

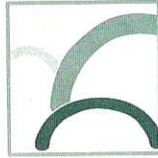
# Tooele Valley Airport



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Airport Layout Plan Update  
& Capital Improvement  
Development Program

# Tooele Valley Airport



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## Airport Layout Plan Update & Capital Improvement Development Program

**AUGUST 2000**

**FAA Project No. AIP 3-49-0048-09**

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## Inventory

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### Introduction

Tooele Valley Airport is a vital component of the national airport system, as well as an integral part of the transportation infrastructure, serving not only Tooele County, but also portions of the Salt Lake City metropolitan area. The airport provides transportation facilities that are an absolute necessity for some businesses and are a "required" convenience for others. Additionally, the airport and associated aviation-related businesses and facilities represent a vital and significant regional economic asset.

The existing master planning document, entitled *Tooele Valley Airport Master Plan Update* (i.e., the 1994 MP), was completed in 1994. This planning effort, which will be conducted as an Airport Layout Plan Update (ALP Update) for the facility, will reevaluate and update the aviation activity forecasts, and revise the existing airfield dimensional criteria in accordance with current Federal Aviation Administration (FAA) design standards. The Federal Aviation Administration (FAA) revised portions of the airside design criteria for all airports in February 1997, and these design revisions are specified in Change 5 of the Airport Design AC 150/5300-13. In accordance with these changes, the current ALP set must be updated. Additional design and development issues associated with this planning effort include an evaluation of upgrading the airport's existing Airport Reference Code (ARC), enhancing instrument approach capabilities, extending the runway, and assisting in the recommendations for future general aviation expansion.

The requirement for future facilities will be evaluated not only from the standpoint of aviation needs, but also from the relationship of airport facilities to the surrounding land uses and the community as a whole. The planning focus of this ALP Update will be on the total aviation facility and its environs, with the overall goal being the development of an aviation facility that can accommodate future demand that is not significantly constrained by its environs.

This chapter will examine the existing airport facilities (i.e., runway, taxiways, hangars, ground access, etc.) and the airport environs. Airport forecasts will be developed detailing both the existing and anticipated aviation activity. An evaluation of the airport facility's ability to meet the projected aviation demand in a safe and efficient manner will be included, and development alternatives will also be analyzed. An airport plans description and a capital improvement program will be presented in a later working paper, as will the estimated costs of development.

## Demographics

Tooele County has an estimated population of approximately 31,997 (1998 Economic Report to the Governor) and the City of Tooele is the county seat. According to demographic data presented in the 1995 Tooele County General Plan, it is estimated that approximately 70% of the county's population are located in the Tooele Valley area. In terms of population growth rates, Tooele County led the state with a 4.9% annual growth rate in 1997. The government sector is the largest employer in Tooele County, with an estimated 3,300 employees in 1995. Over the past several years, the community development efforts of Tooele City have been directed towards economic diversification. This is being achieved through the phased conversion of the Tooele Army Depot to nonmilitary uses, consisting of private sector manufacturing and maintenance businesses. The other major industries, which are based in Tooele Valley consist of livestock production, mining, construction, chemicals, petroleum/coal, and commercial automotive-related businesses. Tooele Valley Airport is situated approximately 22 miles south and west of Salt Lake City International Airport and approximately 8 miles northwest of the City of Tooele.

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## Airport Role and Facilities

Tooele Valley Airport is one of thirteen (13) airports contained within the Wasatch Front Regional Council's Metropolitan Area System Plan (MASP), which includes Salt Lake City International Airport (SLCIA), the primary commercial service airport in the region, along with Ogden-Hinckley Airport and Salt Lake City Airport II, the two other designated *Reliever* airports for SLC. Tooele Valley Airport is owned by the Salt Lake City Corporation, a municipal corporation of the State of Utah, and operated by the Salt Lake City Department of Airports. The nine-member Airport Board, who is appointed by the Mayor, advises the Corporation on specific airport issues. The responsibility for the day-to-day operation of Tooele Valley Airport rests with the Department of Airport's General Aviation Manager. The following information provides a brief description of the airport, including an inventory of both airside and landside facilities, in an outline format.



- Airport Reference Point (ARP): Latitude 40° 36' 44.18"N, Longitude 112° 21' 02.779"W. (estimated).
- FAA Site number: 25313.01A.
- National Plan of Integrated Airport Systems (NPIAS) classification: general aviation reliever.
- Acreage: 348.25 acres.
- Elevation: 4,316 feet above mean sea level (AMSL).
- Mean normal maximum temperature: 95.3° F.

### Airside Facilities

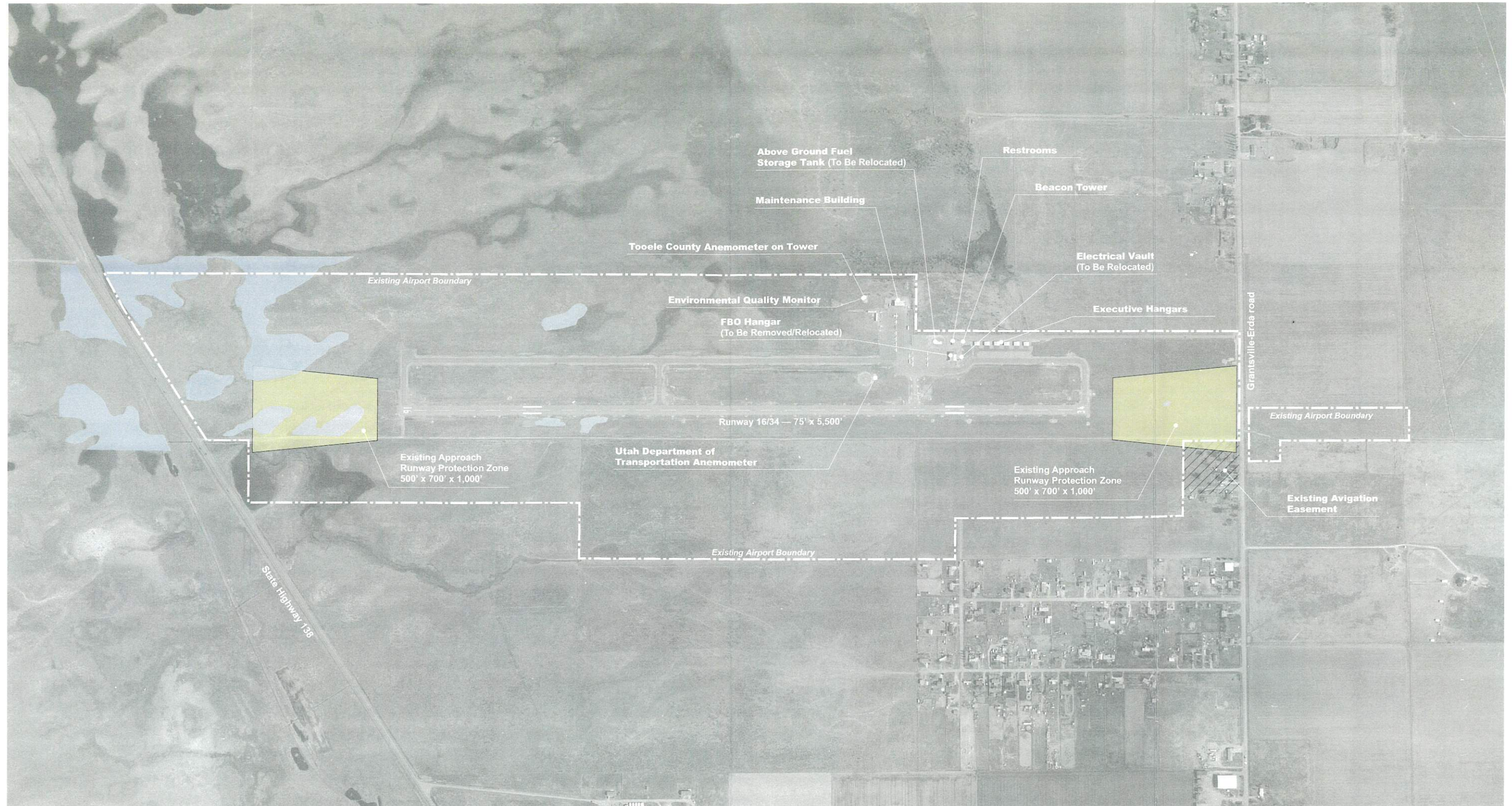
**Runway System.** An illustration of all airport facilities is included in the following figure, entitled *EXISTING AIRPORT LAYOUT*.

- Runways: Runway 16/34, 5,498 feet in length and 75 feet in width.
- Pavement Type/Condition: Constructed of asphalt, a gross weight bearing capacity of 12,500 pounds single wheel landing gear configuration. According to FAA Form 5010 data, pavement condition is good; however, recent pavement core data indicates the pavement to be in poor condition.
- Lighting/Landing Aids: Medium intensity runway lights (MIRLS) and threshold lights are located at each runway end and 2-box Visual Approach Slope Indicators (VASIs) are located on the left hand side of each runway end.

**Taxiway System.** Runway 16/34 is served by a full-length parallel taxiway (i.e., Taxiway "A"), most of which is located 400 feet to the east of the runway centerline. An approximate 500-foot segment of this taxiway is located approximately 300 feet from the runway centerline. Access to the parallel taxiway from the runway is provided by four (4) exit taxiways. All taxiways are approximately 35 feet in width and presently equipped with medium intensity taxiway lights (MITLs). The southern midfield exit taxiway, Taxiway "A2", provides access to the existing Fixed Base Operator (FBO) development area, the executive hangar facilities, and the general aviation apron area. The parallel taxiway system pavement strength is comparable to that of the runway and is generally considered to be in poor condition.

**Aprons.** The airport's original apron area, consisting of approximately 106,000 square feet, was located just north of the existing FBO hangar and provided space for itinerant aircraft parking and approximately twenty-eight (28) tiedowns. This apron pavement strength was assumed to be comparable to that of the runway/taxiway system and considered to be in poor condition.

A new apron area, consisting of approximately 76,000 square feet, was constructed in the spring of 2000 further to the south near the midpoint of the runway. This new



Approximate Scale 1"=800'

Figure A1 Existing Airport Layout

Wetlands

apron is to serve a future FBO hangar development area and accommodate the realignment/straightening of a segment of Taxiway "A", which eliminated approximately 34,000 square feet of apron.

**Approaches.** There are presently two (2) published instrument approach procedures at the airport, which are listed in the following table, entitled *INSTRUMENT APPROACH PROCEDURES*.

Table A1  
**INSTRUMENT APPROACH PROCEDURES**  
*Tooele Valley Airport Layout Plan Update*

Type of Approach	Runway Designation	Ceiling Minimums	Visibility Minimums
GPS	16	1,165'	1 ¼ , 1 ½ or 3 miles
NDB	16	1,145'	1 ¼ , 1 ½ or 3 miles

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

### Landside Facilities

**General Aviation Facilities.** General aviation facilities at Tooele Valley Airport include an FBO office/hangar complex, six (6) individual privately-owned hangars, and two (2) temporary trailers to accommodate existing skydiving facilities. The drop zone for the skydiving operation is located near the midpoint of the runway, on the east side of the airport.

**Support Facilities.** The airport's fuel storage area is located on the east side of the airport, northeast of the existing FBO hangar and adjacent to the general aviation apron area. The facility consists of one (1) 12,000-gallon above ground AVGAS storage tank and one (1) 5,000-gallon tanker truck providing Jet-A fuel. The fuel farm is owned and operated by the FBO (American Aviation, Inc.). In addition, a new fuel storage containment project was completed in 1998. The current ALP proposes the future relocation of the fuel farm, in conjunction with the proposed FBO hangar relocation.

The airport is also served by a joint-use highway maintenance facility located northeast of the FBO hangar and adjacent to the general aviation apron. The facility provides storage for the airport's snow removal equipment. Fire protection services

for the airport are provided under a joint-use agreement with the Tooele North District Volunteer Fire Department.

Water service to the airport is currently provided by five (5) wells located on airport property, with each having varying water flow rates. The water quality is considered good; however, the flow rate is insufficient to meet current fire protection requirements. The Salt Lake City Airport Authority is investigating future water service options to the airport, which include construction of a new water main and/or the installation of temporary water storage tanks.

**Vehicular Access.** Tooele Valley Airport is easily accessible to vehicles utilizing the existing state and federal highway system. Grantsville-Erda Road, a two-lane east-west arterial that parallels the southern boundary of the airport, intersects with State Highway 36 (S.H. 36) approximately three and one-half (3.5) miles east of the airport and S.H. 138 approximately two and one-half (2.5) miles west of the airport. S.H. 36 and S.H. 138 each connect with Interstate 80 (I-80) approximately five (5) miles northeast of the airport. Vehicular access to the airport is provided by the Airport Entrance Road, which extends northward from Grantsville-Erda Road and parallels the runway on the east side of the airport.

Automobile parking for the various aviation facilities is provided by hard surfaced lots located adjacent to the FBO hangar, individual hangars, and office structures.

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## **Airport Environs**

A proper inventory of the existing land uses, zoning patterns, and the various land use planning and control documents used to guide development of property surrounding the airport are important elements in the airport planning process. Land use compatibility with airport development can be insured with a thorough knowledge of what land uses are proposed and what, if any, changes need to be made. In addition, the 1994 MP identified the location of existing jurisdictional wetlands within and adjacent to the existing airport boundary in efforts to minimize impacts to these areas with future airport expansion projects.

Tooele Valley Airport is located in north-central Utah, in the northeastern portion of Tooele County, approximately five (5) miles south of the Great Salt Lake. Existing airport property is located entirely within Tooele County and is not contained within the corporate boundaries of any adjacent community. Only Tooele County exercises land use controls within the environs of the airport.

## Existing Land Use

Due to the airport's location outside of the urbanized portion of Tooele City, the majority of the land surrounding the airport is presently in agricultural/open space use, which includes some existing wetland areas located both north of the airport and adjacent to S.H. 138. However, there is a large tract of residential development located directly west of the Runway 34 approach end, extending southward to Grantsville-Erda Road. Additional rural residential development is located south of the airport, and scattered both east and west along Grantsville-Erda Road. Other land uses of significance in the vicinity of the airport include a dairy farm, located  $\frac{3}{4}$ - mile southwest of the approach end of Runway 16, and a feed lot located approximately  $\frac{1}{2}$ -mile west of the airport, along Grantsville-Erda Road. Existing land use within the airport environs is presented in the following figure, entitled *GENERALIZED AIRPORT ENVIRONS EXISTING LAND USE*.

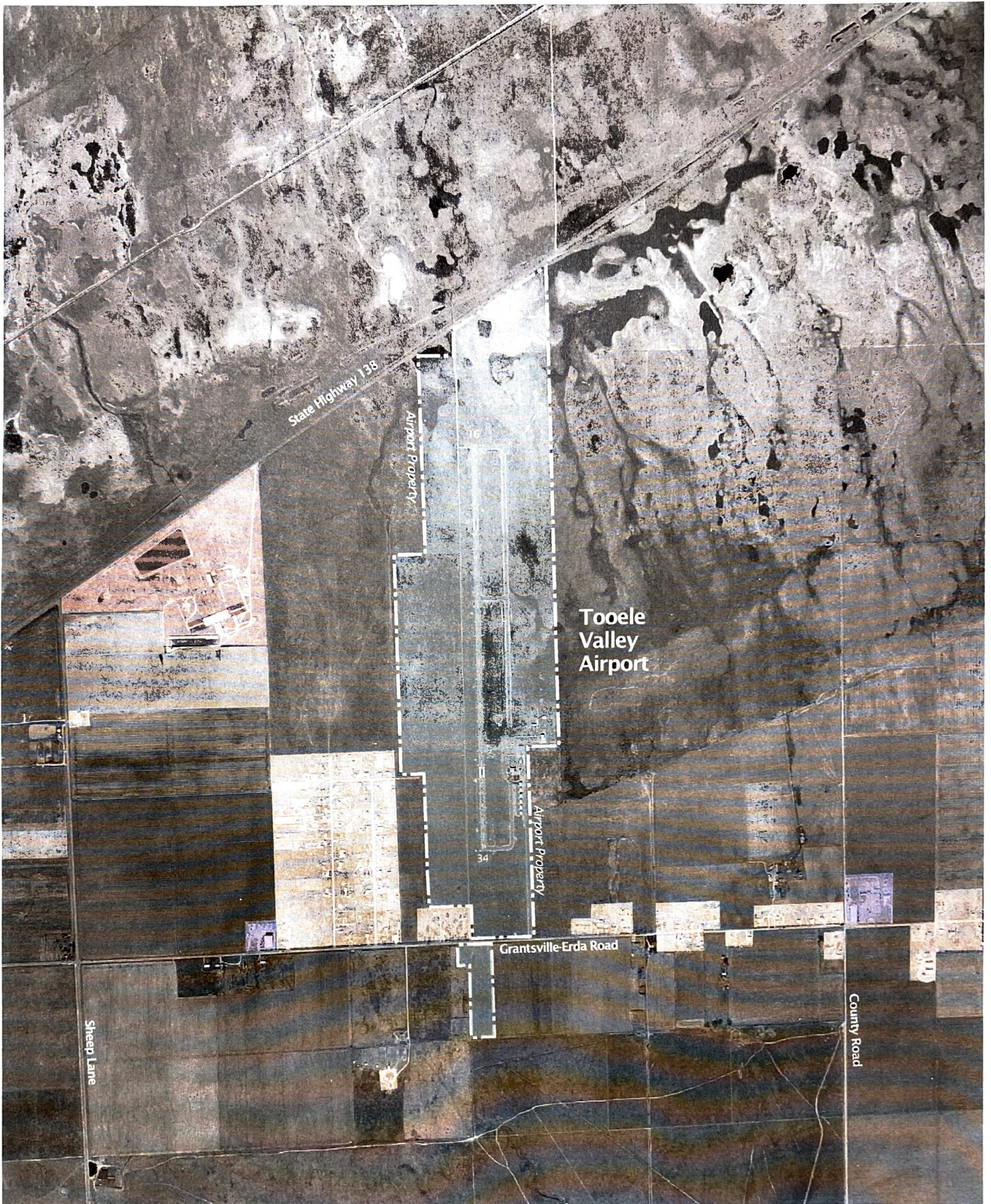
## Future Land Use

Tooele County adopted the *Tooele County General Plan* in November 1995, which specifies future land use development recommendations within six (6) specified planning districts in Tooele County. Tooele Valley Airport is located within the Tooele Valley planning district. The planning area in the vicinity of the airport is dominated by agricultural land uses; however, the expansion of rural residential development is identified adjacent to the south end of the airport and within several large tracts located to the east of airport property. Future land uses, as reflected by the *Tooele County General Plan*, are depicted on the following illustration, entitled *GENERALIZED AIRPORT ENVIRONS FUTURE LAND USE*.

Generally speaking, the significant population growth that has occurred within Tooele County over the past several years has generated a high demand for residential development located along S.H. 36, between the City of Tooele and I-80. This demand for residential development is also rapidly expanding west of S.H. 36, along Grantsville-Erda Road, towards the airport.

## Existing Zoning

The *Tooele County Zoning Ordinance*, adopted in 1994, was implemented to control development within the unincorporated areas of the county. This document identifies twenty-five (25) zoning districts within the county, which basically reflect the future land use patterns described above. The airport is currently located within the Agricultural District (A-20), which is the dominant zoning district in the vicinity of the airport. There is not a specific county zoning district designated for the airport. There is a Rural Residential District (R-R-5) located east, northeast and south of the



Approximate Scale 1"=2,000'

Figure A2 Generalized Existing Land Use

- Airport Property
- Residential
- Commercial
- Industrial

## Tooele Valley Airport



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North Arrow  
Approximate Scale 1"=2,000'

Figure A3 Generalized Future Land Use

- Rural Residential
- Agricultural

### Tooele Valley Airport



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airport, including a Rural Residential District (R-R-1) located further to the east. A residential zoned Planned Unit Development (P-2) is also located directly west of the airport, adjacent to Grantsville-Erda Road. In addition to these described zoning districts, an Agricultural Protection Area (APA) overlay zoning district has been designated within portions of some of the districts.

The allowable residential development densities vary among the specified zoning districts in the vicinity of the airport. The two Rural Residential Districts, the R-R-1 and R-R-5, specify minimum 1-acre and 5-acre lot sizes. In contrast, the Agricultural District (A-20) specifies 20-acre lot sizes for residential development. The Agricultural Protection Area (APA) overlay designation does not impose any residential development or density restrictions. Generalized existing zoning boundaries, as reflected by the *Tooele County Zoning Ordinance*, are depicted on Figure A9, entitled *GENERALIZED AIRPORT ENVIRONS EXISTING ZONING*.

