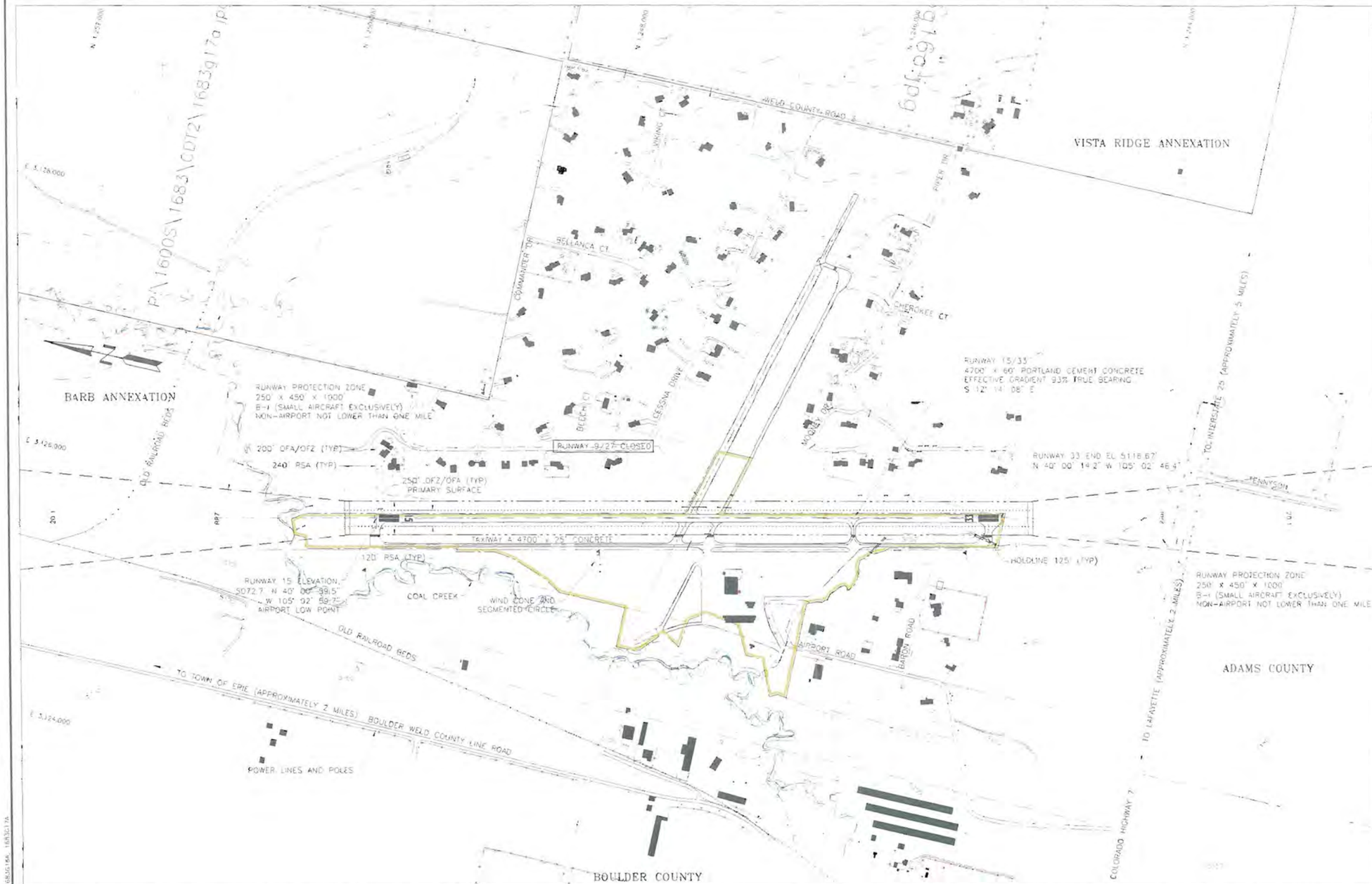
PROJECT: AIP PROJECT NO. 3-08-0090-04

TITLE: AIRSIDE ALTERNATIVE NO. 3

Knight Piésold CONSULTING

DESIGNED BY	SPM	CHECKED BY		DRAWING No.	REV
DRAWN BY	CDT	APPROVED BY		1683M25A - A130	A

PLOT SCALE: 1 | XREF: NOT 1683X01B, 1683X01A, 1683C17A



NOTES:

1. ALL RUNWAY 9/27 AND TAXIWAY B NON-STANDARD CONDITIONS AND OBSTRUCTIONS HAVE BEEN REMEDIATED
2. SIGNIFICANTLY INCREASES AREA FOR POTENTIAL LANDSIDE DEVELOPMENT WEST OF RUNWAY 15/33 AND NORTH OF RUNWAY 09
3. SIGNIFICANTLY EXPANDS THE ABILITY OF THE SPONSOR TO MAINTAIN A SELF-SUFFICIENT FACILITY
4. WILL IMPACT VISTA RIDGE APPROACH SURFACE DESIGN
5. NO COSTS ASSOCIATED WITH CLOSING RUNWAY 9/27, EXCEPT PAINTING AN X ON THE RUNWAY ENDS AND/OR PAVEMENT REMOVAL
6. MORE OPERATIONS MAY BE EXPECTED ON RUNWAY 15/33, AND THE RUNWAY WILL REQUIRE MORE PREVENTATIVE MAINTENANCE
7. DOES NOT MEET FAA RECOMMENDED CROSSWIND/SECONDARY RUNWAY LENGTH OF 80% 3,760'
8. OFF AIRPORT TAXIWAYS AND CONNECTORS HAVE NOT BEEN INCLUDED FOR EVALUATION IN THIS ALTERNATIVE
9. ALLOWS FOR ADDITIONAL RESIDENTIAL DEVELOPMENT EAST OF RUNWAY 15/33. RETAINS ACCESS FOR RESIDENTIAL AIRCRAFT OWNERS

LEGEND:

- EXISTING GROUND SURFACE CONTOUR AND EL. FT
- EXISTING PROPERTY LINE R (E)
- WATERWAY/CULVERT
- OFF AIRPORT ACCESS TAXIWAY
- EXISTING LANDSIDE/PUBLIC ROAD
- RUNWAY SAFETY AREA (E), (F), (RSA)
- OBJECT FREE AREA (E), (F), (OFA)
- OBSTACLE FREE ZONE (E), (F), (OFZ)
- RUNWAY PROTECTION ZONE (E), (F), (RPZ)
- RUNWAY VISIBILITY ZONE (E), (F), (RVZ)
- RUNWAY APPROACH SURFACE
- AIRFIELD PAVEMENT AND MARKINGS
- POWER LINES AND POLES
- EXISTING BUILDING
- SEGMENTED CIRCLE WITH LIGHTED WIND CONE
- SUPPLEMENTAL WIND CONE
- THRESHOLD LIGHTS
- ROTATING BEACON
- RUNWAY LIGHT

PLAN

400 0 400 800 FEET

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CLIENT: TOWN OF ERIE
ERIE MUNICIPAL TRI-COUNTY AIRPORT

PROJECT: AIP PROJECT NO. 3-08-0090-04

TITLE: AIRSIDE ALTERNATIVE NO. 4

Knight Piésold CONSULTING

DESIGNED BY	SPM	CHECKED BY		DRAWING No.	REV.
DRAWN BY	CDT	APPROVED BY		1683M20A - A140	A

PLAN

400 0 400 800 FEET

NOTES:

1. NON-STANDARD CONDITIONS WHICH HAVE BEEN ADDRESSED
   - * RUNWAY 9 SAFETY AREA IS NOT GRADED TO STANDARD
   - * RUNWAY AND TAXIWAY LIGHTING (TAXIWAY REFLECTORS NOT SHOWN)
   - * RUNWAY AND TAXIWAY MARKING
   - * RUNWAY AND TAXIWAY SIGNAGE (NOT SHOWN)
   - * CLEAR AND GRADE RUNWAY 9/27 SAFETY AREA ALONG RUNWAY (NOT SHOWN)
   - * ACQUIRE "SUFFICIENT INTEREST" IN RUNWAY OBJECT FREE AREA AND TAXIWAY OBJECT FREE AREA NEAR THE RUNWAY 9/27 ENDS (NOT SHOWN). WILL REQUIRE FEE SIMPLE/EASEMENT
   - * RUNWAY 9/27 LONGITUDINAL GRADE. THIS ALTERNATIVE EXPRESSLY IMPLIES THAT THIS GRADE WILL MEET STANDARDS AT A SIGNIFICANT COST TO THE SPONSOR. IMPLEMENTATION OF THIS ALTERNATIVE WILL REQUIRE SIGNIFICANT EARTHWORK TO COMPLY WITH SAFETY AREA GRADES AND APPROACH/TRANSITIONAL SURFACE OBSTRUCTION RECOMMENDATIONS
   - * THIS ALTERNATIVE SHOWS NO SHORTENED RUNWAY LENGTH AT THE RUNWAY 9 END. THE ALTERNATIVE EXPRESSLY IMPLIES THAT THE AREA WITHIN THE SAFETY AREA WILL BE CLEARED AND GRADED, INCLUDING RELOCATION OF COAL CREEK
   - * THIS ALTERNATIVE SHOWS NO SHORTENED RUNWAY LENGTH AT THE RUNWAY 27 END. THE ALTERNATIVE EXPRESSLY IMPLIES THAT THE AREA WITHIN THE SAFETY AREA WILL BE CLEARED AND GRADED AT A SIGNIFICANT COST
   - * ACQUIRE "SUFFICIENT INTEREST" IN RUNWAY PROTECTION ZONE AT THE RUNWAY 9/27 END. 8.039 ACRES EACH
   - * NEED TO RELOCATE TIEDOWNS ADJACENT APRON EDGE NEAR MIDFIELD TO COMPLY WITH RUNWAY VISIBILITY ZONE STANDARD (NOT SHOWN)
2. RESIDENTIAL OBSTRUCTIONS ASSOCIATED WITH RUNWAY 9/27 REMAIN. THESE OBSTRUCTIONS ARE RECOMMENDED TO BE REMEDIATED WITH OBSTRUCTION LIGHTS
3. MEETS ARC B-I STANDARDS FOR SMALL AIRCRAFT ONLY
4. LIMITS FUTURE LANDSIDE DEVELOPMENT ON EXISTING OR FUTURE AIRPORT PROPERTY EAST OF RUNWAY 15/33. WILL IMPACT VISTA RIDGE APPROACH SURFACE DESIGN
5. SIGNIFICANT COSTS ASSOCIATED WITH THIS ALTERNATIVE
6. IMPACTS EXISTING RESIDENTIAL DEVELOPMENT
7. MEETS FAA RECOMMENDED CROSSWIND/SECONDARY RUNWAY LENGTH OF 80% 3,760
8. OFF AIRPORT TAXIWAYS AND CONNECTORS HAVE NOT BEEN INCLUDED FOR EVALUATION IN THIS ALTERNATIVE

LEGEND:

- EXISTING GROUND SURFACE CONTOUR AND EL. FT
- EXISTING PROPERTY LINE R (E)
- WATERWAY/CULVERT
- OFF AIRPORT ACCESS TAXIWAY
- EXISTING LANDSIDE/PUBLIC ROAD
- RUNWAY SAFETY AREA (E), (F), (RSA)
- OBJECT FREE AREA (E), (F), (OFA)
- OBSTACLE FREE ZONE (E), (F), (OFZ)
- RUNWAY PROTECTION ZONE (E), (F), (RPZ)
- RUNWAY VISIBILITY ZONE (E), (F), (RVZ)
- RUNWAY APPROACH SURFACE
- AIRFIELD PAVEMENT AND MARKINGS
- POWER LINES AND POLES
- FUTURE AVIGATION EASEMENT
- FUTURE AIRFIELD PAVEMENT
- EXISTING BUILDING
- SEGMENTED CIRCLE WITH LIGHTED WIND CONE
- ROTATING BEACON
- RUNWAY LIGHT
- THRESHOLD LIGHTS
- SUPPLEMENTAL WIND CONE

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A	10/31/01	ISSUED FOR CLIENT REVIEW	CDT

DISCLAIMER

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CLIENT: TOWN OF ERIE
ERIE MUNICIPAL TRI-COUNTY AIRPORT

PROJECT: AIP PROJECT NO 3-08-0090-04

TITLE: AIRSIDE ALTERNATIVE NO. 5

Knight Piésold CONSULTING

DESIGNED BY	SPM	CHECKED BY		DRAWING No.	REV
DRAWN BY	CDT	APPROVED BY		1683M21A – A150	A

NOTES:

1. NON-STANDARD CONDITIONS WHICH HAVE BEEN ADDRESSED:
   - CLEAR AND GRADE RUNWAY 9 SAFETY AREA.
   - RUNWAY AND TAXIWAY LIGHTING (TAXIWAY REFLECTORS NOT SHOWN)
   - RUNWAY AND TAXIWAY MARKING
   - RUNWAY AND TAXIWAY SIGNAGE (NOT SHOWN)
   - RUNWAY 9/27 LONGITUDINAL GRADE
   - CLEAR AND GRADE RUNWAY 9/27 SAFETY AREA ALONG RUNWAY (NOT SHOWN)
   - ACQUIRE "SUFFICIENT INTEREST" IN RUNWAY OBJECT FREE AREA AND TAXIWAY OBJECT FREE AREA NEAR THE RUNWAY 9/27 END (NOT SHOWN)
   - ACQUIRE "SUFFICIENT INTEREST" IN RUNWAY OBJECT FREE AREA NEAR THE RUNWAY 27 END (NOT SHOWN) WILL REQUIRE FEE SIMPLE/EASEMENT ACQUISION.
   - ACQUIRE "SUFFICIENT INTEREST" IN RUNWAY PROTECTION ZONES AT EACH RUNWAY END (NOT SHOWN) 8.035 ACRES EACH.
   - RELOCATE TIEDOWNS ADJACENT APRON EDGE NEAR MIDFIELD TO COMPLY WITH RUNWAY VISIBILITY ZONE STANDARD. (NOT SHOWN)
2. SAME RESIDENTIAL OBSTRUCTIONS ASSOCIATED WITH RUNWAY 9/27 REMAIN. THESE OBSTRUCTIONS ARE RECOMMENDED TO BE REMEDIATED WITH OBSTRUCTION LIGHTS.
3. TERRAIN OBSTRUCTIONS ARE NO LONGER APPLICABLE.
4. MEETS ARC A-I STANDARDS FOR SMALL AIRCRAFT ONLY.
5. WILL IMPACT VISTA RIDGE APPROACH SURFACE DESIGN.
6. FEWER COSTS ASSOCIATED WITH THIS ALTERNATIVE.
7. IMPACTS EXISTING RESIDENTIAL DEVELOPMENT.
8. DOES NOT MEET FAA RECOMMENDED CROSSWIND/SECONDARY RUNWAY LENGTH OF 80% 3,760.

LEGEND:

- EXISTING GROUND SURFACE CONTOUR AND EL. FT
- EXISTING PROPERTY LINE ℄ (E)
- WATERWAY/CULVERT
- OFF AIRPORT ACCESS TAXIWAY
- EXISTING LANDSIDE/PUBLIC ROAD
- RUNWAY SAFETY AREA (E), (F), (RSA)
- OBJECT FREE AREA (E), (F), (OFA)
- OBSTACLE FREE ZONE (E), (F), (OFZ)
- RUNWAY PROTECTION ZONE (E), (F), (RPZ)
- RUNWAY VISIBILITY ZONE (E), (F), (RVZ)
- RUNWAY APPROACH SURFACE
- AIRFIELD PAVEMENT AND MARKINGS
- POWER LINES AND POLES
- FUTURE AVIGATION EASEMENT
- FUTURE AIRFIELD PAVEMENT
- EXISTING BUILDING
- SEGMENTED CIRCLE WITH LIGHTED WIND CONE
- ROTATING BEACON
- RUNWAY LIGHT
- THRESHOLD LIGHTS
- SUPPLEMENTAL WIND CONE

PLAN

400 0 400 800 FEET

REV	DATE	DESCRIPTION	APP'D
A	10/31/01	ISSUED FOR CLIENT REVIEW	CDT

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CLIENT: TOWN OF ERIE
ERIE MUNICIPAL TRI-COUNTY AIRPORT

PROJECT: AIP PROJECT NO. 3-08-0090-04

TITLE: AIRSIDE ALTERNATIVE NO. 6

Knight Piésold CONSULTING

DESIGNED BY	SPM	CHECKED BY		DRAWING No.	REV
DRAWN BY	CDT	APPROVED BY		1683M18A - A160	A

NOTES:

1. THIS ALTERNATIVE FOR RUNWAY 9/27 ACCOMMODATES A TURF/AGGREGATE SURFACE. THE RUNWAY PROTECTION ZONES AND APPROACH SURFACES MOVE TO EACH END OF THE TURF RUNWAY SURFACE, INSTEAD OF THE STANDARD 200' DISPLACEMENT
2. NON-STANDARD CONDITIONS WHICH HAVE BEEN ADDRESSED
   - * CLEAR AND GRADE RUNWAY 9 SAFETY AREA
   - * RUNWAY AND TAXIWAY LIGHTING (TURF)
   - * RUNWAY AND TAXIWAY MARKING (TURF)
   - * RUNWAY AND TAXIWAY SIGNAGE (TURF) (NOT SHOWN)
   - * RUNWAY 9/27 LONGITUDINAL GRADE
   - * CLEAR AND GRADE RUNWAY 9/27 SAFETY AREA ALONG RUNWAY (NOT SHOWN)
   - * ACQUIRE "SUFFICIENT INTEREST" IN RUNWAY OBJECT FREE AREA AND TAXIWAY OBJECT FREE (NOT SHOWN). WILL REQUIRE FEE SIMPLE/EASEMENT ACQUISITION
   - * ACQUIRE "SUFFICIENT INTEREST" IN RUNWAY PROTECTION ZONE AT THE RUNWAY 9/27 ENDS 8.035 ACRES EACH
   - * NEED TO RELOCATE TIEDOWNS ADJACENT APRON EDGE NEAR MIDFIELD TO COMPLY WITH RUNWAY VISIBILITY ZONE STANDARD EXISTS (NOT SHOWN)
   - * SOME RESIDENTIAL OBSTRUCTIONS ASSOCIATED WITH RUNWAY 9/27 REMAIN. THESE OBSTRUCTIONS ARE RECOMMENDED TO BE REMEDIATED WITH OBSTRUCTION LIGHTS
   - * TERRAIN OBSTRUCTIONS ARE NO LONGER APPLICABLE
3. MEETS ARC A-I STANDARDS FOR SMALL AIRCRAFT ONLY
4. WILL IMPACT VISTA RIDGE APPROACH SURFACE DESIGN
5. FEWER COSTS ASSOCIATED WITH THIS ALTERNATIVE
6. IMPACTS EXISTING RESIDENTIAL DEVELOPMENT
7. DOES NOT MEET FAA RECOMMENDED CROSSWIND/SECONDARY RUNWAY LENGTH OF 80% 3,760'
8. OFF AIRPORT TAXIWAYS AND CONNECTORS HAVE NOT BEEN INCLUDED FOR EVALUATION IN THIS ALTERNATIVE
9. MARKINGS ON RUNWAY 9/27 ARE SHOWN FOR VISUAL REFERENCE ONLY

LEGEND:

- EXISTING GROUND SURFACE CONTOUR AND EL. FT
- EXISTING PROPERTY LINE & (E)
- WATERWAY/CULVERT
- OFF AIRPORT ACCESS TAXIWAY
- EXISTING LANDSIDE/PUBLIC ROAD
- RUNWAY SAFETY AREA (E), (F), (RSA)
- OBJECT FREE AREA (E), (F) (OFA)
- OBSTACLE FREE ZONE (E), (F), (OFZ)
- RUNWAY PROTECTION ZONE (E), (F), (RPZ)
- RUNWAY VISIBILITY ZONE (E), (F), (RVZ)
- RUNWAY APPROACH SURFACE (PAVEMENT)
- RUNWAY APPROACH SURFACE (TURF)
- AIRFIELD PAVEMENT AND MARKINGS
- POWER LINES AND POLES
- FUTURE AVIGATION EASEMENT
- FUTURE AIRFIELD PAVEMENT
- EXISTING BUILDING
- SEGMENTED CIRCLE WITH LIGHTED WIND CONE
- ROTATING BEACON
- RUNWAY LIGHT
- THRESHOLD LIGHTS
- SUPPLEMENTAL WIND CONE

PLAN

400 0 400 800 FEET

REV	DATE	DESCRIPTION	APP'D / CADD
A	10/31/01	ISSUED FOR CLIENT REVIEW	CDT

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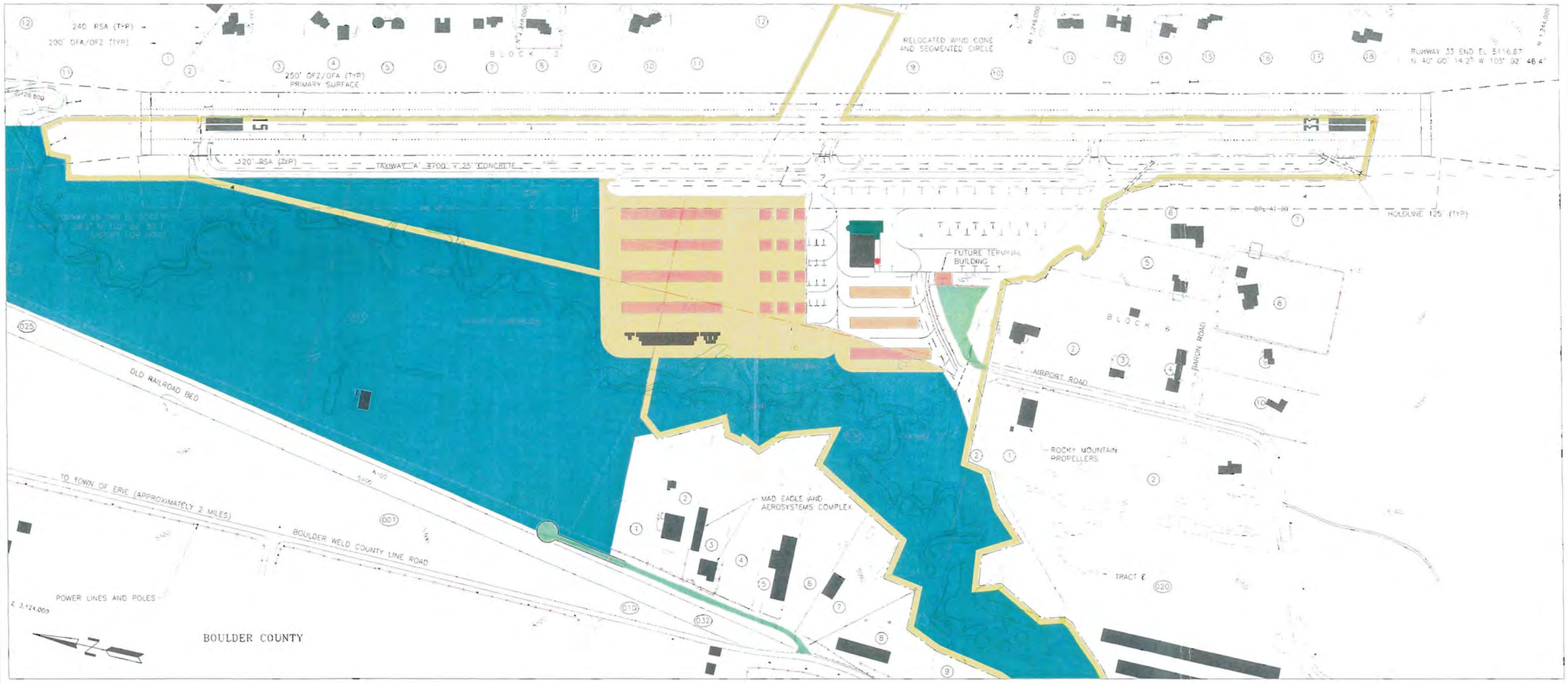
CLIENT: TOWN OF ERIE
ERIE MUNICIPAL TRI-COUNTY AIRPORT

PROJECT: AIP PROJECT NO. 3-08-0090-04

TITLE: AIRSIDE ALTERNATIVE NO. 7

Knight Piésold CONSULTING

DESIGNED BY	SPV	CHECKED BY		DRAWING No.	REV.
DRAWN BY	CDT	APPROVED BY		1683M27A - A170	A



PLAN

200 0 200 400 FEET

LEGEND:

- EXISTING GROUND SURFACE CONTOUR AND EL. FT
- EXISTING PROPERTY LINE R (E)
- WATERWAY/CULVERT
- EXISTING FENCE
- OFF AIRPORT ACCESS TAXIWAY
- EXISTING LANDSIDE/PUBLIC ROAD
- RUNWAY SAFETY AREA (E), (F), (RSA)
- OBJECT FREE AREA (E), (F), (OFA)
- OBSTACLE FREE ZONE (E), (F), (OFZ)
- RUNWAY PROTECTION ZONE (E), (F), (RPZ)
- RUNWAY VISIBILITY ZONE (E), (F), (RVZ)
- TAXIWAY SAFETY AREA (E), (F), (TSA)
- TAXIWAY OBJECT FREE AREA (E), (F), (TOFA)
- SECTION LINE
- PROPERTY LINE
- RUNWAY APPROACH SURFACE (E), (F)
- BUILDING RESTRICTION LINE (E), (F), (BRL)
- COAL CREEK LOCATION (PROPOSED)
- AIRFIELD PAVEMENT AND MARKINGS
- POWER LINES AND POLES
- EXISTING BUILDING
- FUTURE BUILDING
- SEGMENTED CIRCLE WITH LIGHTED WIND CONE
- SUPPLEMENTAL WIND CONE
- THRESHOLD LIGHTS
- RUNWAY LIGHT
- ROTATING BEACON
- TREE/BRUSH
- (8) PARCEL/LOT NUMBER
- FUTURE LANDSIDE ACCESS/PARKING
- OPEN SPACE/COAL CREEK ROW
- FUTURE AIRSIDE PAVEMENT
- COAL CREEK DIVERSION

REV	DATE	DESCRIPTION	APP'D / CADD
A	10/31/01	ISSUED FOR CLIENT REVIEW	CDT

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CLIENT: TOWN OF ERIE
ERIE MUNICIPAL TRI-COUNTY AIRPORT

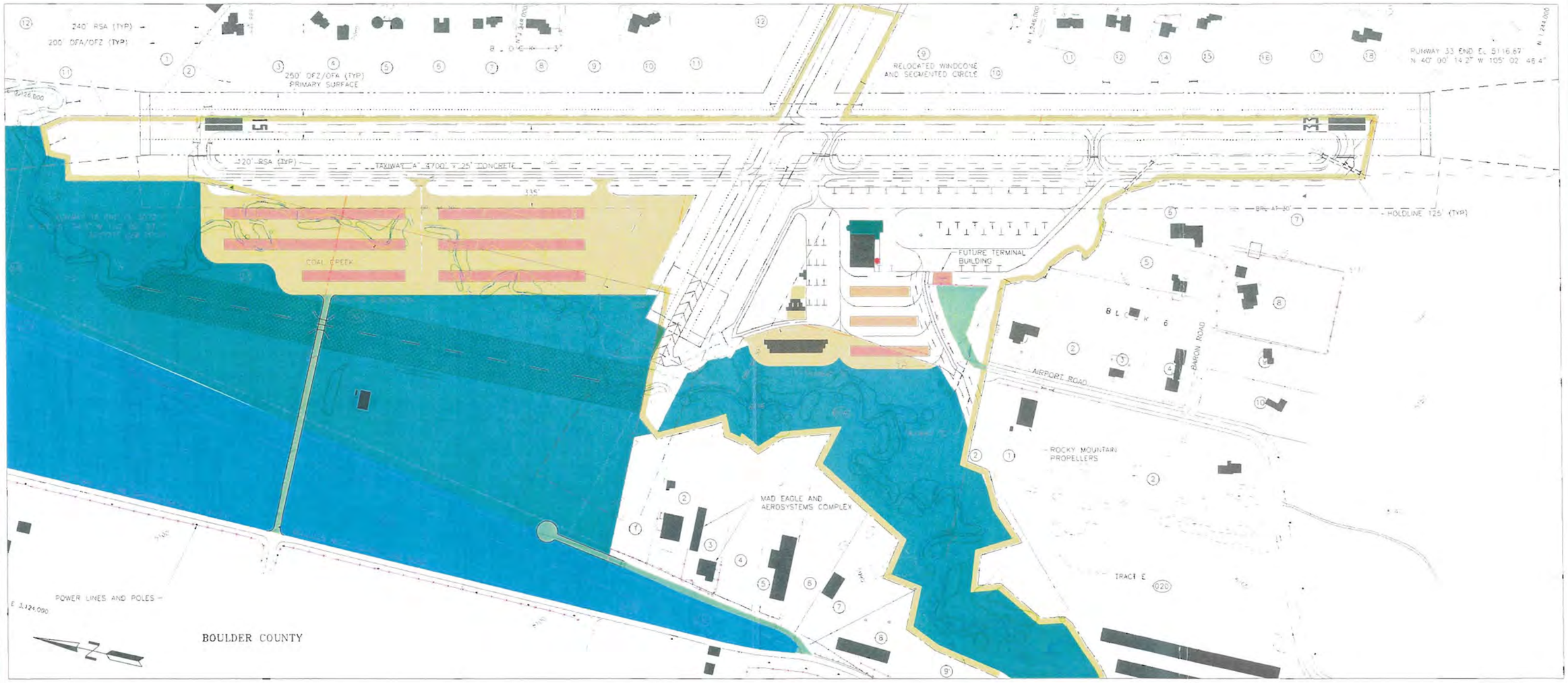
PROJECT: AIP PROJECT NO. 3-08-0090-04

TITLE: LANDSIDE ALTERNATIVE NO. 8

Knight Piésold CONSULTING

DESIGNED BY	SPM	CHECKED BY		DRAWING No.	REV
DRAWN BY	CDT	APPROVED BY		1683M31A - A220	A

PLOT SCALE: 1 | REF NO: 1683X01B, 1683X09A



PLAN

200 0 200 400 FEET

LEGEND:

- EXISTING GROUND SURFACE CONTOUR AND EL. FT
- EXISTING PROPERTY LINE ℄ (E)
- WATERWAY/CULVERT
- EXISTING FENCE
- OFF AIRPORT ACCESS TAXIWAY
- EXISTING LANDSIDE/PUBLIC ROAD
- RUNWAY SAFETY AREA (E), (F), (RSA)
- OBJECT FREE AREA (E), (F), (OFA)
- OBSTACLE FREE ZONE (E), (F), (OFZ)
- RUNWAY PROTECTION ZONE (E), (F), (RPZ)
- RUNWAY VISIBILITY ZONE (E), (F), (RVZ)
- TAXIWAY SAFETY AREA (E), (F), (TSA)
- TAXIWAY OBJECT FREE AREA (E), (F), (TOFA)
- SECTION LINE
- BUILDING RESTRICTION LINE (E), (F), (BRL)
- RUNWAY APPROACH SURFACE (TURF)
- RUNWAY APPROACH SURFACE (PAVEMENT)
- COAL CREEK LOCATION (PROPOSED)
- AIRFIELD PAVEMENT AND MARKINGS
- POWER LINES AND POLES
- EXISTING BUILDING
- FUTURE BUILDING
- SEGMENTED CIRCLE WITH LIGHTED WIND CONE
- SUPPLEMENTAL WIND CONE
- THRESHOLD LIGHTS
- RUNWAY LIGHT
- ROTATING BEACON
- TREE/BRUSH
- (8) PARCEL/LOT NUMBER
- FUTURE AVIATION DEVELOPMENT
- FUTURE BUSINESS PARK DEVELOPMENT
- FUTURE LANDSIDE ACCESS/PARKING
- OPEN SPACE/COAL CREEK ROW
- FUTURE PAVEMENT
- ACQUIRE EASEMENT
- FUTURE AVIATION EASEMENT
- COAL CREEK RELOCATED DITCH (PROPOSED)

REV	DATE	DESCRIPTION	APP'D / CADD
A	10/31/01	ISSUED FOR CLIENT REVIEW	CDT

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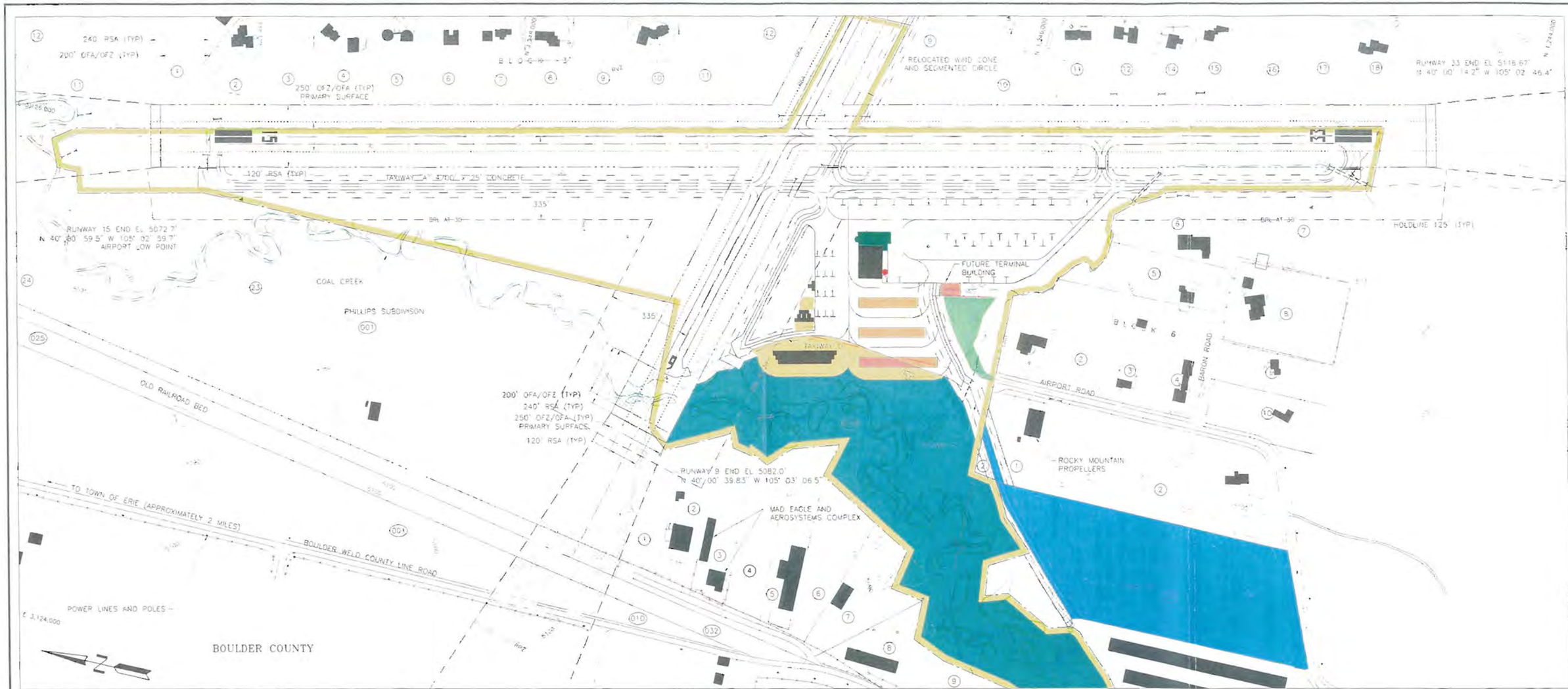
CLIENT: TOWN OF ERIE
ERIE MUNICIPAL TRI-COUNTY AIRPORT

PROJECT: AIP PROJECT NO. 3-08-0090-04

TITLE: LANDSIDE ALTERNATIVE NO. 9

Knight Piésold CONSULTING

DESIGNED BY	SPM	CHECKED BY		DRAWING No.	REV.
DRAWN BY	CDT	APPROVED BY		1683M30A - A210	A



PLAN

200 0 200 400 FEET

LEGEND:

- EXISTING GROUND SURFACE CONTOUR AND EL. FT
- EXISTING PROPERTY LINE ℄ (E)
- WATERWAY/CULVERT
- EXISTING FENCE
- OFF AIRPORT ACCESS TAXIWAY
- EXISTING LANDSIDE/PUBLIC ROAD
- RUNWAY SAFETY AREA (E), (F), (RSA)
- OBJECT FREE AREA (E), (F), (OFA)
- OBSTACLE FREE ZONE (E), (F), (OFZ)
- RUNWAY PROTECTION ZONE (E), (F), (RPZ)
- RUNWAY VISIBILITY ZONE (E), (F), (RVZ)
- TAXIWAY SAFETY AREA (E), (F), (TSA)
- TAXIWAY OBJECT FREE AREA (E), (F), (TOFA)
- SECTION LINE
- RUNWAY APPROACH SURFACE (E), (F)
- BUILDING RESTRICTION LINE (E), (F), (BRL)
- PROPERTY LINE
- AIRFIELD PAVEMENT AND MARKINGS
- POWER LINES AND POLES
- EXISTING BUILDING
- FUTURE BUILDING
- SEGMENTED CIRCLE W/"T" LIGHTED WIND CONE
- SUPPLEMENTAL WIND CONE
- THRESHOLD LIGHTS
- RUNWAY LIGHT
- ROTATING BEACON
- TREE/BRUSH
- PARCEL/LOT NUMBER
- FUTURE AVIATION DEVELOPMENT
- FUTURE LANDSIDE ACCESS/PARKING
- OPEN SPACE/COAL CREEK ROW
- FUTURE AVIGATION EASEMENT
- ACQUIRE FEE SIMPLE/EASEMENT

REV	DATE	DESCRIPTION	APP'D / CADD
A	10/31/01	ISSUED FOR CLIENT REVIEW	CDT

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CLIENT: TOWN OF ERIE
ERIE MUNICIPAL TRI-COUNTY AIRPORT

PROJECT: AIP PROJECT NO. 3-08-0090-04

TITLE: LANDSIDE ALTERNATIVE NO. 10

Knight Piésold CONSULTING

DESIGNED BY	SPM	CHECKED BY		DRAWING No.	REV
DRAWN BY	CDT	APPROVED BY		1683M22A - A200	A

PLOT SCALE: 1 | XREF NOT 1683X01B, 1683X08A

Chapter 5. Environmental Overview

This report recommends improvements at Erie Municipal Tri-County Airport for a 20-year planning period. This chapter describes potential environmental effects of these actions. The descriptions are based upon desktop analyses and coordination with federal, state, and local agencies, as appropriate. Agency coordination letters are included as an appendix to this study. The categories of effects examined, as listed in FAA Order 5050.4A, *Airport Environmental Handbook*, include:

- Noise
- Compatible Land Use
- Social Impacts
- Induced Social Impacts
- Air Quality
- Water Quality
- DOT Act – Section 4(f) and 6(f)
- Historical, Architectural, Archaeological, and Cultural Resources
- Biotic Communities
- Endangered and Threatened Species of Flora and Fauna
- Wetlands
- Floodplains
- Coastal Zone Management
- Coastal Barriers
- Wild and Scenic Rivers
- Farmlands
- Energy Supply and Natural Resources
- Light Emissions
- Solid Waste Impacts
- Construction Impacts

Recent guidance requires examination of two additional categories, hazardous wastes and environmental justice. Subsequent paragraphs describe the findings and recommendations of this environmental overview.

Noise. Aircraft noise is a critical environmental factor in assessing possible impacts of airport development actions. Noise impacts at Erie Municipal Tri-County Airport were evaluated for year 2020 conditions with the recommended improvements. This timeframe should represent the worst-case scenario implied by the forecasts of demand.

The methodology used to assess noise impacts was taken from the FAA's *Developing Noise Exposure Contours for General Aviation Airports* (1975). The measure of noise used was Ldn (day/night noise level). Use of this metric permits estimation of noise levels at specific ground locations. These levels represent totals for noise exposure from aircraft operations over a 24-hour period. Noise exposures are equivalent in terms of sound energy to a continuous A-weighted level with a 10 dB penalty for night operations. To calculate Ldn values, the noise contributions of aircraft operations occurring over a 24-hour period are summed on an energy basis to obtain the Ldn value. Noise contours produced with this input represent noise levels in average daily duration of perceived decibels.

Noise contours for the airport based upon the forecasts of activity for year 2020 are presented in the airport plans set. Interpretation of the significance of these noise impacts was based upon FAA guidelines presented in *Federal Aviation Regulations Part 150 – Airport Noise Compatibility Planning*. Review of these standards shows that a perceived noise level below Ldn 65 is considered acceptable for every land use, including residential, identified in the standards. The Ldn 65 contour produced in the analysis is confined to the immediate runway area. As a result, this analysis indicates that no substantial and objectionable levels of noise will be imposed on areas in the vicinity of the airport as a result of the proposed development.

Compatible Land Use. Currently, Erie Municipal Tri-County Airport is zoned light industrial and the surrounding area is zoned low-density residential and rural preservation. The adjacent land is primarily homes due to the previous use of the airport as an airpark.

Social Impacts. The proposed development items will not divide or disrupt existing or planned development within the surrounding area or existing development within the airport environs. Airport improvements are intended to improve access to the community. Achieving this will produce a positive social impact.

Induced Socioeconomic Impacts. The proposed airport improvements are not expected to influence population growth or development patterns. Development of industry and business in the region may be influenced by the availability of air transportation and general aviation services.

Air Quality. FAA Order 5050.4A, *Airport Environmental Handbook*, states that no air quality modeling is needed if the airport is "...a general aviation airport and has less than 180,000 operations forecast annually." Forecasts presented previously in this report are well below this level; therefore, no air quality modeling is needed to conform to federal requirements.

Construction emissions, specifically dust, will not be a long-term factor. All necessary permits should be obtained before construction begins. Best management practices should be implemented to reduce any impacts associated with dust from construction activity.

Correspondence was sent to the Colorado Department of Public Health and Environment concerning any actions that should be taken before improvements could proceed. The Air Pollution Control Division determined that there are no necessary actions required at this time. Permits for larger construction projects may be required in the future to monitor long-term ambient air quality. A copy of the letter has been provided in Attachment A of this report.

Water Quality. The proposed airport construction will temporarily increase runoff to the surrounding area; however, management practices, including the creation of detention/retention basins, can be used to mitigate the flow of runoff so that impacts to water resources will be minimized. These actions will reduce impacts associated with the proposed projects to area streams and ponds and to area water quality in general.

Correspondence was sent to the Colorado Department of Public Health and Environment concerning any actions that should be taken before improvements could proceed. The Water Quality Control Division stated that no permits are needed as part of the design and construction of short-term improvements at Erie Municipal Tri-County Airport at this time; however, a construction dewatering permit may be required for any projects that disturb more then one acre and are new or continuous after March 10, 2003. A copy of the letter from the Colorado Department of Public Health and Environment has been included in Attachment A of this report.

DOT Act – Section 4(f) and 6(f). The Division of State Parks, Department of Conservation and Natural Resources states that there are no Colorado State Parks or Federal Land and Water Conservation Fund Projects, including any 6(f)(3) projects, within the area of proposed development.

Historical, Architectural, Archaeological, and Cultural Resources. The Colorado Historical Society has determined that a majority of the airport has been surveyed for cultural resources and no significant sites have been identified. The proposed projects will have no effect on cultural resources. If archaeological resources are discovered during construction, work must be interrupted and the resources identified. A letter from the State Historic Preservation Officer has been included in Attachment A of this report.

Biotic Communities, Endangered, and Threatened Species of Flora and Fauna. Because the majority of lands within and around the airport have been disturbed, no significant impacts are expected from the proposed short-term improvements to Erie Municipal Tri-County Airport. The U.S. Fish and Wildlife Service provided a list of species on the threatened and endangered list. These species are potentially present in the area but will not be affected by the proposed construction projects.

The Colorado Division of Wildlife inspected the site for potential threatened and endangered species and habitat. There are no species located on site; however, the Division of Wildlife has provided recommendations to reduce potential impacts to habitat such as mitigation of disturbed areas following construction. The U.S. Fish and Wildlife Service and the Colorado Division of Wildlife have provided a letters commenting on the proposed short-term improvements. A copy of the letter has been provided in Attachment A of this report.

Wetlands. The Army Corps of Engineers, Omaha District was contacted regarding potential impacts to wetlands and waters of the United States. According to the Denver Regulatory Office many of the proposed projects will not affect any wetland areas; however, any projects dealing with waters of the United States, such as Coal Creek, will have to follow mitigation procedures. The Army Corps of Engineers has provided a letter that is included in Attachment A of this report.

The primary location of possible wetlands that the Airport needs to be concerned about lie along Coal Creek and two unnamed tributaries to Coal Creek. Coal Creek is a perennial stream that borders the airport on the west and north sides. The first unnamed tributary to Coal Creek borders the airport on the southwest side and passes under Taxiway A-1 and A, then under airport road. The second unnamed tributary to the east of the airport contains some areas that might possibly be classified as wetland that intermittently lie in the drainage bottom. This

second drainage lies some 800 feet from runway 27 pavement. Coal Creek itself passes within 100 feet of Runway 9 pavement and taxiway A, and it passes about 600 feet from the end of Runway 15. According to the National Wetlands Inventory map of Erie, Colorado (US Fish and Wildlife, 1974), these possible wetlands fall under two classifications in the Cowardin System. The areas adjacent to Coal Creek were classified as an intermittent riverine system in the streambed class that is saturated, semi-permanent and seasonal. Areas in the Coal Creek tributaries were classified as emergent palustrine that were intermittently flooded and temporary.

Floodplains. The proposed development actions should have little or no impact on floodplains. Proposed changes to Runway 9/27 will result in locating the runway threshold further from Coal Creek.

Coastal Zone Management Program. There are no coastal zones associated with the development of Erie Municipal Tri-County Airport. Compliance with the Coastal Zone Management Act of 1977 is not a factor.

Coastal Barriers. There are no coastal barriers associated with the development of Erie Municipal Tri-County Airport. Compliance with the Coastal Barrier Resources Act of 1982 is not a factor.

Wild and Scenic Rivers. No significant adverse impacts are expected to the Wild and Scenic River category as a result of the construction or implementation of short-term development items at Erie Municipal Tri-County Airport. The Cache la Poudre River is the only wild and scenic river in Colorado and flows through the Roosevelt National Forest.

Farmlands. The Natural Resources Conservation Service (NRCS) sent a letter responding to Farmland Protection Policy Act (FPPA) provisions regarding Prime Farmlands. They indicated that Prime Farmlands were located on and around Erie Municipal Tri-County Airport. Impacts to these areas due to improvements on airport Property will not be significant; however, other projects such as land acquisition and construction may need to be evaluated before they can begin. The letter and Prime Farmland mapping from the United States Department of Agriculture, Natural Resource Conservation Service have been included as part of Attachment A.

Energy Supply and Natural Resources. The proposed development actions will increase the power requirements for the airport because the proposed landside improvements will produce new areas that are lighted. The increased power requirements are considered to be within the capacity of the current supplier. The operation of the airport even at increased levels of activity will not have a significant impact on the nation's total fuel resources.

For the proposed action, fuel consumption is expected to increase with additional aircraft operations at the airport. This increase will not have a significant impact on the nation's total fuel resources; consequently, no mitigation measures are required.

Light Emissions. The principal lighting change proposed will be the installation of REILs on Runway 33. No home sites in the vicinity of the airport that will be significantly impacted by this action.

Solid Waste Impacts. Solid wastes generated at the airport are disposed of at a landfill. There is one landfill more than five miles from Erie Municipal Tri-County Airport. City and County officials should be assured that no new landfills will be established near the airport site within a 5-mile radius.

Construction Impacts. Construction operations will cause specific impacts resulting from and limited to construction actions to improve Erie Municipal Tri-County Airport. These impacts are distinct and temporary in duration and decrease as work is concluded. Best management techniques will be used to reduce the impacts due to construction. The following are some impacts that might be expected from the proposed improvements at Erie Municipal Tri-County Airport.

- An increase in particulate and gaseous air pollution levels as a result of dust generated by construction activity and by vehicle emissions from equipment and worker's automobiles
- An increase in solid and sanitary wastes from workers at the site
- An increase in traffic volumes in the airport area due to construction activity
- A slight increase in noise levels due to the operation of heavy equipment

- Construction delays or congestion in automobile or aircraft traffic; especially during the building of the new taxiways

- Temporary erosion or scarring of land surfaces and loss of vegetation in areas which are excavated or otherwise disturbed

Hazardous Waste. The affected areas are currently on airport property or are used for airport-related activities. There is no reason to believe that the proposed projects will be constructed in an area that contains hazardous waste.

Environmental Justice. There are no disproportionately high adverse impacts on minority or low-income populations. The affected areas are currently on airport property or are used for airport-related activities and do not involve housing.

Existing Land Uses. A windshield survey was conducted in the Airport Influence Area to determine the extent and character of existing land uses. The most predominant land use activities within the Airport Influence Area are light industrial, residential, and open space.

