Hobby Field Airport Master Plan Update

CENTURY WEST
ENGINEERING CORPORATION

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GLOSSARY OF AVIATION TERMS

Chapter One
Introduction

CHAPTER ONE
INTRODUCTION

The City of Creswell is preparing an Airport Master Plan for Creswell Municipal Airport – Hobby Field (77S). The purpose of the master plan is to define the current, short-term and long-term needs of the airport through a comprehensive evaluation of conditions and Federal Aviation Administration (FAA) airport planning and design standards.

Several minor planning evaluations have been conducted in recent years through periodic updates of the airport layout plan (ALP).[1] However, this study is the first major planning conducted for the airport since the runway was reoriented and reconstructed in the late 1980s. Although previous ALP updates have consistently applied FAA design standards to current and short-term facility developments, the master planning process provides a comprehensive evaluation of airport development needs through a 20-year planning period.

The planning assumptions used to develop the current ALP (updated in 2004) will be reviewed and revised as necessary, to reflect current conditions and any changes in activity, utilization, or facility development that may affect future demand for aviation facilities. The configuration of existing and planned facilities will also be examined for consistency with current needs and FAA airport design criteria.

Funding for the master plan update is provided through an FAA Airport Improvement Program (AIP) grant. The AIP grant provides 90% of project funding with the remaining 10% provided by the City of Creswell as local match. The AIP is a dedicated fund administered by the FAA with the specific purpose of maintaining and improving the nation's public use airports. The AIP is funded exclusively through fees paid by users of general aviation and commercial aviation.

The primary objective of the Airport Master Plan is to identify current and future facility needs and the improvements necessary to maintain a safe and efficient airport that is economically, environmentally, and socially sustainable. The Airport Master Plan will:

[1] Airport Layout Plan updates performed by David Miller: 1990 (SFC Engineering); 2000, 2004 (Century West Engineering).

- *Examine previous recommendations and development alternatives as appropriate to meet the current and projected airport facility needs;*
- *Determine current and future activity and facility requirements;*
- *Update the airport layout plan, airspace plan, and land-use plan for the airport and its surrounding areas; and*
- *Schedule priorities of improvements and estimate development costs for the 20-year planning period.*

National Airport System

Hobby Field is included in the National Plan of Integrated Airport Systems (NPIAS). Participation in the NPIAS is limited to public-use airports that meet specific FAA activity criteria. NPIAS airports are eligible for federal funding of improvements through FAA programs such as the current Airport Improvement Program (AIP). Currently, there are more than 3,300 NPIAS airports, of which more than 75 percent are general aviation airports like Hobby Field. There are four NPIAS airports in Lane County, including Hobby Field, Eugene Airport, Cottage Grove State Airport and Florence Municipal Airport. The FAA has recognized NPIAS airports as being vital to serving the public needs of air transportation. In doing so, the FAA recognizes that access to the nation's air transportation system is not limited to commercial air service. The FAA requires that all NPIAS airports periodically update their airport plans to maintain effective long-term planning. Completion of this project enables the City to meet the FAA's requirement to maintain an up-to-date plan.

The preparation of this document may have been supported, in part, through the Airport Improvement Program financial assistance from the Federal Aviation Administration as provided under Title 49, United States Code, section 47104. The contents do not necessarily reflect the official views or policy of the FAA. Acceptance of this report by the FAA does not in any way constitute a commitment on the part of the United States to participate in any development depicted therein nor does it indicate that the proposed development is environmentally acceptable with appropriate public laws.

State Airport System

Creswell Municipal Airport is included in the "Core System of Airports" in the Oregon Aviation Plan (OAP).[2] Core system airports are defined as having "a significant role in the statewide

[2] Oregon Aviation Plan (Dye Management/Century West), © Oregon Department of Transportation 2000.

aviation system." Core system airports are eligible to participate in several state aviation funding programs, including the Pavement Maintenance and Management Program (PMMP), administered by the Oregon Department of Aviation. Within the Oregon Aviation System, Hobby Field is classified as a "Community General Aviation Airport (Category 4) based on its functional role. Community airports typically accommodate a wide range of general aviation users and local business activities.

Community airports are significant components in the statewide transportation system and often generate both direct (employment, etc.) and indirect economic benefits for the local community or region. Commercial-related aviation businesses, such as fixed base operators, aerial applicators and aircraft maintenance shops create employment and provide vital services within a large geographic area. For smaller communities without commercial air service, general aviation airports provide additional options for business and personal travel. The availability of a safe, well-maintained general aviation airport is often a key factor in a business decision to locate in, or serve a small community.

Airport History

Creswell Municipal Airport – Hobby Field is owned and operated by the City of Creswell. However, the airport was privately developed and operated through a lease agreement with the City of Creswell before it became publicly-owned in 2000.

A chronology of the airport's development is summarized below (1963-2000, prepared by Mr. John Ward) highlighting several key periods of the airport's forty-year history:

- **1963** - City of Creswell purchased land for airport development; leased land to Creswell Airport Inc., "to be used exclusively for airport purposes."
- **1964-74** – Development of airport facilities with private funds: 2,100-foot asphalt runway, gravel taxiways, asphalt terminal apron; terminal building, T-hangars (23 spaces), and aircraft fueling facility.
- **1975** – Creswell Airport Inc., purchased by Rens Manufacturing Company, Inc.
- **1976-82** – Improvements to airport facilities with private funds: improved fueling facility; T-Hangars (22 spaces); expanded aircraft apron; asphalt run-up pads; taxilanes and hangar access; fencing and landscaping.
- **1982** – The City of Creswell initiates airport expansion and improvement project through Federal Aviation Administration (FAA) grants.

- **1986-1989** – Airport improvements completed through several FAA grants: property acquisition, runway-taxiway construction, apron expansion, access road and vehicle parking, PAPI and runway lighting.

- **1989-99** – Privately-funded hangar construction: 7 individual hangars and 4 T-hangars.

- **1995-2000** – Original and amended agreements for ownership and operation of Hobby Field reviewed and renegotiated concluding with transfer of ownership to City of Creswell in 2000.

- **2000-present** – Airport fencing projects; pavement maintenance; aircraft fueling improvements; private hangar construction.

Public Involvement

The public involvement element of the planning process provided opportunities for all interested individuals, organizations, or groups to participate in the project. A list of stakeholders was developed for the project, which included airport users, local citizens, businesses, and local, state and federal government agencies, and community leaders.

At the project kickoff, a Joint Planning Conference (JPC) was held for agencies and organizations with a specific interest or responsibility (land use, environmental, natural resources, transportation, etc.) associated with the airport or its vicinity. The purpose of the JPC was to identify any concerns or issues, which needed to be addressed as part of this airport Master plan update. The JPC provided valuable information that will be used in formulating the plan.

A planning advisory committee (PAC) was formed to assist the Consultant and City in developing the updated plan. The PAC reviewed and commented on draft work products and provided local knowledge and expertise to the planning process. PAC meetings were held at key points during the study in conjunction with public informational meetings.

In addition to items surrounding the master plan project, the public process also included extensive discussions about the airport's skydiving operations. This issue affected a wide range of airport planning, development, operational and safety considerations, which required additional time and effort to integrate into the planning process. At the time of this writing, the future of skydiving at Hobby Field is uncertain and its potential return and the conditions associated with such an event have not been determined. For purposes of clarity, the original references to "existing" skydiving operations have not been removed from this document. Notations have been added, where appropriate, to provide updated information. Similarly, the

original development alternatives have not been altered to reflect more recent changes in events, in order to maintain an accurate record of the planning process. The final preferred alternative and ALP drawings will depict the airport sponsor's preference for all facilities, including skydiving-related facilities.

Following completion of preliminary work products, a Draft Airport Master Plan Report was assembled that contains the entire work effort and reflects the input provided by all participants in the planning process. Following a period of review, all public and agency comments received will be integrated into the Final Airport Master Plan Report and drawing set.

Summary of Preliminary Findings

1. Creswell Municipal Airport – Hobby Field is owned and operated by the City of Creswell, Oregon.

2. The airport consists of approximately 102.6 acres (fee simple), the majority of which is located within the Creswell city limits. A small portion of the airport (at the southwest corner) was not included in the recent city annexation of the airport. This appears to have been an oversight and should be corrected to provide uniformity in land use planning and regulation.

3. The Airport is included in the National Plan of Integrated Airport System (NPIAS), making it eligible for federal funding through the Federal Aviation Administration (FAA).

4. The Airport is categorized as a "Community General Aviation Airport" in the 2000 Oregon Aviation Plan and it is included in Oregon's "core system" of airports, which denotes its significance in Oregon's aviation system.

5. The Airport has a single paved and lighted runway (3,101feet by 60 feet) with a full-length parallel taxiway on its west side.

6. The airfield facilities are generally designed to meet FAA Airport Design Group (ADG) I standards associated with small aircraft (aircraft weighing less than 12,500 pounds).

7. Runway 15/33 has a pavement strength rating of 12,000 pounds for aircraft with single wheel landing gear configurations.

8. Airfield lighting currently includes medium intensity runway edge lights (MIRL); runway threshold lights; a visual guidance indicator (VGI) on Runway 15; and the airport beacon.