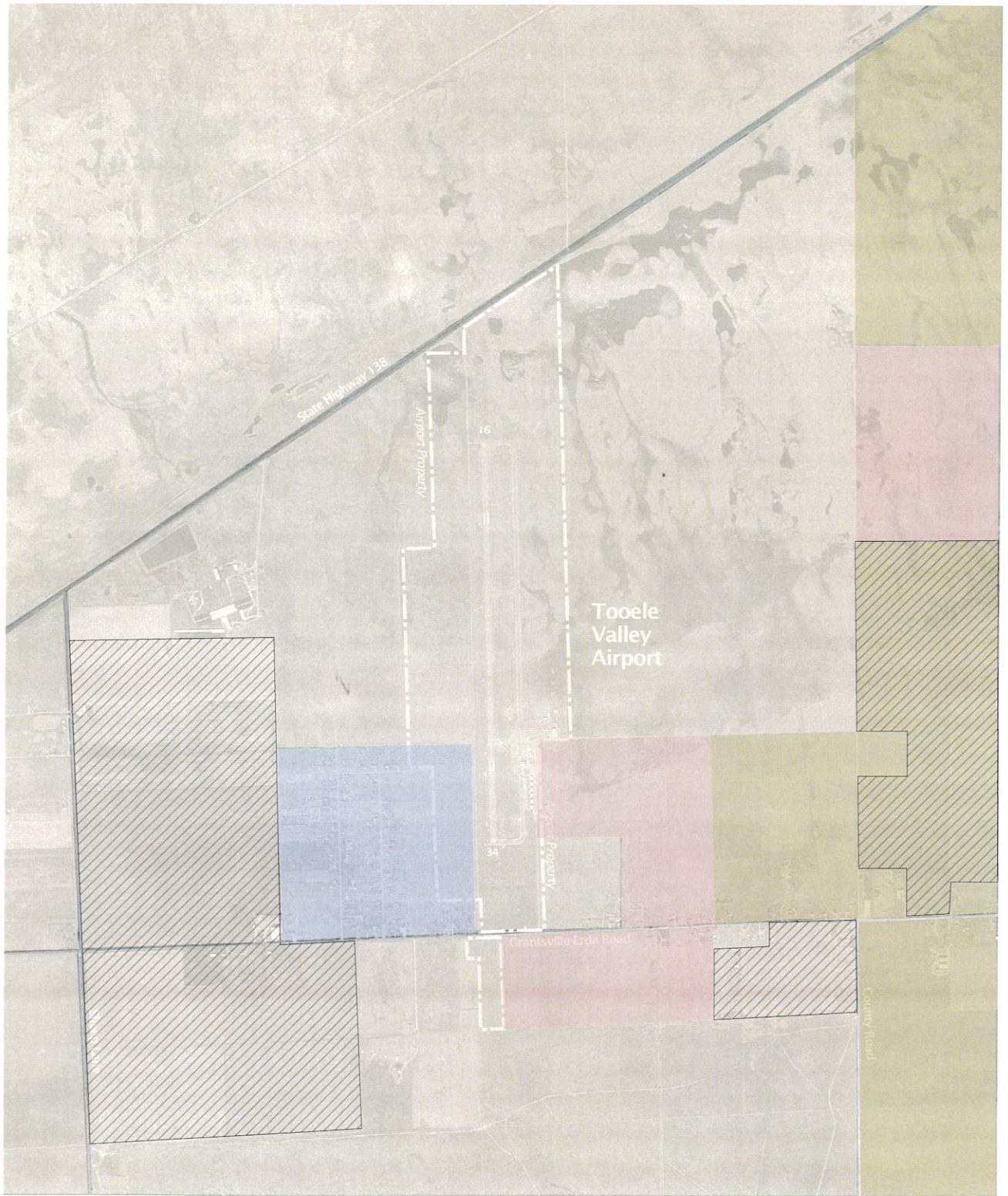
### Height Hazard Zoning/Land Use Compatibility Planning

It is much easier and less costly to prevent the development of incompatible land uses within the vicinity of an airport, than it is to resolve these issues after they occur. The FAA has adopted FAR Part 77 evaluation criteria to identify those objects around airports that may, or may not, become an obstruction and/or hazard to air navigation. Height hazard zoning is intended to limit the height of objects within defined areas around an airport in an effort to protect the safe operation of aircraft to and from the facility. Tooele County has not yet adopted a height hazard zoning ordinance for Tooele Valley Airport. In addition, community, county and/or regional planning efforts designed to promote compatible land uses in the vicinity of airports must be structured to achieve specified safety and noise-related requirements. At present, the county has not conducted any airport-specific land use compatibility planning or zoning for the area surrounding the airport; however, the Salt Lake City Department of Airports is very interested in working with Tooele County on developing compatible land use zoning for the airport environs.

### Jurisdictional Wetlands

As an element of the 1994 MP, a wetlands survey was conducted for the 375-acre project study area at Tooele Valley Airport. Approximately thirty-six (36.3) acres of jurisdictional wetlands were identified within the study area and are depicted on the *GENERALIZED AIRPORT ENVIRONS FUTURE LAND USE* illustration. The condition rating of the wetlands ranged from poor to good, depending on the degree of grazing and other disturbances; however, their functional values ranked mostly low to moderate. The development goal for the airport is to minimize water quality degradation by avoiding wetland losses and through minimizing losses where avoidance is not





North Arrow  
Approximate Scale 1"=2,000'

Figure A4 Generalized Existing Zoning

- Rural residential (RK-1)
- Rural Residential (RR-5)
- Agricultural (A-20)
- Residential Planned Unit Development (P-2)
- Agricultural Protection Zone

**Tooele Valley Airport**



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possible. In addition, a specified wetland mitigation plan must be coordinated and approved by the Army Corps of Engineers for any future development projects associated with the expansion of the airport.

## Forecasts of Aviation Activity

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### Introduction

Forecasting is a key element in the planning process. Forecasts are essential for analyzing existing airport facilities and identifying future needs and requirements for these facilities. Forecasting, by its very nature, is not exact, but it does identify some general parameters for development and, when soundly established, provides a defined rationale for various development activities as demands increase. The amount and kind of aviation activity occurring at an airport are dependent upon many factors, but are usually reflective of the services available to aircraft operators, the businesses located on the airport or within the community, and the general economic conditions prevalent within the surrounding area.

### Regional Socioeconomic Conditions

Historically, the socioeconomic conditions of a particular region impact aviation activity within that region. The most often analyzed indicators are population, employment, and income.

**Population.** Source: US Census data compiled by the Utah Population Estimates Committee and the 1995 Tooele County General Plan.

- Tooele City: 13,887 (1995 estimate).
- Tooele County: 26,700 (1990), 31,997 (1997 preliminary estimate), an average annual increase of 2.6%. Projected to increase to 59,678 by the year 2020 (an average annual growth rate of 2.75%).
- State of Utah: 1,729,000 (1990), 2,048,753 (1997 preliminary estimate), an average annual growth rate of approximately 2.45%. Projection of 3,311,302 by 2020 (average annual growth rate of 2.11%).

- United States: 249,439,000 (1990), 265,253,000 (1996 estimate), an average annual growth rate of approximately 1.05%. Projection of 322,742,000 by 2020 (average annual growth rate of 0.78%).

**Employment.** Source: U.S. Bureau of Labor Statistics, Utah Department of Workforce Services, Labor Market Information Division taken from 1998 Economic Report to the Governor.

- Tooele County: 1996 unemployment rate of 5.3%.
- State of Utah: 1996 unemployment rate of 3.5%. 1998 forecast rate of 3.4%.
- United States: 1996 unemployment rate of 5.4%. 1998 forecast rate of 4.48%.
- Major employers (Tooele County): Tooele Army Depot, Dugway Proving Ground, Barrick Mercur Gold Mine, Magcorp, Morton Salt, AKZO Salt, and Reilly Industries.

**Income.** Source: U.S. Bureau of Economic Analysis taken from 1998 Economic Report to the Governor and the 1995 Tooele County General Plan.

- Tooele City: \$12,990 per capita income (1995 estimate).
- State of Utah: \$14,910 per capita income (1991), \$19,595 (1996 estimate), an average annual growth rate of 5.6%.
- United States: \$19,689 per capita income (1991), \$24,426 (1996 estimate), an average annual growth rate of 4.4%.

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## Historic and Existing Airport Activity

A tabulation of historical aviation activity since 1988, at Tooele Valley Airport, is presented in the following table, entitled *HISTORICAL AVIATION ACTIVITY, 1988-1998*.

Table B1  
**HISTORICAL AVIATION ACTIVITY, 1988-1998**  
*Tooele Valley Airport Layout Plan Update*

Year	Air Taxi Operations	Itinerant GA Operations	Local GA Operations	Military Operations	Total Operations
1988	0	7,836	23,865	163	31,864
1989	0	8,281	26,845	910	36,036
1990	0	9,705	30,472	618	40,795
1991	0	9,698	29,809	325	39,832
1992	0	9,532	29,419	374	39,325
1993	0	8,369	25,857	341	34,567
1994	0	9,987	30,462	228	40,677
1995	0	9,950	30,538	313	40,801
1996	0	7,750	23,938	313	32,001
1997	0	8,249	24,124	315	32,688
1998	0	8,431	24,643	316	33,390

Source: 1998 Metropolitan Airports System Plan (MASP) data.

### Existing Operations By Aircraft Type

The current level of aviation activity by aircraft type is summarized in the following table, entitled *EXISTING OPERATIONS BY AIRCRAFT TYPE, 1998*.

Table B2  
**EXISTING OPERATIONS BY AIRCRAFT TYPE, 1998**  
*Tooele Valley Airport Layout Plan Update*

Aircraft Type	Operations	
<i>General Aviation</i>	33,074	99.1%
Single Engine <sup>1</sup>	31,701	94.9%
Multi-Engine <sup>1</sup>	1,025	3.1%
Turboprop <sup>1</sup>	198	0.6%
Business Jet <sup>1</sup>	99	0.3%
Helicopter <sup>1</sup>	50	0.2%
<i>Military</i> <sup>2</sup>	315	0.9%
Helicopter <sup>1</sup>	265	84.0%
Fixed Wing <sup>1</sup>	50	16.0%
<i>Total</i> <sup>2</sup>	33,389	100.0%

Sources: <sup>1</sup> Operational estimates for aircraft categories generated by Barnard Dunkelberg & Company, Inc.

<sup>2</sup> 1998 Metropolitan Airports System Plan (MASP) data.

### Based Aircraft

Historic based aircraft numbers are presented in the following table, entitled *SUMMARY OF BASED AIRCRAFT, 1988-1998*.

Table B3  
**SUMMARY OF BASED AIRCRAFT, 1988-1998**  
*Tooele Valley Airport Layout Plan Update*

Year	Single Engine	Multi-Engine Piston	Multi-Engine Turboprop	Business Jet	Total <sup>1</sup>
1988	10	0	0	0	10
1989	12	0	0	0	12
1990	21	0	0	0	21
1991	21	0	0	0	21
1992	21	0	0	0	21
1993	20	0	0	0	20
1994	20	0	0	0	20
1995	19	0	0	0	19
1996	18	0	0	0	18
1997	19	0	0	0	19
1998 <sup>2</sup>	19	1	0	0	20

Sources: <sup>1</sup> 1998 Metropolitan Airports System Plan (MASP) data.  
<sup>2</sup> Based aircraft data provided by management.

## Aviation Activity Forecasts

### Factors and Conditions

Prior to the development of aviation activity forecasts, several factors that have an influence, either positive or negative, in the planning process, should be addressed.

- The key negative factor is the overall condition of the general aviation industry in the United States. For many years now, this industry has suffered through a significant recession. Three economic recessions, two fuel crises, the enactment of the Airline Deregulation Act of 1978, the repeal of the GI Bill, and the repeal of the investment tax credit are several factors identified by the FAA as contributing to this prolonged downturn. Other causes include the expense of owning and operating an aircraft (i.e., costs of insurance, fuel, and maintenance), competition from commuter airlines in the more open aviation market since airline deregulation, increases in air space restrictions affecting fair-weather flying, and shifts in personal preference as to how leisure time is spent. These factors have severely restricted the single engine light aircraft segment of the industry, in

particular. In response, the general aviation industry has been focusing more on the business aircraft operator and less on the recreational operator.

- There are a number of factors having a positive influence in certain segments of the general aviation industry. The passage of the long-awaited General Aviation Revitalization Act of 1994, which provides an eighteen (18) year limit on product liability lawsuits against general aviation aircraft and component manufacturers, has renewed interest and optimism among U.S. aircraft manufacturers. Both general aviation aircraft shipments and billings, for the first three quarters of 1998, reflect a positive recovery for the industry, with year-to-date unit shipments and billings increasing over fifty-five percent (55.7%) and twenty-one percent (21%) respectively over 1997 figures. Production demand for general aviation aircraft has now increased for four consecutive years. The growth of the amateur-built aircraft market, and the strength of the used aircraft market, indicate that demand for inexpensive personal aircraft is still strong. Increased general aviation instrument operations at FAA towered airports and handled at FAA en route centers point to continued growth of the more sophisticated general aviation users. Additionally, operations at non-towered U.S. airports have increased, supporting the belief held by many that much of general aviation has been displaced out of towered airports because of the increased commercial air carrier activity.
- The 2002 Winter Olympic Games are projected to increase general aviation and charter aircraft operational activity at several of the regional MASP airports. According to estimates prepared by the Wasatch Front Regional Council, the bulk of the additional general aviation activity (i.e., approximately 78%), representing over 5,800 operations, is projected to occur at Salt Lake City International, Ogden and Provo airports. Tooele Valley Airport is projected to receive less than 200 Olympic-related general aviation operations distributed over an approximate three-week period. Therefore, the upcoming 2002 Winter Olympic Games will not impact the forecast of operational activity for the airport.
- According to previous pilot surveys conducted by the Wasatch Front Regional Council, proximity of home and work rated highest in the criteria utilized by aircraft owners in the selection of a basing location. It is very likely that the rapid expansion of residential development, within the Tooele Valley and the ongoing civilian conversion/redevelopment of the Tooele Army Depot, will have a positive impact on aircraft basing at Tooele Valley Airport.

### General Aviation Activity Forecasts

In developing the general aviation activity forecasts, several forecasts, including local and national trends, were reviewed. Included in this assessment, and as presented in



the following table, entitled *GENERAL AVIATION OPERATIONS FORECASTS, 1998-2018*, are the forecasts contained in the 1994 *Tooele Valley Airport Master Plan Update (1994 MP)*, a straight line trend projection (TP) based on historical data, and three (3) forecast scenarios developed for this study.

- 1994 MP: Projects an average annual growth rate ranging from two and one-half to three and one-half percent (2.5-3.5%) through the year 2012.
- Trend Projection: Depicts an average annual decrease of approximately one-half percent (-0.45%) through the planning period.
- Scenario One: Projects an average annual growth rate of approximately one-half percent (0.51%), which is FAA's APO/TAF projected average annual operational growth rate for the overall general aviation category through the planning period.
- Scenario Two: Reflects the 1998 Metropolitan Area System Plan (1998 MASP) forecast annual average growth rate of 2.16% for Tooele Valley Airport through the year 2020. Based on the recent and projected population growth rates for the Tooele Valley area, coupled with the increased economic expansion activity that is occurring, this is the selected general aviation operational forecast for this study.
- Scenario Three: Projects the average annual population growth rate of just under three percent (2.75%) for Tooele County (i.e., 1990-2020).

Table B4  
**GENERAL AVIATION OPERATIONS FORECAST SCENARIOS, 1998-2018**  
*Tooele Valley Airport Layout Plan Update*

Year	1994 MP (2.5-3.5%)	TP (-0.45%)	Scenario One (0.51%)	Scenario Two (2.16%)	Scenario Three (2.75%)
1998 <sup>1</sup>		33,074	33,074	33,074	33,074
1999	---	32,930	33,240	33,790	34,310
2000	---	32,780	33,410	34,520	35,250
2001	---	32,630	33,580	35,260	36,220
2002	53,000	32,480	33,750	36,030	37,220
2003	---	32,340	33,930	36,800	38,240
2007	63,000	31,760	34,620	40,090	42,624
2008	---	31,620	34,800	40,950	43,800
2012	75,000	31,050	35,520	44,610	48,820
2013	---	30,910	35,700	45,570	50,160
2018	---	30,220	36,620	50,710	57,445

Sources: <sup>1</sup> Actual.  
 1994 MP – Tooele Valley Airport Master Plan Update, 1994, reflects a 1991 base year operational count of 39,598.  
 TP – Trend Projection. Applies historic average annual growth rate for Tooele Valley Airport (i.e., 1988–1998).  
 Scenario One. Applies FAA’s APO/TAF projected average annual operational growth rate for the overall general aviation category through the year 2015.  
 Scenario Two. Applies the 1998 Metropolitan Area System Plan’s general aviation growth rate for Tooele Valley Airport.  
 Scenario Three. Applies the projected average annual population growth rate for Tooele County (i.e., 1990–2020).

### Military Operations Forecast

Over the past ten years, Tooele Valley Airport has experienced only a limited number of annual military operations. At present, this activity consists of touch and go Apache (AH-64A) helicopter training operations originating from Salt Lake City Airport II, which is the base location of the Utah Army National Guard Aviation Support. In addition, some fixed wing transport operations associated with the Dugway Proving Ground are conducted by the C-12 Huron (i.e., a modification of the Raytheon Super King Air 200) and the C-54 Skymaster (i.e., the Douglas DC-4). The FBO does not maintain a fueling contract with the Department of Defense (DOD) and none is anticipated in the future. Therefore, the existing level of military operational activity, estimated at approximately 300 annual operations, is adopted for the 20-year planning period of this study.

## Operations Forecast By Aircraft Type

The types of aircraft expected to use the airport assist in determining the amount and type of facilities needed to meet the aviation demand. The following table, entitled *SUMMARY OF OPERATIONS FORECAST BY AIRCRAFT TYPE, 1998-2018*, depicts the approximate level of use by aircraft types that are projected to use Tooele Valley Airport.

Table B5  
**SUMMARY OF OPERATIONS FORECAST BY AIRCRAFT TYPE, 1998-2018**  
*Tooele Valley Airport Layout Plan Update*

Aircraft Type	1998		2003		2008		2013		2018	
<i>General Aviation</i>	33,074 <sup>1</sup>	99.1%	36,800	99.2%	40,950	99.3%	45,570	99.3%	50,710	99.4%
Single Engine	31,701	94.9%	34,978	94.3%	38,452	93.2%	42,152	91.8%	45,639	89.5%
Multi-Engine	1,025	3.1%	1,288	3.5%	1,638	4.0%	2,051	4.4%	2,890	5.6%
Turboprop	198	0.6%	276	0.7%	512	1.2%	911	2.0%	1,521	3.0%
Business Jet	99	0.3%	184	0.5%	266	0.7%	342	0.8%	507	1.0%
Helicopter	50	0.2%	74	0.2%	82	0.2%	114	0.3%	152	0.3%
<i>Military</i>	315 <sup>1</sup>	0.9%	300	0.8%	300	0.7%	300	0.7%	300	0.6%
Helicopter	265	84.0%	250	83.0%	250	83.0%	250	83.0%	250	83.0%
Fixed Wing	50	16.0%	50	17.0%	50	17.0%	50	17.0%	50	17.0%
<i>Total</i>	33,389 <sup>1</sup>	100.0%	37,100	100.0%	41,250	100.0%	45,870	100.0%	51,010	100.0%

Sources: <sup>1</sup> 1998 Metropolitan Airports System Plan (MASP) data.  
 Operational estimates for aircraft categories generated by Barnard Dunkelberg & Company, Inc.

## Local and Itinerant Operations Forecast

Business jet activity at Tooele Valley Airport is projected to increase, so the percentage of itinerant operations is expected to also grow through the 20-year planning period of this study. The forecast of local and itinerant aircraft operations is illustrated on the following table, entitled *SUMMARY OF LOCAL AND ITINERANT OPERATIONS FORECAST, 1998-2018*.

Table B6  
**SUMMARY OF LOCAL AND ITINERANT OPERATIONS FORECAST, 1998-2018**  
*Tooele Valley Airport Layout Plan Update*

Year	Local	Itinerant	Total
1998	25,042	8,347	33,389
2003	27,454	9,646	37,100
2008	30,113	11,137	41,250
2013	33,026	12,844	45,870
2018	35,707	15,303	51,010

Sources: 1994 Tooele Valley Airport Master Plan Update and Barnard Dunkelberg & Company, Inc. estimates.

### **Based Aircraft Forecast**

The number and type of aircraft anticipated to be based at an airport are vital components in developing a plan for the airport. Generally, there is a relationship between aviation activity and based aircraft, stated in terms of operations per based aircraft (OPBA). Sometimes a trend can be established from historical information of operations and based aircraft. The national trend has been changing with more aircraft being used for business purposes and less for pleasure flying. This impacts the OPBA in that business aircraft are usually flown more often than pleasure aircraft. It is expected that the number of operations per based aircraft will increase at the airport as more aircraft based there are used for business purposes.

There is one other important factor that was addressed in the 1994 MP that will likely influence future aircraft basing characteristics within the Salt Lake City metropolitan area. It includes the self-imposed based aircraft restrictions or "capping", which have limited the construction of additional aircraft storage facilities at Salt Lake City International Airport (SLCIA). The based aircraft "capping" issues at SLCIA continue to increase aircraft basing demand at adjacent metropolitan airports. Based aircraft totals have increased approximately 92.3% at Salt Lake City Airport II and approximately 65.3% at Skypark Airport since 1991. It is very likely that the lack of additional aircraft storage at Tooele Valley Airport has restricted an increase in based aircraft counts at the facility.