- Light Industrial uses within the Influence Area consist mostly of storage facilities with more industry-oriented buildings presently under construction. These facilities have only developed since the time the airport became a municipal facility. The light industrial uses are located for the most part along County Line Road, which runs north/south along the west side of the airport.

- With the exception of the industrial uses along County Line Road, the remainder of the lands surrounding the airport are residential homes of varying density. Initially, residential homes were owned by pilots who had hangars on their property. These properties have direct access via private access taxiways to the runways. More recently, the Town has approved large lot residential development southeast of the Tri-County Airport Influence Area.

- Other existing uses include a planned development currently under construction by US Homes. The construction to date has only been large single-family homes on small lots. These homes are developing along 119th Street and Isabel Road (Leon A. Wurl Parkway) near the northwestern boundary of the Influence Area.

The Town of Erie has annexed two properties near the airport. Directly east of the airport is Vista Ridge. The development for this property is an 18-hole golf course with golf course estate homes and golf course town homes. Proposed development also calls for commercial uses along

State Highway 7. Barb Properties lie due north of the airport. The development is low-density residential.

Based on a review of Erie's adopted Comprehensive Plan, the preferred uses within the Airport Influence Area are generally consistent with the existing land uses on developed parcels.

- **New Rural Residential Uses.** The property south of Arapahoe Road/Weld County Road 4 and west of the preferred commercial area of the County Line Road Corridor is designated as "Rural Residential" – one unit per two acres.
- **Urban Residential Uses.** The northwestern and the northeastern boundaries of the Airport Influence Area are designated as "Urban Residential" – or a gross density of two units per acre.
- **Estate Residential Uses.** These are properties south and west of the Denver Regional Landfill. The preferred density for this designation is one unit per two acres (gross density).

Existing Zoning Regulations. The Town of Erie designates an Airport Zone (AP) that allows airport and airport related uses. The zone definition does not clearly define what an airport-related use is in the Town of Erie; however, in conjunction with the Federal Aviation Administration (FAA), the Town of Erie has created an Airport Overlay District to minimize potential impacts from the airport on the surrounding uses. Development standards within the overlay district – including height limitations, noise attenuation, and aviation interference – are clearly defined and are based on the Federal Aviation Regulations (FAR) Part 77. All proposed development within the Airport Overlay District is subject to review by the Town of Erie.

The Airport Influence Area for Erie Municipal Tri-County Airport includes land within the jurisdictions of Erie, Boulder County, and Weld County. Both Boulder and Weld Counties have created Airport Overlay Districts and have adopted the FAR Part 77; however, Weld County has adopted FAR Part 77 only for the Greeley Airport. The Airport Overlay sections of both the Boulder and Weld County codes are similar to what the Town of Erie has adopted and should be applied to all lands within the Tri-County Airport Influence Area that are not within the Town of Erie. The Town of Erie's underlying zone districts for lands within the Airport Influence Area include general commercial, rural residential, airport, business commercial, planned development, and rural preservation uses.

Chapter 6. Cost Estimates and Development Phasing

6.0 Introduction

Planned development for Erie Municipal Tri-County Airport covers a 20-year period. Development items are grouped into three phases. Phase I is short-term (0 to 5 years), Phase II is intermediate-term (5 to 10 years), and Phase III is long-term (10 to 20 years). The first six-year set of projects is also referred to as the Capital Improvement Plan (CIP). Special attention has been given to these projects as being the most critical.

Preliminary cost estimates are included for each item in the CIP. The phasing of projects assists the airport sponsor in budgetary planning for construction improvements that are needed to provide safe and functional facilities for the aviation demand herein.

6.1 Cost Estimates by Development Phase

Preliminary cost estimates are included for each item in these three phases. Phase I estimates also constitute a portion of the recommended Capital Improvement Program. This phase may be considered the most definitive in its description of needs. The intermediate- and long-term recommendations are less certain and should be periodically reviewed and updated to reflect changes at the airport.

Tables 6.1, 6.2, and 6.3 identify recommended improvements for each of the three phases and provide estimates of their respective costs. The total costs have been allocated to reflect anticipated sources of funding. The shares apportioned are based upon the assumptions that the FAA will continue to provide 90 percent of the funding for eligible projects and the State of Colorado will provide up to 5 percent of the sponsor's share of the project costs that are eligible for Federal funding. Other items such as hangar construction must be funded entirely by local sources, in some cases the sponsor and in others private sources.

As presented in the accompanying tables, the cost estimates for the 20-year planning period amount to approximately $5,258,000. The anticipated FAA share is approximately $3,261,000, the anticipated state share is approximately $177,500 and the sponsor share is estimated at approximately $626,500. In addition, approximately $1,193,000 has been identified for projects that may require private financing (e.g., hangars, hangar access facilities, etc.).

Of the sponsor share, approximately $349,250 is required during the short-term period, $225,500 during the intermediate-term period, and the remaining $51,750 during the long-term period. In addition, maintenance and operations expenses will increase as the airport develops and more airport facilities are completed; subsequently, revenues generated by these facilities should also increase. The federal share includes anticipated expenditures of $1,960,500 during the short-term period, $639,000 during the intermediate-term period, and the remaining $661,500 during the long-term period. The state share includes programmed expenditures of $105,250 during the short-term period, $35,500 during the intermediate-term period, and the remaining $36,750 during the long-term period.

The development phasing recommendations were used to prepare the Airport Capital Improvement Plan (ACIP). That information is provided following the implementation and phasing tables.

Table 6.1
Engineer's Cost Estimates (2000 to 2005)

Phase I (2000 to 2005)	Total Costs	Sponsor Share		State Share	Federal Share
		Private Financing	Public Financing		
Construct GA Terminal/ Pave Auto Parking/Fence	$330,000		$15,000	$15,000	$300,000
Rehabilitate/Mark Runway 9/27 (2,200 ft. × 60 feet)	$200,000		$200,000		
Reconfigure Tie-downs on South Apron	$40,000		$4,000		$36,000
Acquire Land (Fee); SW Hangar Development (±14 Acres)/Prepare EA and Geotech.	$750,000		$37,500	$37,500	$675,000
Rehabilitate Runway 15/33, Taxiway A and Connectors, Mark Visual	$10,000		$500	$500	$9,000
Relocate Port-a-Ports to SW Development	$8,000	$8,000			
Acquire Land (Easement); Partial Runway 15 and 33 RPZs	$125,000		$6,250	$6,250	$112,500
Install Obstruction Lights (6)	$20,000		$1,000	$1,000	$18,000
Reconstruct/Construct West Apron; Construct Hangars and Fence	$570,000	$120,000	$22,500	$22,500	$405,000
Construct Connecting Taxiway from Runway 15/33 to Taxiway A	$210,000		$10,500	$10,500	$189,000
Construct Hangar Accesses/ Access Taxiways (SW Development)	$200,000		$10,000	$10,000	$180,000
Acquire Snow Removal/ Maintenance Equipment	$80,000		$42,000	$2,000	$36,000
Total, Phase I	**$2,543,000**	**$128,000**	**$349,250**	**$105,250**	**$1,960,500**

Table 6.2
Engineer's Cost Estimates (2005 to 2010)

Phase II (5 to 10 Years)	Total Costs	Sponsor Share		State Share	Federal Share
		Private Financing	Public Financing		
Reconstruct North Apron and Reconfigure Tie-downs	$220,000		$11,000	$11,000	$198,000
Acquire Land (Easement); Runway 9/27 OFA and RPZs	$125,000		$125,000		
Acquire Land (Easement); RVZ	$65,000		$65,000		
Airfield Signage Update (Complete)	$320,000		$16,000	$16,000	$288,000
Acquire Land (Fee); NW Hangar Development	$280,000	$280,000			
GPS Survey for Runway 15/33 (Maintain Visibility > One Mile)	$10,000		$500	$500	$500
Install Distance to Go Signage Runway 15/33	$145,000		$7,250	$7,250	$130,500
Rejuvenate Seal Coat Taxiways B, C, D	$15,000		$750	$750	$13,500
Total, Phase II	**$1,180,000**	**$280,000**	**$225,500**	**$35,500**	**$639,000**

Table 6.3
Engineer's Cost Estimates (2010 to 2020)

Phase III (10 to 20 Years)	Total Costs	Sponsor Share		State Share	Federal Share
		Private Financing	Public Financing		
Master Plan Update	$120,000		$6,000	$6,000	$108,000
EA and Wetland Mitigation for NW Hangar Development	$265,000	$265,000			
Rehabilitate/Mark all Aprons	$45,000		$2,250	$2,250	$40,500
Construct Access Taxiways/Taxiway to/NW Hangar Development	$450,000	$450,000			
Extend Utilities to NW Hangar Development	$60,000	$60,000			
Demo Main Hangar Addition	$15,000		$15,000		
Grade Runway 27 for Part 77 Preparations	$350,000		$17,500	$17,500	$315,000
Rehabilitate/Mark Runway 15/33, Taxiway A and Connectors	$40,000		$2,000	$2,000	$36,000
GA Terminal Refurbish/Maintenance	$35,000		$1,750	$1,750	$31,500
Rehabilitate/Terminal Parking Area	$15,000		$750	$750	$13,500
Rehabilitate NW and SW Development Area Pavements	$20,000	$10,000	$500	$500	$9,000
Total, Phase III	**$1,415,000**	**$785,000**	**$45,750**	**$30,750**	**$553,500**

Chapter 7. Airport Plans

7.0 Introduction

In support of the recommendations presented in preceding chapters, an Airport Plans package was prepared. Drawings comprising this package include:

- Cover and Index Sheet
- Airport Layout Plan
- Airport Layout Plan Data Sheet
- FAR Part 77 Airspace Plan
- Runway 15/33 Approach Plan and Profile
- Inner Portion of Approach Surface, Runway 15/33
- Runway 9/27 Approach Plan and Profile
- Inner Portion of Approach Surface, Runway 9/27
- Building Area Plan
- Exhibit A

These drawings are herein presented in reduced, 11" x 17" format at the end of this chapter. Subsequent paragraphs provide brief descriptions of their elements.

7.1 Cover and Index Sheet

The Title Sheet provides information about the contents of the drawing set and the parties responsible for their creation.

7.2 Airport Layout Plan

The Airport Layout Plan, or ALP, presents depictions of existing facilities and improvements recommended as a result of the analyses conducted in this master planning study. The ALP was developed using guidelines and information from applicable FAA publications including Advisory Circular 150/5300-13, *Airport Design*. The ALP has been prepared in accordance with the January 1, 1997, ALP checklist for the FAA's Northwest Mountain Region.

Notable improvements shown on the Airport Layout Plan include a shorter crosswind runway, a new terminal building and new hangar development.

7.3 Airport Layout Plan Data Sheet

The Data Sheet provides existing and future airport information. The airport data table provides basic information concerning such topics as airport elevation, airport reference point coordinates, airport land ownership, etc. The wind rose indicates runway wind coverage. The runway data tables provide information such as airport role, approach surface information and end coordinates/elevations.

7.4 FAR Part 77 Airspace Plan

This drawing shows areas around the airport that may be subject to height restriction regulations. In addition, the property line is shown along with surface features existing facilities. It also depicts area land use in a general taxilane and presents the raise contours discussed earlier.

Several surfaces comprise airspace protection at Erie Municipal Tri-County Airport. These areas are described by Federal Aviation Regulations (FAR) Part 77 and are defined therein as stated and also expounded upon in Appendix B.

7.5 Approach and Inner Approach Plan and Profile Drawings (4)

These drawings present plan and profile views of the Runway Protection Zones and Approach Surfaces for the ends of each runway at Erie Municipal Tri-County Airport.

7.6 Building Area Plan

The Building Area Plan provides a large-scale depiction of existing and future building and development areas on the airport. The most notable aspect of this drawing is the expansion and development of T-hangars and conventional hangars and the new terminal building.

7.7 Airport Property Map, Exhibit A

The property map indicates existing and proposed future airport property. Generally, the land areas depicted on this plan may be divided as follows: existing airport property boundary along with tract acquisition.

ERIE MUNICIPAL TRI-COUNTY AIRPORT
ERIE, COLORADO

Airport Master Plan Drawings
AIP Project No. 3-08-0090-04

ISSUED FOR FAA/CLIENT REVIEW
SEPTEMBER 25, 2001

INDEX OF DRAWINGS

TITLE	DRAWING NO
COVER AND INDEX SHEET	1683C32A
AIRPORT LAYOUT PLAN	1683M08A-A100
AIRPORT LAYOUT PLAN DATA SHEET	1683I33A-A200
BUILDING AREA PLAN	1683M43A-A300
FAR PART 77 AIRPORT IMAGINARY SURFACES	1683M10A-A400
RUNWAY 15/33 APPROACH SURFACE PLAN AND PROFILE	1683M40A-A500
RUNWAY 15/33 INNER APPROACH SURFACES PLAN AND PROFILE	1683M39A-A600
RUNWAY 9/27 APPROACH SURFACE PLAN AND PROFILE	1683M42A-A700
RUNWAY 9/27 INNER APPROACH SURFACE PLAN AND PROFILES	1683M41A-A800
EXHIBIT A AIRPORT PROPERTY MAP	1683M15A-A900

THE PREPARATION OF THIS DOCUMENT WAS FINANCED IN PART THROUGH A PLANNING GRANT FROM THE FEDERAL AVIATION ADMINISTRATION (FAA) AS APPROVED UNDER THE AIRPORT AND AIRWAY IMPROVEMENT ACT OF 1982. THE CONTENTS OF THIS REPORT REFLECT THE VIEWS OF THE CONSULTANT WHICH IS RESPONSIBLE FOR THE ACCURACY OF THE DATA DEPICTED HEREIN, AND DO NOT NECESSARILY REFLECT THE OFFICE VIEWS OF POLICY OF THE FAA. ACCEPTANCE OF THIS REPORT BY THE FAA DOES NOT IN ANY WAY CONSTITUTE A COMMITMENT ON THE PART OF THE UNITED STATES TO PARTICIPATE IN ANY DEVELOPMENT DEPICTED HEREIN, NOR DOES IT INDICATE THAT THE PROPOSED DEVELOPMENT IS ENVIRONMENTALLY ACCEPTABLE IN ACCORDANCE WITH APPLICABLE PUBLIC LAWS.

TOWN OF ERIE
1874

FEDERAL AVIATION ADMINISTRATION

Sponsored by:
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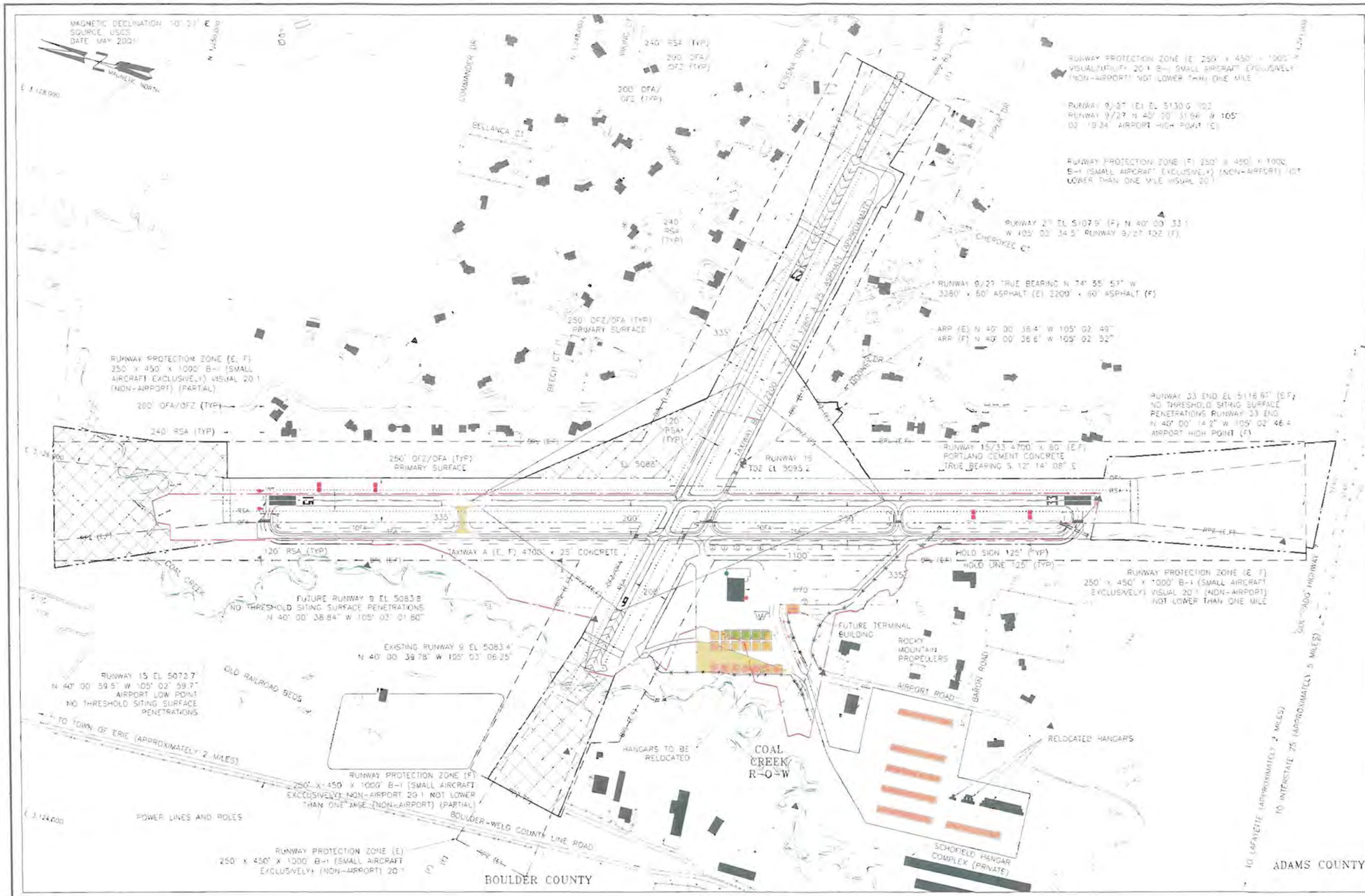

PLAN

300 0 300 600 FEET

LEGEND:

- EXISTING GROUND SURFACE CONTOUR AND EL. (E)
- PROPERTY LINE (E)
- PROPERTY LINE (F)
- WATERWAY/CULVERT
- EXISTING FENCING
- PROPOSED FENCING
- EXISTING LANDSIDE/PUBLIC ROAD
- RSA — RUNWAY SAFETY AREA (E), (F), (RSA)
- OFA — OBJECT FREE AREA (E), (F), (OFA)
- OFZ — OBSTACLE FREE ZONE (E), (F), (OFZ)
- RPZ — RUNWAY PROTECTION ZONE (E), (F), (RPZ)
- RVZ — RUNWAY VISIBILITY ZONE (E), (F), (RVZ)
- TOFA — TAXIWAY OBJECT FREE AREA (TOFA)
- TSA — TAXIWAY SAFETY AREA (TSA)
- APPROACH SURFACE (E), (F)
- BRL — ±30' BUILDING RESTRICTION LINE (BRL)
- AIRFIELD PAVEMENT AND MARKINGS
- POWER LINES AND POLES
- FUTURE AVIGATION EASEMENT
- FUTURE AIRFIELD PAVEMENT
- FUTURE HANGAR DEVELOPMENT AREA
- TREE/BUSH
- EXISTING BUILDING
- FUTURE BUILDING
- SEGMENTED CIRCLE WITH LIGHTED WIND CONE
- ROTATING BEACON
- RUNWAY LIGHT
- THRESHOLD LIGHTS
- PRECISION APPROACH PATH INDICATOR UNITS (EXISTING)
- HOLD SIGN
- RUNWAY END IDENTIFIER LIGHTS (REIL)(E)
- SUPPLEMENTAL WIND CONE
- (E) EXISTING
- (F) FUTURE
- TIE DOWN TO BE CLOSED
- MONUMENT
- BENCH MARK (GOVERNMENT)

NOTES:

1. SEE DRAWING NO. 1683J33A FOR PLAN NOTES
2. SEE DRAWING NO. 1683M15A FOR PROPERTY LINE AND PARCEL INFORMATION

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REV	DATE	DESCRIPTION	APP'D
A	9/25/01	ISSUED FOR CLIENT REVIEW	SPM / DS

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CLIENT: TOWN OF ERIE
ERIE MUNICIPAL TRI-COUNTY AIRPORT

PROJECT: AIP PROJECT NO 3-08-0090-04

TITLE: AIRPORT LAYOUT PLAN

Knight Piésold CONSULTING

DESIGNED BY	SPM	CHECKED BY		DRAWING No.	REV
DRAWN BY	TMF	APPROVED BY		1683M08A - A100	A

TABLE 1 – AIRPORT DATA

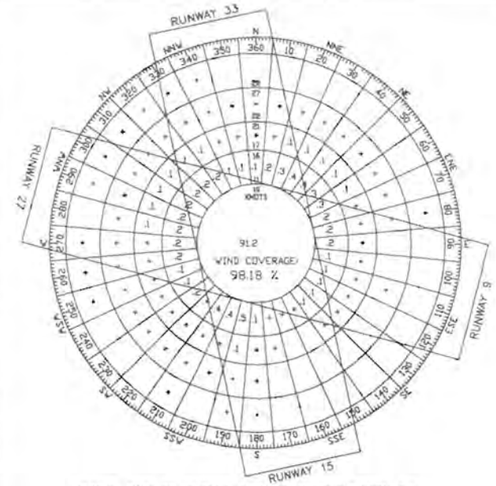
ITEM		EXISTING	FUTURE
AIRPORT ELEVATION, ABOVE MEAN SEA LEVEL		5130', EST	5116.7'
AIRPORT REFERENCE POINT	LATITUDE	N 40° 00' 18"	N 40° 00' 51.513"
	LONGITUDE	W 105° 02' 37"	W 105° 02' 36.556"
MEAN MAXIMUM TEMPERATURE, HOTTEST MONTH		88° F, JULY	88° F, JULY
WIND COVERAGE, COMBINED		98.18%	98.18%
MAGNETIC DECLINATION MAY 2001		10° 21' E	–
AIRPORT REFERENCE CODE		B-I, SMALL AIRCRAFT EXCLUSIVELY	B-I, SMALL AIRCRAFT EXCLUSIVELY
AIRPORT SERVICE LEVEL, NPIAS		RELIEVER	RELIEVER
TAXIWAY A LIGHTING		REFLECTORS	REFLECTORS
TAXIWAY B LIGHTING		NONE	NONE
TAXIWAY A MARKING		NON-PRECISION	VISUAL
TAXIWAY B MARKING		NON-STANDARD	VISUAL
TERMINAL NAVIGATIONAL AIDS		BEACON, GPS LIGHTED WIND CONE SEGMENTED CIRCLE	BEACON, GPS LIGHTED WIND CONE SEGMENTED CIRCLE CERTIFICATED ON-FIELD ALTIMETER