9. Landside facilities (aircraft parking apron, hangars, etc.) are located on the west side of the runway.

10. The most recent air traffic data provided by ODA (Acoustical Counting Program) is for 2001-2002, which estimated 22,363 operations at the airport during the 12-month cycle. The airport currently has approximately 99 based aircraft (based on an estimate provided by airport management in early 2005).

11. The Airport operates under day and night visual flight rules (VFR) and does not currently have instrument approach capabilities.

12. Aviation fuel (AVGAS, Jet A) and aircraft maintenance services are available at the airport.

SUMMARY OF ALP REPORT RECOMMENDATIONS

The recommendations of previous planning efforts were examined and revalidated or modified as appropriate based on current considerations, FAA-approved activity forecasts and current FAA design standards:

1. A regular periodic schedule of pavement maintenance (vegetation control, crack filling, slurry seals, patching, etc.) should be conducted on airfield pavements to maximize the useful life and optimize life cycle maintenance expenditures. Continued participation in the Pavement Maintenance and Management Program (PMMP), currently administered by the Oregon Department of Aviation (ODA), is recommended.
2. Current and future design standards for Runway 15/33 are based on FAA airport reference code (ARC) B-I (small aircraft).
3. Based on a 2002 ODA-sponsored pavement inspection, Runway 15/33 and the parallel taxiway are recommended for pavement rehabilitation by the middle of the current twenty year planning period. The main apron and most hangar taxilanes will also require pavement rehabilitation during the current twenty year planning period.
4. A 500-foot north runway and parallel taxiway extension is recommended to enable the airport to accommodate approximately 99 percent of aircraft included in the small airplane fleet. By FAA definition, small airplanes weigh less than 12,500 pounds, which includes most single engine and multi-engine piston aircraft and some smaller turbine aircraft.
5. Based on forecast demand, the airport's west side hangar areas should be expanded in phases to provide additional T-hangar and conventional hangar space. The development

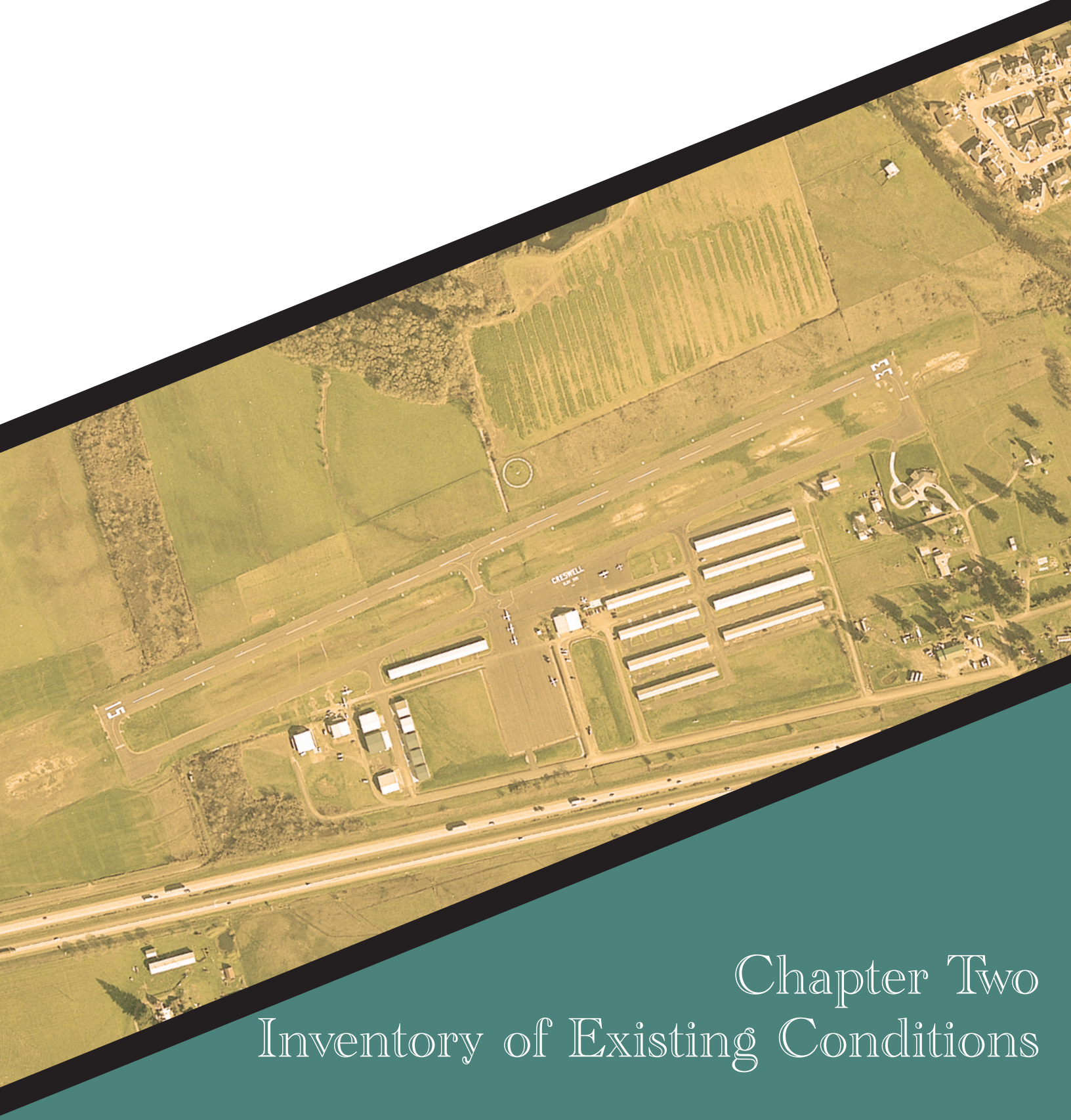
of the hangar areas will require some site preparation, taxilane extensions, and improved vehicle access and parking. The recommended development strategy is to target the most readily developable areas first, followed by areas requiring a greater investment to develop. The undeveloped northwest section of the airport is expected to require the largest investment in site improvements and infrastructure. This area, which has remained largely undisturbed in the past, may require a cultural resource survey for the entire site and wetland delineation/mitigation for specific areas within the site.

6. The remaining undeveloped portion of the south hangar area can accommodate one additional T-hangar and several small/medium conventional hangars. Construction of an additional hangar stub taxilane and a second east-west connecting taxilane along the southern edge of the development is recommended (to the parallel taxiway).
7. A new T-hangar area is recommended for the area immediately north of the existing tiedown apron. New north-south hangar taxilanes will extend from the north edge of the apron to the adjacent hangar rows and the apron tiedowns will be reconfigured to accommodate the hangar taxilanes. The area between the apron and the nearest existing row of hangars to the north has space for three 8-unit standard (not nested) T-hangars. These facilities will be constructed in phases, based on actual demand. The open-front T-hangar located near the northeast corner of the tiedown apron will be removed as part of an overall apron and taxiway reconfiguration. A second T-hangar located immediately south of the existing aircraft fueling area will also be removed and replaced with additional aircraft parking.
8. Long-term changes in the terminal area are identified to accommodate future development of commercial hangars, apron reconfiguration and relocation of the aircraft fueling area. Additional vehicle parking and changes in the terminal loop roadway are also provided by redeveloping the area currently occupied by a septic drain field. Removal of the drain field is dependent on the extension of city sanitary sewer service to the airport.
9. The relocation of the aircraft fueling facilities is planned as part of long-term terminal area redevelopment. The current fueling area is constrained by the increased runway setbacks associated with a planned instrument approach for Runway 15/33. It is anticipated that the relocated fuel pumps can utilize the existing underground fuel tanks by installing a short section of buried pressurized pipe. The existing aircraft tiedown rows and taxilanes would be reconfigured to accommodate commercial related hangars (FBO, aircraft maintenance, etc.) and fueling along the south edge of the apron.
10. The northwest section of the airport is planned to accommodate future demand for small/medium conventional hangars. As currently configured, the area would

accommodate approximately 20 small/medium conventional hangars. A series of stub taxiways/taxilanes will connect to the west parallel taxiway, just north of the current north hangar area, serving the relatively narrow area between the parallel taxiway and the existing/future west-side airport access road. The northern section will accommodate a single row of east-facing hangars and a single north-south taxilane that connects to an east-west taxilane and the parallel taxiway. The east-west taxilane will also provide aircraft access to the undeveloped lots in the current north hangar area. Additional vehicle access roads and parking are also planned to serve the north hangar area. The existing west-side airport access road will be extended to serve the new development area and to connect to Dale Kuni Road, at the northwest corner of the airport. As noted earlier, it is anticipated that development of this area will require a cultural resource survey and wetland delineation/mitigation to assess and mitigate potential impacts.