Several based aircraft forecast scenarios are presented in the following table, entitled *BASED AIRCRAFT FORECAST SCENARIOS, 1998-2018*. These include forecasts from the

1994 MP, a trend projection based on historic data, and two (2) forecast scenarios related to various factors and influences.

- 1998 MP: Projects an average annual growth rate of over four percent (4.4%).
- Trend projection: Indicates an average annual growth rate of two and one-half percent (2.5%). This is the selected based aircraft forecast for this study.
- Scenario One: Reflects the 1998 MASP's projected average annual growth rate of over seven percent (7.3%).
- Scenario Two: Assumes an average annual growth rate of approximately one percent (1.1%), which is the FAA forecasted growth rate for active general aviation aircraft in the United States during the time frame 1999-2010.

Table B7  
**BASED AIRCRAFT FORECAST SCENARIOS, 1998-2018**  
*Tooele Valley Airport Layout Plan Update*

Year	1994 MP (4.4%)	TP (2.5%)	Scenario One (7.3%)	Scenario Two (1.1%)
1998 <sup>1</sup>	---	20	20	20
1999	---	21	21	20
2000	---	21	23	20
2001	---	22	25	21
2002	36	22	27	21
2003	---	23	28	21
2007	42	25	38	22
2008	---	26	40	22
2012	50	28	54	23
2013	---	29	58	24
2018	---	33	82	25

Sources: <sup>1</sup> Actual.  
 1994 MP - 1994 Tooele Valley Airport Master Plan. Reflects a 1991 base year count of 21 aircraft.  
 TP - Trend Projection. Applies historic average annual growth rate for Tooele Valley Airport (i.e., 1988-1998).  
 Scenario One. Applies the 1998 MASP's projected average annual growth rate (i.e., 1998-2020).  
 Scenario Two. Applies the nationwide active general aviation aircraft growth rate as projected in the FAA Aviation Forecasts Fiscal Years 1999-2010.

## Based Aircraft Forecast By Aircraft Type

The mix of based aircraft is shown on the following table, entitled *BASED AIRCRAFT FORECAST BY TYPE, 1998-2018*.

Table B8  
**BASED AIRCRAFT FORECAST BY TYPE, 1998-2018**  
*Tooele Valley Airport Layout Plan Update*

Aircraft Type	1998 <sup>1</sup>		2003 <sup>2</sup>		2008 <sup>2</sup>		2013 <sup>2</sup>		2018 <sup>2</sup>	
Single Engine	19	95.0%	21	91.3%	23	88.5%	25	86.2%	27	81.9%
Multi-Engine	1	5.0%	2	8.7%	3	11.5%	3	10.3%	4	12.1%
Turboprop	0	0.0%	0	0.0%	0	0.0%	1	3.5%	1	3.0%
Business Jet	0	0.0%	0	0.0%	0	0.0%	0	0.0%	1	3.0%
Helicopter	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
<b>Total</b>	<b>20</b>	<b>100.0%</b>	<b>23</b>	<b>100.0%</b>	<b>26</b>	<b>100.0%</b>	<b>29</b>	<b>100.0%</b>	<b>33</b>	<b>100.0%</b>

Source: <sup>1</sup>Tooele Valley Airport FBO management personnel.  
<sup>2</sup>Barnard Dunkelberg & Company, Inc. estimates.

## Summary

A summary of the aviation forecasts prepared for this study is presented in the following table entitled *SUMMARY OF AVIATION ACTIVITY FORECASTS, 1998-2018*. This information will be used in the following chapters to analyze facility requirements, to aid development of alternatives, and to guide the preparation of the plan and program of future airport facilities. In other words, the aviation activity forecasts are the foundation from which future plans will be developed and implementation decisions will be made.

Table B9  
**SUMMARY OF AVIATION ACTIVITY FORECASTS, 1998-2018**  
*Tooele Valley Airport Layout Plan Update*

Operations	1998 <sup>1</sup>	2003 <sup>2</sup>	2008 <sup>2</sup>	2013 <sup>2</sup>	2018 <sup>2</sup>
<i>General Aviation</i>	33,074	36,800	40,950	45,570	50,710
Single Engine	31,701	34,798	38,452	42,152	45,639
Multi-Engine	1,025	1,288	1,638	2,051	2,890
Turboprop	198	276	512	911	1,521
Business Jet	99	184	266	342	507
Helicopter	50	74	82	114	152
<i>Military</i>	315	300	300	300	300
Helicopter	265	250	250	250	250
Helicopter	50	50	50	50	50
<b>TOTAL OPERATIONS</b>	<b>33,389</b>	<b>37,100</b>	<b>41,250</b>	<b>45,870</b>	<b>51,010</b>
Local Operations	25,042	27,454	30,113	33,026	35,707
Itinerant Operations	8,347	9,646	11,137	12,844	15,303
<b>Based Aircraft By Type</b>					
Single Engine	19	21	23	25	27
Multi-Engine	1	2	3	3	4
Turboprop	0	0	0	1	1
Business Jet	0	0	0	0	1
Helicopter	0	0	0	0	0
<b>TOTAL</b>	<b>20</b>	<b>23</b>	<b>26</b>	<b>29</b>	<b>33</b>

Source: <sup>1</sup> Actual.  
<sup>2</sup> Barnard Dunkelberg & Company, Inc. estimates.

## Facility Requirements

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### Introduction

The ability of an airport to accommodate the existing and forecasted aviation activity is primarily a function of the major aircraft operating surfaces that compose the facility and the configuration of those surfaces (runways and taxiways). However, it is also related to and considered in conjunction with weather conditions, the surrounding airspace, the availability and type of navigational facilities, the type and arrangement of aircraft storage facilities, the supporting facilities, and the type and amount of landside access.

Knowledge of the types of aircraft currently using and those that are expected to use Tooele Valley Airport provide information concerning the Airport Reference Code (ARC). FAA Advisory Circular 150/5300-13, *Airport Design*, provides guidelines for this determination. The ARC is based on the "Design Aircraft" that is judged the most critical aircraft using, or projected to use, the airport. The ARC relates aircraft operational and physical characteristics to design criteria that are applied to various airport components. FAA guidelines indicate that at least 500 annual operations by an aircraft, or group of aircraft, are required to designate a specific runway in the representative ARC.

According to the 1994 MP, Tooele Valley Airport has an existing ARC designation of B-II. It is projected that the airport will accommodate over 500 annual business jet operations within the twenty-year planning period, but it is unlikely that all of these operations would be conducted by Category C or D aircraft. However, based on the existing design geometry of the airfield (i.e., the existing 400-foot runway to taxiway centerline separation) and the proposed precision instrument approach capabilities, the 1994 MP recommended preserving the future option of upgrading the airport's ARC B-II design standards to ARC C-II dimensional criteria. A comparison of the two airfield design designations will be presented in proceeding sections of this document.



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## Airside Requirements

The analysis of airside requirements focuses on determining needed facilities and the spatial considerations for these facilities that are related to the actual operation of aircraft on the airport. This evaluation includes the delineation of airfield dimensional criteria, establishment of design parameters for the runway and taxiway systems, and an identification of airfield instrumentation and lighting needs.

### Wind Coverage

- All Weather: To determine wind velocity and direction at Tooele Valley Airport, wind data were attained and an all weather wind rose constructed, which is presented in the following illustration, entitled *ALL WEATHER WIND ROSE: 10.5-, 13-, AND 16-KNOT CROSSWIND COMPONENTS*. This analysis indicates that Runway 16/34 provides adequate combined wind coverage (i.e., greater than 95%) for each of the three crosswind components.

Table C1  
**ALL WEATHER WIND COVERAGE SUMMARY**  
*Tooele Valley Airport Layout Plan Update*

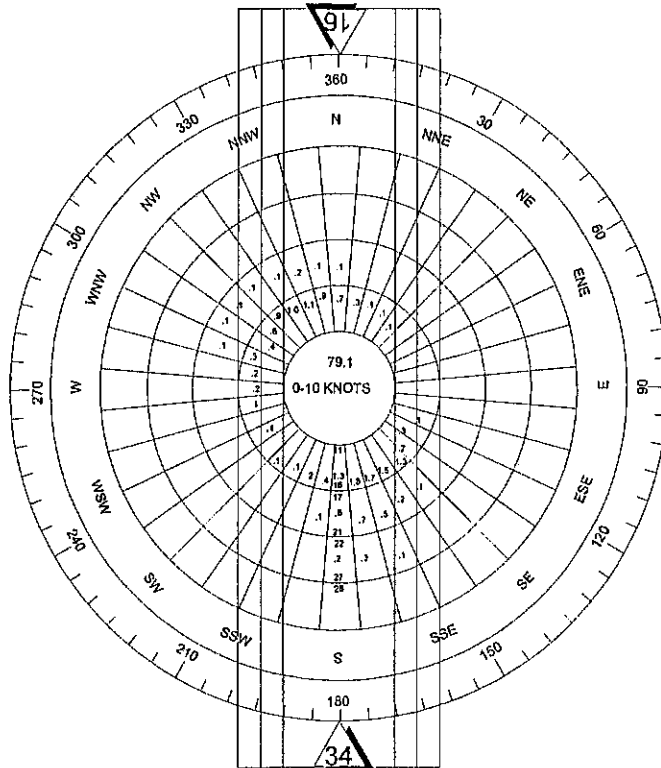
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	Wind Coverage Provided Under All Weather Conditions		
	10.5-Knot	13-Knot	16-Knot
Runway 16	61.9%	62.8%	63.3%
Runway 34	38.2%	39.1%	39.7%
Combined	96.6%	98.5%	99.5%

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Source: National Oceanic and Atmospheric Administration, National Climatic Data Center.  
Station 24127 Salt Lake City, Utah. Period of Record 1982-1991.

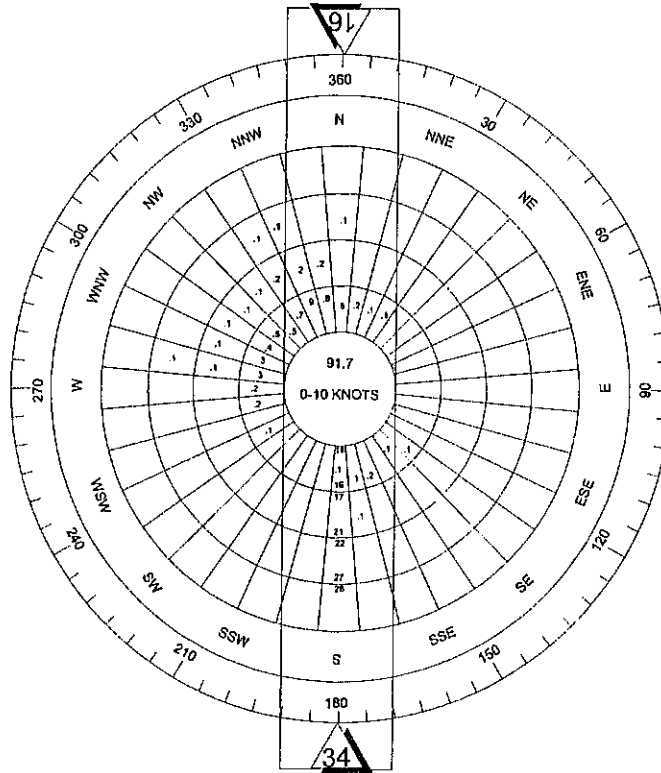
Figure C1  
ALL WEATHER WIND ROSE: 10.5-, 13-, AND 16-KNOT CROSSWIND COMPONENTS  
*Tooele Valley Airport Layout Plan Update*



Source: National Oceanic and Atmospheric Administration, National Climatic Data Center.  
Station 24127 Salt Lake City, Utah. Period of Record 1982-1991.

- IFR Weather: In an effort to analyze the need and/or opportunities to reduce visibility minimums or provide additional instrument approaches, Instrument Flight Rules (IFR) wind data has been gathered and a wind rose was constructed, which is presented in the figure, entitled *IFR WIND ROSE: 10.5-, 13-, AND 16-KNOT CROSSWIND COMPONENTS*. This analysis indicates that if a single runway is considered, Runway 34 offers the best wind coverage. However, an examination of enhancing instrument approach capabilities to each runway end will be provided.

Figure C2  
**IFR<sup>1</sup> WIND ROSE: 10.5-, 13-, AND 16-KNOT CROSSWIND COMPONENTS**  
*Tooele Valley Airport Layout Plan Update*



**Source:** National Oceanic and Atmospheric Administration, National Climatic Data Center.  
 Station 24127 Salt Lake City, Utah. Period of Record 1982-1991.  
<sup>1</sup> Ceiling of less than 1,000 feet, but equal to or greater than 200 feet and/or visibility less than three miles, but equal to or greater than one-half mile.

Table C2  
**IFR WIND COVERAGE SUMMARY**  
*Tooele Valley Airport Layout Plan Update*

	Wind Coverage Provided Under IFR Conditions <sup>1</sup>		
	10.5-Knot <sup>2</sup>	13-Knot <sup>3</sup>	16-Knot <sup>3</sup>
Runway 16	76.35%	93.67%	94.46%
Runway 34	85.69%	97.56%	98.48%
Combined	97.35%	98.54%	99.47%

Source: National Oceanic and Atmospheric Administration, National Climatic Data Center.  
 Station 24127 Salt Lake City, Utah. Period of Record 1982-1991.

<sup>1</sup> Ceiling of less than 1,000 feet, but equal to or greater than 200 feet and/or visibility less than three miles, but equal to or greater than one-half mile.

<sup>2</sup> Calculation based on 5-knot tailwind to maximum headwind.

<sup>3</sup> Calculation based on 10-knot tailwind to maximum headwind.

### Airport Standards Compliance Inventory

- Dimensional Standards: Dimensional standards applicable to Tooele Valley Airport are contained in the following tables, entitled *RUNWAY 16/34 ARC B-II DIMENSIONAL STANDARDS, IN FEET* and *RUNWAY 16/34 ARC C-II DIMENSIONAL STANDARDS, IN FEET*. As can be seen in Table C3, Runway 16/34 is deficient in meeting the current runway object free area (ROFA) width criteria on the west side of the runway, in consideration of the existing approach visibility minimums. This design deficiency is highlighted in bold text within the table. In consideration of the more restrictive “lower than ¾-statute mile” approach visibility minimums, several additional non-standard conditions would result. These would include the design standards for runway width, runway safety area (RSA) length and width, ROFA length and width, and runway centerline to aircraft parking area separation.

As can be seen in Table C4, the application of the more restrictive ARC C-II design standards would result in essentially the same deficiencies on Runway 16/34 as those identified for the ARC B-II criteria, in consideration of the “lower than ¾-statute mile” approach visibility minimums. Each would require widening of the runway, expansion of the RSA and ROFA boundaries, and increased separation between the runway centerline and aircraft parking areas.

Table C3  
 RUNWAY 16/34 ARC B-II DIMENSIONAL STANDARDS, IN FEET  
 Tooele Valley Airport Layout Plan Update

Item	Existing Dimension	Approach Visibility Minimums: Not Lower Than $\frac{1}{4}$ -Statute Mile <sup>1</sup>	Approach Visibility Minimums: Lower Than $\frac{1}{4}$ -Statute Mile
Runway 16/34:			
Width	75	75	100
Safety Area Width	150	150	300
Safety Area Length (beyond runway end)	300	300	600
Object Free Area Width	450 <sup>2</sup>	500	800
Object Free Area Length (beyond runway end)	300	300	600
Obstacle Free Zone Width	400	400	400
Taxiway:			
Width	35	35	35
Safety Area Width	79	79	79
Object Free Area Width	131	131	131
Runway Centerline to:			
Holdline	250	200	250
Parallel Taxiway Centerline	310, 400	240	300
Aircraft Parking Area	355	250	400

Source: FAA Advisory Circular 150/5300-13, *Airport Design*.

<sup>1</sup> Existing runway approach visibility minimums not lower than one statute mile.

<sup>2</sup> Existing OFA width boundary is violated by an existing fence and an unpaved access road linking Grantsville-Erda Road with S.H. 138.

Table C4  
**RUNWAY 16/34 ARC C-II DIMENSIONAL STANDARDS, IN FEET**  
*Tooele Valley Airport Layout Plan Update*

Item	Existing Dimension	Approach Visibility Minimums: Not Lower Than $\frac{1}{4}$ -Statute Mile <sup>1</sup>	Approach Visibility Minimums: Lower Than $\frac{1}{4}$ -Statute Mile
<b>Runway 17/35:</b>			
Width	75	100	100
Safety Area Width	150	400 or 500	400 or 500
Safety Area Length (beyond runway end)	300	1,000	1,000
Object Free Area Width	450	800	800
Object Free Area Length (beyond runway end)	300	1,000	1,000
Obstacle Free Zone Width	400	400	400
<b>Taxiway:</b>			
Width	35	35	35
Safety Area Width	79	79	79
Object Free Area Width	131	131	131
<b>Runway Centerline to:</b>			
Holdline	250	250	250
Parallel Taxiway Centerline	310, 400	300	400
Aircraft Parking Area	355	400	500

Source: FAA Advisory Circular 150/5300-13, *Airport Design*.  
<sup>1</sup> Existing runway approach visibility minimums not lower than one statute mile.

- **Objects Affecting Navigable Airspace:** The criteria contained in Federal Aviation Regulations (FAR) Part 77, *Objects Affecting Navigable Airspace*, apply to existing and proposed manmade objects and/or objects of natural growth and terrain (i.e., obstructions). These guidelines define the *critical* areas in the vicinity of airports, which should be kept free of obstructions. *Secondary* areas may contain obstructions if they are determined to be non-hazardous by an aeronautical study and/or if they are marked and lighted as specified in the aeronautical study determination. Airfield navigational aids, as well as lighting and visual aids, by nature of their location, may constitute obstructions; however, these objects do not violate FAR Part 77 requirements, as they are essential to the operation of the airport.

According to the current *Airport Obstruction Chart* OC 6944, published in October 1996, the current approach surfaces for Runways 16 and 34 at Tooele Valley Airport are classified as visual; however, there are currently two published non-precision instrument approaches to Runway 16. The dimensions for a visual approach surface measure 500 feet at its inner width, 1,500 feet at its outer width and extends for a horizontal distance of 5,000 feet, with an approach slope angle of 20 to 1. The dimensions for a non-precision approach surface measure 500 feet at its inner width, 2,000 feet at its outer width, and extends for a horizontal distance of 5,000 feet, with an approach slope angle of 20 to 1. Based upon these defined dimensions, several obstructions have been identified within the transitional and approach surfaces; however, the majority of these are associated with trees and a fence located on the west side of the airport. In addition, the unpaved west side public access road, linking Grantsville-Erda Road with S.H. 138, is not identified on the obstruction chart, but does likely violate the existing 7:1 transitional surface. These surfaces will be reevaluated in conjunction with any future changes to the airport's approach instrumentation, which may require an alteration or change to the runway's existing Part 77 surfaces.

- Runway Line-of-Sight: Criteria met.
- Runway Protection Zones (RPZs): Meets the dimensions of the specified standard for the existing approach capabilities. Both the Runway 16 & 34 RPZs are contained within existing airport property. The following table, entitled *RUNWAY PROTECTION ZONE DIMENSIONS*, lists the existing RPZ dimensions and the requirements for improved approach capabilities. Planning for enhanced approach capabilities, and the impact of the required Runway Protection Zones, will be incorporated in this study.

Table C5  
**RUNWAY PROTECTION ZONE DIMENSIONS**  
*Tooele Valley Airport Layout Plan Update*

Item	Width at Runway End (feet)	Length (feet)	Width at Outer End (feet)
<b>Existing RPZ Dimensions:</b>			
Runway 16	500	700	1,000
Runway 34	500	700	1,000
<b>Required RPZ Dimensions for Various Visibility Minimums:</b>			
Visual and not lower than 1-mile,			
Approach Categories A & B	500	1,000	700
Visual and not lower than 1-mile,			
Approach Categories C & D	500	1,700	1,010
Not lower than 3/4-mile, all aircraft	1,000	1,700	1,510
Lower than 3/4-mile, all aircraft	1,000	2,500	1,750

Source: FAA Advisory Circular 150/5300-13, *Airport Design*.

- **Threshold Siting:** Criteria met. However, these requirements must be reexamined in conjunction with any future improvements or changes to the airport's approach visibility minimums. The following table, entitled *THRESHOLD SITING CRITERIA, IN FEET*, lists the existing threshold siting criteria applicable to each runway end, as well as the requirements for improved approach capabilities.