TABLE 2 – RUNWAY DATA

ITEM		RUNWAY	EXISTING	FUTURE
APPROACH VISIBILITY MINIMUMS		15	NOT LOWER THAN ONE MILE	NOT LOWER THAN ONE MILE
		33	NOT LOWER THAN ONE MILE	NOT LOWER THAN ONE MILE
		09	NOT LOWER THAN ONE MILE	NOT LOWER THAN ONE MILE
		27	NOT LOWER THAN ONE MILE	NOT LOWER THAN ONE MILE
APPROACH TYPE: [FAR PART 77 CATEGORY]		15	VISUAL/UTILITY	VISUAL/UTILITY
		33	VISUAL/UTILITY	VISUAL/UTILITY
		09	VISUAL/UTILITY	VISUAL/UTILITY
		27	VISUAL/UTILITY	VISUAL/UTILITY
PHYSICAL WIDTH AND LENGTH, FEET		15/33	4700' X 60'	4700' X 60'
		9/27	3280' X 60'	2200' X 60'
RUNWAY SURFACE TYPE		15/33	PORTLAND CEMENT CONCRETE	PORTLAND CEMENT CONCRETE
		9/27	ASPHALTIC CONCRETE	ASPHALTIC CONCRETE
PAVEMENT STRENGTH		15/33	12,500 SWG	12,500 SWG
		9/27	UNKNOWN	NON-STANDARD
RUNWAY LIGHTING		15/33	MIRL	MIRL
		9/27	NON-STANDARD	NONE
RUNWAY MARKING		15/33	NON-PRECISION	VISUAL
		9/27	NON-STANDARD	VISUAL
EFFECTIVE GRADIENT		15/33	.93%	.93%
		9/27	NON-STANDARD (2.18%)	1.095%
MAXIMUM GRADE CHANGE WITHIN RUNWAY LENGTH		15/33	.93%	.93%
		9/27	NON-STANDARD	2%
LINE OF SIGHT REQUIREMENTS			NO (RVZ)	LAND ACQUISITION
PERCENT WIND COVERAGE		10.5 KTS	98.18%	98.18%
		RUNWAY		
APPROACH AND LANDING AIDS	VISUAL	15	PAPI/REIL	PAPI/REIL
		33	PAPI	PAPI
		9	NONE	NONE
		27	NONE	NONE
	ELECTRONIC	15	NONE	GPS
		33	GPS	GPS
		9	NONE	NONE
		27	NONE	NONE
AIRPORT REFERENCE CODE			B-I (SMALL AIRCRAFT ONLY)	B-I (SMALL AIRCRAFT ONLY)
CRITICAL AIRCRAFT GROUP			I (PIPER 400 LS)	I (PIPER 400 LS)
CRITICAL AIRCRAFT WING SPAN			47'-7"	47'-7"
CRITICAL AIRCRAFT BY WEIGHT			MAX TAKEOFF (12,050 LBS)	MAX TAKEOFF (12,050 LBS)
CRITICAL AIRCRAFT BY APPROACH SPEED			B	B
RUNWAY SAFETY AREA (RSA) WIDTH		15/33	120'	120'
		9/27	120'	120'
RUNWAY SAFETY AREA (RSA) BEYOND RUNWAY END		15/33	240'	240'
		9/27	240'	240'
OBJECT FREE AREA (ROFA) WIDTH		15/33	250'	250'
		9/27	250'	250'
OBJECT FREE AREA (ROFA) BEYOND RUNWAY END		15/33	240'	240'
		9/27	240'	240'
OBSTACLE FREE ZONE (ROFZ) WIDTH		15/33	250'	250'
		9/27	250'	250'
OFZ OBJECT PENETRATIONS		15/33	NO OFZ OBJECT PENETRATIONS	NO OFZ OBJECT PENETRATIONS
		9/27	NON-STANDARD	NON-STANDARD
RUNWAY END COORDINATES (NAD 83)	LATITUDE	15	N 40° 00' 59.490"	N 40° 00' 59.490"
		33	N 40° 00' 14.190"	N 40° 00' 14.190"
		9	N 40° 00' 39.780"	N 40° 00' 38.837"
		27	N 40° 00' 31.960"	N 40° 00' 33.063"
	LONGITUDE	15	W 105° 02' 59.710"	W 105° 02' 59.710"
		33	W 105° 02' 46.450"	W 105° 02' 46.450"
		9	W 105° 03' 06.250"	W 105° 03' 01.799"
		27	W 105° 02' 29.340"	W 105° 02' 34.541"
HIGH ELEVATION POINT		15/33	5116.67	5116.67
		9/27	5130.0 (EST)	5107.8 (EST)
LOW ELEVATION POINT		15/33	5072.7	5072.7
		9/27	5083.4 (EST)	5083.8 (EST)
TOUCHDOWN ZONE ELEVATION		15	5095.2	5095.2
		33	5116.67	5116.67
		9	5130.0	5107.9 (EST)
		27	5130.0	5107.9 (EST)

TABLE 3 – NON-STANDARD CONDITIONS

DESCRIPTION/LOCATION	FAA STANDARD	EXISTING CONDITION	DISPOSITION	DATE
LONGITUDINAL GRADE RUNWAY 9/27	MAXIMUM GRADE CHANGE NO GREATER THAN 2%	MAXIMUM GRADE CHANGE GREATER THAN 2% NEAR 27 END	NEW RUNWAY LENGTH (2200')	2002
TRANSVERSE GRADE (ADJACENT TO AND BEYOND SAFETY AREA) RUNWAYS 9/27, 15/33	RECOMMENDED MAXIMUM GRADE OF NO MORE THAN 4 TO 1 BEYOND THE LIMITS OF THE SAFETY AREAS	MORE THAN 4 & TO 1 SLOPE BEYOND THE LIMITS OF THE SAFETY AREAS	FILL	2002
TRANSVERSE GRADE (WITHIN SAFETY AREA) RUNWAY 9/27, TAXIWAY B	RECOMMENDED 3% GRADE FOR SAFETY AREA SHOULDER AREA AND 1.5 TO 5% GRADE FROM THE EDGE OF THE SHOULDER TO THE SAFETY AREA EXTENT	EXCEEDS RECOMMENDED 3% GRADE FOR SAFETY AREA SHOULDER AREA AND 1.5 TO 5% GRADE FROM THE EDGE OF THE SHOULDER TO THE SAFETY AREA EXTENT	FILL	2002
OBJECT FREE AREA RUNWAY 9/27, TAXIWAY A AND B	ACQUIRE LAND OWNERSHIP OR EASEMENT	MAINTAIN AIRPORT SPONSOR CONTROL	LAND ACQUISITION	2003-2007
RUNWAY PROTECTION ZONE RUNWAYS 9, 27, 15, 33.	ACQUIRE LAND OWNERSHIP OR EASEMENT FOR THE ENTIRE ZONE, DEFINED AS SUFFICIENT CONTROL	MAINTAIN AIRPORT SPONSOR CONTROL	LAND ACQUISITION	2004-2006
AIRFIELD MARKING RUNWAY 15/33, 9/27, TAXIWAY B	MARKINGS IN ACCORDANCE WITH FAA ADVISORY CIRCULAR 150/5340-1H	AIRFIELD MARKINGS ARE UNREADABLE / INCORRECT	MARK NEW RUNWAY LENGTH MARK FOR VISUAL OPERATION	2002
AIRFIELD LIGHTING/REFLECTIVE MARKERS RUNWAY 9/27, TAXIWAY B	RECOMMEND INSTALLATION OF RUNWAY AND TAXIWAY EDGE LIGHTS OR REFLECTIVE MARKERS	RUNWAY AND TAXIWAY EDGE LIGHTS OR RETROREFLECTIVE LIGHTS ARE NOT INSTALLED	INSTALL MARKERS	2002
AIRFIELD SIGNAGE/MARKINGS RUNWAY 15/33, 9/27, TAXIWAY A AND B	LOCATIONS AND SPECIFICATIONS IN COMPLIANCE WITH FAA GUIDANCE	NOT PROPERLY LOCATED AND NOT IN COMPLIANCE WITH CURRENT FAA GUIDANCE	INSTALL SIGNAGE AND MARK	2001-2008
SAFETY AREA GRADE (COAL CREEK) RUNWAY 9	SAFETY AREA SHOULD BE GRADED TO SUPPORT THE OCCASIONAL PASSAGE OF AIRCRAFT AND COMPLY WITH FAA GRADING STANDARDS	SAFETY AREA IS NOT GRADED TO SUPPORT THE OCCASIONAL PASSAGE OF AIRCRAFT	NEW RUNWAY LENGTH (2200')	2002
RUNWAY VISIBILITY ZONE	AIRPORT SPONSOR SHOULD MAINTAIN LAND OWNERSHIP CONTROL AND REMOVE OBJECTS WHICH INTERFERE WITH RVZ LINE OF SIGHT	THE AIRPORT SPONSOR DOES NOT HAVE COMPLETE CONTROL OVER THE LAND WITHIN THE RVZ, AND OBJECTS EXIST WHICH INTERFERE WITH LINE OF SIGHT	LAND ACQUISITION	2007
ACCESS TAXIWAYS ADJACENT TO AND OFF AIRPORT PROPERTY	TAXIWAYS SHOULD BE CONSTRUCTED TO PAVEMENT STRENGTH, AIRFIELD DESIGN CRITERIA, SIGNAGE AND MARKING, GRADES AND BRIDGE STANDARDS TAXIWAYS SHOULD BE DESIGNED FOR AIRCRAFT TRAFFIC ONLY	TAXIWAYS ARE NOT CONSTRUCTED TO PAVEMENT STRENGTH, AIRFIELD DESIGN CRITERIA, SIGNAGE AND MARKING, GRADES AND BRIDGE STANDARDS. TAXIWAY ADJACENT WESTERN APRON ALLOWS AIRCRAFT TRAFFIC AND RESIDENTIAL TRAFFIC TO INTERACT	NONE-CONSTRUCT TERMINAL BUILDING	2002
TAXIWAY WIDTH, TAXIWAY B	MAINTAIN 25' WIDTH	20' - 25' WIDTH	NONE	-
TIE DOWNS NORTH APRON	LOCATIONS IN ACCORDANCE WITH FAA AC 150/5300-13	NON-STANDARD DESIGN	REDESIGN AND MARK	2006
PORT-A-PORTS HANGARS WEST OF FBO	LOCATIONS IN ACCORDANCE WITH FAA AC 150/5300-13	NON-STANDARD TOFA SEPARATION	REDESIGN AND MARK	2006
TAXIWAY NORTH OF/ADJACENT TO FBO AND TAXIWAY ADJACENT TO PARKING LOT	LOCATIONS/SEPARATIONS IN ACCORDANCE WITH FAA AC 150/5300-13	FENCE IN TOFA NEAR PARKING LOT AND ELECTRICAL VAULT IN TOFA NEAR NORTH APRON/FBO	REDESIGN AND MARK	2006
ADJACENT/ALONG RUNWAY 9/27 AND NEAR A3 ON RUNWAY 15/33	NON FRANGIBLE OBJECTS WITHIN OFA (OLD LIRL ON RUNWAY 9/27 AND SIGN ADJACENT A3)	MAINTAIN FRANGIBLE OBJECTS WITHIN OFA	NEW RUNWAY LENGTH (2200')	2002



ANNUAL RATE OF CHANGE OF MAGNETIC DECLINATION 5'E

ALL WEATHER WIND ROSE

SOURCE:	NOAA RESEARCH TOWER (ERIE, COLORADO)
PERIOD:	MARCH THROUGH NOVEMBER 1999
APPROXIMATELY 244,000 OBSERVATIONS	

% WIND COVERAGE

RUNWAY	10.5 KTS (12 MPH)	13.0 KTS (15 MPH)
09/27	95.18%	97.13%
15/33	95.62%	97.65%

COMBINED CROSSWIND:

BOTH RUNWAYS 10.5 KNOT CROSSWIND = 98.18%
WITH RUNWAY 09/27 – 13 KNOT CROSSWIND AND
RUNWAY 15/33 – 10.5 KNOT CROSSWIND = 98.82%

TABLE 4 – TAXIWAY DATA

ITEM	TAXIWAY	EXISTING	FUTURE
TAXIWAY WIDTH	A	25'	25'
	B	±25'	±25'
TAXIWAY LENGTH	A	FULL PARALLEL 4700' WEST SIDE OF 15/33	FULL PARALLEL 4700' WEST SIDE OF 15/33
	B	PARTIAL PARALLEL APPROX 3280' SOUTH SIDE OF RUNWAY 09/27	PARTIAL PARALLEL APPROX 3280' SOUTH SIDE OF RUNWAY 09/27
TAXIWAY OBJECT FREE AREA (OFA)	A	131'	131'
	B	131'	131'
TAXIWAY STRENGTH (POUNDS)	A	12,500 SINGLE WHEEL GEAR	12,500 SINGLE WHEEL GEAR
	B	UNKNOWN	NON-STANDARD
TAXIWAY SAFETY AREA	A	79'	79'
	B	79'	79'
TAXILANE OBJECT FREE AREA (OFA)		115'	115'

TABLE 5 – AIRPORT LAYOUT PLAN NOTES

1. DATE OF INVENTORY SEPTEMBER, 1999.
2. AIRCRAFT PARKING AND OTHER FIXED OR MOVABLE OBJECTS SHOULD BE MAINTAINED WITH A 125-FOOT SEPARATION FROM EACH RUNWAY CENTERLINE.
3. RUNWAY 15/33 STRENGTH IS 12,500 POUNDS SINGLE-WHEEL GEAR. ALL FUTURE PAVEMENT SHALL BE CONSTRUCTED TO/AND IN ACCORDANCE WITH THIS 12,500 SINGLE-WHEEL GEAR RATING.
4. BASE DATA FOR THIS PLAN WERE COMPILED USING AN AERIAL PHOTOGRAPH, USGS TOPOGRAPHIC MAPS, SITE VISITS, AND OTHER RELEVANT INFORMATION.
5. CONSTRUCTION OR ALTERATION OF AIRPORT HANGARS OR BUILDINGS MUST BE REPORTED TO THE FAA VIA FORM 7460-1.
6. DATUMS USED ARE NAD 83 AND NAD 88. ALL ELEVATIONS ARE MSL AND INDICATED LENGTHS ARE IN FEET.
7. THIS DRAWING IS FOR PLANNING PURPOSES ONLY. EXACT LOCATIONS SHALL NOT BE ASSUMED. THIS DRAWING SHALL NOT BE USED FOR CONSTRUCTION.
8. CRITICAL AIRCRAFT FOR THE 20 YEAR PLANNING PERIOD IS EXCLUSIVELY SMALL AIRCRAFT. THE CRITICAL AIRCRAFT IS THE PIPER 400 LS CHEYENNE. PIPER 400 LS HAS A 47.7' WING SPAN A GROSS WEIGHT OF 12,050 LBS AND AN APPROACH SPEED OF 110 KTS.
9. NEW HANGAR LOCATIONS HAVE NOT BEEN PLANNED BUT ARE DEPICTED FOR CONCEPTUAL PURPOSES.
10. APRON FLOOD LIGHTING EXISTS NEAR THE FBO BUILDING. OUTLYING AREAS ARE NOT LIGHTED.
11. SEE SHEET A300 FOR BUILDING AREA PLAN DETAILS.
12. FUTURE RUNWAY 9/27 END COORDINATES AND ELEVATIONS ARE NOT SURVEYED.
13. RUNWAY ELEVATIONS AND COORDINATES WERE OBTAINED FROM FAA OKC DATABASE VIA DEN ADO; HTTP://AVNWWW.JCCBI.GOV.
14. RUNWAY 9/27 AND 15/33 OBSTACLE FREE ZONE: 250' WIDE AND 200' BEYOND EACH RUNWAY END.
15. IT IS ASSUMED THAT THE TOWN OF ERIE HAS ACQUIRED THE RIGHT TO DEVELOP LANDSIDE IMPROVEMENTS WITHIN THE COAL CREEK ROW.
16. THE BUILDING RESTRICTION LINE (BRL) IS ARBITRARILY DEPICTED AT 335 FEET FROM EACH SIDE OF EACH RUNWAY CENTERLINE. THE LINE IS DEPICTED FOR PLANNING PURPOSES ONLY. EACH PROPOSAL FOR DEVELOPMENT SHOULD SUBMIT FAA FORM 7460 TO ENSURE COMPLIANCE WITH F.A.R. PART 77.
17. REFERENCE PLAN AND PROFILE SHEETS AND EXHIBIT A FOR DISPOSITION OF THRESHOLD SITING SURFACE REQUIREMENTS FOR RUNWAY 9/27. DISPOSITION OF OBSTRUCTIONS MAY BE FOUND ON DRAWING NO. 1683M10A.
18. IT IS ASSUMED THAT THE ERIE MUNICIPAL TRI-COUNTY AIRPORT SHALL NOT INCUR LAND ACQUISITION COSTS FOR ANY AIRPORT DEVELOPMENT WITHIN THE COAL CREEK RIGHT OF WAY (R-O-W).

TABLE 6 – BUILDING AND FACILITIES INFORMATION

BUILDING	NUMBER	CONDITION/USE	ESTIMATED HEIGHT, FEET
DESCRIPTION	ONE	POOR/FBO AND HANGAR	25
HANGAR NEST A	TWO	GOOD/AIRCRAFT STORAGE	12
HANGAR NEST A	THREE	GOOD/AIRCRAFT STORAGE	12
HANGAR NEST A	FOUR	GOOD/AIRCRAFT STORAGE	12
HANGAR NEST B	FIVE	GOOD/AIRCRAFT STORAGE	12
HANGAR NEST B	SIX	GOOD/AIRCRAFT STORAGE	12
HANGAR NEST B	SEVEN	GOOD/AIRCRAFT STORAGE	12
HANGAR NEST B	EIGHT	GOOD/AIRCRAFT STORAGE	12
HANGAR NEST B	NINE	GOOD/AIRCRAFT STORAGE	12
HANGAR NEST B	TEN	GOOD/AIRCRAFT STORAGE	12
HANGAR NEST B	ELEVEN	GOOD/AIRCRAFT STORAGE	12
HANGAR NEST B	TWELVE	GOOD/AIRCRAFT STORAGE	12
HANGAR NEST B	THIRTEEN	GOOD/AIRCRAFT STORAGE	12
HANGAR NEST B	FOURTEEN	GOOD/AIRCRAFT STORAGE	12
HANGAR NEST B	FIFTEEN	GOOD/AIRCRAFT STORAGE	12
HANGER NEST C	SIXTEEN	GOOD/AIRCRAFT STORAGE	12
CARGO BOX	SEVENTEEN	FAIR/GENERAL STORAGE	8

REFERENCE: BUILDING AREA PLAN (SHEET 1683M43A).
OFF-AIRPORT BUILDINGS SEE SHEET 1683M10A AND 1683M15A.

REV	DATE	DESCRIPTION	APP'D
B	1/25/02	ISSUED FOR CLIENT REVIEW	WA
A	9/25/01	ISSUED FOR CLIENT REVIEW	SPM / DS

DISCLAIMER
KNIGHT PIESOLD AND CO. PRODUCED THE DATA SHOWN ON THE DRAWING FILES USING BOTH TECHNICAL INFORMATION AND KNOW HOW. RECEIPT OF THIS DRAWING DOES NOT MEAN THAT THE RECIPIENT HAS ANY RIGHTS TO EITHER SUCH TECHNICAL INFORMATION OR KNOW HOW. ANY ADAPTATION OR MODIFICATION OF THE DATA OR DRAWING SHALL BE AT USER'S SOLE RISK AND WITHOUT LIABILITY OR LEGAL EXPOSURE TO KNIGHT PIESOLD AND CO.

CLIENT: TOWN OF ERIE
ERIE MUNICIPAL TRI-COUNTY AIRPORT

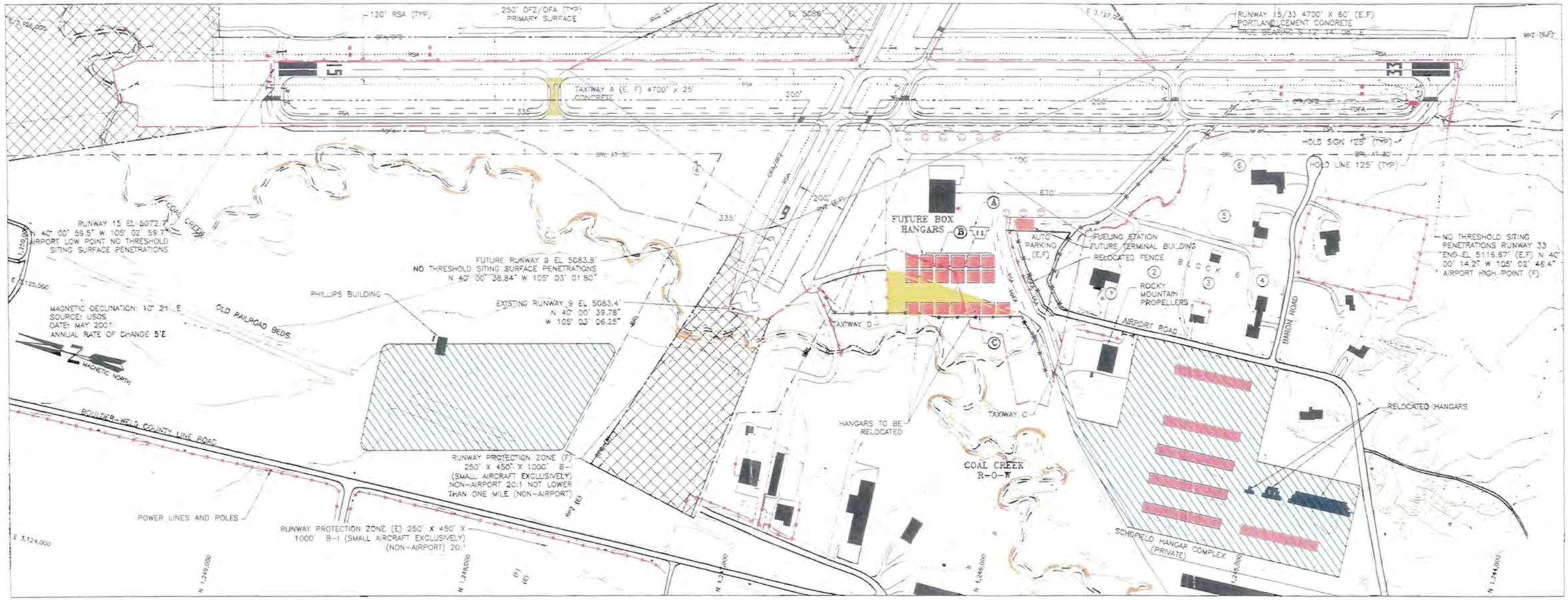
PROJECT: AIP PROJECT NO. 3-08-0090-04

TITLE: AIRPORT LAYOUT PLAN DATA SHEET

Knight Piésold CONSULTING

DESIGNED BY	SPM	CHECKED BY		DRAWING No.	REV.
DRAWN BY	WA	APPROVED BY		1683133B – A200	B

PLOT SCALE: 1 | SHEET NO. N/A



REFERENCE
- TOPOGRAPHIC MAPPING PROVIDED BY INTRASEARCH DATA FILES NAMED: 99244-2,3,4,5,6, AND 7.DWG DATED 11/16/99 RECEIVED BY KNIGHT PIESOLD ON 11/16/99 SEE P:\DATABASE\16005\1683\KPMOD\99244-2,3,4,5,6 AND 7.DWG
- TOPOGRAPHIC MAPPING PROVIDED BY ISS RECEIVED BY KNIGHT PIESOLD ON 3/14/00 SEE P:\DATABASE\16005\1683\031400\COMBOMAP.DWG

PLAN

200 0 200 400 FEET

LEGEND:

- 6200 — EXISTING GROUND SURFACE CONTOUR AND EL. FT
- PROPERTY LINE ℞ (E)
- PROPERTY LINE ℞ (F)
- WATERWAY/CULVERT
- EXISTING FENCING
- PROPOSED FENCING
- EXISTING LANDSIDE/PUBLIC ROAD
- RSA — RUNWAY SAFETY AREA (E), (F), (RSA)
- OFA — OBJECT FREE AREA (E), (F), (OFA)
- OFZ — OBSTACLE FREE ZONE (E), (F), (OFZ)
- RPZ — RUNWAY PROTECTION ZONE (E), (F), (RPZ)
- RVZ — RUNWAY VISIBILITY ZONE (E), (F), (RVZ)
- RUNWAY APPROACH SURFACE
- BRL — 30' BUILDING RESTRICTION LINE (BRL)
- TOFA — TAXIWAY OBJECT FREE AREA
- TSA — TAXIWAY SAFETY AREA
- AIRFIELD PAVEMENT AND MARKINGS
- POWER LINES AND POLES
- FUTURE AVIGATION EASEMENT
- FUTURE AIRFIELD PAVEMENT
- EXISTING AIRFIELD PAVEMENT
- FUTURE HANGAR DEVELOPMENT AREA
- TREE/BUSH
- EXISTING BUILDING
- FUTURE BUILDING
- SEGMENTED CIRCLE WITH LIGHTED WIND CONE
- ROTATING BEACON
- RUNWAY LIGHT
- THRESHOLD LIGHTS
- PRECISION APPROACH PATH INDICATOR UNITS (EXISTING)
- HOLD SIGN
- RUNWAY END IDENTIFIER LIGHTS (REIL)(E)
- SUPPLEMENTAL WIND CONE
- (E) EXISTING
- (F) FUTURE
- TIE DOWN TO BE CLOSED
- (3) LOT REFERENCE
- (A) BUILDING REFERENCE; SEE DRAWING NUMBER 1683I33A FOR BUILDING AREA PLAN NOTES