11. Development of a nonprecision instrument approach to Runway 33 is recommended. Obstruction surveying for the instrument approach design has been completed. The airport sponsor should submit a formal request for procedure development through the FAA Flight Procedures Office (FPO) at their earliest convenience.
12. A small area (0.55 acres +/-) of property acquisition is recommended near the southwest corner of the airport, immediately south of the south T-hangar development area. The property acquisition is required to accommodate construction of a new taxilane to serve the south hangar area; the existing east-west taxilane located between the hangar rows is limited by several hangars and does not meet FAA design standards (taxilane object free area). The FAA has indicated that no new hangars should be constructed in the south hangar area until upgraded taxilane access is provided.
13. An updated Exhibit “A” property plan is recommended to accurately depict airport property boundaries and acreages.
14. An access road is identified to provide access to activities occurring on the east side of the runway. Originally, the internal roadway was intended to eliminate airport-based skydiving operations from driving directly across the runway, parallel taxiway and their protected areas to access the parachute drop zone. At the time of the master plan completion the east side drop zone was not in use. However, since the long-term future of skydiving operations at the airport is uncertain, the road is identified as a future project that may be completed based on overall airport access requirements or potential future development on the east side of the runway.
15. The City of Creswell should annex the remaining portion of the airport (southwest corner) currently located outside city limits and the Creswell Urban Growth Boundary (UGB) line.

16. The City of Creswell and Lane County should ensure that airport overlay zoning reflects the updated boundaries of the FAR Part 77 airspace surfaces defined in this plan and complies fully with Oregon state law (ORS Ch. 836.600-630). The ordinance language and mapping developed and maintained by the land use jurisdictions should be consistent to ensure overall compatibility.
17. The City of Creswell and Lane County should ensure through their comprehensive planning that development of rural lands in the vicinity of the airport is compatible with airport activities. Maintaining the Agricultural or other low density zoning in the areas surrounding the airport provides effective land use compatibility with airport operations. Development of new residential areas, or increasing the densities of existing rural residential areas within the boundaries of the protected airspace surfaces of the airport should be discouraged to ensure the long-term viability of the airport.
18. The City of Creswell should continue to require that applicants for all leases or development proposals involving construction of structures on the airport demonstrate compatibility with the airport's protected airspace surfaces. The applicant should be required to provide all documentation necessary for the sponsor to obtain "no objection" finding by FAA resulting from the review of FAA Form 7460-1 – Notice of Proposed Construction or Alteration, prior to approval of ground leases. Any proposal that receives an objection by FAA should not be approved without first addressing FAA concerns.
19. Local (City or County) planning and building officials should require that applicants for all proposed development within the boundaries of the airport overlay zone (as defined by the updated Airport Airspace Plan) demonstrate a finding of "no objection" by FAA resulting from review of proposed development (FAA Form 7460-1) prior to approval of building permits, plats, binding site plans, etc.
20. It is recommended that any proposed changes in land use or zoning within the boundaries of the airport overlay zone be coordinated with the Oregon Department of Aviation (ODA) to ensure consistency with Oregon airport land use guidelines.
21. The City of Creswell should adopt the Airport Layout Plan Report and drawings in a timely manner to guide airport activities. The City of Creswell and Lane County should also adopt the Airport Layout Plan Report and drawings for incorporation into local/county comprehensive and transportation planning.
22. The City of Creswell should initiate the recommended improvements and major maintenance items in a timely manner, requesting funding assistance under FAA and other federal or state funding programs for all eligible capital improvements.



Chapter Two
Inventory of Existing Conditions

CHAPTER TWO
INVENTORY OF EXISTING CONDITIONS
INTRODUCTION

This chapter documents existing conditions at the airport. Existing airfield facilities were examined during on-site inspections to update facility inventory data collected in prior planning efforts. This airport master plan is the first FAA-funded planning project at the airport since the runway-taxiway was reoriented and reconstructed in 1987.

Data from a variety of sources are used in this evaluation:

- **Creswell Municipal/Hobby Field Airport Layout Plan** (SFC Engineering, 2004)
- **Environmental Assessment for Hobby Field Airport** (Devco Engineering, 1983)
- **Creswell Airport - Hobby Field Pavement Evaluation Maintenance-Management Program** (Pavement Consultants, Inc., 2005)
- **Oregon Continuous Aviation System Plan – Volume I: Inventory and Forecasts; Volume III: Recommended Development Plan** (AirTech, 1997)
- **Oregon Aviation Plan** (Dye Management Group/Century West, © 2000)
- **FAA Airport Master Record Form (5010-1)**
- **Klamath Falls Sectional Aeronautical Chart; IFR Enroute Low Altitude (L-2) Chart** (US DOT Federal Aviation Administration National Charting Office)
- **City of Creswell – A Profile of the Creswell Community** (Lane Council of Governments, November 2000**)**
- An historic chronology of the airport's development (1963-2000), prepared by **Mr. John Ward**.
- Airport management records
- City of Creswell and Lane County land use planning documents, zoning ordinances and mapping.

AIRPORT LOCALE

Creswell is located at the southern end of the Willamette Valley of Oregon, approximately 130 miles south of Portland and 10 miles south of Eugene. Creswell Municipal Airport/Hobby Field (hereafter referred to as Hobby Field) is located on approximately 98 acres, 1 mile northeast of downtown Creswell, within the city limits. U.S. Interstate 5 (I-5) is located immediately adjacent to the west edge of the airport; U.S. Highway 99 is located about one-half mile west of I-5. Both I-5 and Highway 99 connect Creswell with Eugene to the north and Cottage Grove to the south. The Siskiyou line of the Central Oregon and Pacific railroad serves Creswell with connections to Eugene and Black Butte, California.

The airport is surrounded by predominantly agricultural lands (grass and hay, grazing, etc.) to the north, east and west. The area south of the airport contains residential and commercial development, small areas of agricultural lands and open space. The density of residential and commercial development south and southeast of the airport has increased significantly in recent years. A newer residential subdivision located on the north side of Emerald Parkway (St. Andrews Loop), includes numerous residences located within 1,200 feet of the south end of the runway. The nearest residence is located approximately 700 feet from the runway end and 300 feet east of the extended runway centerline, just beyond the boundaries of the runway protection zone and runway approach surface for Runway 33. Lower density rural residential developments are located near the southwest corner of the airport, with access provided by Melton Road.

Hill Creek approaches the airport near its southeast corner and feeds into Garden Lake, located approximately 1,200 feet from the south end of the runway. Garden Lake Park, which provides public access to the lake, is located just west of the extended runway centerline and is accessed from Melton Road.

CLIMATE

The climate in the Creswell area is characterized by warm, dry summers and mild, wet winters. Based on historic records from the National Weather Service station in Eugene, the average maximum temperature is 81.8 degrees Fahrenheit (August) and the average minimum temperature is 35.2 degrees (January). The area averages 49.37 inches of precipitation (8.61 in December and 0.51 in July). The average wind speed is 7.6 miles per hour; prevailing winds are predominantly north-south with seasonal variations that include a westerly flow during the spring and early summer months.

GEOLOGY AND TERRAIN

Creswell is located adjacent to the Camas Swale, a natural plain that extends into the valley from the South Eugene Hills. The terrain immediately surrounding Hobby Field is relatively level, consisting mostly of cultivated agricultural lands and sparsely forested areas. The published airport elevation is 538 feet above mean sea level (MSL). Creswell Butte is located about 1.75 miles southwest of the runway, rising to an elevation of approximately 980 feet MSL, which is 442 feet above the airport. Creswell Butte is located just south and west of the standard (left) airport traffic pattern for Runway 15, within the existing conical surface, which is the outer band of protected airspace for the runway. Short Mountain is located approximately 3 miles north of the airport with an elevation of just less than 1,100 feet MSL (a tower height of 1,114 feet MSL is depicted on current USGS topographical mapping). Terrain rises to nearly 3,800 feet (southeast) within ten miles of the airport.

Soil survey information for Lane County indicates that the soils found in the vicinity of the airport are predominantly silty loams, consistent with the general characteristics of the broad flood plains of the valley floor.[3] These areas are characterized by "nearly level, excessively drained to very poorly drained soils on flood plains." The most common soil types mapped in the immediate vicinity of the airport include: Noti loam; Linslaw loam; Holcomb silty clay loam; Salem gravely silt loam; and Salkum silt loam, 2 to 6 percent slopes.

SOCIOECONOMIC CONDITIONS

Population

According to the most recent statewide estimates prepared by Portland State University Center for Population Research and Census, the population of Creswell (incorporated area) was 4,525 in 2006; Lane County's 2006 population was estimated at 339,740. Based on 2006 data, Creswell accounted for approximately 1.33 percent of Lane County's population, up from 0.86 percent in 1990. In percentage terms, Creswell's population growth consistently outpaced the Eugene-Springfield area, Lane County and the statewide growth between 1990 and 2006. In real terms, the population within the incorporated areas of the community has increased 86 percent in the last 16 years.

The Eugene-Springfield metropolitan area accounts for approximately 60 percent of Lane County population, while the unincorporated areas of the county account for nearly 30 percent of overall population. It is interesting to note that the population within the unincorporated areas of Lane County has declined by 1.8 percent since 1990. This may indicate some population shift toward urbanized areas, an expansion of local community incorporated areas (annexation), or a combination

[3] Lane County Soil Survey. Natural Resources Conservation Service (September 1987)

of both. This trend is thought to have also contributed to the significant population growth within incorporated Creswell in recent years.

Table 2-1 summarizes recent local, county and state population trends. Additional population data and existing long-term population forecasts will be incorporated into the aviation activity forecasts (Chapter Three).