Table C6  
**THRESHOLD SITING CRITERIA, IN FEET**  
*Tooele Valley Airport Layout Plan Update*

Item	Distance From Threshold	Width at Threshold	Width at Outer End	Length of First Segment	Length of Second Segment	Slope
<b>Existing Threshold Siting Criteria:</b>						
Runway 16	0	400	1,000	1,500	8,500	20:1
Runway 34	0	400	1,000	1,500	8,500	20:1
<b>Required Threshold Siting Criteria for Various Aircraft Types and Visibility Minimums</b>						
Small aircraft with approach speeds less than 50-knots	0	120	250	500	2,500	15:1
Small aircraft with approach speeds greater than 50-knots	0	250	700	2,250	2,750	20:1
Visual and not lower than 1-mile, Large Aircraft	0	400	1,000	1,500	8,500	20:1
Not lower than 3/4-mile, all aircraft	200	1,000	4,000	10,000	0	20:1
Lower than 3/4-mile, all aircraft	200	1,000	4,000	10,000	0	34:1

Source: FAA Advisory Circular 150/5300-13, *Airport Design*.

## Runway System

- **Runway Length:** The runway length requirements at Tooele Valley Airport are provided in the following table, entitled *RUNWAY LENGTH REQUIREMENTS*. The data indicates that Runway 16/34 can accommodate 95% of the small aircraft fleet weighing less than 12,500 pounds. In order to accommodate 100% of the small general aviation aircraft fleet with ten or more seats, a runway length of 5,910 feet is required. Also note that 75% of the general aviation aircraft fleet weighing between 12,500 and 60,000 pounds, operating at 60% of useful load, can be accommodated with a runway length of approximately 6,960 feet. According to this tabulation, the specified runway lengths for both wet and dry pavement are the same.

Table C7  
**RUNWAY LENGTH REQUIREMENTS**  
*Tooele Valley Airport Layout Plan Update*

Aircraft Category	Length (Feet)	
	Dry	Wet
<i>Airplanes less than 12,500 lbs. with less than 10 seats</i>		
75% of Small Aircraft Fleet	4,270	4,270
95% of Small Aircraft Fleet	5,610	5,610
100% of Small Aircraft Fleet	5,910	5,910
<i>Airplanes less than 12,500 lbs. with 10 or more seats</i>		
	5,910	5,910
<i>Airplanes greater than 12,500 lbs. and less than 60,000 pounds</i>		
75% of fleet at 60% useful load	6,960	6,960
75% of fleet at 90% useful load	9,050	9,050
100% of fleet at 60% useful load	10,430	10,430
100% of fleet at 90% useful load	11,450	11,450
Runway 16/34 (existing)	5,498	5,498

Source: FAA Advisory Circular 150/5300-13, *Airport Design*.  
 Lengths based on 4,316' AMSL, 95.3° F NMT and a maximum difference in runway centerline elevation of 45'.

- **Runway Pavement Strength:** The runway received a two (2) inch bituminous overlay in 1992. Based on current and projected levels of business jet activity, it's recommended that the existing gross weight bearing capacity of the runway (i.e., 12,500 pounds single wheel) be maintained. However, future pavement strengthening projects should be reevaluated at pavement maintenance intervals and in conjunction with any future extension projects.
- **Runway Approach Instrumentation:** Runway 34 provides the best IFR wind coverage; however, the 1994 MP recommended a future precision instrument approach be implemented to Runway 16, due to the mountainous terrain located south of the airport. Runway 16 was also the preferred approach end by Salt Lake City ATCT personnel. A new Aviation Impact Analysis (Airspace Case No. 99-DEN-0110-NRA) for the proposed GPS precision approach at Tooele Valley Airport was completed in August of 1999, which determined that a precision approach to

Runway 16 is feasible, contingent upon the removal of several fence post obstructions located adjacent to the Runway 16 threshold.

- **Airport Lighting:** The existing VASIs should be upgraded as needed in the future with PAPIs. In conjunction with the examination of improved instrument approaches described above, the potential requirements for new approach lighting systems (ALS) will also be evaluated.

### Taxiway System

- **Recommended Improvements:** Realign/straighten a segment of Taxiway "A" within the general aviation apron area to provide a 400-foot runway to taxiway centerline separation. Also construct a new midfield connector taxiway linking the new FBO apron area with Taxiway "A". Additional access taxiways will be constructed as needed to serve future hangar development areas located on the east side of the runway.

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### Landside Requirements

Landside requirements are those facilities that support the airside facilities, but are not actually part of the aircraft operating surfaces. These consist of such facilities as terminal buildings, aprons, access roads, hangars, and support facilities. From an analysis of the existing facilities, deficiencies can be noted in terms of accommodating both existing and future needs. The accompanying table, entitled *GENERAL AVIATION FACILITY REQUIREMENTS*, shows the type of facilities and the number of units or acres needed for that facility in order to meet the forecast demand.

- **Aircraft Storage:** Approximately twenty-two (22) new based aircraft storage facilities are required. Based upon information obtained from the March 1999 Joint Planning Conference (JPC) for Tooele Valley Airport, there is a strong demand for the development of additional hangar storage facilities at the airport. It is projected that future aircraft storage requirements will reflect that the majority of based aircraft (i.e., approximately 85%) will be stored in some type of hangar facility (i.e., T-hangars, executive hangars, or a large storage hangar). At present, only 30 percent of the based aircraft are stored in hangars.
- **Tiedown Storage/Based Aircraft:** Approximately 0.3 acres required.
- **Tiedown Storage/Itinerant Aircraft:** Approximately 1.0 acre required.

- FBO/bulk Storage Hangars: Actual number, size, and location of FBO/bulk storage hangars will depend on user needs and financial feasibility. Therefore, future numbers of these facilities have not been projected; however, potential development sites will be identified in the development plan. It should be restated that the existing FBO hangar facility must be relocated to accommodate the proposed realignment of Taxiway "A".
- Access Roads: Access and perimeter roadway locations, auto parking requirements, and land requirements will be a function of the location of other facilities, as well as the most effective routing of roadways. It is anticipated that the existing Airport Entrance Road will have to be extended to provide access to the new FBO hangar development area. In addition, this roadway must eventually be extended to S.H. 138 to permit the future closure of the existing west side unpaved connector road.

Table C8  
**GENERAL AVIATION FACILITY REQUIREMENTS**  
*Tooele Valley Airport Layout Plan Update*

Facility	1998 <sup>1</sup>	Total Number Required (In Acres)			
		2003 <sup>2</sup>	2008 <sup>2</sup>	2013 <sup>2</sup>	2018 <sup>2</sup>
Itinerant Apron	0.80 <sup>3</sup>	0.67	0.74	0.89	1.00
Based Aircraft Apron	1.70	0.43	0.43	0.37	0.31
Hangars					
Exec. Hangars (no./ac.)	6/1.5	6/1.5	6/1.5	6/1.5	8/2.0
T-hangars (no./ac.)	0/0	10/1.2	15/1.8	20/2.4	20/2.4
Total	4.00	3.80	4.47	5.16	5.71

Source: <sup>1</sup> Actual.

<sup>2</sup> Barnard Dunkelberg & Company, Inc. projections based on FAA AC 150/5300-4B.

<sup>3</sup> The existing itinerant apron area must be abandoned with the proposed relocation of the FBO hangar facility.

## Support Facilities

- Aircraft Rescue and Fire Fighting (ARFF) Facility: FAA requirements for ARFF equipment and staff are based on commercial service aircraft. Therefore, Tooele Valley Airport does not have ARFF requirements.
- Fuel Storage Facility: As noted in the *Inventory* chapter, the existing fuel storage facility is to be relocated, in conjunction with the proposed FBO hangar relocation. The future site is located near the midpoint of the runway, just southwest of the future FBO hangar development site. The new facility will likely consist of one (1) 20,000-gallon above ground AVGAS storage tank.
- Utility infrastructure: The existing airport electrical vault and transformer have been relocated to accommodate the realignment/straightening of Taxiway "A". The new site is located north of the existing airport maintenance building and east of the proposed T-hangar development area. In addition, the North Tooele County Fire Marshall has determined that no new permanent structures can be constructed at the airport until a new approved water supply system is installed to serve the facility. The Salt Lake City Airport Authority is currently evaluating the costs associated with installing a new water service line to the airport or a temporary water storage facility to meet fire protection storage requirements.

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## Summary

Although many of the existing airport facilities are adequate to meet the expected aviation demand, others will need improvement, replacement, or upgrading to provide a safe and efficient aircraft operating environment. The facility requirements detailed in this chapter will be used to evaluate several important decisions concerning the future design and development of the airfield. Each of these decisions will be utilized to formulate the overall future Development Plan for the airport.

## **Development Concepts and Recommendations**

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### **Introduction**

The purpose of this chapter is to present the Development Plan Recommendations for Tooele Valley Airport, in terms of both their concept and reasoning. This planning effort begins with the establishment of several goals for the purpose of directing the plan and establishing continuity in the future development of the airport. These goals take into account several categorical considerations relating to the needs of the airport both in the short-term and the long-term, including safety, capital improvements, land use compatibility, financial and economic conditions, public interest and investment, and community recognition and awareness.

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### **Goals for Development**

The following goals are intended to guide the preparation of this Airport Layout Plan Update and direct the future expansion of Tooele Valley Airport:

- o Plan the airport to safely accommodate the forecast aircraft fleet with facilities properly sized to accommodate forecast demand.
- o Program facilities to be constructed when demand is realized (i.e., construction is to be driven by actual demand, not forecast demand).
- o Ensure that the future development of the airport can accommodate the growing corporate aviation needs and requirements of the area.
- o Enhance the self-sustaining capability of the airport and ensure the financial feasibility of future airport development.
- o Develop land acquisition priorities (i.e., fee simple and/or easement) related to airport safety, future airport development, and land use compatibility.

- o Encourage the protection of existing public and private investment in land and facilities, and advocate the resolution of any existing and/or potential land use conflicts both on and off airport property.
- o Plan and develop the airport to be environmentally compatible with the surrounding area and minimize environmental impacts on both airport property and property adjacent to the facility.
- o Provide effective direction for the future development of Tooele Valley Airport through the preparation of a rational plan and adherence to the adopted development program.
- o Integrate the airport's ground transportation access requirements with the area's regional transportation goals.

Accompanying these goals are several development assumptions, which are supported by the aviation activity forecasts, and include a commitment for continued airport expansion that reflects the needs of the aviation community and generates economic development.

The first assumption states that Runway 16/34 will be maintained initially to Airport Reference Code (ARC) B-II design standards; however, future ARC C-II upgrade capabilities will be preserved to this facility. In addition, the existing non-precision approach minimums to Runway 16 will be upgraded to precision instrument approach standards (i.e., ½-mile approach visibility minimums), while the visual approach minimums to Runway 34 will be upgraded to non-precision standards.

The second assumption states that the existing ARC B-II dimensional criteria deficiencies (i.e., the runway object free area width), along the west side of the runway, should be resolved as soon as possible. This will require the closure of an unpaved public access trail on the west side of the airport and the relocation of existing fencing outside of the future ARC C-II runway object free area (ROFA). A portion of this fencing has been removed.

The third assumption states that the existing FBO hangar, electrical vault, and fuel storage facility will be relocated to accommodate the straightening of the east side parallel taxiway system. This project will also necessitate the abandonment of approximately 0.8 acre of existing general aviation apron.

The fourth assumption states that the runway should be extended to accommodate approximately 100-percent of the small aircraft fleet (i.e., airplanes less than 12,500 lbs.). According to the runway length requirements specified in the previous chapter, this would require a future runway length of 5,910 feet. The 1994 MP identified that approximately 6,100 feet of runway could be accommodated on existing airport

property, between S.H. 138 and Grantsville-Erda Road and recommended that the proposed 602-foot extension be divided and distributed to each end of the runway. The runway will need to be widened to 100 feet in accordance with the future application of ARC C-II dimensional criteria and/or the implementation of precision approach standards.

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## Airside Development Concepts

To best accommodate the projected operational demand at Tooele Valley Airport through the year 2018, several alternatives for airport and associated facility development were evaluated. Because all other airport functions relate to and revolve around the basic runway/taxiway layout, airside development alternatives must first be carefully examined and evaluated. Specific considerations include runway/taxiway design and dimensional standards, as well as surrounding airspace considerations and approach protection criteria needed to support the forecast use through the planning period. The main objective of the alternatives analysis presented herein is to analyze those alternatives, which will result in a runway/taxiway system capable of accommodating the forecast aviation activity.

### Alternatives

The following airside development alternatives were investigated.

**Alternative One. Resolve existing ARC B-II dimensional criteria deficiencies, lengthen runway by 600 feet, and maintain existing non-precision approach visibility minimums to Runway 16.**

#### Airside Development Recommendations:

- 1) Maintain ARC B-II dimensional criteria.
- 2) Maintain existing approach visibility minimums (RW 16: NP, RW 34: visual).
- 3) Realign segment of parallel taxiway system.
- 4) Proposed 602' runway extension (402': north, 200': south).
- 5) Upgrade existing VASIS with PAPIs.

#### Landside Development Recommendations:

- 1) Extend Airport Entrance Road to S.H. 138.
- 2) Relocate electric vault.
- 3) Relocate FBO hangar.
- 4) Install temporary water storage facility.
- 5) Relocate fuel farm.
- 6) Close west side unpaved public access trail.





- 7) Acquire property for Runway 34 RPZ (0.8 acre).

**Alternative Two. Resolve existing ARC B-II dimensional criteria deficiencies and upgrade to ARC C-II design standards, lengthen runway by 600 feet, and implement precision approach visibility minimums to Runway 16.**

**Airside Development Recommendations:**

- 1) Implement ARC C-II dimensional criteria.
- 2) Upgrade existing approach visibility minimums (RW 16: Precision, RW 34: visual)
- 3) Install Runway 16 MALSR.
- 4) Realign segment of parallel taxiway system.
- 5) Proposed 602' runway extension (402': north, 200': south).
- 6) Upgrade existing VASIS with PAPIs.

**Landside Development Recommendations:**

- 1) Relocate Airport Entrance Road and extend northward to S.H. 138.
- 2) Relocate electric vault.
- 3) Relocate FBO hangar.
- 4) Install temporary water storage facility.
- 5) Relocate fuel farm.
- 8) Close west side unpaved public access trail.
- 6) Obtain airspace approval for obstruction lighting or relocate six (6) existing executive hangars.
- 7) Acquire property @ southwest corner for Runway 34 RPZ, OFA, and buffer (5.4 acres).
- 8) Acquire property @ southeast quadrant for relocation of Airport Entrance Road and future aviation development (26.5 acres).
- 9) Acquire property for future Runway 16 RPZ (10.9 acres in fee/36.2 acres in easement).
- 10) Acquire property for future Runway 34 RPZ (14.0 acres).



**Alternative Three. Resolve existing ARC B-II dimensional criteria deficiencies and upgrade to ARC C-II design standards, lengthen runway by 600 feet, and maintain existing non-precision approach visibility minimums to Runway 16.**

**Airside Development Recommendations:**

- 1) Implement ARC C-II dimensional criteria.
- 2) Upgrade existing approach visibility minimums (RW 16: NP, RW 34: NP)
- 3) Realign segment of parallel taxiway system.
- 4) Proposed 600' runway extension (400': north, 200': south).
- 5) Upgrade existing VASIS with PAPIS.

**Landside Development Recommendations:**

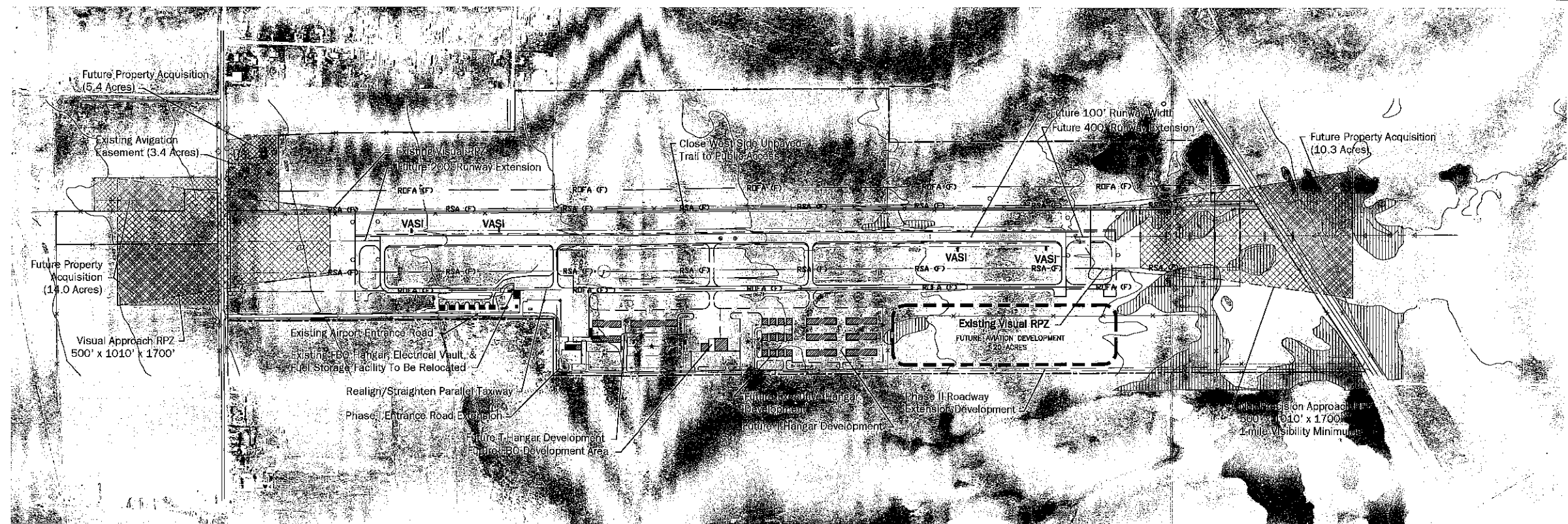
- 1) Extend Airport Entrance Road northward to S.H. 138.
- 2) Relocate electric vault.
- 3) Relocate FBO hangar.
- 4) Install temporary water storage facility.
- 5) Relocate fuel farm.
- 6) Close west side unpaved public access trail.
- 7) Acquire property @ southwest corner for Runway 34 RPZ, OFA, and buffer (5.4 acres).
- 8) Acquire property for future Runway 16 RPZ (10.3 acres).
- 9) Acquire property for future Runway 34 RPZ (14.0 acres).

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## **Recommended Development Plan**

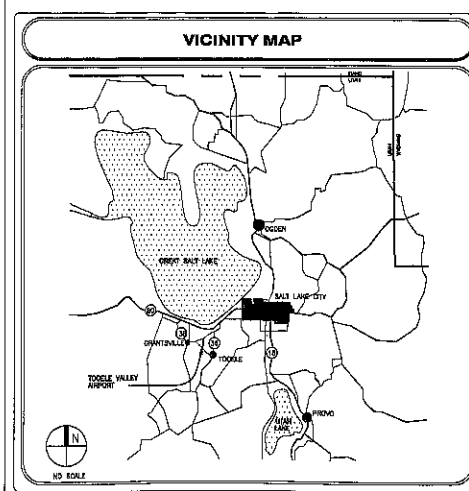
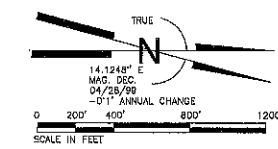
### **Introduction**

The proposed development alternatives for Tooele Valley Airport are intended to present the Salt Lake City Department of Airports (i.e., the airport sponsor) with a variety of options for future facility expansion and also illustrate some potential interim development configurations for the airport, with respect to the specified ARC designation and precision approach standards. Both the forecast operations and the goals of the airport sponsor, relative to aviation development and economic enhancement, were incorporated into the planning effort. Following a careful assessment of the potential impacts of each alternative, in conjunction with a detailed FAA precision approach evaluation (see FAA response letter in appendix), the airport sponsor's planning and engineering staff have chosen a variation of Alternative Two to best reflect the long-term development objectives of the airport. This development recommendation is presented in Figure D4, entitled *CONCEPTUAL DEVELOPMENT PLAN*.