REV	DATE	DESCRIPTION	APP'D / CADD
B	1/25/02	ISSUED FOR CLIENT REVIEW	WA
A	9/25/01	ISSUED FOR CLIENT REVIEW	SPM / DS

DISCLAIMER

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CLIENT: TOWN OF ERIE
ERIE MUNICIPAL TRI-COUNTY AIRPORT

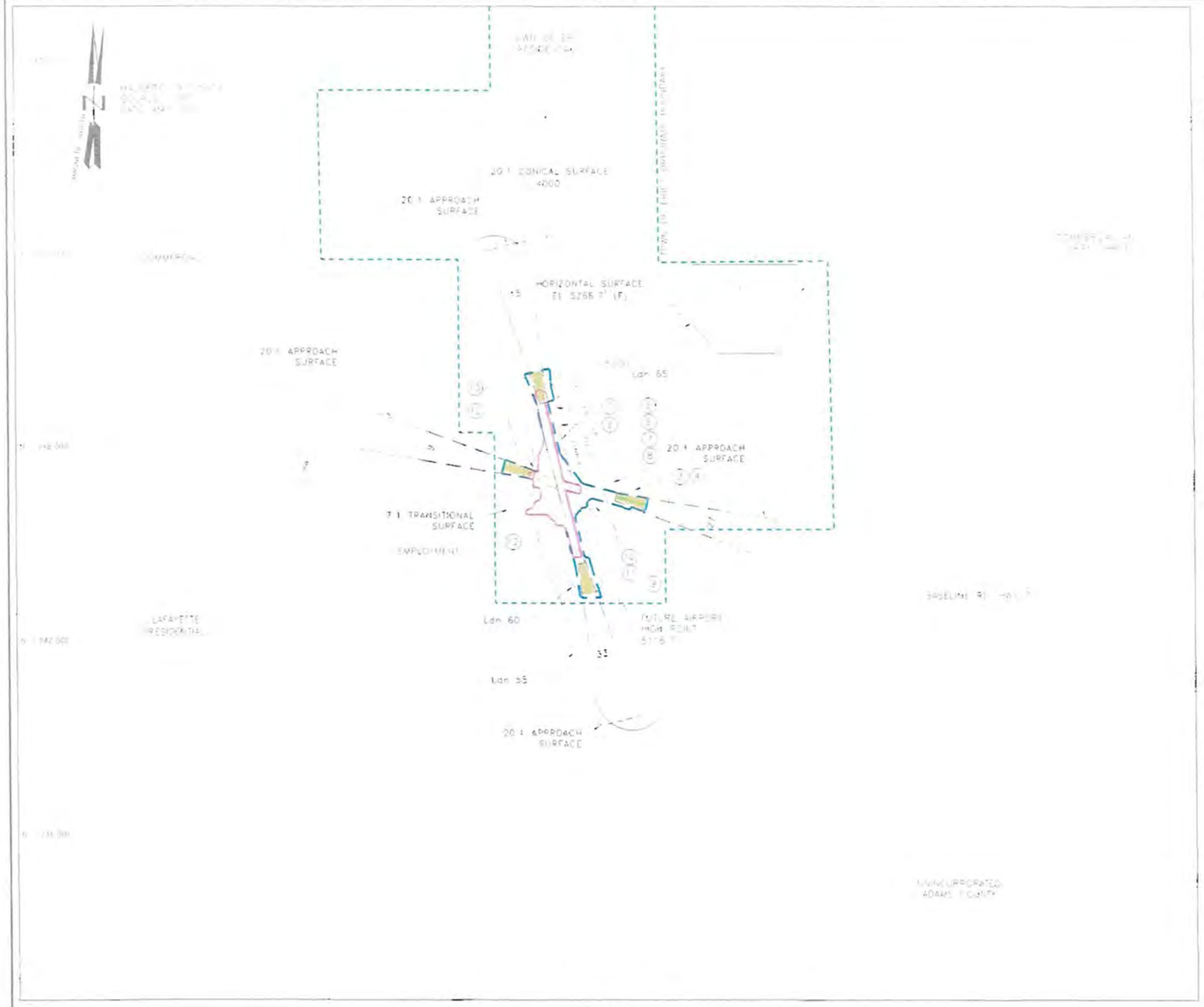
PROJECT: AIP PROJECT NO. 3-08-0090-04

TITLE: BUILDING AREA PLAN

Knight Piésold CONSULTING

DESIGNED BY	SPM	CHECKED BY		DRAWING No.	REV.
DRAWN BY	TMF	APPROVED BY		1683M43B – A300	B

PLOT SCALE: 1 | XREF NO: 1683X01B, 1683X09A



PLAN

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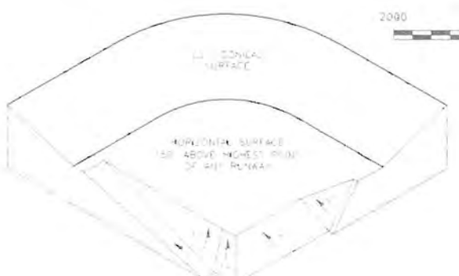

1 TYPICAL ISOMETRIC VIEW OF F.A.R. PART 77 SURFACES

(CUT ON RUNWAY CENTERLINES)

NTS

TABLE 1 – OBSTRUCTION DATA

NO.	RUNWAY SURFACE	LOCATION OBJECT	EXISTING/FUTURE	OBJECT TOP ELEVATION, FT	PENETRATION, FT	DISPOSITION
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
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[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
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[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

*EXISTING/FUTURE DUE TO PLANNED NEW RUNWAY LENGTH OF [illegible] FEET

NOTES:

1. RUNWAY 15-33 IS [illegible] FEET IN LENGTH AS SHOWN. PRIMARY SURFACE IS 250 FEET WIDE BY 5100 FEET. LENGTH RUNWAY 9-27 IS 6200 FEET IN LENGTH AS SHOWN. PRIMARY SURFACE IS 250 FEET WIDE BY 2600 FEET IN LENGTH. THESE ARE BASED UPON PLANNED DIMENSIONS.

2. USGS 7.5 MINUTE TOPOGRAPHIC QUADRANGLE MAPS USED FOR CONTOUR BASE: HYGIENE, COLORADO, DATED 1965 (PHOTOREVISED 1979); UNION, COLORADO, DATED 1967 (PHOTOREVISED 1979); LONGMONT, COLORADO, DATED 1968 (PHOTOREVISED 1979); LYONS, COLORADO, DATED 1966 (PHOTOREVISED 1979); AND ERIE, COLORADO, DATED 1967 (PHOTOREVISED 1979).

3. THE RADIUS OF THE HORIZONTAL SURFACE IS 5,000 FEET.

4. ELEVATIONS ARE AS FOLLOWS: RUNWAY 9 (E) = [illegible]; RUNWAY 15 (E) = 5010; RUNWAY 33 (E) = 5167.7; RUNWAY 27 (E) = 5157; RUNWAY 27 (F) = 5173; RUNWAY 9 (E) = 5081.4; RUNWAY 9 (F) = 5081.9.

5. THE COMPREHENSIVE PLAN ADOPTED BY THE TOWN OF ERIE PLANNING COMMISSION (10/19/99, TOWN OF ERIE FUTURE COMPLANNER/WEST SPECIFIES LOW CENSITY RESIDENTIAL AND LOW DENSITY RESIDENTIAL DEVELOPMENT DUE EAST OF RUNWAY 15-33. PRESERVATION AND EMPLOYMENT THE PLAN ALSO RESERVES RURAL LAND USES EAST AND NORTH OF THE MID-FIELD RUNWAY INTERSECTION. THE LAND USES BETWEEN AND ALONG COLORADO HIGHWAY 7 AND THE RUNWAY 33 END ARE DESIGNATED COMMERCIAL AND RURAL PRESERVATION.

THE TOWN OF ERIE HAS ADOPTED AN AIRPORT OVERLAY DISTRICT (SECTION 10-4-4-C OF CODE). THE ORDINANCE SPECIFIES AIRPORT ADVISORY COMMITTEE REVIEW OF OBJECT HEIGHT RESTRICTIONS BASED UPON FAR PART 77 IMAGINARY SURFACES, REVIEW OF LAND NOISE CONTOUR LOCATION, AND LAND USE APPLICATION, PUBLIC DISCLOSURE (AVIGATION EASEMENT) FOR ALL LANDOWNERS WITHIN THE DISTRICT, AIRPORT INFLUENCE AREA AND FAA FORM 7460 FILINGS. THE ORDINANCE ALSO SPECIFIES REVIEW OF THE DATA APPLICATION BASED UPON ELECTRICAL INTERFERENCE, LAND USES WITHIN THE RUNWAY PROTECTION ZONE (RPZ), ASPHALT OR ANYTHING ELSE WHICH WOULD ENDANGER AIRCRAFT OPERATION.

LEGEND:

- EXISTING GROUND SURFACE CONTOUR AND ELEV. (F)
- NOISE CONTOUR (YEAR 2000)
- RUNWAY APPROACH SURFACE EDGE BELOW HORIZONTAL SURFACE (F)
- RUNWAY APPROACH SURFACE EDGE ABOVE HORIZONTAL SURFACE (F)
- PRIMARY SURFACE EDGE (F)
- CONICAL SURFACE EDGE (F)
- TRANSITIONAL SURFACE EDGE (F)
- ROAD (E)
- WATERWAY (E)
- BUILDING (E)
- PROPERTY LINE (E)
- PROPERTY LINE (F)
- AIA AIRPORT INFLUENCE AREA (AIA) (E)
- RUNWAY PROTECTION ZONE (1250' X 450' X 1700') (TYP)

REV.	DATE	DESCRIPTION	APP.	CK.
A	9/20/10	ISSUED FOR CLIENT REVIEW		

DISCLAIMER
KNIGHT PIESOLD AND CO. PRODUCED THE DATA SHOWN ON THE DRAWING FILES. GIVE BOTH TECHNICAL INFORMATION AND KNOW-HOW. RECEIPT OF THIS DRAWING DOES NOT MEAN THAT THE RECIPIENT HAS ANY RIGHTS TO EITHER SUCH TECHNICAL INFORMATION OR KNOW-HOW. ANY ADAPTATION OR MODIFICATION OF THE DATA OR DRAWING SHALL BE AT USER'S SOLE RISK AND WITHOUT LIABILITY OR LEGAL EXPOSURE TO KNIGHT PIESOLD AND CO.

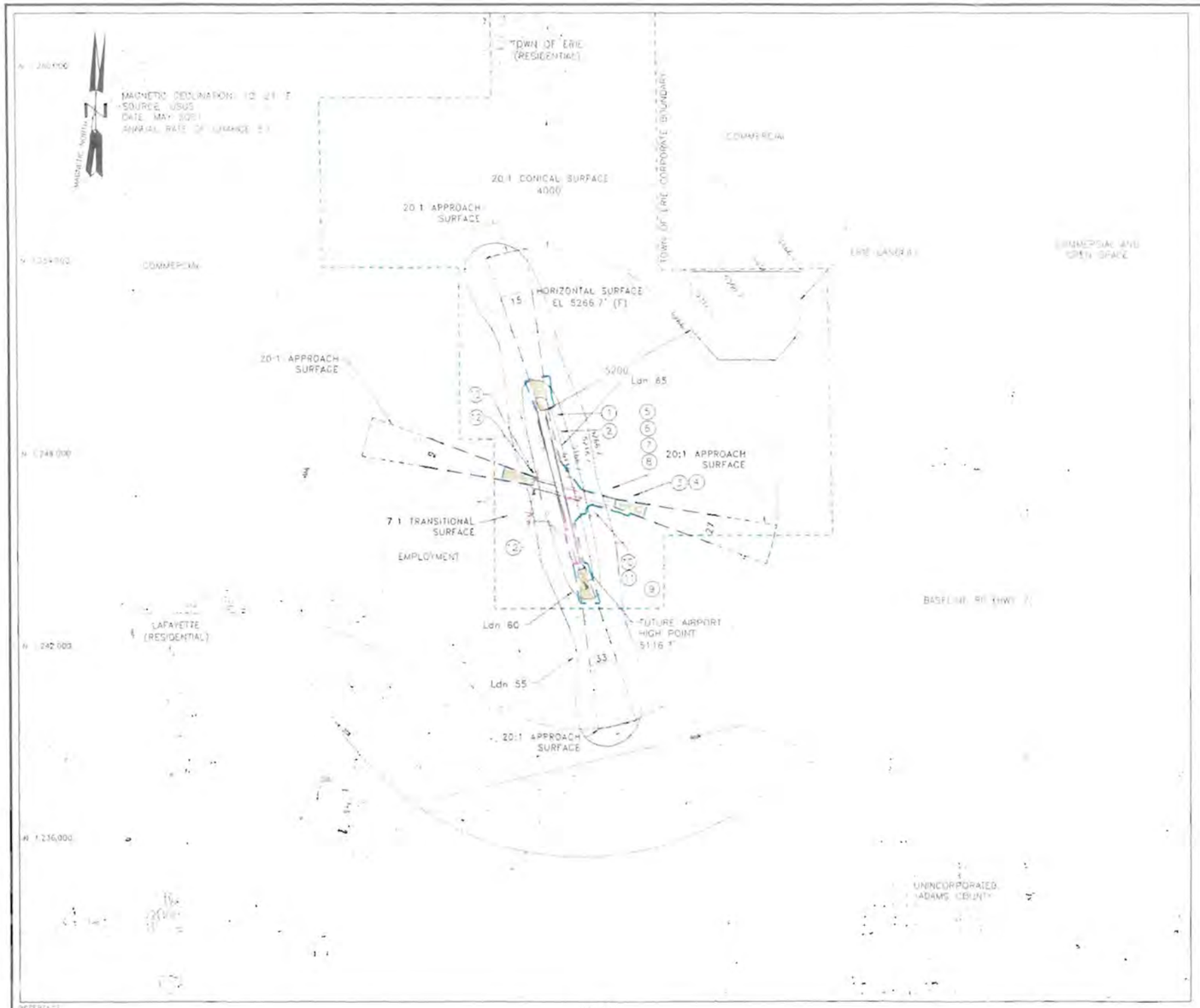
CLIENT: TOWN OF ERIE
ERIE MUNICIAL TRI-COUNTY AIRPORT

PROJECT: AIP PROJECT NO. 03-08-0090-04

TITLE: FAR PART 77
AIRPORT IMAGINARY SURFACES

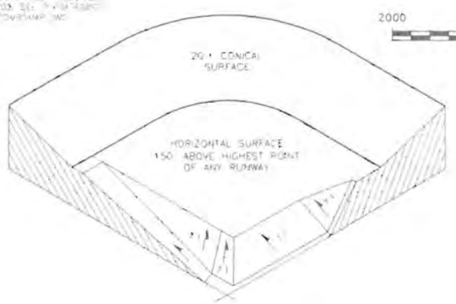
Knight Piésold CONSULTING

DESIGNED BY	DRAWN BY	CHECKED BY	APPROVED BY	DRAWING No.	REV.
	TVF			1683M10A – A400	A



PLAN

2000 0 2000 4000 FEET



1 TYPICAL ISOMETRIC VIEW OF F.A.R. PART 77 SURFACES
(CUT ON RUNWAY CENTERLINES)
NTS

TABLE 1 – OBSTRUCTION DATA

NO	RUNWAY/SURFACE	LOCATION/OBJECT	EXISTING/FUTURE	OBJECT TOP ELEVATION, FT	PENETRATION, FT	DISPOSITION
1	RUNWAY 15/33, EAST TRANSITIONAL	BLOCK 3, LOT 3 RESIDENCE	EXISTING AND FUTURE	5127.8	±16	INSTALL OBST LIGHTS (2)
2	RUNWAY 15/33, EAST TRANSITIONAL	BLOCK 3, LOT 4 RESIDENCE	EXISTING AND FUTURE	5111.2	±2	NONE
7	RUNWAY 9/27, NORTH TRANSITIONAL, PRIMARY AND 27 APPROACH	BLOCK 3, LOT 20 TERRAIN PENETRATION	EXISTING	5140.1	SLOPING TO ±10 (MAXIMUM)	NEW RUNWAY LENGTH (2,200 FEET)
8	RUNWAY 9/27, NORTH TRANSITIONAL, PRIMARY AND 27 APPROACH	BLOCK 3, LOT 20 TERRAIN PENETRATION	FUTURE	5140.1	SLOPING TO ±11 (MAXIMUM)	NONE
4	RUNWAY 9/27, NORTH TRANSITIONAL, PRIMARY AND 27 APPROACH	BLOCK 3, LOT 18 TERRAIN PENETRATION	EXISTING	5134.2	SLOPING TO ±18 (MAXIMUM)	NEW RUNWAY LENGTH (2,200 FEET)
5	RUNWAY 9/27, NORTH TRANSITIONAL, PRIMARY AND 27 APPROACH	BLOCK 3, LOT 18 TERRAIN PENETRATION	FUTURE	5134.2	SLOPING TO ±2 (MAXIMUM)	NONE
7	RUNWAY 9/27, NORTH TRANSITIONAL	BLOCK 3, LOT 18, RESIDENCE	EXISTING	5164.6	±15	N/A
8	RUNWAY 9/27, NORTH TRANSITIONAL	BLOCK 3, LOT 18 RESIDENCE	FUTURE	5164.6	±13	INSTALL OBST LIGHTS (2)
9	RUNWAY 9/27, SOUTH TRANSITIONAL	BLOCK 4, LOT 4 RESIDENCE	FUTURE	5170.1	±2	NONE
10	RUNWAY 9/27, SOUTH TRANSITIONAL	BLOCK 4, LOT 5/6 RESIDENCE	EXISTING	5168.9	±14	N/A
11	RUNWAY 9/27, SOUTH TRANSITIONAL	BLOCK 4, LOT 5/6, RESIDENCE	FUTURE	5168.9	±11	INSTALL OBST LIGHTS (2)
12	RUNWAY 9/27, TRANSITIONAL, PRIMARY AND 9 APPROACH	PHILLIPS SUB DIVISION COAL CREEK R-O-W TERRAIN	EXISTING	5100.0	SLOPING TO ±11 (MAXIMUM)	NEW RUNWAY LENGTH (2,200 FEET)
13	RUNWAY 9/27, WEST PRIMARY, TRANSITIONAL AND APPROACH	TRACT 1/3 COAL CREEK R-O-W	EXISTING	5120.9	±37.5	REMOVE
14	RUNWAY 9/27, WEST PRIMARY, TRANSITIONAL AND APPROACH	TRACT 1/3 COAL CREEK R-O-W	EXISTING	5130.4	±47	REMOVE

*EXISTING/FUTURE DUE TO PLANNED NEW RUNWAY LENGTH OF 2,200 FEET

NOTES:

1. RUNWAY 15/33 IS 4700 FEET IN LENGTH AS SHOWN. PRIMARY SURFACE IS 250 FEET WIDE BY 5100 FEET IN LENGTH. RUNWAY 9/27 IS 2200 FEET IN LENGTH AS SHOWN. PRIMARY SURFACE IS 250 FEET WIDE BY 2600 FEET IN LENGTH. THESE ARE BASED UPON PLANNED DIMENSIONS.
2. U.S.G.S. 7.5 MINUTE TOPOGRAPHIC QUADRANGLE MAPS USED FOR CONTOUR BASE. HYGIENE, COLORADO, DATED: 1968 (PHOTOREVISED 1979); NWOT, COLORADO, DATED 1967 (PHOTOREVISED 1979); LONGMONT, COLORADO, DATED 1968 (PHOTOREVISED 1979); LYONS, COLORADO, DATED 1968 (PHOTOREVISED 1978); AND ERIE, COLORADO, DATED 1967 (PHOTOREVISED 1979).
3. THE RADII OF THE HORIZONTAL SURFACE IS 5,000 FEET.
4. ELEVATIONS ARE AS FOLLOWS: RUNWAY 15 (E) = 5072.7; RUNWAY 15 (F) = 5072.7; RUNWAY 33 (E) = 5116.67; RUNWAY 33 (F) = 5116.67; RUNWAY 27 (E) = 5130.2; RUNWAY 27 (F) = 5107.9; RUNWAY 9 (E) = 5083.4; RUNWAY 9 (F) = 5083.8.
5. THE COMPREHENSIVE PLAN, ADOPTED BY THE TOWN OF ERIE PLANNING COMMISSION (10/19/99; TOWN OF ERIE FILENAME: COMPPLAN99.DWG) SPECIFIES LOW DENSITY RESIDENTIAL AND LOW DENSITY RESIDENTIAL DEVELOPMENT DUE EAST OF RUNWAY 15/33. PRESERVATION AND EMPLOYMENT. THE PLAN ALSO IDENTIFIES RURAL LAND USES EAST AND NORTH OF THE MID-FIELD RUNWAY INTERSECTION. THE LAND USES BETWEEN AND ALONG COLORADO HIGHWAY 7 AND THE RUNWAY 33 END ARE DESIGNATED COMMERCIAL AND RURAL PRESERVATION.
6. THE TOWN OF ERIE HAS ADOPTED AN AIRPORT OVERLAY DISTRICT (SECTION 10-4-2 OF CODE). THE ORDINANCE SPECIFIES AIRPORT ADVISORY COMMITTEE REVIEW OF OBJECT HEIGHT RESTRICTIONS BASED UPON FAR PART 77 IMAGINARY SURFACES, REVIEW OF LDN NOISE CONTOUR LOCATION WITH EACH CHANGE OF LAND USE APPLICATION, PUBLIC DISCLOSURE (AVIGATION EASEMENT) FOR ALL LANDOWNERS WITHIN THE DISTRICT (AIRPORT INFLUENCE AREA), AND FAA FORM 7460 FILINGS. THE ORDINANCE ALSO SPECIFIES REVIEW OF THE EACH APPLICATION BASED UPON: ELECTRICAL INTERFERENCE, LAND USES WITHIN THE RUNWAY PROTECTION ZONE (RPZ), VISIBILITY OR ANYTHING ELSE WHICH WOULD ENDANGER AIRCRAFT OPERATION.