TABLE 2-1:
AREA POPULATION

	2006[1]	2000[2]	1990[2]
City of Creswell	4,525 (+26.4%)	3,579 (+47.2%)	2,431
Eugene-Springfield	205,660 (+7.8%)	190,757 (+21.2%)	157,397
Lane County	339,740 (+5.2%)	322,977 (+14.2%)	282,912
Oregon	3,690,505 (+7.9%)	3,421,399 (+20.4%)	2,842,321

1. PSU Certified Population Estimate (7/1/06)
2. U.S. Census Data
3. Percentages listed in table represent net increase/decrease from prior year in table.

Economy

The Lane County economy has historically been heavily dependent on the wood products industry, although it has become increasingly diversified in recent years with growth in services, high technology and transportation manufacturing, retail industries and higher education. The Emerald Valley Golf Club, located less than one mile east of Hobby Field, is one of the community's leading recreational/tourism attractions, drawing visitors on a year-round basis.

According to information compiled by the Oregon Economic & Community Development Department, the five largest employers in Creswell[4] include: Fircrest Farms (300 employees – poultry); Creswell Forest Products (40 employees – finished wood products); JD Rinaldi Fabricators (35 employees – steel fabricators); Green River Lumber, Inc. (20 employees – lumber transportation); and Tom Smith Fiberglass – (16 employees – motor home component manufacturer). The nearby Eugene-Springfield metropolitan area is also a primary source of employment opportunities for local residents. The Region 2050 community profile[5] prepared in 2000 indicated that "over half of Creswell workers currently commute to jobs in Eugene or Springfield…" The 2003

[4] Employment data provided by City of Creswell (October 2002)

[5] City of Creswell – A Profile of the Creswell Community (LCOG, Region 2050; November 2000)

average annual unemployment rate in Lane County was 7.8 percent, placing it slightly below the statewide average, but nearly 2 percentage points above the average national unemployment level.

Hobby Field provides local community access to the statewide and national air transportation system. The nearby Eugene Airport provides access to commercial air transportation and business aviation needs that exceed the capabilities of Hobby Field. As noted in Chapter One, Hobby Field is included in Oregon's "core system of airports," a functional classification defined in the 2000 Oregon Aviation Plan. Core system airports are defined as having "a significant role in the statewide aviation system." Based on their strategic importance, these airports are given a higher priority status for funding to ensure the long-term viability of the Oregon transportation system.

The Oregon Department of Transportation (ODOT) - Aeronautics Division, conducted a study of the economic impacts of Oregon airports in the mid-1990s. The study evaluated the economic contribution of airports from direct impacts, indirect impacts, and induced impacts. Direct impacts are those expenditures related to direct passenger/cargo transport, aviation functions, and direct support services for transport/aviation functions at the airport. Indirect impacts are those regional expenditures resulting from aviation-related tourism (hotels, restaurants, etc) and other economic activities that are dependant on the airport. The induced impact is the "multiplier effect" related to increased regional demand for goods and services, and the resulting circulation of money in the local community, that results from the airport.

In the ODOT study, the total economic impact (output) of the airport was taken as the sum of all direct, indirect, and induced impacts on the regional economy**. Based on 1995 data, the economic contributions of Hobby Field were estimated as follows: Employment: 38; Payroll: $616,300; Output: $1.9 million.** The study noted that several businesses regularly used Hobby Field including G.O. Walsh Real Estate and Cascade-Pacific Industries, in addition to local flight training, skydiving, and aircraft maintenance businesses.

A new ODA economic impact study of Oregon airports is planned that will update the economic conditions associated with Hobby Field. Based on recent data provided by airport management, a list of airport tenants and regular users was compiled and is summarized in **Table 2-2**.

TABLE 2-2:
HOBBY FIELD BUSINESS ACTIVITY

Airport Businesses Tenants	Activity	2005 Full-Time Equivalent (FTE) Estimated Employees (if known)
Viper Aviation	Aircraft Maintenance	2.25
Wolf Aircraft	Aircraft Maintenance	2.0
Cub Works	Aircraft Maintenance	N/A
About Time Aviation	Flight Instruction	3
Flying D Enterprises	Flight Instruction	1
Eugene Skydivers	Skydiving	N/A
Wright Brothers Skydiving	Skydiving	N/A
Total Estimated On-Airport Employment		***8.25***
Regular Airport Users		
Ray's Food Place		
PCC Aviation		
Lane Community College		
Advanced Flight Line Disciplines		
Creswell Garden Inn		
Seasonal Forest Fire Suppression Operators		

Source: Airport management records. N/A: Employment data not available.

RECENT AIRPORT IMPROVEMENTS

A major reconstruction project was completed at the airport in the mid-1980s. The project included construction of the current runway and parallel taxiway, which replaced a smaller runway. The new runway was realigned approximately 10 degrees (toward the northwest) to its current 150-330 degree (magnetic) alignment. Additional property was acquired as part of that project to accommodate the changes in airfield configuration.

An FAA-funded environmental assessment (EA) project was conducted in 1983 and subsequently approved for the runway-taxiway reconstruction. The runway and parallel taxiway construction project was completed in 1987. Most of the hangar taxilanes and aircraft parking aprons at Hobby Field have been constructed since 1988. A summary of improvement projects at Hobby Field include:

- Property acquisition to accommodate the runway extension and reorientation;
- Reconstruction of Runway (3,101by 60 feet) with full-length west parallel taxiway;
- Runway edge lights and threshold lights;
- Precision approach path indicator (PAPI) on Runway 15;
- Replacement of the aviation fuel storage tanks and dispensing system to meet DEQ/EPA regulations;
- Construction of new hangars (predominately private investment);
- Hangar taxilane & taxiway construction;
- Aircraft tiedown apron construction;
- Construction of terminal area loop roadway and vehicle parking; extension of access roadways (to serve landside facilities);
- Utility improvements, septic drain field, and stormwater drainage;
- Temporary water storage tanks for fire response;
- Airport fencing projects; and
- Pavement maintenance and rehabilitation projects.

Local fire protection service is provided by the Creswell Rural Fire Protection District; law enforcement is provided by Lane County Sheriff Department under contract with the City of Creswell. The City of Creswell provides water and sewer utilities. The Lane Council of Governments (LCOG) provides land use planning and zoning services under contract with the City.

The day-to-day operation of the airport is managed by one full-time staff position (Airport Manager) that is under the direction of the City Manager. An appointed Airport Commission oversees the operation of the airport with staff and reports to the City Council.

The airport has a fixed base operator (FBO) and several aviation businesses providing services such as aircraft maintenance, aircraft fueling, flight instruction, and skydiving.

In recent years, the absence of city water has prevented expansion of hangars due to local fire marshal concerns about fire suppression and response capabilities. The inability to respond to demand for hangar space is generally recognized as a significant factor in the airport's current and recent financial performance. The 2004 annexation of the airport into the city limits allows city utilities to be extended to the site. The elimination of the utility-related development constraint is expected to result in new private investment in hangars at the airport, which will also increase airport land lease revenues and local property tax revenues.

AIRFIELD FACILITIES

Hobby Field serves a variety of general aviation users, including business and recreational aviation and seasonal forest fire response. The relatively narrow configuration of the site has resulted in all landside development and aircraft services being located on the west side of the runway.

Table 2-3 summarizes existing airport data, based on the 2004 FAA-approved airport layout plan (ALP) and published data from the current Airport/Facility Directory (AFD).[6] **Figure 2-1** provides location and site maps of the airport. **Figure 2-2** provides a detail of existing terminal area facilities at the airport.

TABLE 2-3:
AIRPORT DATA

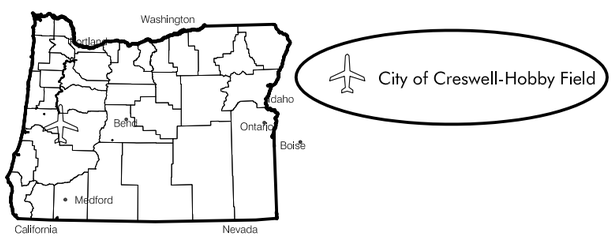
Airport Name/Designation	Creswell Municipal/Hobby Field (77S)
Airport Owner	City of Creswell
Date Established	1963
Airport Category	National Plan of Integrated Airport Systems (NPIAS) General Aviation FAA Airport Reference Code: B-I (small) Oregon Aviation System Designation: Community General Aviation Airport (Category 4) included in Oregon Core System of Airports
Airport Acreage	Approximately 102.6 Acres (based on Lane County Assessor ownership data)
Airport Coordinates	N 43º 55’ 51” W 123º 00’ 24”
Airport Elevation	535 feet Mean Sea Level (MSL)
Airport Traffic Pattern Configuration/Altitude	Left Traffic - 1,400 feet above mean sea level (MSL)

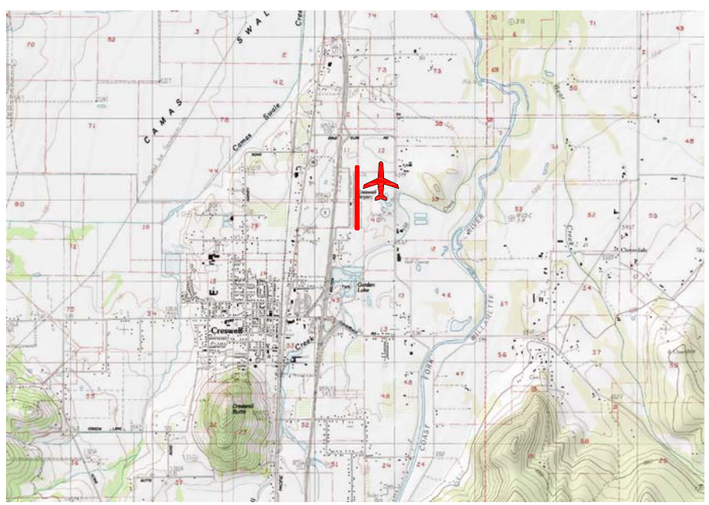
[6] Airport/Facility Directory Northwest U.S., published by U.S. Department of Commerce.