### Alternative Three

ARC C-II Non-Precision Approach Standards



DESCRIPTION	REVISION
1. FMS HANGAR TO BE RELOCATED/REDESIGNED	
2. EXISTING HANGAR TO BE DEMOLISHED/RELOCATED	
3. MAINTENANCE BUILDING	
4. FUTURE T-HANGAR	
5. FUTURE T-HANGAR	
6. FUTURE EXECUTIVE HANGAR	
7. ELEC. VULT. TO BE RELOCATED	
8. REPOSITION FOR AIR HANGAR	
9. ELECTRICAL VULT. TO BE RELOCATED	
10. FUTURE NON-PRECISION BASED WEATHER BLDG.	
11. TOWER TO BE RELOCATED	
12. TOOELE COUNTY AIRCRAFT TO BE RELOCATED	
13. ENVIRONMENTAL QUALITY MONITOR TO BE RELOCATED	
14. USE OF EQUIPMENT OF TRANSPORTATION AGENCIES	

DESCRIPTION	EXISTING	REVISION
APPROACH VISIBILITY MINIMUMS	100	100
PART 77 APPROACH SURFACES	500/200	500/200
PAR. PAR. TO CATEGORIES	0/0	0/0
RUNWAY WIDTH AND LENGTH	70' x 8000'	70' x 8000'
PAVEMENT TYPE	ASPHALT	ASPHALT
PAVEMENT STRENGTH (IN 1000 LBS)	12.0 (MS)	12.0 (MS)
RUNWAY LIGHTING	VISUAL	VISUAL
RUNWAY MARKING	ASPHALT	ASPHALT
EFFECTIVE RUNWAY GRADIENT %	0.2	0.2
WEAR SURF EDGE WITH BUSHING LENGTH	0	0
RUNWAY LINE-OF-SIGHT	0	0
PRESENT ROAD ELEVATION	500	500
VISUAL APPROACH AIDS	NONE	NONE
INSTRUMENT APPROACH AIDS	NONE	NONE
CRITICAL AIRCRAFT-SPEED	10000' Super Ring #1	10000' Super Ring #1
CRITICAL AIRCRAFT-WEIGHT	10000' Super Ring #1	10000' Super Ring #1
RUNWAY SAFETY AREA	150' x 6100'	150' x 6100'
RUNWAY OBSTACLE FREE AREA	400' x 6100'	400' x 6100'
RUNWAY OBSTACLE FREE ZONE	100' x 6100'	100' x 6100'

ITEM	EXISTING	REVISION
AIRPORT ELEVATION (ASL)	4516'	4516'
AIRPORT REFERENCE POINT (ARP)	111.11, 111.11, 0.00'	111.11, 111.11, 0.00'
NEWLY MAX. TEMP. HIGHEST MONTH	85.37	85.37
COORDINATE AND COVERAGE SYSTEM	NAD 83	NAD 83
AIRPORT MAGNETIC VARIATION & DATE	14.1248° (04-28-99)	14.1248° (04-28-99)
AIRPORT REFERENCE CODE (ARC)	0-0	0-0
UNIFORM SERVICE LEVEL	RELIEF	RELIEF
TAXIWAY LIGHTING	EDGE	EDGE
TAXIWAY SIGNING	CENTRALINE	CENTRALINE
APPROVE & REMOVAL MINUTES	100	100
UNIFORM LIGHTING	12.0	12.0
CONTROL TOWER (MFT)	NONE	NONE
AIRPORT OBSTACLE (FEET)	10000', 10000'	10000', 10000'

ITEM	EXISTING	FUTURE
BUILDING RESTRICTION LINE	---	---
PROPOSED PROPERTY LINE	---	---
ENCLOSURE	---	---
IMMEDIATE PROTECTION ZONE	---	---
BUILDINGS	---	---
AIRFIELD PAVEMENT	---	---
FUEL STORAGE	---	---
SEASON	---	---
LIGHTED WIND CONE & SENSITIZED CIRCLE	---	---
PRECISION APPROACH PATH INDICATOR (PAPI)	---	---
RUNWAY END IDENTIFIER LIGHTS (REIL)	---	---
RUNWAY SAFETY AREA (RSA)	---	---
RUNWAY OBSTACLE FREE AREA (ROFA)	---	---
JURISDICTIONAL WETLANDS AREA (DEVELOP)	---	---
POWER POLES	---	---
WELLS	---	---

NON-STANDARD CONDITIONS							
ITEM	AIRPLANE DESIGN GROUP	STANDARD	NON-STANDARD CONDITION	REMARKS			
	EXISTING	FUTURE	EXISTING	FUTURE			
NO 10/24 CRASH FREE AREA BENCH			500'	200'	400'	NONE	TO BE RESOLVED WITHIN 1-YEAR CIP

REVISIONS		
NO.	DESCRIPTION	DATE

NOTE: 1. THIS DRAWING SHOULD NOT BE USED AS A BASIS FOR PLANNING OR DESIGN.  
 2. HORIZONTAL DIMENSIONS DERIVED FROM CENTER POINTS, UNLESS OTHERWISE NOTED.  
 3. TOPOGRAPHICAL INFORMATION DERIVED FROM QUINCY AERIALS 3-3-82.  
 4. PROPERTY LINES BASED ON RECORDS ON FILE WITH THE COUNTY RECORDS AUTHORITY 8-1-91.  
 5. JURISDICTIONAL WETLANDS AREA DETERMINED BY TOWNE, ENVIRONMENTAL CONSULTING, INC. 12-19-92.  
 6. ALL DATA SUBJECT TO SURVEY ADJUSTMENTS AT THE TIME OF FINAL DESIGN.  
 7. ALL DATA/LINE COORDINATE INFORMATION IS BASED ON NAD 83 DATUM.

**TOOELE VALLEY AIRPORT**  
TOOELE COUNTY, UTAH

**Alternative Three**

Barnard Dunkelberg & Company  
Tulsa, Oklahoma

FIGURE NUMBER: \_\_\_\_\_  
 METRIC SCALE: \_\_\_\_\_  
 SCALE: 1" = 400'  
 DATE: JUNE, 1999  
 DRAWING NUMBER: \_\_\_\_\_

Figure D3 Alternative Three



It is essential that the initial development of the airport be commensurate with the anticipated needs and requirements of the airport users; however, the long-term expansion capabilities of the facility must also be considered and planned for to ensure the future success of the project.

## Runway System

The following development recommendations for Runway 16/34 are presented in the following text.

- **Dimensions:** The runway is to be extended approximately 402 feet to the north and 200 feet to the south to provide a future length of approximately 6,100 feet. The existing runway width is to be widened from 75 feet to 100 feet in accordance with the future application of ARC C-II dimensional criteria and/or the implementation of precision approach standards.
- **Pavement:** Upgrade existing gross weight bearing capacity of 12,500 lbs. single wheel to 30,000 lbs. single wheel to better accommodate the forecast business jet fleet.
- **ARC Dimensional Criteria:** Maintain existing ARC B-II design standards, but protect for future upgrade to ARC C-II criteria.
- **Instrument Approach Criteria:** Protect for the future implementation of improved approach visibility minimums to each runway end (i.e., ½-mile visibility minimums to Runway 16 and 1-mile visibility minimums to Runway 34).
- **Runway Lighting:** Upgrade existing VASIs with PAPIs at each runway end. Install REILs to serve each runway end and ultimately upgrade the Runway 16 REILs with a Medium Intensity Approach Lighting System with Runway Alignment Indicator Lights (MALSR).

## Taxiway System

The following development recommendations for the taxiway system are presented in the following text.

- **Dimensions:** Realign/straighten an approximate 500-foot segment of the existing parallel taxiway system to achieve a 400-foot runway centerline to parallel taxiway centerline separation for the full length of the runway. The parallel taxiway system is also to be extended to the north and the south in conjunction with the proposed runway extension project.
- **Pavement:** Upgrade existing gross weight bearing capacity commensurate with the runway pavement improvements.

- Taxiway Lighting: All new taxiway development would include the installation of MITLS, including signs and markings.

### Property/Easement Acquisition

The Salt Lake City Corporation presently owns sufficient fee simple and aviation easement interests at the airport to accommodate the existing ARC B-II non-precision approach standards. However, based on the previous airfield and instrument approach development recommendations, the following property/easement acquisition requirements are presented.

#### **Runway 16 RPZ (Future).**

- Property Acquisition: 13.1 acres.
- Property or Easement Acquisition: 19.5 acres.

#### **Runway 34 RPZ (Future).**

- Property Acquisition: 17.7 acres.

#### **East Side Development Expansion (Future).**

- Property Acquisition: 26.7 acres.

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## **Landside Development Concepts**

### Introduction

With the framework of the airport's ultimate airside development identified, the placement of needed landside facilities can now be analyzed. In general, landside facilities consist of terminal area development, aircraft parking aprons, support facility development, hangar development areas, and airport access. The overall objective of the landside development planning at the airport is the provision of facilities, which are conveniently located and accessible to the community, and accommodate the specific requirements of airport users.

Based on the forecast aviation activity levels and resultant facility requirements determination, the existing demand for aircraft tiedown apron is primarily driven by current deficiencies in aircraft storage facilities. Therefore, various undeveloped parcels of airport property, including potential reuse development areas will be evaluated with respect to aviation and aviation-related development capability.



## General Aviation Development

As identified in the 1994 MP, the existing FBO hangar and associated itinerant apron are to be relocated to a new development site on the east side of the airport, near the midpoint of the runway. New T-hangar and executive hangar development areas are to be located on both the north and south sides of the new FBO facility. It is recommended that the six (6) existing privately-owned executive hangars, located south of the general aviation ramp, be maintained and obstruction lighted, if required, following an FAA airspace determination. In addition, two (2) temporary trailers, utilized by an existing skydiving operator, will ultimately have to be relocated to accommodate the development of new T-hangar facilities. The ALP will continue to illustrate all of the airport's existing and future landside development along the east side of the runway.

## Vehicular Access

Ground access is an important element in the overall ability of an airport to function properly. Not only is it vital that airport users have easy access to and from the airport's general aviation facilities using ground transportation, but also surface transported freight must be easily shipped to and from the businesses located on the airport. In addition, because airports are employment centers, proper access for people employed on airport property must be provided.

In accordance with the landside development recommendations presented in the 1994 MP, this ALP document will illustrate the future extension of Airport Road to the north in phases. Initial extension of the road will serve the new FBO hangar development area and be extended as needed to serve the future development of adjacent aircraft storage facilities. Ultimately, Airport Road will be fully extended to the north, connecting with S.H. 138 and a new segment will be constructed at the south end of the airport to accommodate future aviation expansion development.

## Aviation Support Development

Aviation support functions are those which are required for the airport to operate properly, but are not part of the runway/taxiway system and do not relate directly to aircraft storage facilities. The support facilities at Tooele Valley Airport that require development recommendations include the fuel storage facility and electrical vault.

**Fuel Storage Facility.** The airport's existing fuel farm, which is owned and operated by the FBO (American Aviation, Inc.), is to be relocated in conjunction with the FBO hangar relocation project. The new fuel farm, which is to consist of one (1) 20,000-gallon self contained, double wall, above ground AVGAS storage tank, is to be located

south of the new FBO hangar and adjacent to the new apron area. The facility is to be designed and developed in compliance with all current EPA guidelines and for future expansion capabilities in this location.

**Electric Vault.** The airport electric vault has also been relocated in conjunction with the FBO hangar relocation project. The new facility is located north of the existing airport maintenance building and just south of the NDB antenna facility.

## Airport Plans & Development Program

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### Introduction

The plan for the future development of Tooele Valley Airport has evolved from an analysis of many considerations. Among these are: aviation demand; aviation activity forecasts; aircraft operational characteristics; facility requirements; and environmental considerations. In addition, the general direction or thrust of future airport development, as expressed by the Salt Lake City Department of Airports' officials, airport users, and as characterized in the previously noted statement of goals, served as a basis for this airport planning process.

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### Airport Plans

Because previous chapters have established and quantified the future development needs of the airport, the various elements of the selected plan are categorically reviewed here in a graphic format. A brief written description of the individual drawings, represented in the set of *Airport Plans* for Tooele Valley Airport, is accompanied by a graphic description presented in the form of the *Airport Layout Plan*, the *Airspace Plans*, the *Inner Portion of the Approach Surface Plans*, and the *Terminal Area Drawing*.

#### Airport Layout Plan

The Airport Layout Plan (ALP), which illustrates both airside and landside facilities, is a graphic depiction of the existing and ultimate airport facilities that will be required to enable the airport to properly accommodate the forecast future demand. In addition, the ALP also provides detailed information on both airport and runway design criteria, which is necessary to define relationships with applicable standards. The following

illustration, entitled *AIRPORT LAYOUT PLAN*, illustrates the major components of the future airport Development Plan.

### Airspace Plan

The Airspace Plan for the airport is based upon Federal Aviation Regulations (FAR) Part 77, *Objects Affecting Navigable Airspace*. In order to protect the airport's airspace and approaches from hazards that could affect the safe and efficient operation of aircraft, federal criteria contained in the FAR Part 77 document have been established to provide guidance in controlling the height of objects in the vicinity of the airport. FAR Part 77 criteria specify a set of imaginary surfaces which, when penetrated, designate an object as being an obstruction.

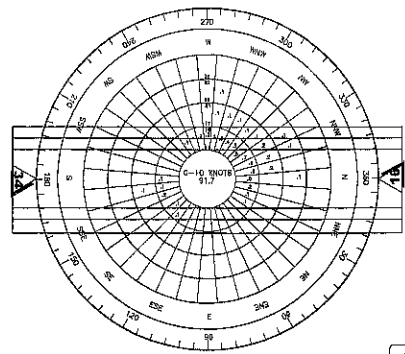
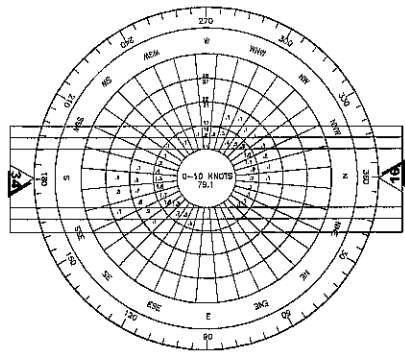
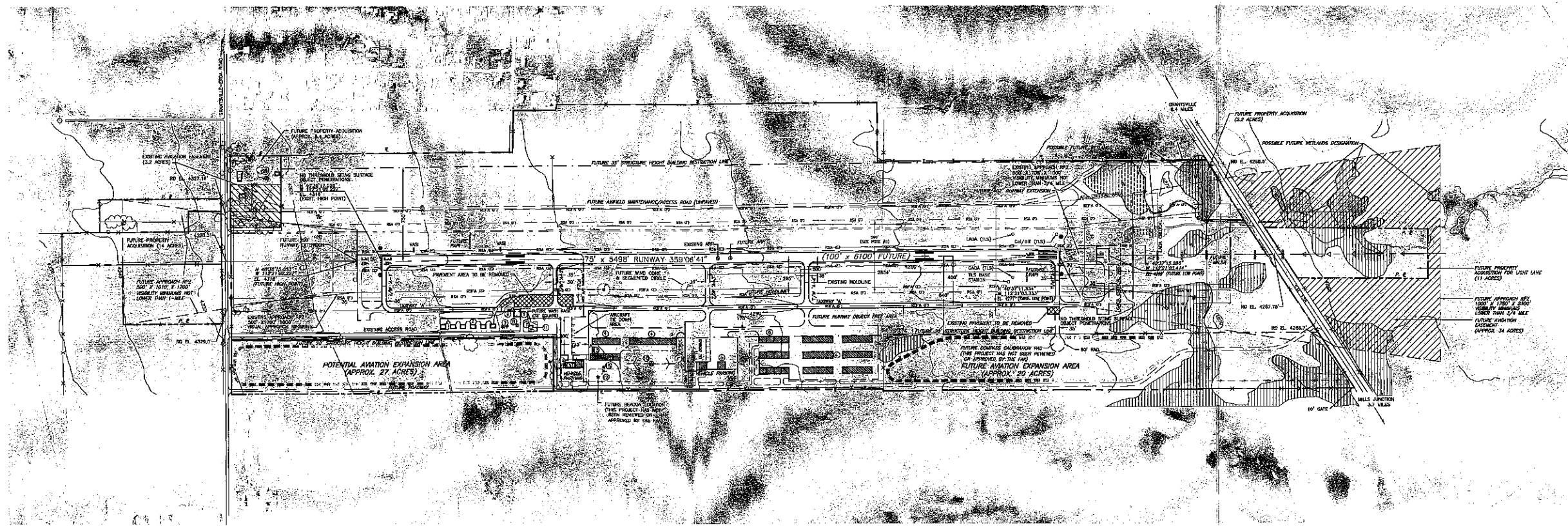
The Airspace Plan, which is illustrated in figures E2, E3, and E4, provides plan and profile views, which depict these criteria as they specifically relate to Tooele Valley Airport. The plan is based on the ultimate planned runway configuration and lengths, along with the ultimate planned approaches to each runway end. Therefore, it is based on larger-than-utility airport criteria with a precision instrument approach to Runway 16 and a non-precision approach to Runway 34.

### Inner Portion of the Approach Surface Plans

The Inner Portion of the Approach Surface Drawings, which are depicted in Figures E5 and E6, provide a more detailed view of the inner portions of the Part 77 imaginary approach surfaces and the Runway Protection Zones (RPZs) with both plan and profile delineations. They are intended to facilitate identification of the roadways, utility lines, railroads, structures, and other possible obstructions that may lie within the confines of the inner approach surface area associated with each runway end. The illustrations also depict the approach clearance requirements specified by threshold siting criteria, as well as FAR Part 77 criteria. As with the Airspace Plan, the Inner Portion of the Approach Surface Drawings are based on the ultimate planned runway configuration and length, along with the ultimate planned approaches to each runway.

### Terminal Area Drawing

The *TERMINAL AREA DRAWING* presents a more detailed view of the proposed landside development of the new FBO facility, general aviation hangar development areas, and support facilities.

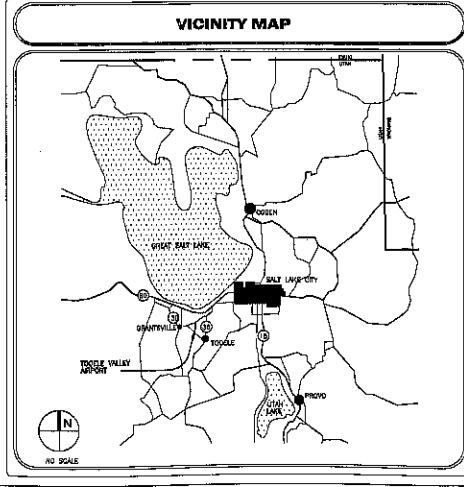
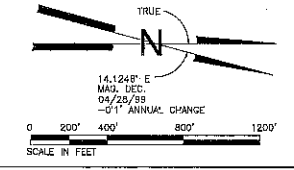


**IFR WIND ROSE**

SOURCE: NATIONAL CLIMATIC DATA CENTER  
STATION 24127 - SALT LAKE CITY, UTAH  
PERIOD: 1989 - 1991

DIRECTION	% COVERAGE	CROSSWIND
10-34	97.35	10.5 KNOTS
15-34	98.54	12 KNOTS
18-34	99.47	16 KNOTS

(1) PERCENT OF LESS THAN 1000 FT AGL WINDS TO BE REPORTED TO 200' HEIGHT FROM THE TRUE WIND.