LEGEND:

- EXISTING GROUND SURFACE CONTOUR AND EL. FT
- NOISE CONTOUR (YEAR 2020)
- RUNWAY APPROACH SURFACE EDGE BELOW HORIZONTAL SURFACE (F)
- RUNWAY APPROACH SURFACE EDGE ABOVE HORIZONTAL SURFACE (F)
- PRIMARY SURFACE EDGE (F)
- CONICAL SURFACE EDGE (F)
- TRANSITIONAL SURFACE EDGE (F)
- ROAD (E)
- WATERWAY (E)
- BUILDING (E)
- PROPERTY LINE (E)
- PROPERTY LINE (F)
- AIA — AIRPORT INFLUENCE AREA (AIA) EE
- RUNWAY PROTECTION ZONE (250' X 450' X 1000') (TYP)

REV	DATE	DESCRIPTION	APP'D
B	1/25/02	ISSUED FOR CLIENT REVIEW	NA
A	9/25/01	ISSUED FOR CLIENT REVIEW	SPM / DS

DISCLAIMER
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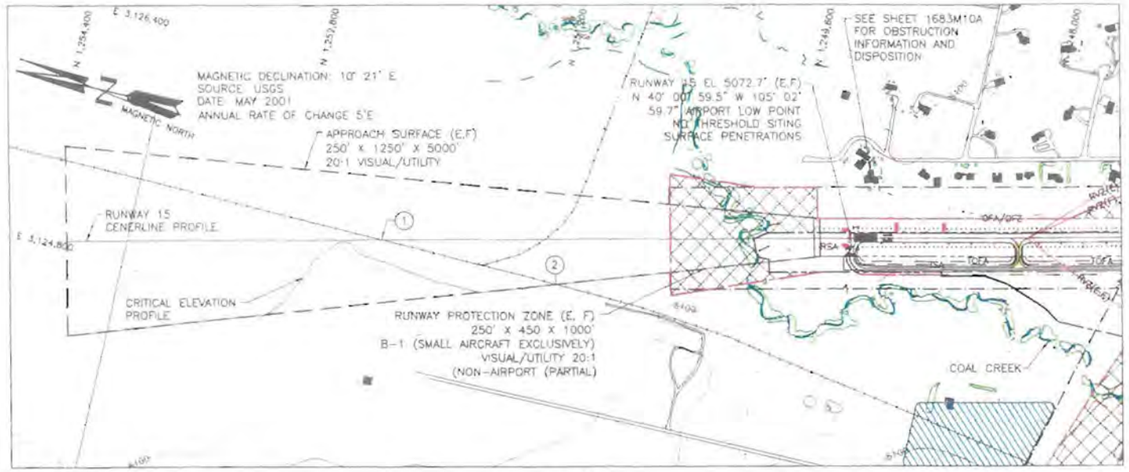
CLIENT: TOWN OF ERIE
ERIE MUNICIAL TRI-COUNTY AIRPORT

PROJECT: AIP PROJECT NO. 03-08-0090-04

TITLE: FAR PART 77
AIRPORT IMAGINARY SURFACES

Knight Piésold CONSULTING

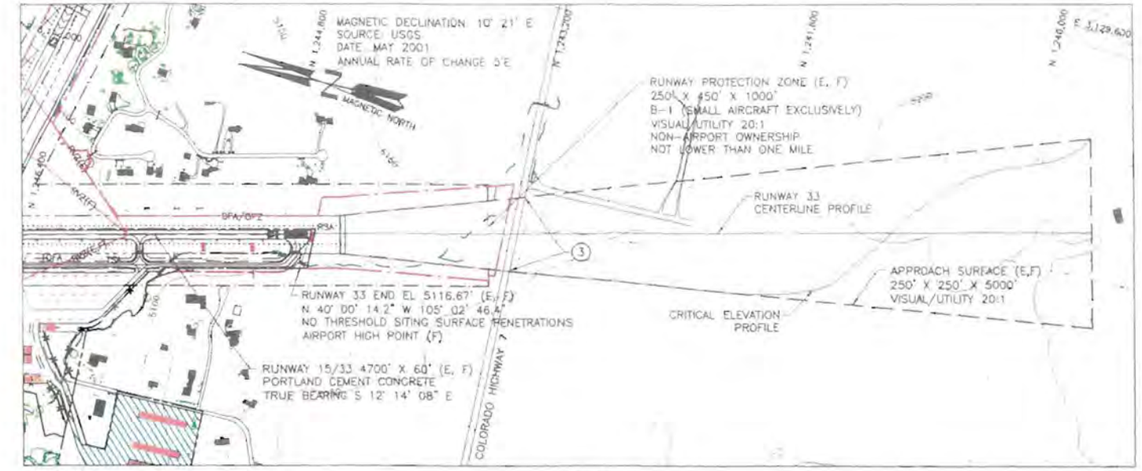
DESIGNED BY	SPM	CHECKED BY		DRAWING No.	REV.
DRAWN BY	TMF	APPROVED BY		1683M10B - A400	B



REFERENCE
-TOPOGRAPHIC MAPPING PROVIDED BY INTRASEARCH
DATA FILES NAMED: 99214-2,3,4,5,6, AND 7.DWG DATED
11/16/99. RECEIVED BY KNIGHT PIESOLD ON 11/16/99
SEE P:\DATABASE\16005\1683\XRMOD\99214-2,3,4,5,6
AND 7.DWG
-TOPOGRAPHIC MAPPING PROVIDED BY ISSI RECEIVED
BY KNIGHT PIESOLD ON 3/14/00. SEE P:/DATABASE/
16005/1683/031400/COMBOMAP.DWG

PLAN

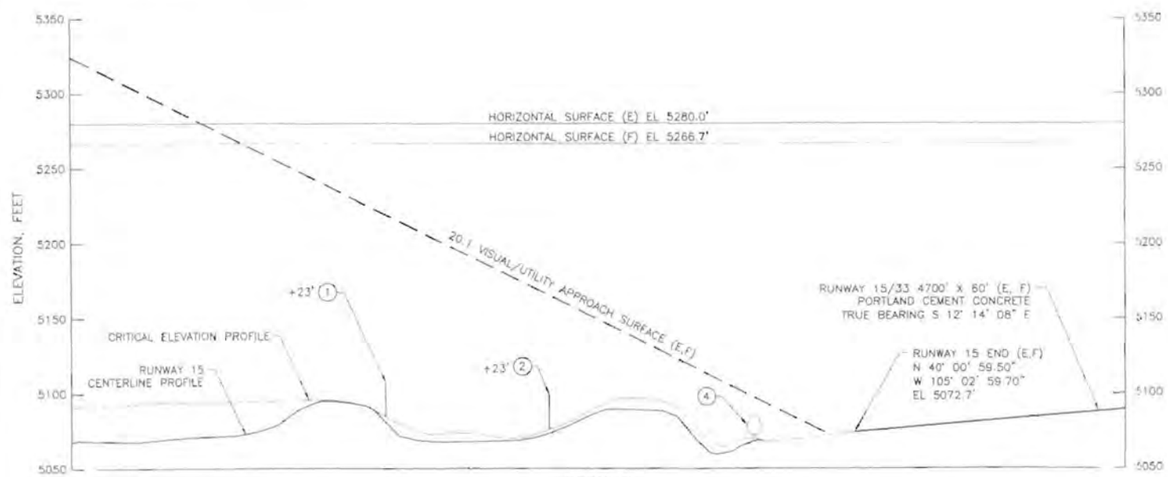
500 0 500 1000 FEET



REFERENCE
-TOPOGRAPHIC MAPPING PROVIDED BY INTRASEARCH
DATA FILES NAMED: 99214-2,3,4,5,6, AND 7.DWG DATED
11/16/99. RECEIVED BY KNIGHT PIESOLD ON 11/16/99
SEE P:\DATABASE\16005\1683\XRMOD\99214-2,3,4,5,6
AND 7.DWG
-TOPOGRAPHIC MAPPING PROVIDED BY ISSI RECEIVED
BY KNIGHT PIESOLD ON 3/14/00. SEE P:/DATABASE/
16005/1683/031400/COMBOMAP.DWG

PLAN

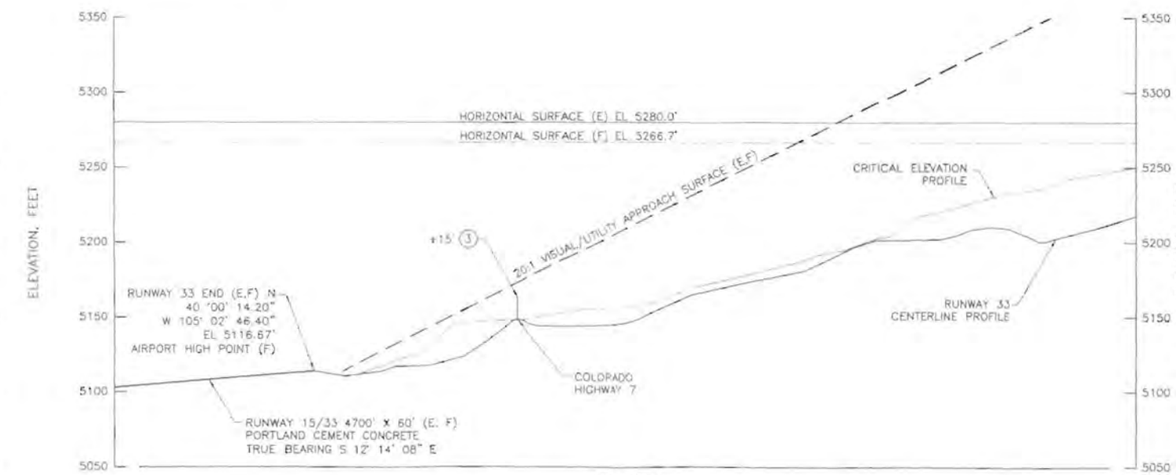
500 0 500 1000 FEET



PROFILE

50 0 50 100 FEET 500 0 500 1000 FEET

VERTICAL EXAGGERATION = 10X



PROFILE

50 0 50 100 FEET 500 0 500 1000 FEET

VERTICAL EXAGGERATION = 10X

RUNWAY 15/33 APPROACH CLEARANCES

NO.	OBJECT	ELEVATION, FEET	CLEARANCE, FEET
1	OLD RAILROAD EASEMENT	5062.1	APPROACH SURFACE CLEAR BY ±103
2	OLD RAILROAD EASEMENT	5081.3	APPROACH SURFACE CLEAR BY ±65
3	HIGHWAY 7	5147.9	APPROACH SURFACE CLEAR BY ±10
4	TREE	5080.0	APPROACH SURFACE CLEAR BY ±12

LEGEND:

- EXISTING GROUND SURFACE CONTOUR AND EL. FT
- PROPERTY LINE ℄ (F)
- PROPERTY LINE ℄ (E)
- WATERWAY/CULVERT
- EXISTING FENCING
- CRITICAL ELEVATION PROFILE
- CENTERLINE PROFILE
- RSA — RUNWAY SAFETY AREA (E), (F), (RSA)
- OFA — OBJECT FREE AREA (E), (F), (OFA)
- OFZ — OBSTACLE FREE ZONE (E), (F), (OFZ)
- RPZ — RUNWAY PROTECTION ZONE (E), (F), (RPZ)
- RVZ — RUNWAY VISIBILITY ZONE (E), (F), (RVZ)
- RUNWAY APPROACH SURFACE
- BRL — 30' BUILDING RESTRICTION LINE (BRL)
- TOFA — TAXIWAY OBJECT FREE AREA
- TSA — TAXIWAY SAFETY AREA
- AIRFIELD PAVEMENT AND MARKINGS
- POWER LINES AND POLES
- FUTURE AVIGATION EASEMENT
- FUTURE AIRFIELD PAVEMENT
- FUTURE HANGAR DEVELOPMENT AREA
- ACCESS TAXIWAY (E)
- TREE/BUSH
- EXISTING BUILDING
- FUTURE BUILDING
- 3 — SPOT RUNWAY APPROACH CLEARANCE IDENTIFICATION
- PRECISION APPROACH PATH INDICATOR LIMITS (EXISTING)
- RUNWAY END IDENTIFIER LIGHTS (REIL)(E)

REV	DATE	DESCRIPTION	APP'D
B	1/22/02	ISSUED FOR CLIENT REVIEW	MA
A	9/25/01	ISSUED FOR CLIENT REVIEW	SPM / DS

CADD

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CLIENT: TOWN OF ERIE
ERIE MUNICIPAL TRI-COUNTY AIRPORT

PROJECT: AIP PROJECT NO. 3-08-0090-04

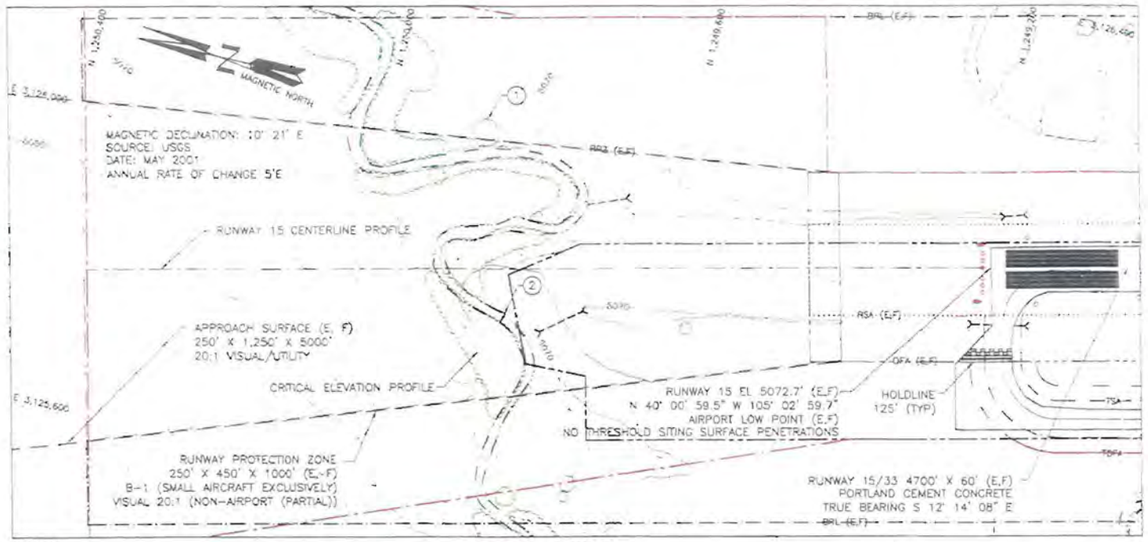
TITLE: RUNWAY 15/33
APPROACH SURFACE
PLAN AND PROFILE

Knight Piésold CONSULTING

DESIGNED BY	SPM	CHECKED BY		DRAWING No.	REV.
DRAWN BY	TMF	APPROVED BY		1683M40B – A500	B

REF. NO. 1683M01B, 1683M09A, 1683M10A, 1683M17A

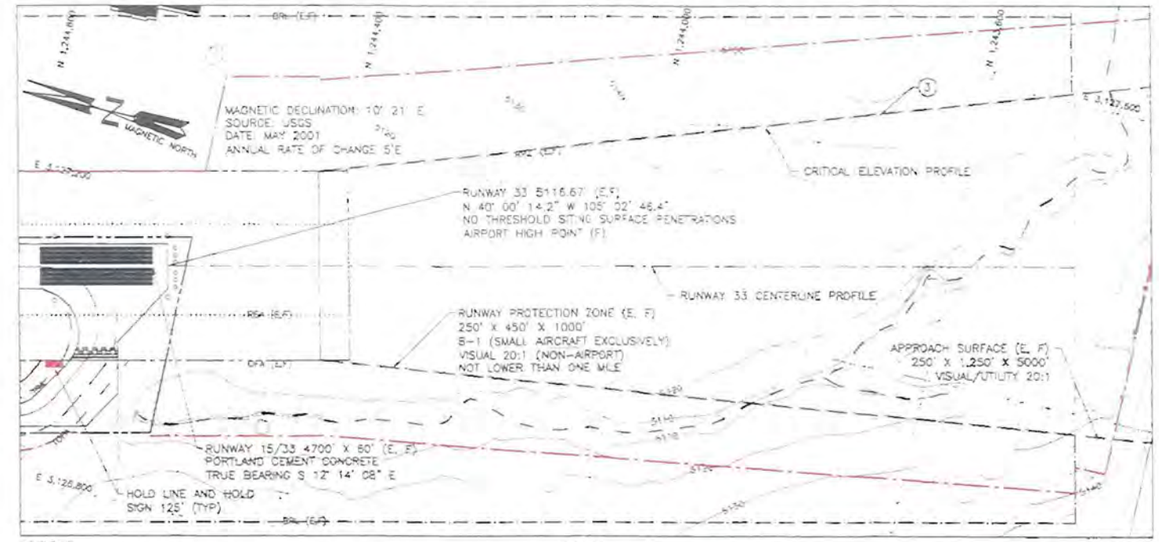
PLOT SCALE: 1:1



REFERENCE:
- TOPOGRAPHIC MAPPING PROVIDED BY INTRASEARCH
DATA FILES NAMED: 99214-2,3,4,5,6, AND 7.DWG DATED 11/16/99. RECEIVED BY KNIGHT PIESOLD ON 11/16/99
SEE P:\DATABASE\16005\1683\KPMOD\99214-2,3,4,5,6, AND 7.DWG.

PLAN

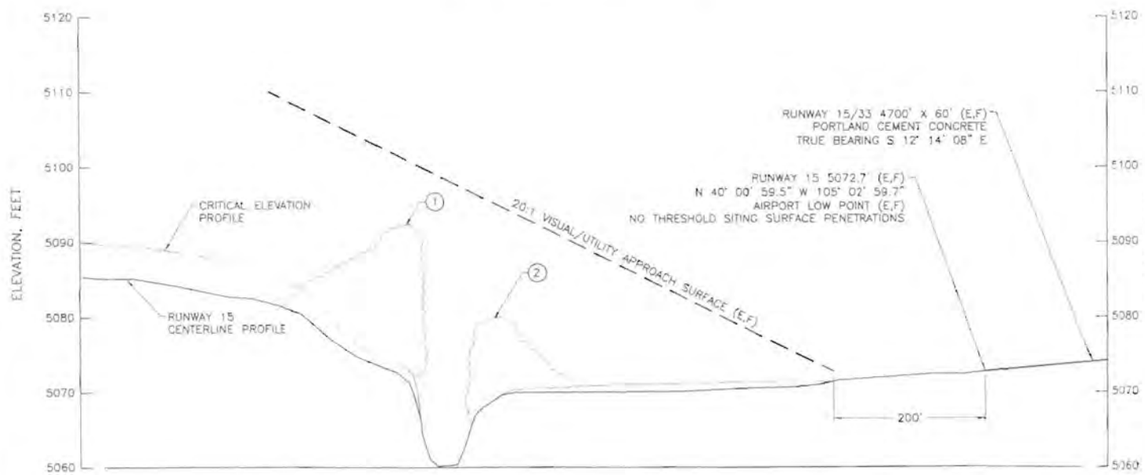
100 0 100 200 FEET



REFERENCE:
TOPOGRAPHIC MAPPING PROVIDED BY INTRASEARCH
DATA FILES NAMED: 99214-2,3,4,5,6, AND 7.DWG DATED 11/16/99. RECEIVED BY KNIGHT PIESOLD ON 11/16/99.
SEE P:\DATABASE\16005\1683\KPMOD\99214-2,3,4,5,6, AND 7.DWG

PLAN

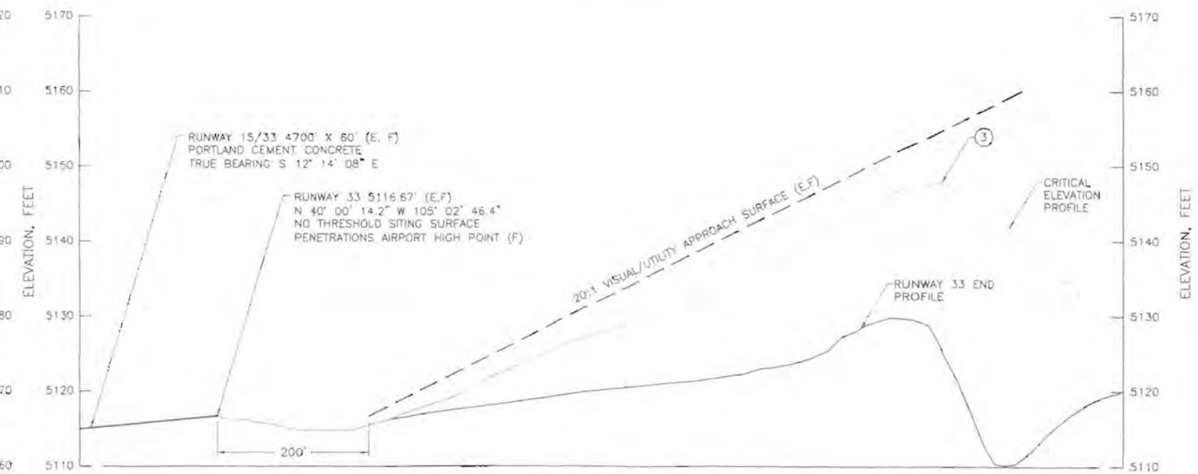
100 0 100 200 FEET



PROFILE

10 0 10 20 FEET 100 0 100 200 FEET

VERTICAL EXAGGERATION = 10X



PROFILE

10 0 10 20 FEET 100 0 100 200 FEET

VERTICAL EXAGGERATION = 10X

RUNWAY 15/33 APPROACH CLEARANCES

NO.	OBJECT	ELEVATION, FEET	CLEARANCE, FEET
1	TREE/BUSH	5092.3	APPROACH SURFACE CLEARS BY ±12
2	TREE/BUSH	5080.0	APPROACH SURFACE CLEARS BY ±15
3	TERRAIN	5147.9	APPROACH SURFACE CLEARS BY ±10

LEGEND:

- 5200 EXISTING GROUND SURFACE CONTOUR AND EL, FT
- PROPERTY LINE ℞ (F)
- PROPERTY LINE ℞ (E)
- WATERWAY/CULVERT
- TAXIWAY CENTERLINE
- CRITICAL ELEVATION PROFILE
- CENTERLINE PROFILE
- RSA — RUNWAY SAFETY AREA (E), (F), (RSA)
- OFA — RUNWAY OBJECT FREE AREA (E), (F), (OFA)
- OFZ — OBSTACLE FREE ZONE (E), (F), (OFZ)
- RPZ — RUNWAY PROTECTION ZONE (E), (F), (RPZ)
- TOFA — TAXIWAY OBJECT FREE AREA
- TSA — TAXIWAY SAFETY AREA
- RUNWAY APPROACH SURFACE
- BRL — 30' BUILDING RESTRICTION LINE (BRL)
- AIRFIELD PAVEMENT AND MARKINGS
- POWER LINES AND POLES
- ACCESS TAXIWAY (E)
- FUTURE AVIGATION EASEMENT
- EXISTING AIRFIELD PAVEMENT
- TREE/BUSH
- 1 SPOT RUNWAY APPROACH CLEARANCE IDENTIFICATION
- EXISTING BUILDING
- PRECISION APPROACH PATH INDICATOR UNITS (EXISTING)
- RUNWAY END IDENTIFIER LIGHTS (REIL)(E)

REV.	DATE	DESCRIPTION	APP'D. / CADD
B	1/25/02	ISSUED FOR CLIENT REVIEW	WA
A	9/25/01	ISSUED FOR CLIENT REVIEW	SPM / DS

DISCLAIMER
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CLIENT: TOWN OF ERIE
ERIE MUNICIPAL TRI-COUNTY AIRPORT

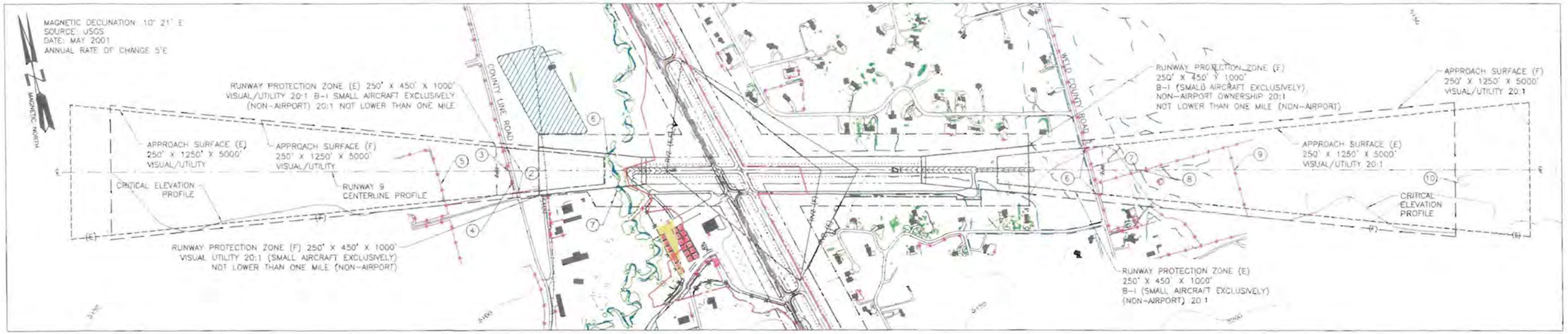
PROJECT: AIP PROJECT NO. 3-08-0090-04

TITLE: RUNWAY 15/33
INNER APPROACH SURFACE
PLAN AND PROFILE

Knight Piésold CONSULTING

DESIGNED BY	SPM	CHECKED BY		DRAWING No.	REV.
DRAWN BY	TMF	APPROVED BY		1683M39B – A600	B

PLOT SCALE: 1 | XREF: NO | 1683X01B, 1683X02A



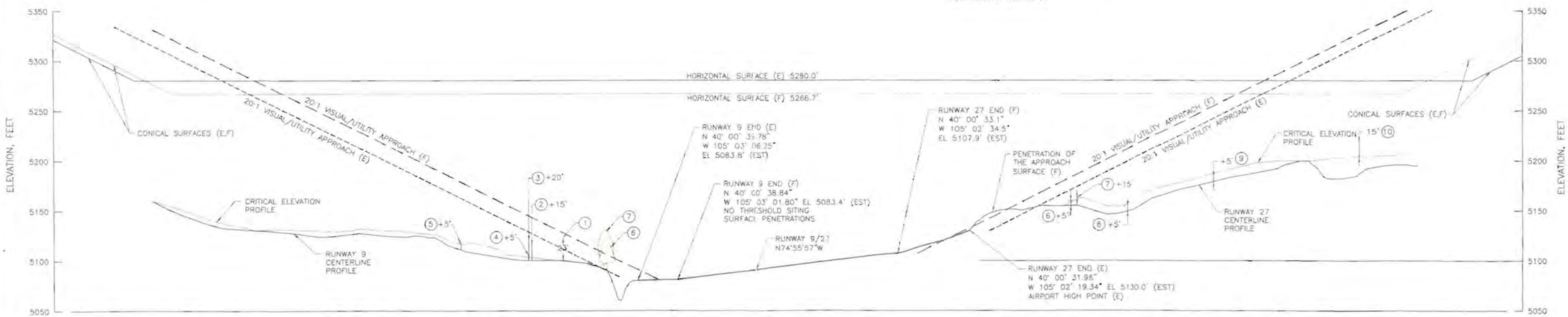
REFERENCE:
- TOPOGRAPHIC MAPPING PROVIDED BY INTRASEARCH DATA FILES NAMED: 99214-2,3,4,5,6 AND 7.DWG DATED 11/16/99 RECEIVED BY KNIGHT PIESOLD ON 11/16/99 SEE P:\DATABASE\16005\1683\KRMTD\99214-2,3,4,5,6 AND 7.DWG
- TOPOGRAPHIC MAPPING PROVIDED BY ISSI RECEIVED BY KNIGHT PIESOLD ON 3/14/00 SEE P:/DATABASE/16005/1683/031400/COMBOMAP.DWG