LEGEND

1. RUNWAY 15-33: 3101'x60'
2. PARALLEL TAXIWAY
3. AIRCRAFT HOLD/RUN-UP AREA
4. AIRCRAFT APRON
5. FIXED BASE OPERATOR
6. FUELING AREA
7. VEHICLE PARKING
8. CONVENTIONAL HANGAR
9. T-HANGAR
10. AIRPORT BEACON
11. SEGMETED CIRCLE

TERMINAL AREA FACILITIES
(SEE FIGURE 2-2 FOR DETAIL)





MAGNETIC DEC.
17° 0' EAST
(2004 VALUE)

AERIAL PHOTO FLOWN FOR CENTURY WEST ENGINEERING BY BERGMAN PHOTOGRAPHIC SERVICE 3/16/04

CENTURY WEST
ENGINEERING CORPORATION

CITY OF CRESWELL-HOBBY FIELD
EXISTING CONDITIONS AND SITE MAP

FIGURE
2-1

LEGEND

1	RUNWAY 15-33: 3101'x60'
2	PARALLEL TAXIWAY
3	AIRCRAFT HOLD/RUN-UP AREA
4	AIRCRAFT APRON
5	FIXED BASE OPERATOR
6	FUELING AREA
7	VEHICLE PARKING
8	CONVENTIONAL HANGAR
9	T-HANGAR
10	AIRPORT BEACON
11	SEGMETED CIRCLE
12	EAA HANGAR
13	HANGAR/RESIDENCE (OFF-AIRPORT)
	TERMINAL AREA FACILITIES

NOTE:
SEE FIGURE 2-1 FOR ALL ITEMS LISTED IN LEGEND

MAGNETIC DEC.
17° 4' EAST
(2004 VALUE)

0 80 160
SCALE OF FEET
SCALE: 1"=80'

AERIAL PHOTO FLOWN FOR CENTURY
WEST ENGINEERING BY BERGMAN
PHOTOGRAPHIC SERVICE 3/16/04

CENTURY WEST
ENGINEERING CORPORATION

CITY OF CRESWELL-
HOBBY FIELD
TERMINAL AREA FACILITIES

FIGURE
2-2

Runway & Taxiways

Hobby Field has a single 3,101-foot by 60-foot paved and lighted runway, which is oriented in a north-south alignment with a 150/330-degree (magnetic) heading. The runway is designed to accommodate small general aviation aircraft and has a published weight bearing capacity of 12,000 pounds for aircraft with single wheel land gear configurations.[7] The effective gradient of Runway 15/33 is 0.1 percent. The runway has an asphaltic concrete (AC) surface, basic markings (white paint), and medium-intensity runway edge lighting (MIRL). During a recent site inventory, Runway 15/33 was observed to be in generally good condition. According to available data, the original asphalt surface course applied in 1987 has not been modified.

Runway 15/33 is served by a full-length west side parallel taxiway/taxilane with three connecting exit taxiways. The parallel taxiway is 35 feet wide with a 200-foot runway separation. Aircraft holding/run-up areas are located at both ends of the parallel taxiway, adjacent to each runway threshold. The parallel taxiway provides runway access for the entire west side of the airfield. The parallel taxiway is not equipped with edge lighting or edge reflectors; however, several flush mounted blue reflectors are installed on the taxiway centerline near the entrance to the FBO apron and fueling area.

Aircraft hold lines are painted on all taxiway connections to Runway 15/33, 125 feet from the runway centerline. This distance corresponds to the outer edges of a 250-foot wide runway obstacle free zone (OFZ) and runway object free area (OFA) that are defined for runways used by small aircraft exclusively. The parallel taxiway and exit taxiways have yellow centerline striping.

Additional taxiway/taxilane access is provided to the hangar development areas located north and south of the main apron areas. The south hangar area is served by center taxilane and individual taxilanes between the hangars. Aircraft access to the north hangar area is provided by an access taxiway that connects to the parallel taxiway and by a taxilane that extends from the north edge of the main tiedown apron. None of the hangar taxiways or taxilanes are equipped with edge lighting or edge reflectors.

Table 2-4 summarizes existing runway and taxiway facilities.

[7] FAA Airport/Facility Directory (A/FD)

TABLE 2-4:
RUNWAY & TAXIWAY DATA

Runway	
Dimensions	3,101 x 60 feet
Runway Bearing	N 6º 00' 00" W (true)
Effective Gradient	0.1%
Surface/Condition	Asphalt/Very Good* *(*Based on 2005 PCI inspection)*
Weight Bearing Capacity	12,000 pounds – Single Wheel Landing Gear
Marking	Basic (visual)
Lighting	Medium Intensity Runway Edge Lighting (MIRL) PAPI (Rwy 15) MIRL and PAPI are pilot activated on CTAF 122.7 MHz
Signage	Location & Directional Signs
Wind Coverage	All Weather: Estimated 95% at 12 mph *(source: 1983 Runway Reconstruct / Reorientation EA)*
Taxiways	
Parallel Taxiway	3,101 x 35 feet with (3) 90-degree exit/connecting taxiways (200-foot runway separation). Asphalt surface; centerline stripes; aircraft hold lines at each runway connection.
Hangar Taxiway/Taxilanes (north)	Extend from north section of parallel taxiway and north edge of tiedown apron, serving north hangar development area. Dimensions vary from 12- to 35 feet wide; "very good" condition rating (2002 PCI report)
Hangar Taxiway/Taxilanes (south)	Extend from south section of parallel taxiway and south edge of FBO apron, serving south hangar development area. Dimensions vary from 14- to 25 feet wide; condition ratings range from "very poor" to "excellent" (2002 PCI report)

Aircraft Apron

Hobby Field has two primary aircraft apron areas located near the midpoint of the runway on its west side, with a total of 37 designated tiedown positions. In addition to the paved aprons, an unpaved area located in front of the north row of conventional hangars also accommodates aircraft parking for local skydivers.

The FBO apron directly abuts the parallel taxiway and accommodates aircraft fueling, aircraft loading/unloading, maintenance hangar access, and a limited number of parking positions. The aircraft fueling area is located just south of the fixed base operator (FBO) office. The FBO office and maintenance hangar is located along the back edge of apron. **Table 2-5** summarizes existing aircraft apron facilities.

TABLE 2-5:
AIRCRAFT APRON DATA

FBO/Fueling Apron	Approximately 380' long; width varies from 120 to 155' (apprx. 5,900 square yards); Asphalt Concrete. Aircraft parking (2 tiedowns); FBO hangar; aircraft fueling area
Tiedown Apron	Dimensions Vary; Main Section Approximately 250 x 350' (apprx. 12,990 square yards); Asphalt Concrete. Aircraft parking (35 tiedowns)

The FBO apron is approximately 380 feet long and varies between 120 and 155 feet deep. The FBO apron directly abuts the 35-foot wide parallel taxiway. The airplane design group (ADG) I taxiway object free area (OFA) edge is located 44.4 feet from taxiway centerline. The taxiway OFA should be free of any obstructions such as parked aircraft. The outer 27 feet of the FBO apron is located within the parallel taxiway OFA and is therefore not available for aircraft parking, loading/unloading or fueling. Two tiedowns are located near the south end of the apron, adjacent to the parallel taxiway, outside the taxiway OFA.

The main tiedown apron connects to the FBO apron at its north end and extends to the west. There are currently 35 light aircraft tiedown positions designated on the main parking apron configured in three east-west rows. The center row has 14 tail-to-tail tiedown positions and four south-facing tiedowns (at the east end of the row), with taxilanes on both sides. The outer tiedown rows are tail-in with 7 positions each; three additional tail-to-tail tiedown positions are located on the south row, directly adjacent to the FBO maintenance hangar. Currently, two tiedowns located at the southeast corner of the main apron are unavailable for use, occupied by two temporary water storage tanks that

provide water supply for basic fire response at the airport. Airport management indicates that these tanks will be removed when City water service is extended to the airport.

During a recent site inventory, the aprons were observed to be in good condition, which generally corresponds to the PCI inspections conducted at the airport in 2002.

Airfield Pavement Condition

As part of the **Oregon Aviation System Plan**, the Oregon Department of Aviation manages a program of pavement evaluation and maintenance for Oregon's general aviation airports. This evaluation provides standardized pavement condition index (PCI) ratings, pavement features and current conditions. Through the use of MicroPAVER computer software, current pavement condition ratings are entered into the system with the specifics of each pavement section. The program is able to predict the future condition of the pavements if no action is taken (i.e. rate of deterioration) while also identifying the recommended measures needed to extend the useful life of the pavement section.