**ALL WEATHER WIND ROSE**

SOURCE: NATIONAL CLIMATIC DATA CENTER  
STATION 24127 - SALT LAKE CITY, UTAH  
PERIOD: 1989 - 1991

DIRECTION	% COVERAGE	CROSSWIND
10-34	98.83	10.5 KNOTS
15-34	99.5	15 KNOTS
18-34	99.5	18 KNOTS

**BUILDING LEGEND**

DESCRIPTION	SYMBOL
1. FUTURE WINDS TO BE REMOVED/RELOCATED	4337
2. EXISTING WINDS TO BE REMOVED/RELOCATED	4338
3. EXISTING BUILDING	4339
4. FUTURE 15' WINDS	4340
5. FUTURE 15' WINDS	4341
6. FUTURE 15' WINDS	4342
7. FUTURE 15' WINDS	4343
8. FUTURE 15' WINDS	4344
9. FUTURE 15' WINDS	4345
10. FUTURE 15' WINDS	4346
11. TRAIL TO BE RELOCATED	4347
12. TOOELE COUNTY AIRPORTS TO BE RELOCATED	4348
13. TOOELE COUNTY AIRPORTS TO BE RELOCATED	4349
14. FUTURE AIRPORTS	4350
15. ELECTRICAL WIRE	4351

**RUNWAY DATA**

DESCRIPTION	EXISTING	FUTURE
APPROACH VISIBILITY MINIMUMS	1-WIND VISUAL	1/2-SEE/PSYCH
PART 77 APPROACH SURFACES	341/20.1	20.1/20.1
PART 77 DATA SURFACES	341	20.1
RUNWAY WIDTH AND LENGTH	75' X 6488'	100' X 6100'
PAVEMENT TYPE	ASPHALT	ASPHALT
PAVEMENT STRENGTH (ON 1000 LBS)	12.5 (IAP)	30 (IAP)
RUNWAY LIGHTING	WIS	WIS
RUNWAY MARKING	NON-PREC.	PREC./NON-PREC.
EFFECTIVE RUNWAY SPREADER R	82	82
MINIMUM OBSTACLE HEIGHT	82	82
RUNWAY LINE-OF-SIGHT	82	82
APPROACH REFERENCE CODE (ARC)	3	3
VISUAL APPROACH AID	VAR	VAR
INSTRUMENT APPROACH AID	N/A	N/A
CRITICAL APPROACH-SLOPE	1:20	1:20
CRITICAL APPROACH-WINDSPEED	120 KTS	120 KTS
CRITICAL APPROACH-INDICATOR	120 KTS	120 KTS
RUNWAY SAFETY AREA (SEE NOTE #8)	150' X 6100'	150' X 6100'
RUNWAY CLEARANCE ZONE	150' X 6100'	150' X 6100'
OBSTRUCTION FREE ZONE (OFZ)	150' X 6100'	150' X 6100'
RUNWAY END COORDINATES	4371/4318	4371/4318
RUNWAY END ELEVATIONS	4371/4318	4371/4318

**NON-STANDARD CONDITIONS**

ITEM	APPLICABLE DESIGN GROUP	STANDARD	NON-STANDARD CONDITION	REMARKS
	EXISTING	PIPELINE	EXIST-10	FUTURE

**AIRPORT DATA**

ITEM	EXISTING	FUTURE
AIRPORT ELEVATION (AMSL)	4318'	4318'
AIRPORT REFERENCE POINT (ARP)	4318'	4318'
MEAN MAX TEMP. HOTTEST MONTH	93.37	93.37
COLDWIND WIND COVERAGE VTY/HR	-	-
AIRPORT MAINTENANCE VARIATION & SIZE	1.4 LEMAS (54-83-99)	1.4 LEMAS (54-83-99)
AIRPORT REFERENCE CODE (ARC)	3	3
ALPHA SERVICE LEVEL	RELEVANT	RELEVANT
AXIOM LIGHTING	NONE	NONE
TAXIWAY SURFACES	CONCRETE/ASPH	CONCRETE/ASPH
AIRPORT & TERMINAL MARKINGS	NONE	NONE
UNIFORM LIGHTS	NONE	NONE
CONTROL TOWER (DMS)	NONE	NONE
AIRPORT PROPERTY (ASRES)	APPROX. 800	APPROX. 400

**LAYOUT PLAN LEGEND**

ITEM	EXISTING	FUTURE
BUILDING RESTRICTION LINE	---	---
AIRPORT PROPERTY LINE	---	---
PERMISSION APPROACH PATH AND/ORION (PAP)	---	---
RUNWAY END INDICATOR LIGHTS (REIL)	---	---
RUNWAY PROTECTION TONE	---	---
BUILDINGS	---	---
PAVED PAVEMENT	---	---
FUEL STORAGE	---	---
ROADS	---	---
NON-OPERATIONAL WIND BLINDS	---	---
LIGHTS WIND CONE & REMOVED CIRCLE	---	---
PERMISSION APPROACH PATH AND/ORION (PAP)	---	---
RUNWAY END INDICATOR LIGHTS (REIL)	---	---
VISUAL APPROACH SLOPE INDICATOR (VASI)	---	---
RUNWAY END AREA (REIL)	---	---
RUNWAY END INDICATOR LIGHTS (REIL)	---	---
POTENTIAL WINDS AREA (REMOVED)	---	---
POWER LINES	---	---
TREES	---	---
PAVED PAVEMENT TO BE REMOVED	---	---

**SPONSOR APPROVAL**

NAME/TITLE	DATE

**REVISIONS**

NO.	DESCRIPTION	DATE

NOTE: 1. THIS DRAWING SHOULD NOT BE USED AS A STANDARD FOR PLANNING OR DESIGN.  
2. METRIC DIMENSIONS OBTAINED FROM UNITED STATES GEOLOGICAL SURVEY.  
3. SURVEYING DATA FROM TOOELE COUNTY, UTAH, 1989-1991.  
4. SURVEYING DATA FROM TOOELE COUNTY, UTAH, 1989-1991.  
5. SURVEYING DATA FROM TOOELE COUNTY, UTAH, 1989-1991.  
6. ALL UNITS AND COORDINATE INFORMATION IS BASED ON NAD 83 DATUM.  
7. EXISTING AREA FOR 15' AIRPORT SURVEY OR DRAWING FOR CLIMATE DEVELOPMENT GUIDANCE.

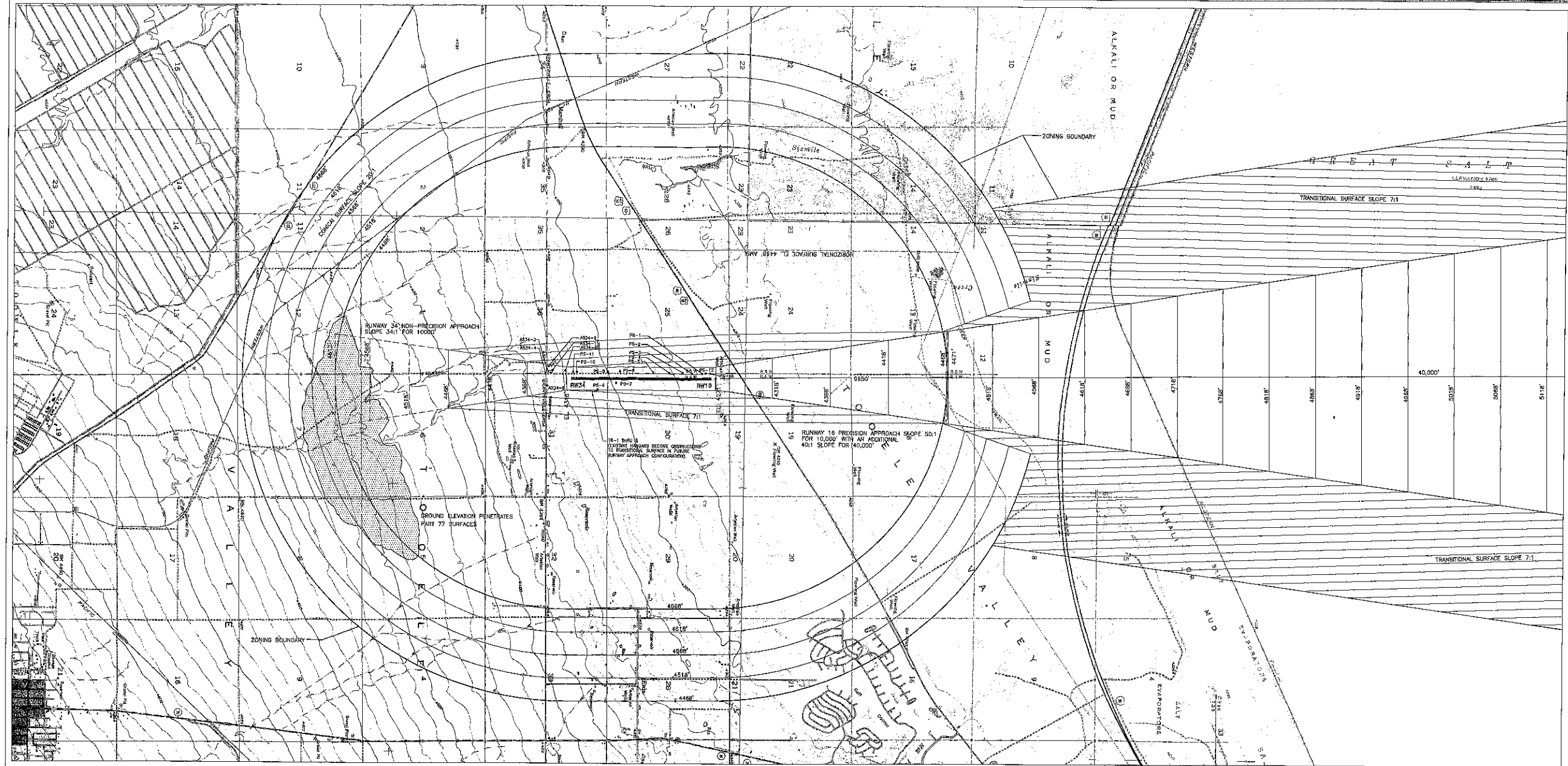
**TOOELE VALLEY AIRPORT**  
TOOELE COUNTY, UTAH

**AIRPORT LAYOUT PLAN**

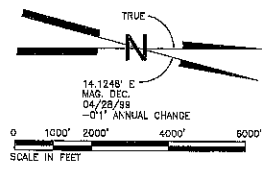
**Barnard Dunkelberg & Company**  
Tulsa, Oklahoma

FIGURE NUMBER: \_\_\_\_\_  
METRIC SCALE: \_\_\_\_\_  
SCALE: 1" = 400'  
DATE: AUG. 5, 2000  
DRAWING NUMBER: 1 OF 8

Figure E1 Airport Layout Plan



CONICAL SURFACE PLAN VIEW



REVISIONS		
NO.	DESCRIPTION	DATE

OBSTRUCTIONS											
PRIMARY SURFACE				APPROACH SURFACE				INNER TRANSITIONAL SURFACE			
#	OBSTRUCTION ITEM	PENETRATION	DISPOSITION	#	OBSTRUCTION ITEM	PENETRATION	DISPOSITION	#	OBSTRUCTION ITEM	PENETRATION	DISPOSITION
PS-1	FENCE POST EL. 4280'	11'	TO BE REMOVED/RELOCATED	AS24-1	TREE EL. 4376'	38.75'	TO BE TRIMMED/REMOVED	TS-1	HANGAR APPROX. EL. 4325'	12'	TO BE OB LIGHTED
PS-2	FENCE POST EL. 4282'	9.0'	TO BE REMOVED/RELOCATED	AS24-2	TREE EL. 4354'	48.16'	TO BE TRIMMED/REMOVED	TS-2	HANGAR APPROX. EL. 4325'	13'	TO BE OB LIGHTED
PS-3	TREE EL. 4293'	17.2'	TO BE TRIMMED/REMOVED	AS24-3	TREE EL. 4369'	48.17'	TO BE TRIMMED/REMOVED	TS-3	HANGAR APPROX. EL. 4325'	14'	TO BE OB LIGHTED
PS-4	FENCE POST EL. 4290'	6.8'	TO BE REMOVED/RELOCATED	AS24-4	POLE EL. 4363'	13.80'	TO BE REMOVED/RELOCATED	TS-4	HANGAR APPROX. EL. 4325'	15'	TO BE OB LIGHTED
PS-5	FENCE POST EL. 4294'	2.2'	TO BE REMOVED/RELOCATED	AS24-5	POLE EL. 4363'	18.51'	TO BE REMOVED/RELOCATED	TS-5	HANGAR APPROX. EL. 4325'	16'	TO BE OB LIGHTED
PS-6	FENCE POST EL. 4304'	6.5'	TO BE REMOVED/RELOCATED	AS24-6	TREE EL. 4361'	41.78'	TO BE TRIMMED/REMOVED	TS-6	HANGAR APPROX. EL. 4325'	17'	TO BE OB LIGHTED
PS-7	LIGHTED WINDSOCK EL. 4324'	23.0'	FRANGIBLE WIND TO REMAIN								
PS-8	BUSH EL. 4316'	14.2'	TO BE TRIMMED/REMOVED								
PS-9	BEACON AND NDB EL. 4390'	05'	TO BE OB LIGHTED IF REQUIRED								
PS-10	FENCE POST EL. 4319'	5.4'	TO BE REMOVED/RELOCATED								
PS-11	FENCE POST EL. 4330'	6.2'	TO BE REMOVED/RELOCATED								
PS-12	FENCE POST EL. 4277'	8'	TO BE REMOVED/RELOCATED								
PS-13	FENCE POST EL. 4277'	0'	TO BE REMOVED/RELOCATED								

NOTE: 1. THIS DRAWING SHOULD NOT BE USED AS A STANDARD FOR PLANNING OR DESIGN.  
 2. PROFILE SHOWS APPROACH AND PRIMARY OBSTACLE CONSTRUCTION ONLY.  
 3. EXISTING OBSTRUCTIONS TAKEN FROM AOB OBSTRUCTION CHART 005844 "UNDER FIELD-TOOELE VALLEY AIRPORT, TOOELE, UTAH" DATE PUBLISHED OCTOBER 1996.

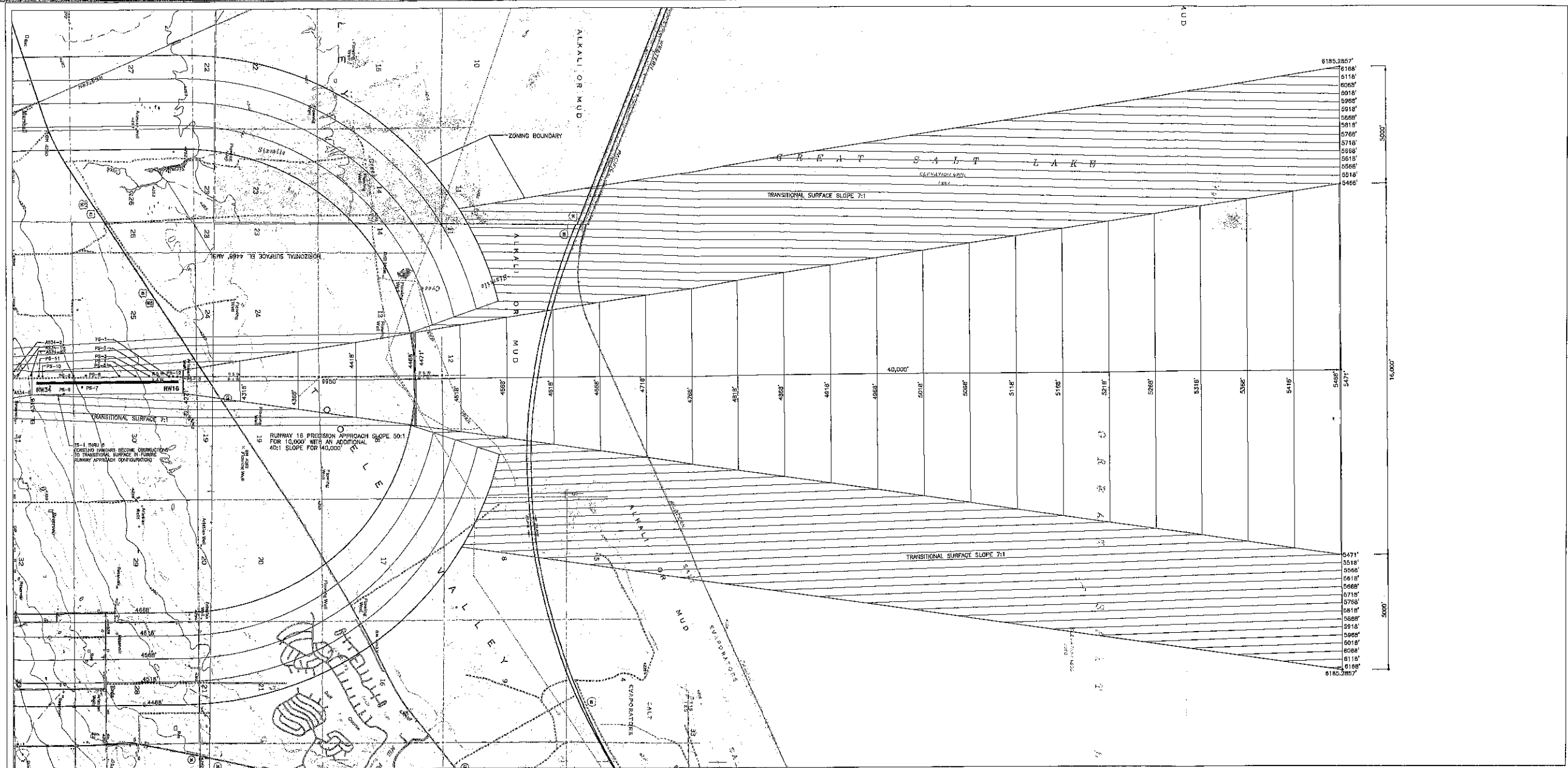
**TOOELE VALLEY AIRPORT**  
TOOELE COUNTY, UTAH

**AIRPORT AIRSPACE DRAWING**  
CONICAL SURFACE PLAN

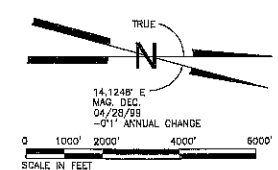
**Barnard Dunkelberg & Company**  
Tulsa, Oklahoma

FIGURE NUMBER: \_\_\_\_\_  
 METRIC SCALE: \_\_\_\_\_  
 SCALE: 1" = 2000'  
 DATE: AUG. 5, 2000  
 DRAWING NUMBER: 2 OF 8

Figure E2 Airport Airspace Drawing (Plan)



EXTENDED APPROACH PLAN VIEW



REVISIONS		
NO.	DESCRIPTION	DATE

OBSTRUCTIONS											
PRIMARY SURFACE			APPROACH SURFACE			INNER TRANSITIONAL SURFACE					
#	OBSTRUCTION ITEM	PENETRATION	DISPOSITION	#	OBSTRUCTION ITEM	PENETRATION	DISPOSITION	#	OBSTRUCTION ITEM	PENETRATION	DISPOSITION
PS-1	FENCE POST EL. 4280'	11'	TO BE REMOVED/RELOCATED	AS34-1	TREE EL. 4376'	38.78'	TO BE TRIMMED/REMOVED	TS-1	HANGAR APPROX. EL. 4325'	12'	TO BE LIGHTED
PS-2	FENCE POST EL. 4282'	0.8'	TO BE REMOVED/RELOCATED	AS34-2	TREE EL. 4384'	49.16'	TO BE TRIMMED/REMOVED	TS-2	HANGAR APPROX. EL. 4325'	13'	TO BE LIGHTED
PS-3	TREE EL. 4283'	17.2'	TO BE TRIMMED/REMOVED	AS34-3	TREE EL. 4365'	49.17'	TO BE TRIMMED/REMOVED	TS-3	HANGAR APPROX. EL. 4325'	14'	TO BE LIGHTED
PS-4	FENCE POST EL. 4280'	0.8'	TO BE REMOVED/RELOCATED	AS34-4	POLE EL. 4383'	13.87'	TO BE REMOVED/RELOCATED	TS-4	HANGAR APPROX. EL. 4325'	15'	TO BE LIGHTED
PS-5	FENCE POST EL. 4284'	6.2'	TO BE REMOVED/RELOCATED	AS34-5	POLE EL. 4383'	18.51'	TO BE REMOVED/RELOCATED	TS-5	HANGAR APPROX. EL. 4325'	16'	TO BE LIGHTED
PS-6	FENCE POST EL. 4304'	6.6'	TO BE REMOVED/RELOCATED	AS34-6	TREE EL. 4381'	41.75'	TO BE TRIMMED/REMOVED	TS-6	HANGAR APPROX. EL. 4325'	17'	TO BE LIGHTED
PS-7	LIGHTED WINDSOCK EL. 4324'	23.8'	FRAGILE INWARD TO REMAIN								
PS-8	BUSH EL. 4312'	14.2'	TO BE TRIMMED/REMOVED								
PS-9	BEACON AND NDB EL. 4360'	6.9'	TO BE ON LIMITED IF REQUIRED								
PS-10	FENCE POST EL. 4318'	6.4'	TO BE REMOVED/RELOCATED								
PS-11	FENCE POST EL. 4320'	6.2'	TO BE REMOVED/RELOCATED								
PS-12	FENCE POST EL. 4277'	8'	TO BE REMOVED/RELOCATED								
PS-13	FENCE POST EL. 4277'	8'	TO BE REMOVED/RELOCATED								

NOTE: 1. THIS DRAWING SHOULD NOT BE USED AS A STATEMENT FOR PLANNING OR DESIGN.  
 2. PROFILE SHOWS APPROACH AND PRIMARY SURFACE OBSTRUCTIONS ONLY.  
 3. EXISTING OBSTRUCTIONS TAKEN FROM AEC OBSTRUCTION CHART 002844 "SOUTHWEST FIELD-TOOELE VALLEY AIRPORT, TOOELE, UTAH" DATE PUBLISHED OCTOBER 1986.