PLAN

500 0 500 1000 FEET

NOTE:

1 SEE DRAWING NO. 1683M10A FOR OBSTRUCTION DISPOSITION.



PROFILE

50 0 50 100 FEET — VERTICAL SCALE

500 0 500 1000 FEET — HORIZONTAL SCALE

VERTICAL EXAGGERATION =10X

RUNWAY 9 APPROACH CLEARANCES			
NO.	OBJECT	ELEVATION, FEET	CLEARANCE, FEET
1	OLD RAILROAD EASEMENT	5123.0	APPROACH SURFACE PENETRATED BY ±12 EXISTING AND CLEARS BY ±5 FUTURE
2	COUNTY LINE ROAD	5116.9	APPROACH SURFACE CLEARS BY ±10 EXISTING AND ±23 FUTURE
3	POWERLINE	5120.3	APPROACH SURFACE CLEARS BY ±5 EXISTING AND ±25 FUTURE
4	FENCE	5105.5	APPROACH SURFACE CLEARS BY ±20 EXISTING AND ±40 FUTURE
5	FENCE	5116.0	APPROACH SURFACE CLEARS BY ±35 EXISTING AND ±62 FUTURE
6	TREE	5120.9	APPROACH SURFACE PENETRATED BY ±37.5 EXISTING AND ±20.5 FUTURE
7	TREE	5130.4	APPROACH SURFACE PENETRATED BY ±47.1 EXISTING AND ±30 FUTURE

RUNWAY 27 APPROACH CLEARANCES			
NO.	OBJECT	ELEVATION, FEET	CLEARANCE, FEET
6	FENCE	5165.0	APPROACH SURFACE CLEARS BY ±7 EXISTING AND ±22 FUTURE
7	WELD COUNTY ROAD	5174.4	APPROACH SURFACE CLEARS BY ±3 EXISTING AND ±12 FUTURE
8	FENCE	5154.3	APPROACH SURFACE CLEARS BY ±45 EXISTING AND ±57 FUTURE
9	FENCE	5184.1	APPROACH SURFACE CLEARS BY ±56 EXISTING AND ±76 FUTURE
10	BUILDING	5219.2	HORIZONTAL SURFACE CLEARS BY ±60 EXISTING AND ±48 FUTURE

LEGEND:

- 5200 EXISTING GROUND SURFACE CONTOUR AND EL. FT
- PROPERTY LINE ℞ (E)
- PROPERTY LINE ℞ (F)
- WATERWAY/CULVERT
- EXISTING FENCING
- CRITICAL ELEVATION PROFILE
- RUNWAY END PROFILE
- RSA RUNWAY SAFETY AREA (E), (F), (RSA)
- OFA OBJECT FREE AREA (E), (F), (OFA)
- OFZ OBSTACLE FREE ZONE (E), (F), (OFZ)
- RPZ RUNWAY PROTECTION ZONE (E), (F), (RPZ)
- RVZ RUNWAY VISIBILITY ZONE (E), (F), (RVZ)
- RUNWAY APPROACH SURFACE (E)
- RUNWAY APPROACH SURFACE (F)
- BRL 30' BUILDING RESTRICTION LINE (BRL)
- TOFA TAXIWAY OBJECT FREE AREA
- TSA TAXIWAY SAFETY AREA
- AIRFIELD PAVEMENT AND MARKINGS
- POWER LINES AND POLES
- FUTURE AVIGATION EASEMENT
- FUTURE AIRFIELD PAVEMENT
- EXISTING AIRFIELD PAVEMENT
- FUTURE HANGAR DEVELOPMENT AREA
- TREE/BUSH
- EXISTING BUILDING
- FUTURE BUILDING
- (1) SPOT RUNWAY APPROACH CLEARANCE IDENTIFICATION
- (E) EXISTING
- (F) FUTURE

REV	DATE	DESCRIPTION	APP'D / CADD
B	1/25/02	ISSUED FOR CLIENT REVIEW	NA
A	9/25/01	ISSUED FOR CLIENT REVIEW	SPW / DS

DISCLAIMER
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CLIENT: TOWN OF ERIE
ERIE MUNICIPAL TRI-COUNTY AIRPORT

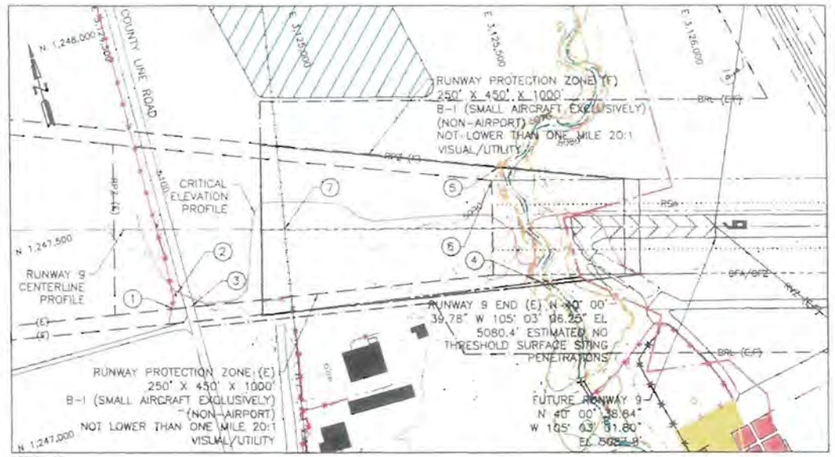
PROJECT: AIP PROJECT NO. 3-08-0090-04

TITLE: RUNWAY 9/27 APPROACH SURFACE PLAN AND PROFILE

Knight Piésold CONSULTING

DESIGNED BY	SPW	CHECKED BY		DRAWING No.	REV.
DRAWN BY	TMF	APPROVED BY		1683M42B – A700	B

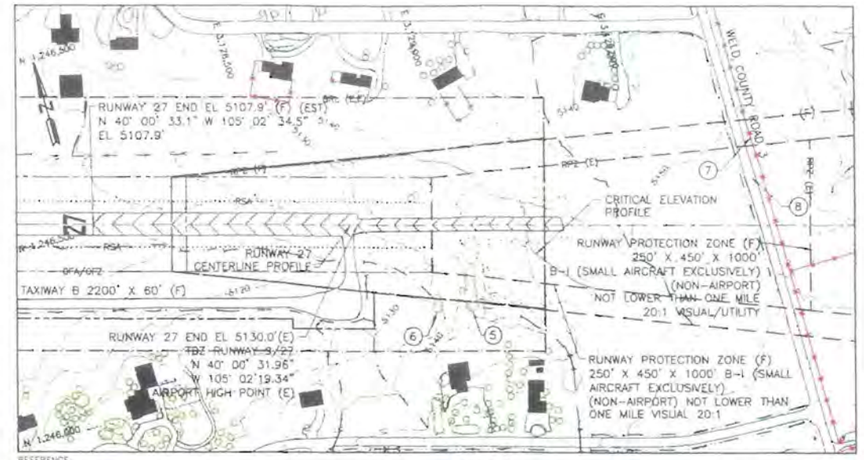
PLOT SCALE: 1 | XREF NO: 1683X01B, 1683X09A, 1683G16A, 1683G17A



REFERENCE
-TOPOGRAPHIC MAPPING PROVIDED BY INTRASEARCH DATA FILES NAMED 99214-2,3,4,5,6 AND 7.DWG DATED 11/16/99. RECEIVED BY KNIGHT PIESOLD ON 11/16/99 SEE P:\DATABASE\16005\1683\KPMCD\99214-2,3,4,5,6 AND 7.DWG
-TOPOGRAPHIC MAPPING PROVIDED BY ISSI RECEIVED BY KNIGHT PIESOLD ON 3/14/00. SEE P:/DATABASE/16005/1683/031400/COMBOMAP.DWG

PLAN

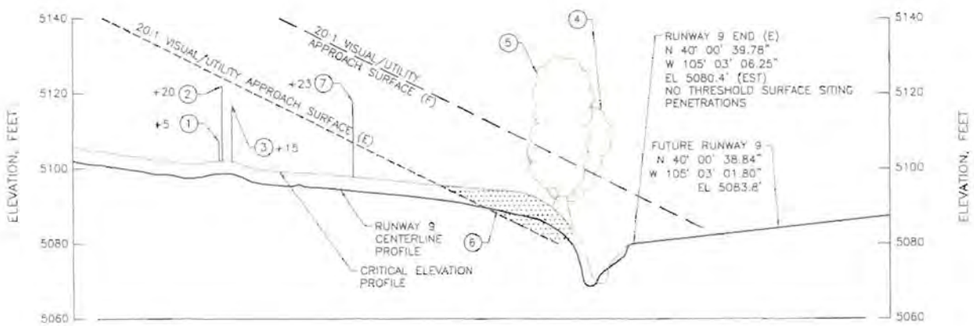
200 0 200 400 FEET



REFERENCE
-TOPOGRAPHIC MAPPING PROVIDED BY INTRASEARCH DATA FILES NAMED 99214-2,3,4,5,6 AND 7.DWG DATED 11/16/99. RECEIVED BY KNIGHT PIESOLD ON 11/16/99 SEE P:\DATABASE\16005\1683\KPMCD\99214-2,3,4,5,6 AND 7.DWG
-TOPOGRAPHIC MAPPING PROVIDED BY ISSI RECEIVED BY KNIGHT PIESOLD ON 3/14/00. SEE P:/DATABASE/16005/1683/031400/COMBOMAP.DWG

PLAN

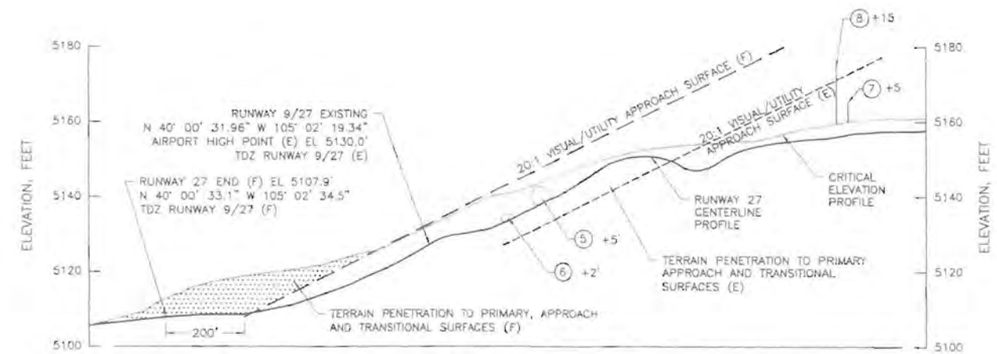
200 0 200 400 FEET



PROFILE

20 0 20 40 FEET 200 0 200 400 FEET

VERTICAL EXAGGERATION = 10X



PROFILE

20 0 20 40 FEET 200 0 200 400 FEET

VERTICAL EXAGGERATION = 10X

RUNWAY 9 APPROACH CLEARANCES			
NO.	OBJECT	ELEVATION, FEET	CLEARANCE, FEET
1	FENCE	5105.5	APPROACH SURFACE CLEARS BY ±20 EXISTING AND ±40 FUTURE
2	POWERLINE	5120.3	APPROACH SURFACE CLEARS BY ±5 EXISTING AND ±25 FUTURE
3	ROAD	5116.9	APPROACH SURFACE CLEARS BY ±10 EXISTING AND ±23 FUTURE
4	TREE	5120.9	APPROACH SURFACE PENETRATED BY ±37.5 EXISTING AND ±20.5 FUTURE
5	TREE	5130.4	APPROACH SURFACE PENETRATED BY ±47.1 EXISTING AND ±30 FUTURE
6	TERRAIN	5090.0 (MAX)	APPROACH SURFACE CLEARS BY ±(-9) MAX EXISTING AND ±14 FUTURE
7	OLD RAILROAD EASEMENT	5123.0	APPROACH SURFACE PENETRATED BY 12 EXISTING CLEARS BY 5 FUTURE

RUNWAY 27 APPROACH CLEARANCES			
NO.	OBJECT	ELEVATION, FEET	CLEARANCE, FEET
5	BUSH	5143.2	APPROACH SURFACE CLEARS BY ±10 EXISTING AND ±15 FUTURE
6	BUSH	5135.6	APPROACH SURFACE CLEARS BY ±7 EXISTING AND ±8 FUTURE
7	FENCE	5165.0	APPROACH SURFACE CLEARS BY ±7 EXISTING AND ±22 FUTURE
8	ROAD	5174.4	APPROACH SURFACE CLEARS BY ±3 EXISTING AND ±12 FUTURE

LEGEND:

- 5260 EXISTING GROUND SURFACE CONTOUR AND EL, FT
- PROPERTY LINE ℄ (E)
- PROPERTY LINE ℄ (F)
- WATERWAY/CULVERT
- EXISTING FENCING
- CRITICAL ELEVATION PROFILE
- CENTERLINE PROFILE
- RSA — RUNWAY SAFETY AREA (E), (F), (RSA)
- OFA — OBJECT FREE AREA (E), (F), (OFA)
- OFZ — OBSTACLE FREE ZONE (E), (F), (OFZ)
- RPZ — RUNWAY PROTECTION ZONE (E), (F), (RPZ)
- RVZ — RUNWAY VISIBILITY ZONE (E), (F), (RVZ)
- RUNWAY APPROACH SURFACE (E)
- RUNWAY APPROACH SURFACE (F)
- BRL — 30' BUILDING RESTRICTION LINE (BRL)
- TOFA — TAXIWAY OBJECT FREE AREA
- TSA — TAXIWAY SAFETY AREA
- AIRFIELD PAVEMENT AND MARKINGS
- POWER LINES AND POLES
- FUTURE AVIGATION EASEMENT
- FUTURE AIRFIELD PAVEMENT
- FUTURE TERRAIN PENETRATION (PART 77)
- EXISTING AIRFIELD PAVEMENT
- FUTURE HANGAR DEVELOPMENT AREA
- TREE/BUSH
- EXISTING BUILDING
- FUTURE BUILDING
- (6) RUNWAY APPROACH CLEARANCES

NOTE:

1. SEE DRAWING 1683M10A FOR OBSTRUCTION DISPOSITION.

REV	DATE	DESCRIPTION	APP'D
B	1/25/02	ISSUED FOR CLIENT REVIEW	NA
A	9/25/01	ISSUED FOR CLIENT REVIEW	SPM / DS

CADD

DISCLAIMER
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CLIENT: TOWN OF ERIE
ERIE MUNICIPAL TRI-COUNTY AIRPORT

PROJECT: AIP PROJECT NO. 3-08-0090-04

TITLE: RUNWAY 9/27
INNER APPROACH SURFACE
PLAN AND PROFILES

Knight Piésold CONSULTING

DESIGNED BY	SPM	CHECKED BY		DRAWING No.	REV.
DRAWN BY	TMF	APPROVED BY		1683M41B – A800	B

PLOT SCALE: 1 | XREF: NO 1683V01B, 1683V09A, 1683A16A, 1683A17A

NOTES:

1. THE ERIE MUNICIPAL TRI-COUNTY IS LOCATED IN PARTS OF SECTIONS 30 AND 31, TOWNSHIP 1 NORTH, RANGE 68 WEST OF THE 6TH PRIME MERIDIAN, TOWN OF ERIE, COUNTY OF WELD, STATE OF COLORADO.
2. PARCELS 1, 2 AND 3 WERE ACQUIRED UNDER AIP PROJECT NO. 1. THESE PARCELS WERE ORIGINALLY PARTS OF TRACT H.
3. TRACT 2 WAS ACQUIRED UNDER AIP PROJECT NO. 1, RECEPTION NO. 02231083, CEZ1 NO. 161772.
4. TRACTS 3 (CEZ2 NO. 1733844), 4 (CEZ3 NO. 02069608) AND 5 (NOT YET FULLY DEFINED OR DRAWN IN BUT PART OF CEZ4) WERE ACQUIRED UNDER AIP PROJECT NO. 1. EASEMENT DOCUMENTATION WAS NOT FOUND AT THE WELD COUNTY ASSESSOR'S OFFICE.
5. TRACTS 6 (CEZ6 NO. 02182200) AND 7 (NOT YET FULLY DEFINED OR DRAWN) WERE NOT FOUND AT THE WELD COUNTY ASSESSOR'S OFFICES.
6. TRACT 8 (NO. 1708083, RECEPTION NO. 0225423) WAS ACQUIRED UNDER AIP PROJECT NO. 1 NOT DEEDED TO THE TOWN OF ERIE. THIS TRACT IS PROGRAMMED TO BE ACQUIRED UNDER AIP PROJECT NO. 5.
7. TRACT 9 (NO. 1617727, RECEPTION NO. 02231084) WAS ACQUIRED UNDER AIP PROJECT NO. 1 NOT DEEDED TO THE TOWN OF ERIE. A PORTION OF THIS TRACT (OFA) IS PROGRAMMED TO BE ACQUIRED (FEE) UNDER AIP PROJECT NO. 5. THE REMAINDER OF THE TRACT WILL BE ACQUIRED (FEE) IN THE FUTURE.
8. TRACT 10 INCLUDE BLOCK 3, LOTS 1, 2, 3, 4, 5, 6, 7, 8, 9, 10 AND 11 AND BLOCK 4, LOTS 10, 11, 12, 14, 15, 16, 17 AND 18. THE QUIT CLAIMS PARTIALLY OVERLAPS TRACT 11 AND INCLUDES A PORTION OF THE EASTERN RUNWAY 15/33 OFA.
9. TRACT 11 INCLUDES BLOCK 3, LOTS 1, 2, 3, 4, 5, 6, 7, 8, 9, 10 AND 11 AND BLOCK 4, LOTS 10, 11, 12, 14, 15, 16, 17 AND 18. THE EASEMENTS PARTIALLY OVERLAP TRACT 11 AND INCLUDE A PORTION OF THE EASTERN RUNWAY 15/33 OFA.
10. TRACT 14 INCLUDES THE COAL CREEK RIGHT-OF-WAY (R.O.W). THE TOWN OF ERIE MAINTAINS CONTROL OF THE COAL CREEK RIGHT R.O.W. AN INTRAGOVERNMENTAL AGREEMENT SHOULD BE MAINTAINED.
11. TRACT 15 WAS ACQUIRED UNDER AIP PROJECT NO. 1. EASEMENT DOCUMENTATION WAS NOT FOUND AT THE WELD COUNTY ASSESSOR'S OFFICE. BLOCK 4, LOT 9 WAS ACQUIRED BY THE TOWN OF ERIE UNDER A SEPARATE COURT ACTION. ALTHOUGH THE FUTURE RVZ DIMENSIONS (BASED UPON RUNWAY 9/27 AT 2200 FEET) DO NOT REQUIRE ACQUISITION OF THE HISTORICAL TRACTS, THESE TRACT DESCRIPTIONS HAVE BEEN RETAINED FOR FUTURE ACQUISITION PURPOSES. ±3.7 ACRES REMAINS TO BE ACQUIRED (LINE OF SIGHT EASEMENT) FROM BLOCK 4, LOTS 8, 10 AND 11.
12. TRACT 16 (EXCEPTION, PARCEL 1) WAS ACQUIRED UNDER AIP PROJECT NO. 1 NOT DEEDED TO THE TOWN OF ERIE. THE TRACT WAS ACQUIRED UNDER AIP PROJECT NO. 1. THIS TRACT IS PROGRAMMED FOR ACQUISITION (FEE) UNDER AIP PROJECT NO. 5.
13. TRACT 17 (NOT YET FULLY DEFINED OR DRAWN). PREVIOUS EXHIBIT A INDICATED THAT TOWN WAS TO ACQUIRE TRACT 17 BY SEPARATE LEGAL ACTION. THE TOWN OF ERIE MAINTAINS JURISDICTIONAL CONTROL OF THE COAL CREEK RIGHT R.O.W. AN INTRAGOVERNMENTAL AGREEMENT SHOULD BE MAINTAINED.
14. TRACT 20 INCLUDES RVZ ACQUISITION (LINE OF SIGHT EASEMENT, EXCLUSIVE OF RUNWAY 15/33 AND 9/27 OFA'S) FOR BLOCK 3, LOTS 9, 10, 11, 12, 13 BASED UPON RUNWAY 9/27 WITH A 2200 FOOT LENGTH AS DEPICTED.
15. TRACT 22 INCLUDES ACQUISITION (AVIGATION SAFETY EASEMENT) FOR BLOCK 3, LOTS 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22 AND BLOCK 4, LOTS 2 AND 3.
16. TRACTS 23 AND 24 ARE DEPICTED FOR CONCEPTUAL PLANNING PURPOSES ONLY. AS DEMAND FOR HANGAR FACILITIES REQUIRES ADDITIONAL LAND ACQUISITION THESE SITES SHALL BE EVALUATED FOR HANGAR DEVELOPMENT SUITABILITY.
17. INFORMATION ON THIS SHEET WAS OBTAINED FROM EXHIBIT A (DATED: OCT 1996) AND DEED RESEARCH PROVIDED BY TOWN OF ERIE AIRPORT STAFF. THIS INFORMATION IS DEPICTED WITHOUT THE BENEFIT OF A BOUNDARY SURVEY OR VERIFICATION OF OWNERSHIP.
18. DISTANCE AND BEARING INFORMATION IS SHOWN FOR EXISTING PROPERTY LINE ONLY.

LEGEND:

- PROPERTY LINE ℄ (F)
- PROPERTY LINE ℄ (E)
- EXISTING LANDSIDE/PUBLIC ROAD
- OBJECT FREE AREA
- RUNWAY PROTECTION ZONE
- RUNWAY VISIBILITY ZONE
- RUNWAY APPROACH SURFACE
- 30' BUILDING RESTRICTION LINE (BRL)
- AIRFIELD PAVEMENT AND MARKINGS
- BUILDING
- BENCH MARK (GOVERNMENT)
- MONUMENT
- 30|31 SECTION CORNER

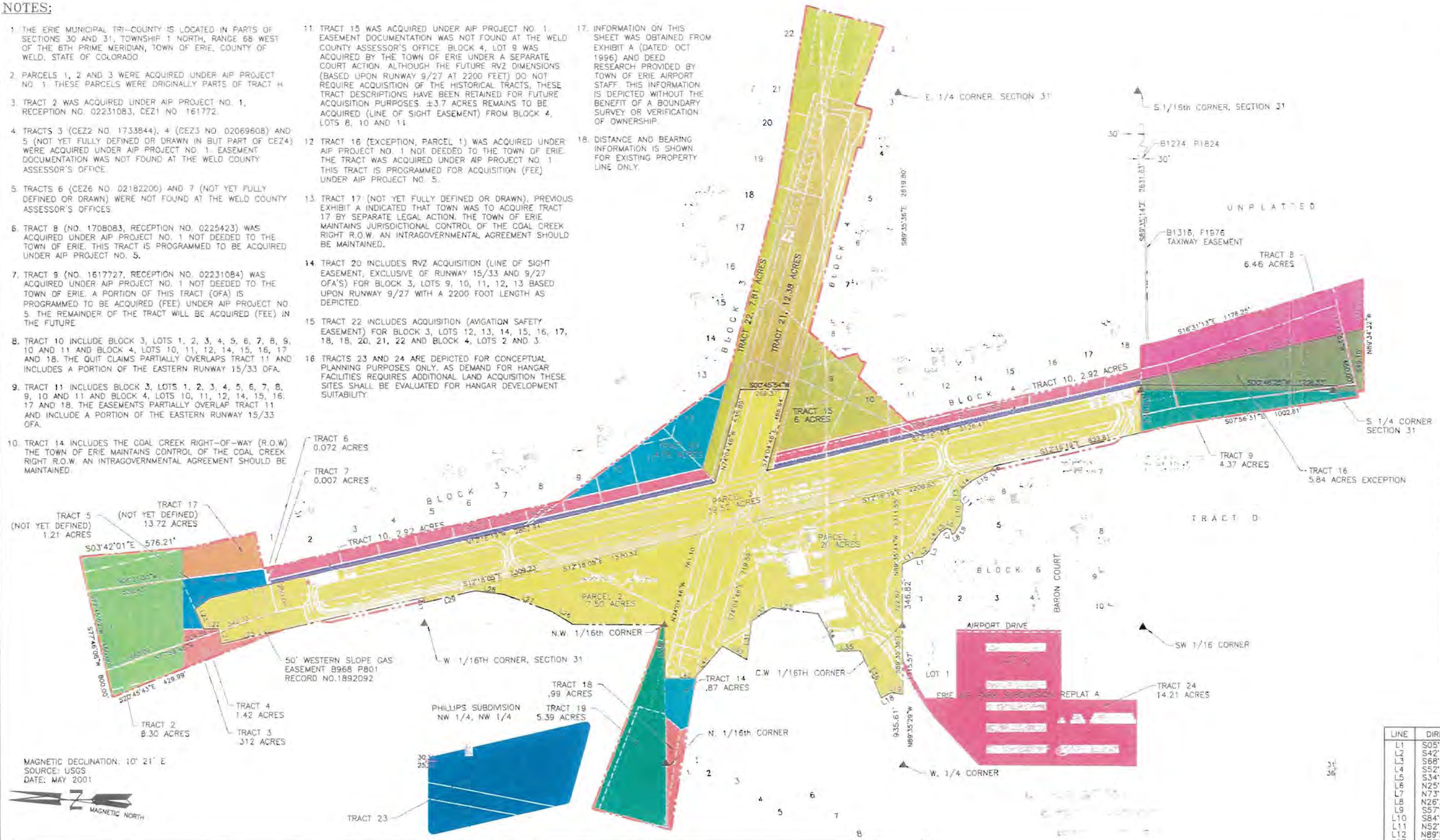

TABLE 1 – OWNERS OF RECORD

BLOCK	LOT	NAME
3	1	MARGOS, DAVID & MARTINEZ, DEBORAH
3	2	ROGERS, ROBERT
3	3	FEUER, JACK
3	4	WILDMAN, RICHARD
3	5	MONTGOMERY, DAN
3	6	JONES, RON
3	7	RONE, BOONE
3	8	MCGINN, MICHAEL
3	9	JUNGLAS, VINCINT
3	10	DEATON, KYLE
3	11	ESCH, RAYMOND
3	12	FEURER, JACK
4	8	LENTZ, RAYMOND
4	9	TOWN OF ERIE
4	10	FEURER, JACK
4	11	KOSTA, MICHAEL
4	12	HERZOG, GEORGE
4	14	ROEBUCK, WARREN
4	15	ROBERTS, JACK
4	16	EVANS, RICHARD
4	17	BILLINGS, ROBERT
4	18	DENT, FLOYD

*OWNERS OF RECORD WERE OBTAINED FROM WELD COUNTY ASSESSOR'S OFFICE AS OF MARCH 5, 1996.