Table 2-6 summarizes airfield pavement conditions for Hobby Field based on the inspection conducted in 2002.[8] The branch report contained in the pavement study indicates that Hobby Field currently has more than 610,000 square feet (SF) of airfield pavement, which equals approximately 14 acres of surface area.

In the 2002 inspection, Hobby Field's airfield pavements ranged from "very poor" to "excellent," although the average rating of all airfield pavements was 77, which corresponds to "very good" condition. The airfield pavements that were rated "very poor" included two hangar taxilanes in south hangar development.

The following excerpt from 2002 pavement study summarizes the findings:

"The primary distresses observed during the inspection were longitudinal and transverse cracking and weathering and raveling with isolated occurrences of alligator cracking, block cracking, depressions, oil spillage, patching, rutting."

The condition of the airfield pavements observed during site visits performed as part of this master plan inventory were generally consistent with the formal pavement evaluations conducted in 2002.

[8] Pavement Evaluation/Maintenance Management Program, Creswell Municipal/Hobby Field (2000)

TABLE 2-6:
SUMMARY OF AIRFIELD PAVEMENT CONDITION (2002)

Pavement	Section Design/Age	PCI Rating[1]	Condition
Runway 15/33	2" AC (1987); 4" Crushed Aggregate Base (1987); 12" Aggregate Subbase (1987)	85	Very Good
Parallel Taxiway and Midfield Exit	2" AC (1987); 4" Crushed Aggregate Base (1987); 12" Aggregate Subbase (1987)	79-87	Very Good to Excellent
Main Apron	2" AC (1988); 4" Crushed Aggregate Base (1988); 12" Aggregate Subbase (1988)	71	Very Good
North Hangar Area			
North Hangar Area Main Access Taxiway	2" AC (1988); 4" Crushed Aggregate Base (1988); 12" Aggregate Subbase (1988)	85	Very Good
North Hangar Area Taxilanes	AC (1988); unknown pavement and base thickness	78-80	Very Good
South Hangar Area			
South Hangar Area Main Access Taxilane	2" AC (1988); 8" Crushed Aggregate Base (1988)	32	Very Poor
South Hangar Area Main Access Taxilane – *(western extension)*	AC (1988); unknown pavement and base thickness	83	Very Good
South Hangar Area Taxilanes	2" AC (1988); 8" Crushed Aggregate Base (1988); other taxilanes (1988-1999) unknown pavement and base thicknesses.	12-100	Very Poor to Excellent

1. The Pavement Condition Index (PCI) scale ranges from 0 to 100, with seven general condition categories ranging from "failed" to "excellent." For additional details, see *Oregon Aviation System Plan Pavement Evaluation/Maintenance Management Program for Creswell Airport - Hobby Field.*

LANDSIDE FACILITIES

Hangars and Airport Buildings

In early 2005 there were a total of 23 buildings located on the airport, mostly consisting of aircraft storage hangars. It is noted that no new hangars have been constructed at the airport for several years due to the unavailability of water service to provide adequate fire protection.

There are currently nine T-hangars with a total of 97 storage units. Three of the T-hangars have open fronts (no doors) and the remaining six buildings have doors. There are currently 12 conventional hangars located on the airport including the FBO maintenance hangar, the Experimental Aircraft Association (EAA) hangar, and eleven other hangars used for commercial business and aircraft storage. The FBO hangar houses office space, classrooms, a pilot waiting area, and restrooms. One additional aircraft hangar is located off airport property near the southwest corner of the airport, with taxiway access to the aircraft holding area for Runway 33. Existing on-airport buildings are summarized in **Table 2-7.**

TABLE 2-7: AIRPORT BUILDINGS

Building	Existing Use
FBO Hangar and Office	FBO, Restrooms, Office, Pilot/Passenger Areas; Maintenance Hangar
T-Hangar A - (11 units) (north hangar area)	Aircraft Storage
T-Hangar B - (10 units) (south hangar area)	Aircraft Storage
T-Hangar C - (13 units) (south hangar area)	Aircraft Storage
T-Hangar D - (10 units) (south hangar area)	Aircraft Storage
T-Hangar E - (11 units) (south hangar area)	Aircraft Storage
T-Hangar F - (10 units) (south hangar area)	Aircraft Storage
T-Hangar G - (14 units) (south hangar area)	Aircraft Storage
T-Hangar L - (11 units) (south hangar area)	Aircraft Storage
T-Hangar I - (7 units) (south hangar area)	Aircraft Storage
"EAA" Conventional Hangar	Aircraft Storage, EAA Operations
Sm/Med. Conventional Hangar (G1) (north hangar area)	Aircraft Storage
Sm/Med. Conventional Hangar (G2) (north hangar area)	Aircraft Storage
Sm/Med. Conventional Hangar (G3) (north hangar area)	Aircraft Storage
Sm/Med. Conventional Hangar (G4) (north hangar area)	Aircraft Storage
Sm/Med. Conventional Hangar (G5) (north hangar area)	Aircraft Storage
Med/Lg. Conventional Hangar (F1) (north hangar area)	Commercial Hangar (Wolf Aircraft); Aircraft Storage & Operations
Med/Lg. Conventional Hangar (F2) (north hangar area)	Commercial Hangar (PCC Aviation) Aircraft Storage & Operations
Med/Lg. Conventional Hangar (F4) (north hangar area)	Commercial Hangar (About Time Aviation); Aircraft Storage & Operations
Med/Lg. Conventional Hangar (E1) (north hangar area)	Commercial Hangar (Eugene Skydivers); Aircraft Storage & Operations
Med/Lg. Conventional Hangar (D1) (north hangar area)	Commercial Hangar (Wright Brothers Skydiving); Aircraft Storage & Operations
Small Office (modular bldg.)	Commercial tenant office
Electrical Building	Facilities

Airport Lighting

Hobby Field is equipped with lighting that accommodates day and night operations in visual flight rules (VFR) conditions. Runway 15/33 has medium intensity runway lighting (MIRL) (edge and threshold lighting) and a precision approach path indicator (PAPI) on the Runway 15 end.

The airport beacon is mounted on the roof of the FBO hangar on the west side of the runway. The segmented circle and wind cone are located near the mid-point of the runway on its east side. Wind cones are located within the segmented circle and near the end of Runway 33. The airport beacon and lighted wind cones operate on dusk-dawn automatic switches. The runway lights and PAPI are pilot-activated on the common traffic advisory frequency (CTAF) 122.7 MHz. **Table 2-8** summarizes existing airport lighting at Hobby Field.

Overhead flood lighting is available in the terminal area, fueling area, and adjacent to most aircraft hangars.

TABLE 2-8:
AIRPORT LIGHTING

Component	Type	Condition
Runway 15/33	Medium Intensity Runway Edge Lighting (MIRL); Threshold Lights	Good
Taxiway Lighting	None (Limited Reflectors)	N/A
Lighted Airfield Signage	None	N/A
Runway Approach Lighting	None	N/A
Visual Guidance Indicators	PAPI (Rwy 15)	Good
Airport Lighting	Airport Rotating Beacon; Lighted Wind Cone	Good

AIRSPACE AND NAVIGATIONAL AIDS

Hobby Field has no electronic navigational aids or published instrument approaches and operates exclusively under visual flight rules (VFR) conditions. In 2004, updated airspace planning was conducted for the airport based on the planned development of a nonprecision instrument approach. The airspace surfaces for the runway were upgraded to nonprecision instrument approaches for utility runways.[9] These airspace planning criteria will be assumed in all master plan evaluations. This type of airspace is consistent with development of a nonprecision instrument approach using either conventional ground-based navigational aids such as the Eugene VOR, or satellite navigational

[9] Per FAR Part 77, Utility runways are designed for aircraft weighing less than 12,500 pounds.

(SATNAV) based on various Global Positioning System (GPS) platforms, such as the Wide Area Augmentation System (WAAS). **Table 2-9** summarizes existing navigational aids and related items.

Hobby Field is located within an area of Class E airspace with a floor 700 feet above the ground surface. Class E airspace has no mandatory radio communications during VFR conditions. An area of Class E airspace that extends from the surface upward is located approximately 7.5 miles northwest of Hobby Field; this airspace is intended to protect instrument procedures at Eugene Airport. Class D airspace surrounds Eugene Airport (5 nautical mile radius, extending to a height 2,500 feet above airport elevation) when the air traffic control tower is in operation; airspace surrounding Eugene reverts to Class when the tower is closed.

The Eugene VORTAC is located approximately 14.7 miles northwest of the airport on the 120-degree radial. Several low- and high-altitude enroute airways connecting to VORTACs in Eugene, Medford, and Klamath Falls are located in the vicinity of Hobby Field. However, the minimum enroute altitudes for these airways are well above local airport traffic altitudes and no conflicts exist.