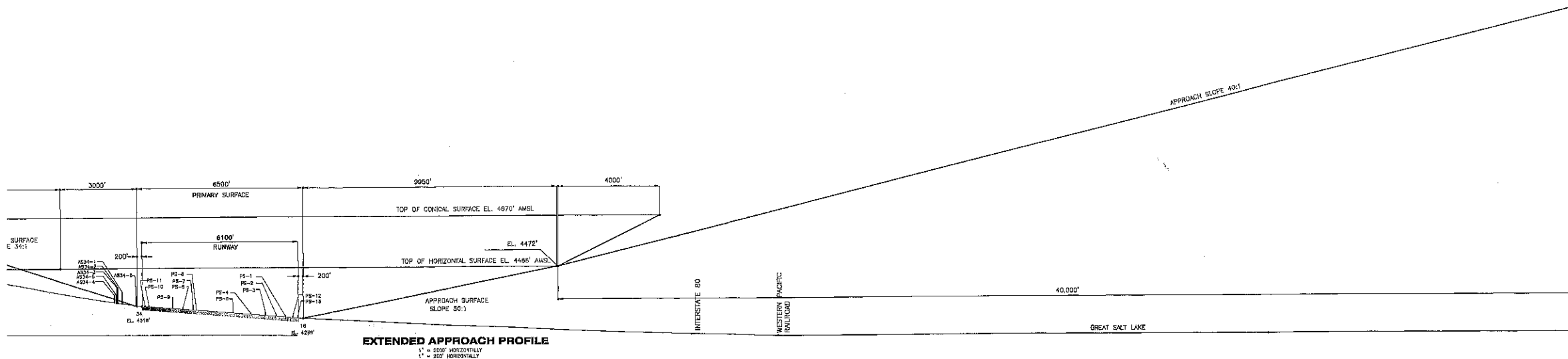
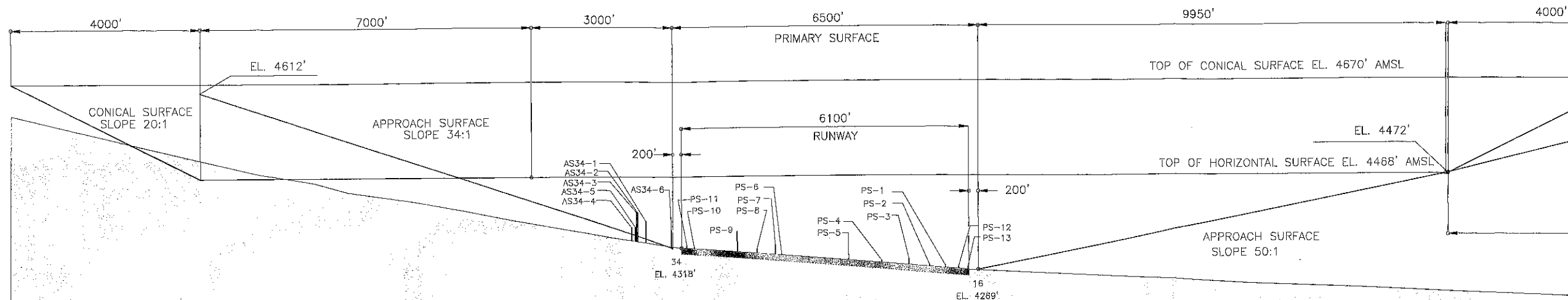
**TOOELE VALLEY AIRPORT**  
TOOELE COUNTY, UTAH

**AIRPORT AIRSPACE DRAWING**  
EXTENDED APPROACH PLAN

**Barnard Dunkelberg & Company**  
Tulsa, Oklahoma

FIGURE NUMBER: \_\_\_\_\_  
 METRIC SCALE: \_\_\_\_\_  
 SCALE: 1" = 2000'  
 DATE: AUG. 8, 2000  
 DRAWING NUMBER: 3 OF 8

Figure E3 Airport Airspace Drawing/Runway 16 Extended Approach (Plan)



REVISIONS		
NO.	DESCRIPTION	DATE

OBSTRUCTIONS												
#	OBSTRUCTION ITEM	PRIMARY SURFACE			APPROACH SURFACE			INNER TRANSITIONAL SURFACE				
		PENETRATION	DISPOSITION		#	OBSTRUCTION ITEM	PENETRATION	DISPOSITION	#	OBSTRUCTION ITEM	PENETRATION	DISPOSITION
PS-1	FENCE POST EL. 4280'	11'	TO BE REMOVED/RELOCATED		AS34-1	TREE EL. 4376'	36.78'	TO BE TRIMMED/REMOVED	TS-1	HANGAR APPROX. EL. 4325'	12'	TO BE OB LIGHTED
PS-2	FENCE POST EL. 4282'	9.8'	TO BE REMOVED/RELOCATED		AS34-2	TREE EL. 4384'	49.16'	TO BE TRIMMED/REMOVED	TS-2	HANGAR APPROX. EL. 4325'	13'	TO BE OB LIGHTED
PS-3	TREE EL. 4283'	17.2'	TO BE TRIMMED/REMOVED		AS34-3	TREE EL. 4385'	49.17'	TO BE TRIMMED/REMOVED	TS-3	HANGAR APPROX. EL. 4325'	14'	TO BE OB LIGHTED
PS-4	FENCE POST EL. 4280'	9.8'	TO BE REMOVED/RELOCATED		AS34-4	POLE EL. 4383'	13.87'	TO BE REMOVED/RELOCATED	TS-4	HANGAR APPROX. EL. 4325'	16'	TO BE OB LIGHTED
PS-5	FENCE POST EL. 4284'	8.2'	TO BE REMOVED/RELOCATED		AS34-5	POLE EL. 4383'	16.51'	TO BE REMOVED/RELOCATED	TS-5	HANGAR APPROX. EL. 4325'	16'	TO BE OB LIGHTED
PS-6	FENCE POST EL. 4304'	6.8'	TO BE REMOVED/RELOCATED		AS34-6	TREE EL. 4381'	41.76'	TO BE TRIMMED/REMOVED	TS-6	HANGAR APPROX. EL. 4325'	17'	TO BE OB LIGHTED
PS-7	LIGHTED WINDSOCK EL. 4324'	23.8'	FRAGILE NAWIG TO REMAIN									
PS-8	BEACON AND NDB EL. 4380'	14.2'	TO BE TRIMMED/REMOVED									
PS-9	BEACON AND NDB EL. 4380'	14.2'	TO BE OB LIGHTED IF REMOVED									
PS-10	FENCE POST EL. 4319'	5.4'	TO BE REMOVED/RELOCATED									
PS-11	FENCE POST EL. 4320'	6.2'	TO BE REMOVED/RELOCATED									
PS-12	FENCE POST EL. 4277'	5'	TO BE REMOVED/RELOCATED									
PS-13	FENCE POST EL. 4277'	5'	TO BE REMOVED/RELOCATED									

NOTE: 1. THIS DRAWING SHOULD NOT BE USED AS A STANDARD FOR PLANNING OR DESIGN.  
 2. PROFILE SHOWS APPROACH AND PRIMARY SURFACE OBSTRUCTIONS ONLY.  
 3. EXISTING OBSTRUCTIONS "WEEK FROM NOW" OBSTRUCTION DATA 02844 "SOUNDER FIELD-TOOLE VALLEY AIRPORT, TOOLEE COUNTY, UTAH" DATE PUBLISHED OCTOBER 1994.

**TOOLEE VALLEY AIRPORT**  
 TOOLEE COUNTY, UTAH

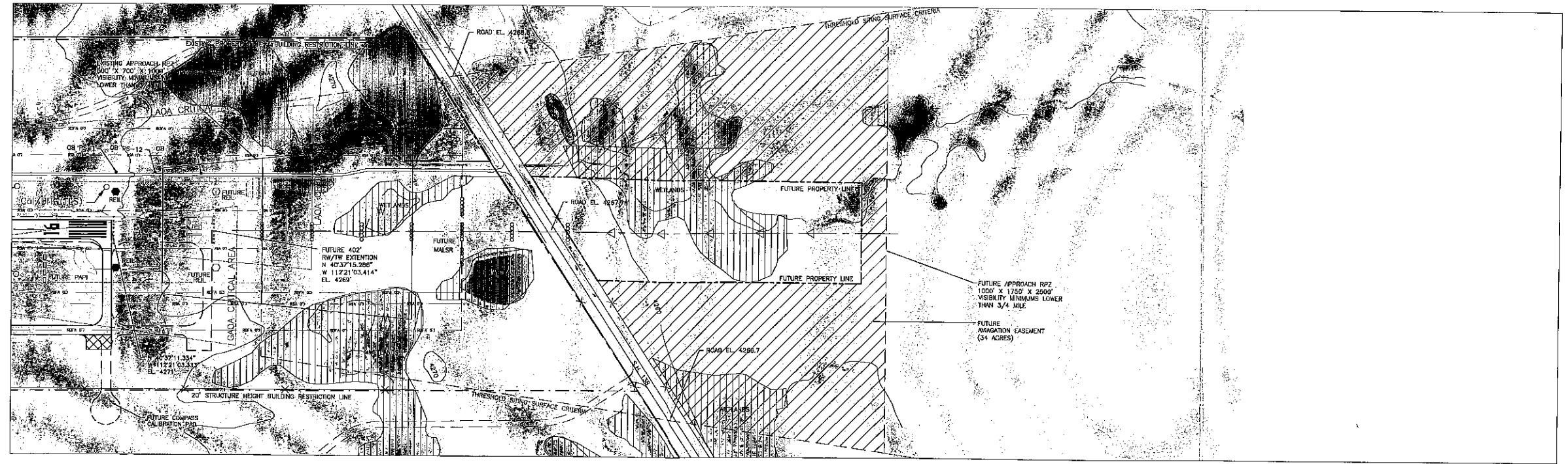
**AIRPORT AIRSPACE DRAWING**  
 PROFILE

**Barnard Dunkelberg & Company**  
 Tulsa, Oklahoma

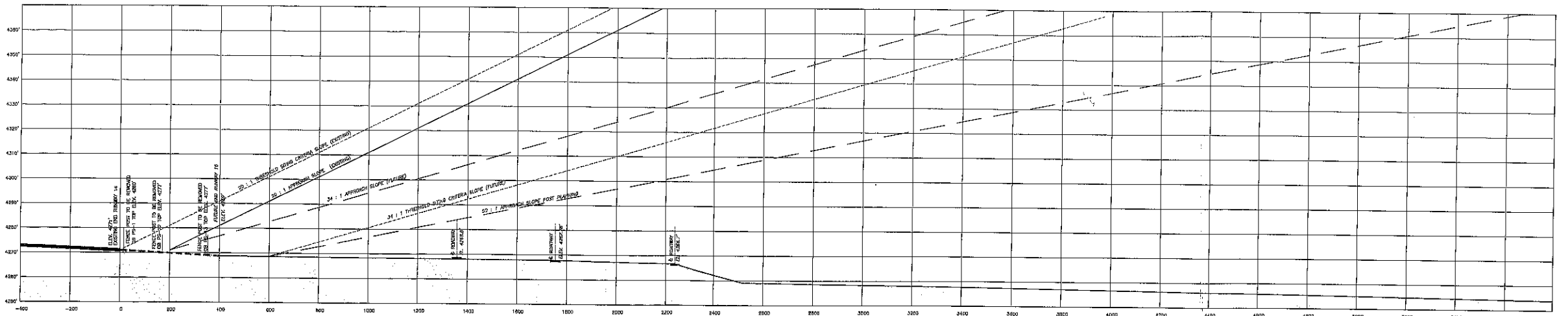
POLE NUMBER  
 METRIC SCALE  
 SCALE AS NOTED  
 DATE AUG. 8, 2000  
 DRAWING NUMBER 4 OF 8

Figure E4 Airport Airspace Drawing (Profile)

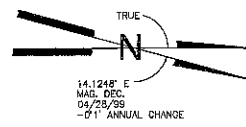




RUNWAY 16 PLAN VIEW  
1" = 200'



RUNWAY 16 PROFILE VIEW  
1" = 200' HORIZONTALLY  
1" = 20' VERTICALLY



14.124° E  
MAG. DEC.  
04/28/99  
-01' ANNUAL CHANGE

REVISIONS		
NO.	DESCRIPTION	DATE

PART 77 OBSTRUCTIONS		
#	REF.	REMARKS
1	111	TO BE REMOVED/RELOCATED
2	5	TO BE REMOVED/RELOCATED
3	8	TO BE REMOVED/RELOCATED

RUNWAY DATA		
ITEM	EXISTING	FUTURE
APPROACH VISIBILITY MINIMUMS	1-1/2 MILES	1-1/2 MILES
PART 77 OBSTRUCTIONS	20' / 20'	20' / 20'
RUNWAY WIDTH AND LENGTH	78' X 5049'	100' X 5100'
PAVEMENT TYPE	ASPHALT	ASPHALT
PAVEMENT WIDTH (ON 100' LBS.)	78' (50')	100' (50')
RUNWAY LIGHTING	MIL	MIL
RUNWAY MARKING	NON-PREC.	PREC./ASYM-PREC.
EFFICIENCY NUMBER GRADIENT %	80	80
MAXIMUM GRADE WITHIN RUNWAY LENGTH %	80	80
RUNWAY LENGTH (FT)	5049	5100
APPROACH REFERENCE CODE (ARC)	0	0
VISUAL APPROACH AIDS	N/A	N/A
INSTRUMENT APPROACH AIDS	N/A	N/A
ORIGINAL AIRCRAFT-PIPED	Boeing Super King A0	Boeing Super King A0
ORIGINAL AIRCRAFT-ROBUST	Boeing Super King A0	Boeing Super King A0
RUNWAY SAFETY AREA (FEET) (S)	150' X 8100'	200' X 8100'
RUNWAY SAFETY AREA (FEET) (N)	150' X 8100'	200' X 8100'
RUNWAY OBSTACLE FREE ZONE	N/A	N/A
OBSTACLE FREE ELEVATION (EXISTING)	4287.1118'	4287.1118'

AIRPORT DATA		
ITEM	EXISTING	FUTURE
APPROACH ELEVATION (ASL)	4276'	4276'
APPROACH REFERENCE POINT (ARP)	145° 00' 30" 44.40'	145° 00' 30" 44.40'
MINIMUM WIND SPEED (KNOTS)	10	10
COMBINED WIND COVERAGE (KNOTS)	25.0	25.0
APPROACH SLOPE (PERCENT)	14.124%	14.124%
APPROACH REFERENCE CODE (ARC)	0	0
TAXIWAY LIGHTING	N/A	N/A
TAXIWAY MARKING	NON-PREC.	PREC./ASYM-PREC.
APPROACH REFERENCE CODE (ARC)	0	0
APPROACH REFERENCE CODE (ARC)	0	0
APPROACH REFERENCE CODE (ARC)	0	0

LAYOUT PLAN LEGEND		
ITEM	EXISTING	FUTURE
BUILDING RESTRICTION LINE	---	---
APPROACH PROPERTY LINE	---	---
FENCE	---	---
AVIATION EASEMENT	---	---
RUNWAY PROTECTION ZONE	---	---
BUILDING	---	---
PAVED PARKING	---	---
PAVED STORMWATER	---	---
BEACON	---	---
NON-DIRECTIONAL OBSTACLE LIGHT	---	---
DIRECTIONAL OBSTACLE LIGHT	---	---
APPROACH REFERENCE POINT (ARP)	---	---
RUNWAY END IDENTIFIER LIGHT (REIL)	---	---
VISUAL APPROACH SLOPE INDICATOR (VASI)	---	---
RUNWAY SAFETY AREA (RSA)	---	---
RUNWAY OBSTACLE FREE ZONE (OFZ)	---	---
JARVIS/STORMWATER WETLANDS AREA (SWWA)	---	---
POSSIBLE WETLANDS DESIGNATION AREA	---	---
POWER POLES	---	---
TOWER	---	---
TAXIWAY (RELOCATED)	---	---
AVIATION EASEMENT TO BE REMOVED	---	---

NOTE: 1. THIS DRAWING SHOULD NOT BE USED AS A BASIS FOR PLANNING OR DESIGN.  
2. METRIC DIMENSIONS OBTAINED FROM UNITED STATES DIMENSIONAL SYSTEMS.  
3. TOPOGRAPHICAL INFORMATION OBTAINED FROM ORDNANCE SURVEY, 3-2-55.  
4. PROPERTY LINES BASED ON BOVANNY SURVEY BY GALT LAKE CITY ASSOCIATES, INC. 12-18-82.  
5. ALL LINES SHOWN TO BE EXISTING UNLESS OTHERWISE NOTED BY THIS DRAWING.  
6. RUNWAY SAFETY AREA FOR 5-MINUTE APPROACH TO BE REMOVED FOR ULTIMATE DEVELOPMENT GUIDANCE.

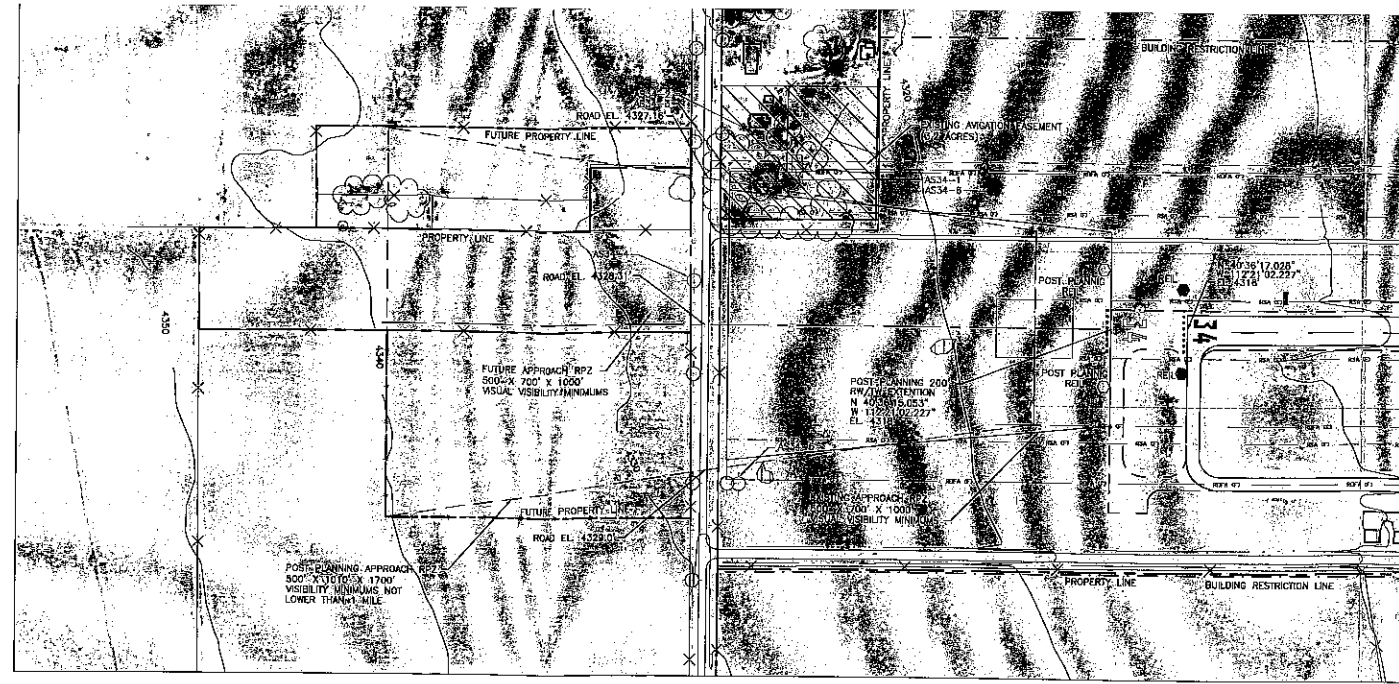
TOOELE VALLEY AIRPORT  
TOOELE COUNTY, UTAH

**RUNWAY 16  
INNER APPROACH DRAWING  
PLAN & PROFILE**

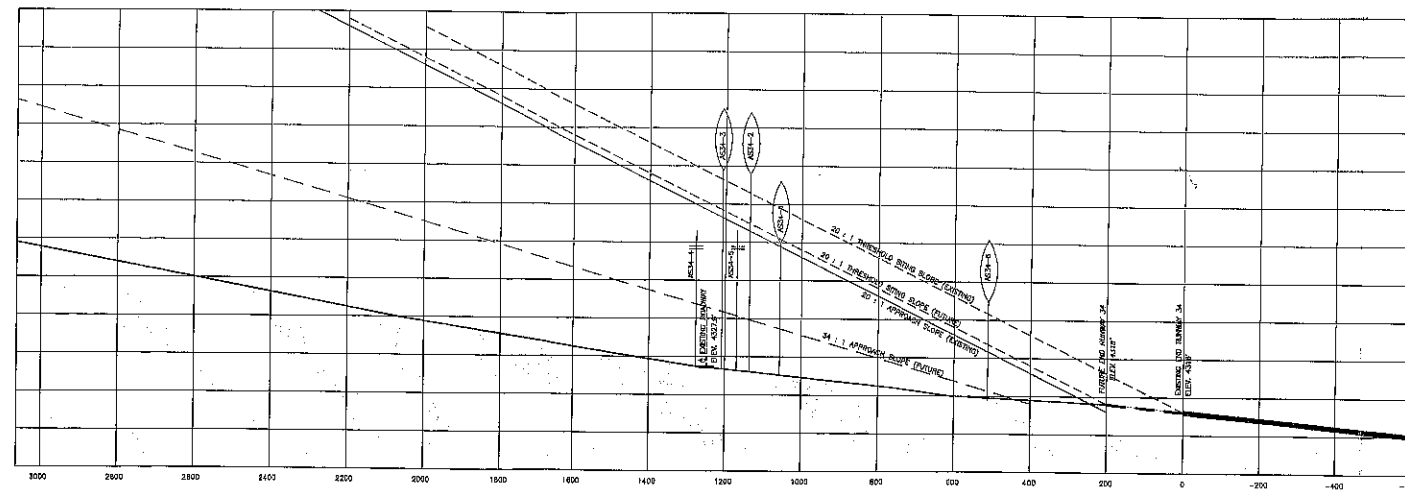
Barnard Dunkelberg & Company  
Tulsa, Oklahoma

FIGURE NUMBER  
METRIC SCALE  
SCALE  
1" = 200'  
DATE  
AUG. 8, 2000  
DRAWING NUMBER  
5 OF 8

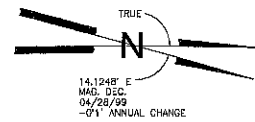
Figure E5 Inner Portion of the Approach Surface Drawing, Runway 16 (Plan & Profile)



RUNWAY 34 PLAN VIEW  
1" = 200'