LINE TABLE

LINE	DIRECTION	DISTANCE	LINE	DIRECTION	DISTANCE
L1	S05°01'20"E	38.94'	L22	N00°11'25"W	80.00'
L2	S42°32'07"E	52.59'	L23	N67°00'57"E	120.00'
L3	S68°40'16"E	35.56'	L24	S35°03'47"E	103.46'
L4	S52°51'21"E	83.20'	L25	N12°17'19"W	398.38'
L5	S34°08'33"E	42.72'	L26	N32°18'45"E	135.36'
L6	N25°03'27"E	22.46'	L27	N20°19'23"E	287.92'
L7	N73°55'01"E	26.26'	L28	N07°37'30"E	158.17'
L8	N26°38'11"W	18.20'	L29	N12°19'26"W	291.27'
L9	S57°58'56"E	69.95'	L30	S30°53'41"W	155.28'
L10	S84°00'19"E	97.92'	L31	S82°18'48"E	217.48'
L11	N52°16'23"E	25.81'	L32	S31°49'39"E	138.51'
L12	N89°52'55"W	27.84'	L33	S08°07'48"W	252.82'
L13	S88°45'58"E	58.19'	L34	S62°57'34"W	234.00'
L14	S39°25'51"E	80.41'	L35	S00°00'00"E	131.47'
L15	S28°32'25"E	120.86'	L36	S66°25'06"W	287.06'
L16	S46°01'01"E	36.76'	L37	S33°49'13"E	201.53'
L17	S24°00'31"E	82.13'	L38	S89°44'17"E	149.32'
L18	S28°10'43"E	61.76'	L39	N89°44'17"W	299.11'
L19	S09°05'25"W	68.77'	L40	S00°12'16"W	161.79'
L20	N89°35'14"W	28.98'	L41	S48°15'40"E	236.47'
L21	N77°43'31"E	85.35'			

ACQUISITION HISTORY AND FUTURE LAND ACQUISITION

TRACT	STATUS	INTEREST	ACRES	GRANTOR	GRANTEE	FAA PROJECT NO.	BOOK AND PAGE	DATE OF RECORDING	ASSOCIATED WITH
PARCEL 1	COMPLETE	FEE/WARRANTY DEED TO CORPORATION	20	–	TOWN OF ERIE	AIP 03-08-0090-01	–	MAY 3, 1978	APRON AND TERMINAL
PARCEL 2	COMPLETE	FEE/WARRANTY DEED TO CORPORATION	7.5	–	TOWN OF ERIE	AIP 03-08-0090-01	–	MAY 3, 1978	FUTURE DEVELOPMENT
PARCEL 3	COMPLETE	FEE/WARRANTY DEED TO CORPORATION	39.52	–	TOWN OF ERIE	AIP 03-08-0090-01	–	MAY 3, 1978	RWY 15/33 & 9/27
2	VERIFY	EASEMENT	8.30	CERSONSKY/FEURER	TOWN OF ERIE	AIP 03-08-0090-01	1280,948	MAY 22, 1990	RWY 15 RPZ
3	VERIFY	EASEMENT	.312	–	TOWN OF ERIE	AIP 03-08-0090-01	–	–	RWY 15 RPZ
4	VERIFY	EASEMENT	1.42	W.D. HARRINGTON	TOWN OF ERIE	AIP 03-08-0090-01	–	–	RWY 15 RPZ
5	VERIFY	EASEMENT/COAL CREEK R.O.W	1.21	TOWN OF ERIE	TOWN OF ERIE	AIP 03-08-0090-01	–	–	RWY 15 RPZ
6	VERIFY	EASEMENT	.072	LOCAL SERVICE CORP	TOWN OF ERIE	–	–	–	RWY 15 RPZ
7	VERIFY	EASEMENT	.007	K. PRATT	TOWN OF ERIE	–	–	MAY 23, 1992	RWY 15 RPZ
8	AIP-05	FEE/WARRANTY DEED TO CORPORATION	6.46	C.PIERCE	TOWN OF ERIE	AIP 03-08-0090-01/05	1274,1819	MAY 22, 1990	RWY 33 RPZ
9	FUTURE	FEE/WARRANTY DEED TO CORPORATION	4.37	J. FEURER	TOWN OF ERIE	AIP 03-08-0090-01	1280,949	MAY 3, 1978	RWY 33 RPZ
10	COMPLETE	QUITCLAIM DEED	±2.92	VARIOUS	TOWN OF ERIE	–	–	MAY 19, 1997	RWY 15/33 OFA
11	COMPLETE	AVIGATION SAFETY EASEMENT	±9.37	VARIOUS	TOWN OF ERIE	–	–	MAY 17, 1997	RWY 15/33 OFA
14	FUTURE	EASEMENT/COAL CREEK R.O.W.	±.87	VARIOUS	TOWN OF ERIE	–	–	–	RWY 9 RPZ
15	FUTURE	LINE OF SIGHT EASEMENT	6±	LENTZ, FEURER, KOSTA	TOWN OF ERIE	–	–	–	RVZ
16	AIP-05	FEE/WARRANTY DEED TO CORPORATION	±5.84	TOWN OF ERIE	TOWN OF ERIE	AIP 03-08-0090-05	1274,1823	–	RWY 33 RPZ
17	FUTURE	EASEMENT/COAL CREEK R.O.W	±13.72	TOWN OF ERIE	TOWN OF ERIE	–	–	–	RWY 15 RPZ
18	FUTURE	AVIGATION SAFETY EASEMENT	±.99	VARIOUS	TOWN OF ERIE	–	–	–	RWY 9 RPZ
19	FUTURE	AVIGATION SAFETY EASEMENT	±5.39	R.O.W./PHILLIPS	TOWN OF ERIE	–	–	–	RWY 9 RPZ/OFA
20	FUTURE	LINE OF SIGHT EASEMENT	±4.09	VARIOUS	TOWN OF ERIE	–	–	–	RVZ
21	FUTURE	FEE/WARRANTY DEED TO CORPORATION	±12.38	VARIOUS	TOWN OF ERIE	–	–	–	RWY 27 OFA
22	FUTURE	AVIGATION SAFETY EASEMENT	±7.81	VARIOUS	TOWN OF ERIE	–	–	–	RWY 27 OFA/RPZ
23	FUTURE	FEE/WARRANTY DEED TO CORPORATION	±8.53	–	TOWN OF ERIE	–	–	–	HANGAR DEVELOPMENT (F)
24	FUTURE	FEE/WARRANTY DEED TO CORPORATION	±14.21	–	TOWN OF ERIE	–	–	–	HANGAR DEVELOPMENT (F)

PLAN

300 0 300 600 FEET

REV	DATE	DESCRIPTION	APP'D / CADD
B	1/25/02	ISSUED FOR CLIENT REVIEW	NA
A	9/25/01	ISSUED FOR CLIENT REVIEW	SPM / DS

DISCLAIMER

KNIGHT PIESOLD AND CO. PRODUCED THE DATA SHOWN ON THE DRAWING FILES USING BOTH TECHNICAL INFORMATION AND KNOW HOW. RECEIPT OF THIS DRAWING DOES NOT MEAN THAT THE RECIPIENT HAS ANY RIGHTS TO EITHER SUCH TECHNICAL INFORMATION OR KNOW HOW. ANY ADAPTATION OR MODIFICATION OF THE DATA OR DRAWING SHALL BE AT USER'S SOLE RISK AND WITHOUT LIABILITY OR LEGAL EXPOSURE TO KNIGHT PIESOLD AND CO.

CLIENT: TOWN OF ERIE
ERIE MUNICIPAL TRI-COUNTY AIRPORT

PROJECT: AIP PROJECT NO. 03-08-0090-04

TITLE: EXHIBIT A
AIRPORT PROPERTY MAP

Knight Piésold CONSULTING

DESIGNED BY	SPM	CHECKED BY		DRAWING No.	REV.
DRAWN BY	SPM	APPROVED BY		1683M15B – A900	B

PLOT SCALE: 1 | XREF: NO TM

Attachment A

Environmental Review Letters

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Ecological Services
Colorado Field Office
755 Parfet Street, Suite 361
Lakewood, Colorado 80215

IN REPLY REFER TO:
ES/CO:T&E
Mail Stop 65412

JUL 2 0 2001

Kelly C. Dlouhy
Knight Piesold Consulting
1050Seventeenth Street, Suite 500
Denver, Colorado 80265-0500

Dear Ms. Dlouhy:

The U.S. Fish and Wildlife Service (Service) received your letter of June 27, 2001, regarding the **Erie Municipal Tri-County Airport** in Weld County, Colorado (Sections 30 and 31, Township 1 North, Range 69 West). You requested that we advise you of potential impacts of your project.

These comments have been prepared under the provisions of the Endangered Species Act of 1973 (ESA), as amended (16 U.S.C. 1531 et. seq.). While we have no detailed knowledge of the project site, enclosed is a list of Federal endangered, threatened, proposed, and candidate species, by county, in Colorado. If present, threaten and endangered species, and their habitats are protected under provisions of the ESA. While other species could occur at or visit the project area, listed species most likely to occur include:

Birds:	Bald eagle, *Haliaeetus leucocephalus*, Threatened
Mammals:	Preble's meadow jumping mouse, *Zapus hudsonius preblei*, Threatened
	Black-tailed prairie dog, *Cynomys ludovicians*, Candidate
Plants:	Ute ladies'-tresses orchid, *Spiranthes diluvialis*, Threatened
	Colorado butterflyplant, *Gaura neomexicana* spp. *coloradensis* Threatened

Beyond the possible presence of listed species, impacts to wetlands and riparian habitats along Coal Creek are also of concern. The proposed future property lines appear to include a portion of Coal Creek. Future hanger development areas appear near Coal Creek or are across Coal Creek from the airport runways. Should impacts to jurisdictional wetlands or waters of the U.S. be proposed, please contact the U.S. Army Corps of Engineers, Denver Regulatory Office.

Recently, we reviewed the planned expansion of the Lafayette Sewage Treatment Plant, just upstream from the subject site and along Coal Creek. Lush creekside habitats present at that site suggested possible presence of the Preble's meadow jumping mouse; however, a trapping survey did not confirm presence. Proposed impacts to wetlands of Coal Creek associated with that project resulted in recommendations from the Service and the U.S. Environmental Protection Agency that Lafayette pursue project alternatives to avoid wetlands.

If the Service can be of further assistance, contact Peter Plage of this office at (303)275-2370.

Sincerely,

FSC LeRoy W. Carlson
Colorado Field Supervisor

Enclosure

cc: U.S. Army COE, Littleton, CO
Plage

Reference:Peter\T&E\2001.13

STATE OF COLORADO

Bill Owens, Governor
Jane E. Norton, Executive Director

Dedicated to protecting and improving the health and environment of the people of Colorado

4300 Cherry Creek Dr. S.
Denver, Colorado 80246-1530
Phone (303) 692-2000
TDD Line (303) 691-7700
Located in Glendale, Colorado

Laboratory and Radiation Services Division
8100 Lowry Blvd.
Denver, Colorado 80230-6928
(303) 692-3090

http://www.cdphe.state.co.us

Colorado Department
of Public Health
and Environment

July 25, 2001

Kelly C. Dloughy
Environmental Planner
Knight Piesold Consulting
1050 Seventeenth Street, Suite 500
Denver, CO 80265-0500

Re: Erie Municipal Tri-County Airport Master Plan, Environmental Overview

Dear Ms. Dloughy:

On approximately June 30, 2001 the Colorado Air Pollution Control Division (APCD) received a request for an air quality analysis of projects scheduled at Erie Municipal Tri-County Airport. Thank you for taking the time to inquire about air quality requirements in this area and to apprise the Division of your plans. This review pertains to air quality issues only.

In general, the Division reviews a proposed project to determine its potential to impact long-term ambient air quality (as set forth in 40 CFR 51, Subpart W of the 1990 Clean Air Act Amendments) or for permit requirements. The following information should assist you in assessing project impact(s) on air quality.

Air quality requirements for some projects include permits or notices if ground disturbances exceed more than twenty-five (25) acres or last longer than six (6) months in duration. A permit may also be required if construction or demolition dust is produced, or if odors are such that they require the installation of odor control equipment. In addition, if unpaved roads create traffic levels that exceed certain thresholds as defined by Colorado Air Pollution Regulation No. 1, or asbestos demolition or removal is involved, permits may be required. With your description of the planned project, a fugitive dust permit and plan may be required. The APCD program responsible for handling such permits and plans can be reached at (303) 692-3150.

Lastly, generally projects of this magnitude can benefit from Pollution Prevention (P2) strategies. The Colorado Department of Public Health and Environment has its own P2 team designed to identify and

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8100 Lowry Blvd.
Denver, Colorado 80230-6928
(303) 692-3090

http://www.cdphe.state.co.us

Colorado Department
of Public Health
and Environment

July 12, 2001

Ms. Kelly Dlouhy
Knight Piesold & Co.
1050 17th St., Ste. 500
Denver, CO 80265-0500

Re: Erie Municipal Tri-County Airport
CDPS Permit Cert. No. COR-010980

Dear Ms. Dlouhy:

This is in response to your letter of June 27, 2001. You had asked for information on potential water quality issues connected with proposed construction at the above-referenced facility.

A construction dewatering permit would be needed if any construction dewatering were to take place. This permit should be applied for at least 30 days prior to the dewatering taking place. Regarding stormwater construction permits, the airport is not required to apply for a stormwater permit for any construction activity at this time. This is due to the fact that the airport is owned and operated by a municipality with a population of less than 100,000. This is a temporary exemption granted to small municipalities by Congress. (The exemption will end when Phase II of the Stormwater Program is implemented. The deadline for application for stormwater permit coverage for any municipally-owned industrial activities, including construction of one acre or more, is March 10, 2003.)

Also, the airport is covered by stormwater permit certification COR-010980, under the Light Industry general permit. The permit requires a Stormwater Management Plan (SWMP). The Town of Erie will need to update their SWMP to take into account any additional or changed impacts to stormwater quality from the changes to the facility. A summary of the SWMP update should be reported to our office with the Town's next Annual Report (due by 2/15/02).

If you have any questions, please give me a call at (303) 692-3596.

Sincerely,

Kathryn Dolan
Stormwater Program Coordinator
Permits Unit
WATER QUALITY CONTROL DIVISION

xc: File Copy

COLORADO
HISTORICAL
SOCIETY

The Colorado History Museum 1300 Broadway Denver, Colorado 80203-2137

July 13, 2001

Kelly C. Dlouhy
Environmental Planner
Knight Piesold & Co.
1050 Seventeenth Street, Suite 500
Denver, CO 80265-0500

Re: Erie Municipal Tri-County Airport

Dear Ms. Dlouhy:

This office has reviewed the information provided in your June 27, 2001 correspondence concerning the project listed above.

A search of our files has indicated that there are no known cultural resource sites located within the area of potential effect. Based on the information supplied, we believe the present nature of the proposed project area is such that no further cultural resource work is necessary. The project may proceed without further consultation with our office.

If previously unidentified archaeological resources are discovered in the course of the project, work should be halted until the resources have been evaluated in terms of the National Register criteria, 36 CFR 60.4, in consultation with this office.

Thank you for the opportunity to comment on this project. If we may be of further assistance, please contact Jim Green at (303) 866-4674.

Sincerely,

for Georgianna Contiguglia
State Historic Preservation Officer

GC/WJG

DEPARTMENT OF THE ARMY
CORPS OF ENGINEERS, OMAHA DISTRICT
DENVER REGULATORY OFFICE, 9307 S. PLATTE CANYON ROAD
LITTLETON, COLORADO 80128-6901

July 11, 2001

Mr. Kelly C. Dlouhy
Knight Piesold and Co.
1050 Seventeenth Street, Suite 500
Denver, CO 80265-0500

RE: **Erie Municipal Tri-County Airport Master Plan, Environmental Overview**
Corps File No. 200180488

Dear Mr. Dlouhy:

Reference is made to the above-mentioned project located in the SW ¼ of Section 30 and the NE ¼ of Section 31, Township 1 North, Range 68 West and 69 West, Weld County, Colorado.

If any work associated with this project requires the placement of dredged or fill material, and any excavation associated with a dredged or fill project, either temporary or permanent, in waters of the United States at this site, this office should be notified by a proponent of the project for proper Department of the Army permits or changes in permit requirements pursuant to Section 404 of the Clean Water Act. Waters of the U.S. includes ephemeral, intermittent and perennial streams their surface connected wetlands and adjacent wetlands and certain lakes, ponds, drainage ditches and irrigation ditches that have a nexus to interstate commerce. Coal Creek, which is located at this site, is a waters of the U.S.

Work in waters of the U.S. should be shown on a map with a list identifying the Quarter Section, Township, Range and County, and Latitude and Longitude to seconds or the UTM coordinates of the area of work.

If there are any questions concerning this matter please call **Mr. Terry McKee** of this office at 303-979-4120 and reference **Corps File No. 200180488.**

Sincerely,

Timothy T. Carey
Chief, Denver Regulatory Office

tm

USDA United States Department of Agriculture

Natural Resources Conservation Service (NRCS)

Longmont Field Office
9595 Nelson Road
Suite D
Longmont , CO 80501-6359

Serving Boulder, SW Weld, and NW Adams Counties

Telephone: 303-776-4034 X105 tim.carney@co.usda.gov Fax:303-684-9893

August 14, 2001

Kelly Dlouhy
Knight Piesold Consulting
1050 Seventeenth Street, Suite 500
Denver, Colorado 80625-0500

As requested enclosed find prime farmland soils data for the area you requested near the Erie Airport.

I am providing general soils descriptions and a list of prime farmland mapping units within the requested area.

I have also highlighted the prime farmland mapping unit symbols on the map in blue.

Call if you have questions.

Sincerely,

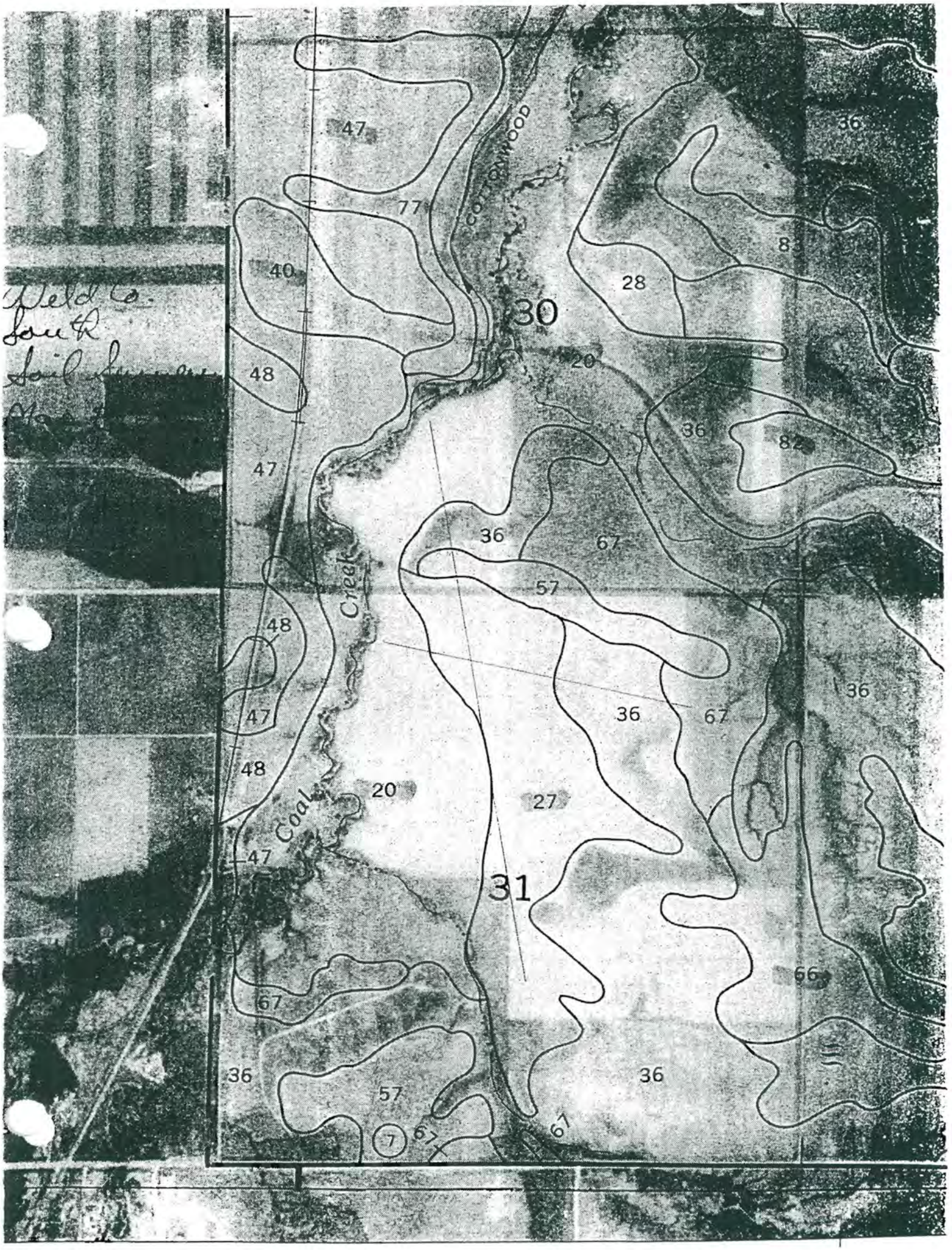
Tim Carney

Tim Carney
District Conservationist

PRIME FARMLAND

Prime Farmland - Erie Airport Proximity

Map symbol	Soil name
20	Colombo clay loam, 1 to 3 percent slopes (where irrigated)
27	Heldt silty clay, 1 to 3 percent slopes (where irrigated)
40	Nunn loam, 1 to 3 percent slopes (where irrigated)
47	Olney fine sandy loam, 1 to 3 percent slopes (where irrigated)
66	Ulm clay loam, 0 to 3 percent slopes (where irrigated)
82	Wiley-Colby complex, 1 to 3 percent slopes (where irrigated)


Weld Co.
South
Soil Survey
COTTONWOOD
Coal Creek
30
31
47
77
40
48
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47
67
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57
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6
36
28
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83