TABLE 2-9:
NAVIGATIONAL AIDS AND RELATED ITEMS

Type	Facilities
Electronic Navigational Aids	None on Site Nearby Facilities: Eugene (EUG) VORTAC (14.7 nm NW) 112.8 MHz Frakk (EU) Nondirectional Beacon (19.5 nm NW) 260 LHz Corvallis (CRV) VOR/DME (36.2 nm NNW) 115.4 MHz Rogue Valley (OED) VORTAC (85.6 nm S) 113.6 MHz Medford (MEF) Nondirectional Beacon (92 nm S) 356 LHz Roseburg (RBG) VOR/DME (47 nm SSW) 108.5 MHz
Instrument Approaches	None
Weather Observation	None (Eugene ASOS nearest weather data)
Communication	Unicom/Common Traffic Advisory Frequency (CTAF)(122.8 MHz)

The airport traffic pattern for Runway 15/33 is standard left traffic with an altitude of 1,400 feet above mean sea level (MSL). Runway 33 is listed as the “calm” wind runway in pilot facility directories. Pilots operating at Hobby Field use the common traffic advisory frequency (CTAF) of 122.8 MHz for local communications. It is noted that Cottage Grove State Airport, located 8 miles south of Hobby Field also uses the CTAF 122.8 MHz frequency. To avoid confusion in radio communications, pilots are encouraged to state the name of the airport when announcing intentions for takeoff, landing, etc.

A designated parachute jumping area is located on the east side of the runway, near its north end (listed in the current A/FD). It has been noted that conflicts have reportedly occurred between aircraft on the runway and/or in the airport traffic pattern and skydivers landing on the east side of the runway. Airport management established standard operating guidelines for users and worked with tenants to maintain safe airport operations; however, in late 2006, the City canceled its lease with the Oregon Department of Transportation (ODOT) for the drop zone (immediately adjacent to the east side of the airport), citing concerns about persistent safety and operational conflicts and the limited size of the drop zone.

ORS 660-013-0100 (8) states: *Parachuting businesses may be allowed only where they have secured approval to use a drop zone that is at least 10 contiguous acres. A local government may establish a larger size for the required drop zone where evidence of missed landings and dropped equipment supports the need for the larger area. The configuration of 10 acre minimum drop zone shall roughly approximate a square or circle and may contain structures, trees, or other obstacles if the remainder of the drop zone provides adequate areas for parachutists to safely land.*

Table 2-10 summarize notable obstructions, special airspace designations and IFR routes in the vicinity of Hobby Field, as identified on the Klamath Falls Sectional Aeronautical Chart. Local airport operations and flight activity is not affected by the noted airspace or obstructions located in the vicinity of the airport.

TABLE 2-10:
AIRSPACE/INSTRUMENT ROUTES/ LOCAL OBSTRUCTIONS

Airspace Item	Description	Location
Low Altitude Enroute Airway	Victor 452 – 5,200 feet mean sea level minimum enroute altitude (MEA)	2.5 nautical miles west. Extends from Eugene VORTAC on a 130-degree course to MANSN intersection (with Klamath Falls VORTAC 314-degree radial)
Low Altitude Enroute Airway	Victor 23 – 4,000 feet mean sea level minimum enroute altitude (MEA)	8 nautical miles west. Extends from Eugene VORTAC on a 152-degree course to CURTI intersection (with Rogue Valley VORTAC 333-degree radial)
Low Altitude Enroute Airway	Victor 448 – 4,000 feet mean sea level minimum enroute altitude (MEA)	11 nautical miles west. Connects Eugene VORTAC and Roseburg VOR/DME on a 167/333-degree course
Class E Airspace	Associated with low altitude federal airways (700 feet above ground level)	Directly over airport, extends northwest toward Eugene Airport
Class E Airspace (SFC)	Associated with Eugene Airport at surface	Southeastern corner of extension begins 7.5 nautical miles northwest of Hobby Field
Class D Airspace	Associated with Eugene Airport (surface to 2,500 feet above airport elevation)	Begins 10.5 nautical miles northwest of Hobby Field (5 nm radius from EUG)
Parachute Jump Area	Landing zone located adjacent to runway; depicted on northeast side of airport	Immediately adjacent to airport *(site lease canceled in 2006)*
Glider Operations Area	Associated with Cottage Grove State Airport; depicted on northwest of airport	8 nautical miles south-southwest
Tower (Group)	985' MSL (450 feet AGL) Radio Tower	Within 3 miles northwest
Tower	1085' MSL (205 feet AGL) Noted: Under Construction on current sectional chart	Within 2 miles southeast
Tower (Group)	2156' MSL (855 feet AGL)	Within 7 miles northwest
Tower	743' MSL (230 feet AGL)	Within 7 miles northeast
Tower	725' MSL (230 feet AGL)	Within 7 miles northeast
Overhead Power Line	Major Transmission Lines	Within 2-3 miles (west)

AIRPORT SUPPORT FACILITIES/SERVICES

Aircraft Fuel

Hobby Field has aviation gasoline (AVGAS) and jet fuel available for sale. The airport has two underground fuel storage tanks (10,000 gallons each) that were installed in 2000. The tanks are owned by the City of Creswell. The double wall storage tanks and underground piping is constructed of fiberglass and meets all current Oregon DEQ and federal EPA regulations for leak detection, vapor recovery and spill containment. The new storage tanks replaced two older underground 12,000-gallon steel tanks that were removed as part of the project. The tanks and fueling facilities are located south of the FBO on the FBO apron.

Surface Access and Vehicle Parking

Vehicle access to the airport is provided via Melton Road, which connects to Emerald Parkway and then Cloverdale Road (Springfield Creswell Highway No. 222). Cloverdale Road is Creswell's primary east-west crossing over U.S. Interstate 5 (I-5) and connects to the freeway interchange (Exit 182) serving Creswell. Cloverdale Road becomes Oregon Avenue on the west side of the freeway as it enters downtown Creswell.

Melton Road and the terminal area loop roadway are paved; an unpaved section of Melton Road continues beyond the terminal area loop roadway to provide access to the north hangar area. A separate section of Melton Road connects at Dale Kuni Road, and extends along the northwest corner of the airport on the east side of I-5. Dale Kuni Road borders the airport's north end and extends southward beyond the airport's eastern boundary to Cloverdale Road. All landside facilities are currently located on the west side of the airport; no vehicle access is available to the east side of the airport.

Designated vehicle parking areas are located adjacent to the FBO building, along the terminal area loop roadway and adjacent to individual hangars. Vehicle parking requirements are generally modest, although some congestion reportedly occurs in the north hangar area during busy skydiving days.

Fencing

Fencing at the airport consists of sections of chain link in the terminal area and around the north end of the airport. A 2005 fencing project has extended new chain link fencing from the south side of the main tiedown apron and along the northwest and northern sections of the airport property line. The fencing consists of 7-foot chain link with a 1-foot barbed wire top section. A new 20-foot wide cantilever vehicle access gate will control access to the north hangar area, immediately beyond the terminal loop roadway. Other portions of the airport perimeter are fenced with three or four strand wire fencing. Airport management indicates that chain link fencing will continue to be extended along the airport property line as funding becomes available.

Utilities

The airport water supply is provided by an on-site well. The limited flow volume that can be maintained by the system has prompted a moratorium on new hangar construction until water service upgrades are performed. As a temporary fire protection measure, the City has installed two water storage tanks on the main apron. Extension of water service to the airport is identified as a high priority improvement for the City.

The airport is not currently served with (City) sanitary sewer; a drain field located within the terminal loop roadway is used by the FBO building. Replacing the airport's drain field septic system with sanitary sewer service will be considered among future utility upgrades by the City. The airport has electrical (Pacific Power & Light) and telephone service. Natural gas service is provided locally by Northwest Natural Gas, although service is not currently extended to the airport. Public telephone and restrooms are located in the airport FBO building.

LAND USE PLANNING AND ZONING

The City of Creswell Comprehensive Plan provides land use guidance for the areas located within the city limits and urban growth boundary (UGB). The airport was annexed into the city limits in 2004, although a small portion of city-owned airport property (southwest corner) was inadvertently not included in the annexation. This oversight should be corrected as soon as possible to provide uniform land use planning and development regulations for the entire airport site. With the exception of the small area located outside city limits, the airport is subject to city land use and zoning requirements (City of Creswell Development Code).

The incorporated area and UGB of Creswell is relatively compact, with the largest area located on the west side of U.S. Interstate 5 (I-5). The airport, golf course and areas of commercial and residential land use are located on the east side of I-5, mostly north of Cloverdale Road. Lands located north, northwest, northeast, and east of the airport are generally outside city boundaries and are subject to Lane County regulation.

The land contained within airport boundaries is zoned **"Public Facilities/Government"** (Creswell Development Code, Chapter 2.6) and is depicted on both the City of Creswell Comprehensive Plan and Zoning maps as "Public Facilities/Government." The small area of the airport (County Tax Lot 5301) that was not annexed into the city is zoned **Airport Operations (A-O)**, the original Lane County zoning applied to Hobby Field, prior to annexation.

Airport overlay zoning is maintained by the City of Creswell (Creswell Development Code, Chapter 2.8). As part of the master plan and airport layout plan update, the City should ensure that overlay zoning is updated to be consistent with both current airport planning and Oregon state land use requirements. The airport overlay zone should be jointly adopted by the City and Lane County. The airport is surrounded by predominantly county zoned agricultural use zones (north, northwest and east) in the areas beyond city jurisdiction. Chapter Eight (Environmental Review) provides a more detailed discussion of surrounding land uses and zoning, including Oregon and FAA land use compatibility guidelines.