RUNWAY 34 PROFILE VIEW  
1" = 200' HORIZONTALLY  
1" = 20' VERTICALLY



REVISIONS

NO.	DESCRIPTION	DATE

PART 77 OBSTRUCTIONS		
ITEM	ELEVATION	DISPOSITION
AS34-1	TREE EL. 4316	TO BE TRIMMED/REMOVED
AS34-2	TREE EL. 4344	TO BE TRIMMED/REMOVED
AS34-3	TREE EL. 4316	TO BE TRIMMED/REMOVED
AS34-4	POLE EL. 4343	TO BE REMOVED/RELOCATED
AS34-5	POLE EL. 4343	TO BE REMOVED/RELOCATED
AS34-6	TREE EL. 4343	TO BE TRIMMED/REMOVED
AS34-7	TREE EL. 4343	TO BE TRIMMED/REMOVED

RUNWAY DATA	
RUNWAY 15/34	
APPROACH VISIBILITY MINIMUMS	EXISTING 1/2 MILE/1000 FT
PART 77 APPROACH SURFACES	241/2501
FAW PART 77 CATEGORY	7/3
PERMANENT NOISE ABLD LENGTH	12' X 848'
PERMANENT NOISE ABLD TYPE	250' HGT
PERMANENT OBSTRUCTION (Q) 1000 LBS.	13.5 (34)
RUNWAY LIGHTING	NONE
RUNWAY MARKING	NON-PROD. PREC./NOVA-PROD.
EFFECTIVE AIRPORT GRADIENT %	0.2
MINIMUM CRUISE WITH RUNWAY LENGTH %	32
RUNWAY LINE-OF-SIGHT	CRITICAL POINT
AIRPORT REFERENCE CODE (ARC)	C-2
VISUAL APPROACH AID	NONE
INSTRUMENT APPROACH AID	NONE
CRITICAL AIRCRAFT-SPEED	8000 Super King AC 150' X 30' AT 100' HGT
CRITICAL AIRCRAFT-HEIGHT	8000 Super King AC 150' X 30' AT 100' HGT
CRITICAL AIRCRAFT-WEIGHT	8000 Super King AC 150' X 30' AT 100' HGT
RUNWAY SAFETY AREA (RSA) EL. @ 100'	180' X 8100'
RUNWAY SAFETY AREA (RSA) EL. @ 200'	180' X 8100'
RUNWAY SAFETY AREA (RSA) EL. @ 300'	180' X 8100'
TOUCHDOWN ZONE ELEVATION (TDE) @ 100'	4285 / 4218'
TOUCHDOWN ZONE ELEVATION (TDE) @ 200'	4285 / 4218'

AIRPORT DATA		
ITEM	EXISTING	FUTURE
AIRPORT ELEVATION (AMSL)	4314'	4314'
AIRPORT REFERENCE POINT (ARP)	150' X 30' X 14.5'	150' X 30' X 14.5'
MEAN MAX. TEMP. HOTTEST MONTH	99.3° F	99.3° F
COMBINED WIND COEFFICIENT WINDS	14.3	14.3
AIRPORT HIGHEST WINDSPEED & DIRECTION	14.3 KNOTS (10-20-30)	14.3 KNOTS (10-20-30)
AIRPORT REFERENCE CODE (ARC)	C-2	C-2
AIRPORT SURFACE LEVEL	RELATIVE	RELATIVE
TAXIWAY LIGHTING	NONE	NONE
AIRPORT TERMINAL BUILDING	NONE	NONE
CONTROL TOWER (CT)	NONE	NONE
AIRPORT PROPERTY (ACRES)	APPROX. 209	APPROX. 434

LAYOUT PLAN LEGEND		
ITEM	EXISTING	FUTURE
BUILDING RESTRICTION LINE	---	---
AIRPORT PROPERTY LINE	---	---
LINE	---	---
ADJUTANT GENERAL	---	---
RUNWAY PROTECTION ZONE	---	---
WILDOUSES	---	---
FUEL STORAGE	---	---
BEACON	---	---
NON-DIRECTIONAL RADIO BEACON	---	---
LIGHTED WIND CONE & SEGMENTED CIRCLE	---	---
PRECEDENCE APPROACH SLOPE INDICATOR (PAS)	---	---
RUNWAY EXO IDENTIFIER SIGNS (REIS)	---	---
VISUAL APPROACH SLOPE INDICATOR (VASI)	---	---
BLANKING VALLEY AREA (BVA)	---	---
RUNWAY OBJECT FREE AREA (OFA)	---	---
SUBORDINATE METEOROLOGICAL AREA (SMETA)	---	---
POSSIBLE WILDLAND OBSTRUCTION AREA	---	---
POWER POLES	---	---
TANKS	---	---
ARTIFICIAL PAVEMENT TO BE REMOVED	---	---

NOTE: 1. THIS DRAWING SHOULD NOT BE USED AS A BASIS FOR PLANNING OR DESIGN.  
2. MAGNETIC DECLINATION OBTAINED FROM UNITED STATES GEOLOGICAL SURVEY.  
3. TOPOGRAPHICAL INFORMATION OBTAINED FROM USGS MAPS: 3-4-92.  
4. PROPERTY LINES BASED ON BOUNDARY SURVEY BY S&B L&S CITY AIRPORT AUTHORITY 8-1-91.  
5. APPROXIMATE WINDSPEED & DIRECTION BY COAST GUARDIAN STATION, COAST GUARDIAN, INC. 12-19-92.  
6. ALL DATA SUBJECT TO CHANGE WITHOUT NOTICE.  
7. THIS DRAWING IS THE PROPERTY OF BARNARD DUNKELBERG & COMPANY.  
8. RUNWAY SAFETY AREA FOR C-2 AIRCRAFT SHOWN ON DRAWING FOR ULTIMATE DEVELOPMENT GUIDANCE.

TOOELE VALLEY AIRPORT  
TOOELE COUNTY, UTAH

**RUNWAY 34  
INNER APPROACH DRAWING  
PLAN & PROFILE**

Barnard Dunkelberg & Company  
Tulsa, Oklahoma

FOUR NUMBER  
METRIC SCALE  
SCALE  
1" = 200'  
DATE  
AUG. 8, 2000  
DRAWING NUMBER  
5 OF 5

Figure E6 Inner Portion of the Approach Surface Drawing, Runway 34 (Plan & Profile)



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## Development Program

The facility requirements necessary to satisfy the forecast aviation demands for Tooele Valley Airport have been categorized into three phases: phase one (0-5 years), phase two (6-10 years), and phase three (11-20 years). The cost estimates for projects are presented in the following tables and are also illustrated graphically for each phase on the following figure, entitled *PHASING PLAN*.

Cost estimates have been categorized by the total cost for each project, that portion of the total cost eligible to be paid by the FAA under the Airport Improvement Program (AIP) or similar program; that portion eligible for payment by the airport sponsor or related local entity; and that portion that could be borne by private financing.

The percentage of costs shown as eligible for participation by Federal agencies is subject to change depending upon current funding legislation and policy at the time of implementation. However, the relationship between anticipated Federal funding and local matching funds, as shown in this document, is based on current FAA participation of approximately ninety-one percent (90.94%) of the total cost and local participation of approximately nine percent (9.06%). All project cost estimates presented are based on 2000 costs.

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## Summary

As presented in the accompanying tables, the Tooele Valley Airport Development Plan cost estimates for an approximate twenty-year planning period, not including maintenance and operational expenses, amount to approximately \$14,297,280. The anticipated FAA share is approximately \$9,079,250, with the sponsor share being approximately \$2,052,530. In addition, approximately \$3,165,500 is projected to be spent on projects (e.g., hangars, apron/taxiway development, etc.) that will generate revenue and could be financed through the use of revenue bonds or utilize some form of private financing. Of the *sponsor* share, approximately \$1,953,323 is required during the phase one period (0-5 years), \$51,622 during the phase two period (6-10 years), and \$47,565 during the phase three period (11-20 years). The *federal* share includes programmed expenditures of \$8,083,457 during the phase one period, \$518,358 during the phase two period, and \$477,435 during the phase three period.

In addition, maintenance and operation expenses will increase as the airport develops and more airport facilities are completed. Revenues generated by these facilities should also increase. It is a worthy and feasible goal that operational expenses and

revenues should balance at the airport. This relationship should, however, be monitored closely so those future imbalances can be anticipated and provided for in the budgeting and capital improvement process.

Table E1

## PHASE I (0-5 YEARS) DEVELOPMENT PLAN PROJECT COSTS

Tooele Valley Airport Layout Plan Update

Project Description	Note	Total Costs	Recommended Financing Method		
			Sponsor	Private	Federal
A.1 Construct New FBO Hangar with Auto Parking		\$600,000.00	\$600,000.00		
A.2 Relocate Aviation Fuel Storage Facility		\$160,000.00	\$160,000.00		
A.3 Relocate/Bury Overhead Utilities @ Grantsville-Erda Road		\$300,000.00	\$27,180.00		\$272,820.00
A.4 Install Wildlife Control/Perimeter Fencing		\$239,000.00	\$21,653.40		\$217,346.60
A.5 Install Water System		\$188,000.00	\$188,000.00		
A.6 Install New Segmented Circle & Lighted Windsock		\$75,000.00	\$6,795.00		\$68,205.00
A.7 Estimated Wetlands Mitigation (Approx. 10 Acres)		\$100,000.00	\$9,060.00		\$90,940.00
A.8 Extend & Widen Runway 16/34 to 100' x 6,100' with MIRLS, Upgrade Existing VASIs with PAPIs & Relocate Existing REILs @ Each Runway End		\$2,496,000.00	\$226,137.60		\$2,269,862.40
A.9 Rehabilitate/Strengthen Existing Runway/Taxiway Pavement		\$1,000,000.00	\$90,600.00		\$909,400.00
A.10 Extend Existing Eastside Parallel Taxiway System MITLs		\$232,000.00	\$21,019.20		\$210,980.80
A.11 Remove Abandoned Apron & Taxi- way Pavement (5,360 sq. yds.) & Install MITLs		\$25,000.00	\$2,265.00		\$22,735.00
A.12 Acquire Property or Easement at North & South End of Airport to Accommodate ROFA, RPZs & Approach Protection (Approx. 122.3 Acres)		\$2,583,780.00	\$234,090.47		\$2,349,689.53
A.13 Construct New West Side Airport Maintenance Road (Gravel)		\$65,000.00	\$5,889.00		\$59,111.00
A.14 Install Transponder Landing System (TLS) or Instrument Landing System (ILS) with MALSR		\$1,560,000.00	\$141,336.00		\$1,418,664.00
A.15 Install New Airport Beacon		\$100,000.00	\$9,060.00		\$90,940.00
A.16 Cap Existing Water Well		\$20,000.00	\$1,812.00		\$18,188.00
A.17 Construct One 5-Unit T-Hangar Facility & Four Executive Hangars with Access Apron, Taxiway & Auto Parking	1	\$744,500.00		\$744,500.00	
A.18 Install Aircraft Wash Rack		\$137,000.00		\$137,000.00	
A.19 Construct One 10-Unit T-Hangar Facility with Access Apron/Taxiway	1	\$505,000.00		\$505,000.00	
A.20 Expand Airport Maintenance Facility		\$200,000.00	\$200,000.00		
A.21 Construct Airport Compass Rose		\$93,000.00	\$8,425.80		\$84,574.20
Sub-Total/Phase I		\$11,423,280.00	\$1,953,323.47	\$1,386,500.00	\$8,083,456.53

Notes Cost estimates, based upon 2000 data, are intended for preliminary planning purposes and do not reflect a detailed engineering evaluation.

FAA Federal Aviation Administration

- 1 The development of future aircraft storage facilities could also be funded by the Salt Lake City Corporation utilizing revenue bond financing.

Table E2  
**PHASE II (6-10 YEARS) DEVELOPMENT PLAN PROJECT COSTS**  
*Tooele Valley Airport Layout Plan Update*

Project Description	Note	Total Costs	Recommended Financing Method		
			Sponsor	Private	Federal
B.1 Expand FBO Apron Area (Phase II)		\$440,000.00	\$39,864.00		\$400,136.00
B.2 Extend Airport Entrance Road to Serve Future T-hangar and Executive Hangar Development Area		\$30,000.00	\$2,718.00		\$27,282.00
B.3 Construct One 5-Unit T-Hangar Facility & Four Executive Hangars with Access Road, Apron & Taxiway	1	\$1,042,800.00		\$1,042,800.00	
B.4 Expand/Modify Airport Perimeter Fencing		\$25,000.00	\$2,265.00		\$22,735.00
B.5 Implement Runway/Taxiway Maintenance Projects: Seal Cracks, Seal Coat & Remark		\$75,000.00	\$6,795.00		\$68,205.00
Sub-Total/Phase I		\$1,612,800.00	\$51,642.00	\$1,042,800.00	\$518,358.00

Notes Cost estimates, based upon 2000 data, are intended for preliminary planning purposes and do not reflect a detailed engineering evaluation.

- 1 The development of future aircraft storage facilities could also be funded by the Salt Lake City Corporation utilizing revenue bond financing.

Table E3

## PHASE III (11-20 YEARS) DEVELOPMENT PLAN PROJECT COSTS

## Tooele Valley Airport Layout Plan Update

Project Description	Note	Total Costs	Recommended Financing Method		
			Sponsor	Private	Federal
C.1 Extend Airport Entrance Road to Connect with S.H. 138		\$350,000.00	\$31,710.00		\$318,290.00
C.2 Construct One 5-Unit T-Hangar Facility & Four Executive Hangars with Access Apron/Taxiway	1	\$736,200.00		\$736,200.00	
C.3 Expand/Modify Airport Perimeter Fencing		\$25,000.00	\$2,265.00		\$22,735.00
C.4 Implement Runway/Taxiway Maintenance Projects: Seal Cracks, Seal Coat & Remark		\$75,000.00	\$6,795.00		\$68,205.00
C.5 Implement Apron Maintenance Projects: Seal Cracks, Seal Coat & Remark		\$75,000.00	\$6,795.00		\$68,205.00
Sub-Total/Phase II		\$1,261,200.00	\$47,565.00	\$736,200.00	\$477,435.00
GRAND TOTALS		\$14,297,280.00	\$2,052,530.47	\$3,165,500.00	\$9,079,249.53

Notes Cost estimates, based upon 2000 data, are intended for preliminary planning purposes and do not reflect a detailed engineering evaluation.

- 1 The development of future aircraft storage facilities could also be funded by the Salt Lake City Corporation utilizing revenue bond financing.



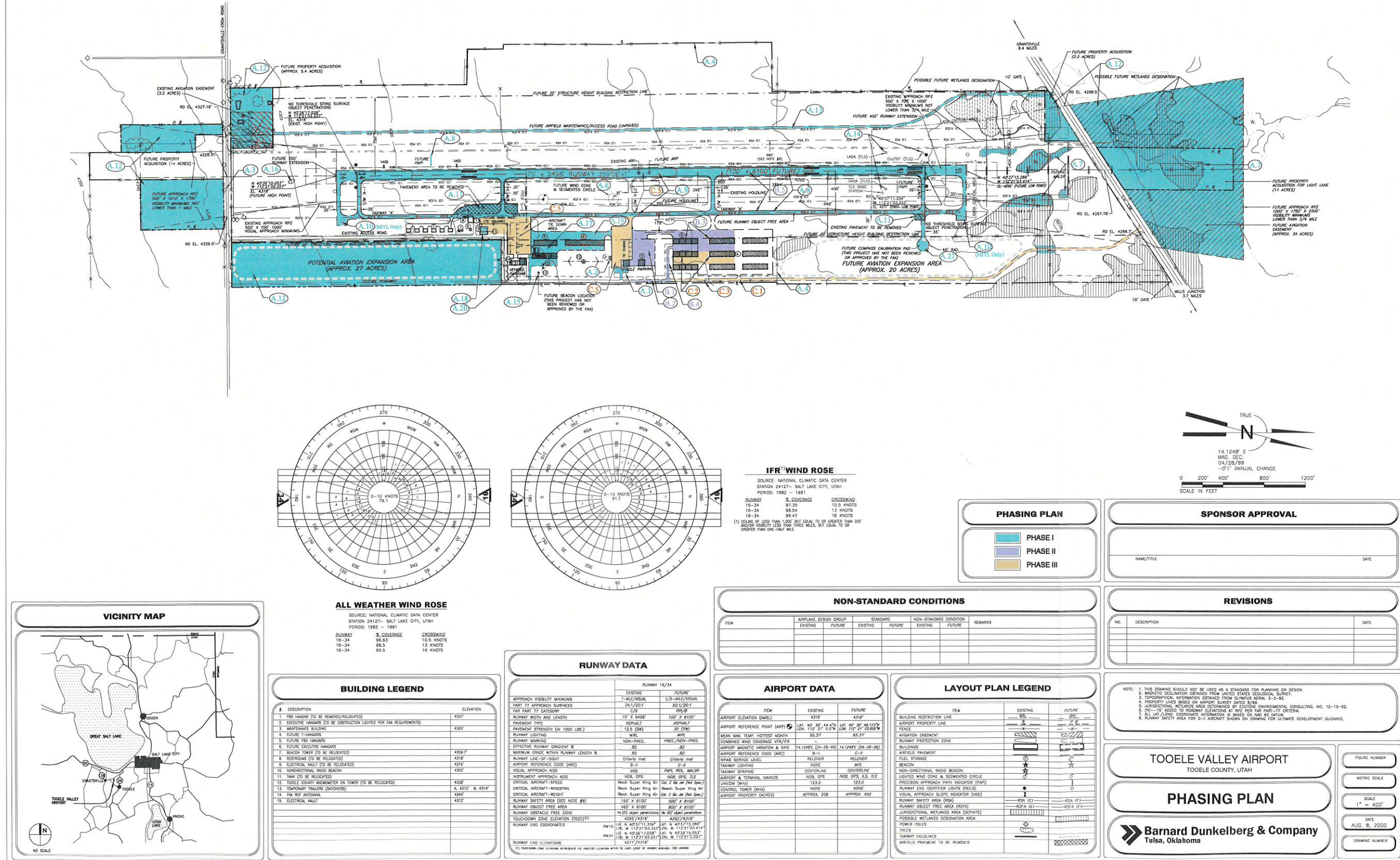


Figure E8 Phasing Plan

## Appendix

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**Barnard Dunkelberg & Company**

**MEMORANDUM**

June 2, 1999

To: Mr. Phillip Braden, Community Planner  
FAA Denver Airports District Office  
26805 E. 68<sup>th</sup> Ave., Suite 224  
Denver, CO 80249-6361  
Phone # (303) 342-1264

From: Cody Fussell  
Barnard Dunkelberg & Company  
Phone # (918) 585-8844  
Fax # (918) 585-8857

RE: Tooele Valley Airport (TVA), Tooele County Utah  
Precision Instrument Approach Evaluation.

In conjunction with the current Airport Layout Plan Update for Tooele Valley Airport, we are requesting that a new precision instrument approach evaluation be conducted for Runway 16. A determination on the future precision instrument approach capabilities at the airport will impact the selection of a new development plan and program for the facility.

At the completion of the last Master Plan Update for Tooele Valley, the new parallel runway at Salt Lake City International Airport was still under construction and the actual airspace requirements and compatibility issues were not yet determined. According to the airspace review (Case #93-ANM/D-294-NRA) for the 1994 ALP at Tooele Valley (see attached February 28, 1994 letter), it was stated that the proposed Runway 16 ILS at Tooele "will conflict with operations at Salt Lake City International Airport at this point in time".

We just need to know if this is in fact still the case, in consideration of the proposed precision GPS approach capabilities, so that the new ALP Update can be revised accordingly. Per your instruction, I have enclosed five (5) sets of the 1994 ALP drawing set for your distribution. We appreciate your assistance on this matter and please call if you have any questions. Thanks.



DENVER AIRPORTS DISTRICT OFFICE  
26805 EAST 68TH AVENUE, SUITE 224  
DENVER, COLORADO 80249-6361  
(303) 342-1264

FEDERAL AVIATION  
ADMINISTRATION

August 9, 1999

Mr. Alan McCandless  
Salt Lake City Department of Airports  
AMF Box 22084  
Salt Lake City, Utah 84122

RECEIVED  
AUG 13 1999  
Barnard Dunkelberg

Proposed GPS Precision Approach  
Tooele, Utah  
Airspace Case No. 99-DEN-0110-NRA

Dear Mr. McCandless:

An Aviation Impact Analysis (Airspace Case No. 99-DEN-0110-NRA) of the proposed GPS precision approach at the Tooele Valley Airport has been completed. Based on this analysis, the Federal Aviation Administration has no objection to the proposal, it will not adversely affect the safe and efficient use of airspace by aircraft or the safety of persons and property on the ground. The FAA in this review has determined that a precision approach to Runway 16 is feasible. Please note that prior to implementation of the proposed approach, the fence posts located northwest of the RW 16 threshold are penetrations to the 34:1 approach surface, therefore, they must be removed.

This determination is issued in accordance with FAR, Part 77, and concerns the effect of this proposal on the safe and efficient use of the navigable airspace by aircraft and does not relieve the sponsor of any compliance responsibilities relating to any law, ordinance, or regulation of any Federal, state, or local governmental body.

If you have any questions concerning this determination, please feel free to contact me at the number above.

This construction should be shown on the next regular ALP update.

Sincerely,

Original Signed By  
Phillip J. Braden

Phillip J. Braden  
Community Planner (UT/WY)

cc: Cody Fussell, Barnard Dunkelberg & Company