AIRPORT ROLE AND SERVICE AREA

Hobby Field is categorized as a Community General Aviation (GA) airport in the Oregon Aviation System. Community GA airports typically accommodate a variety of general aviation and local business activities. As a community airport, the size and scale of facilities at Hobby Field are directly proportionate to the air transportation needs of the community and the airport's functional role of accommodating a variety of general aviation users, including business users of small aircraft. Hobby Field also accommodates Civil Air Patrol search and rescue operations and seasonal forest fire response activity.

The airport service area refers to the area surrounding an airport that is directly affected by the activities at that airport. Normally a 30 or 60-minute surface travel time is used to approximate the boundaries of a service area. As noted in **Table 2-11**, there are three other public airports within a 30 nautical mile radius of Creswell.

Eugene Airport, located approximately 15 miles from Creswell, accommodates a full range of commercial and business aviation users, in addition to general aviation. Cottage Grove State, also classified as a Community GA airport, is located approximately 8 miles south on I-5. Although both Cottage Grove and Hobby Field accommodate the same type of activity, the absence of developable land for new hangars or aircraft parking at Cottage Grove appears to limit future expansion options. Due to the inherent site limitations associated with Cottage Grove State and high activity nature of Eugene Airport, Hobby Field is uniquely situated to provide an efficient alternative for a broad range of general aviation users.

An individual or business decision about where to locate an aircraft or from which airport to operate, is often based on a combination of factors including the facilities available, quality of services provided by airport businesses, availability and price of aircraft storage and fuel, and convenience. In a competitive market place, the success of a general aviation airport is determined by a combination of these factors.

As noted earlier, the ability of the City to accommodate facility expansion in response to market demand has been significantly constrained in recent years by a moratorium on new building construction caused by inadequate water supply for fire protection. The planned extension of city water service to the airport will provide necessary fire response capabilities and allow the airport to accommodate demand more effectively and improve its financial performance.

TABLE 2-11: PUBLIC USE AIRPORTS IN VICINITY (WITHIN 30 NAUTICAL MILES)

Airport	Location	Runway Dimension (feet)	Surface	Lighted Runway?	Fuel Available?
Eugene Airport/Mahlon Sweet Field	15 NM northwest	8,009 x 150 (primary rwy)	Asphalt	Yes	Yes
Cottage Grove State	8 NM south	3,200 x 60	Asphalt	Yes	Yes
Oakridge State	24 NM southeast	3,610 x 47	Asphalt	No	No

Chapter Three
Aviation Activity Forecasts

CHAPTER THREE
AVIATION ACTIVITY FORECASTS
INTRODUCTION

The purpose of this chapter is to prepare forecasts of aviation activity for the twenty-year planning period addressed in the Airport Master Plan (2005-2025). The forecasts will provide the basis for evaluating current and future facility needs at Hobby Field. This project represents the first comprehensive planning conducted at the airport since before it was expanded and reconfigured in the late 1980's. As a result, there have been no recent activity forecasts prepared for Hobby Field that were developed specifically to support local airport planning efforts.

Basic activity forecasts (based aircraft, operations, fleet mix, etc.) have been prepared on a semi-regular basis through both statewide and national aviation planning programs. The Federal Aviation Administration (FAA) maintains the Terminal Area Forecast (TAF) for airports such as Hobby Field, which are included in the National Plan of Integrated Airport Systems (NPIAS). The current TAF for Hobby Field extends to 2020 and includes limited historical data for based aircraft and aircraft operations (takeoffs and landings).

On a statewide level, the Oregon Aviation System Plan (OASP), maintained by the Oregon Department of Aviation (and previously the Department of Transportation – Aeronautics Division) has a forecast component that is periodically updated. The OASP also provides limited historic data to support updated activity forecasts for Oregon's airports. Although the forecast element of the OASP has not been thoroughly updated by ODA since 1997, the most recent minor update provides activity forecasts (based aircraft and operations) that extend out to 2018. The historical data and forecasts contained in the 2000 Oregon Aviation Plan[10] and the 1997 OASP were reviewed in the preparation of updated activity forecasts for the master plan.

In addition to these broader forecasts, forecasts of aviation activity were included as part of the 1983 Environmental Assessment project for Hobby Field's planned airfield reconstruction.[11]

[10] Oregon Aviation Plan (Dye Management & Century West Engineering; © Oregon Department of Transportation, 2000).

[11] Final Environmental Assessment for Hobby Field Airport (Devco, August 1983)

Although these forecasts are now outdated, they provide interesting historical perspective for developing activity forecasts for Hobby Field.

National General Aviation Activity Trends

After an extended period of decline dating back to the early 1980s, the U.S. general aviation industry experienced a period of sustained growth between 1994 and 2000. During this period, the general aviation fleet increased by 25 percent overall, or about 3.2 percent per year. The General Aviation Revitalization Act (GARA) of 1994 is widely credited with enabling the U.S. general aviation aircraft manufacturing industry to survive and resume limited aircraft production levels following a nearly complete shutdown of light aircraft production in the United States.[12] GARA provided an 18-year limit on legal liability for manufacturers of aircraft and components from product liability claims. Product liability exposure had been cited by major aircraft manufacturers as a key factor in declining light aircraft production, which had gone from approximately 17,000 aircraft in 1979 to 2,600 in 1983. The legislation, coupled with a sustained period of economic growth, were significant factors in the improving health of the general aviation industry. In recent years, aircraft production levels have continued to increase and now include several updated "original" aircraft designs and newly-certified aircraft designs. In addition, the popularity of owner-built aircraft kits has grown, as new, increasingly refined models have been introduced.

The general aviation industry again experienced a significant downturn in 2001, which began with an economic slowdown and then accelerated following the events associated with September 11th. The steep rise in aviation fuel prices combined with persistently weak economic conditions continued to depress the general aviation industry. However, as noted in their current long-term forecasts, the FAA's assessment is that national economic conditions are improving and are expected to continue improving beyond 2005.[13] The FAA's long-term expectations for aviation activity are generally in line with relatively optimistic long-term projections of economic health such as gross domestic product (GDP) and the consumer price index (CPI).

FAA Long Term Forecasts

The FAA's long-term forecasts[14] project a modest increase in the number of aircraft in the U.S. general aviation fleet between 2004 and 2016. The FAA's forecasts for activity components such

[12] Public Law 103-298, signed by President Clinton on August 17, 1994.

[13] FAA Terminal Area Forecast (TAF) Fiscal Years 2005-2020; FAA Long-Range Aerospace Forecasts, Fiscal Years 2020, 2025 and 2030; FAA Aerospace Forecasts, Fiscal Years 2005-2016.

[14] FAA Aerospace Forecasts, Fiscal Years 2005-2016

as hours flown, active pilots, and the active GA aircraft fleet reflects relatively modest growth, typically ranging from 0.2 to 1.6 percent annually over the 12-year forecast. Several of the FAA's general aviation activity growth assumptions are summarized in **Table 3-1.**

TABLE 3-1: FAA LONG RANGE FORECAST ASSUMPTIONS

Activity Component	Forecast Annual Average Growth Rate (2004-2016)
Active GA Aircraft Fleet	+1.1% per year (0.5% per year, excluding new "light sport" aircraft)[1]
Active Turbine Aircraft (FW & Rotor)	+3.2% per year
Active Business Jet	+5.4% per year
Active Piston Single Engine Aircraft	+0.2% per year
Active Piston Multi Engine Aircraft	-0.3% per year
GA Hours Flown (all aircraft)	+1.6% per year (1.4% per year, excluding new "light sport" aircraft)
GA AVGAS Consumption	+1.2% per year
GA Jet Fuel Consumption	+5.6% per year
Active General Aviation Pilots	+1.6% per year
Active Private Pilots	+1.2% per year
Student Pilots	+1.8% per year

1. New "light sport" aircraft are ultralight aircraft not previously included in FAA activity data; these aircraft can be registered with FAA starting in 2005.

Although single-engine piston aircraft (not including experimental) account for nearly 70 percent of the GA fleet, the rate of growth in business jets, turboprops, piston and turbine helicopters, and experimental aircraft has been two to four-times greater than single-engine aircraft over the last several years.

For the most part, growth in the turbine aircraft segment is not expected to significantly affect activity at Hobby Field, based on the airport's operational capabilities and functional role. Two possible exceptions could be found in the ongoing evolution of single-engine turboprop and very light jet (VLJ) aircraft for personal and business use. Although most of the single-engine turbine aircraft currently produced are high performance aircraft requiring runway lengths that are comparable to many larger business turbine aircraft, expanded use of turbine power plants for a variety of light aircraft may promote increased activity at smaller general aviation airports.

The FAA considers the ongoing development and planned deliveries of VLJ or "micro" business jets such as the Eclipse 500 or Cessna Mustang to be among the more significant events affecting

business aviation activity over the next several years. The FAA expects that as many as 4,500 new very light business jets could be added to the U.S. fleet by 2016.[15] With relatively low acquisition and operating costs, the FAA anticipates that this category of aircraft will become increasingly popular for use in on-demand air taxi business service. Based on preliminary manufacturer's data, it appears that many of these aircraft will have characteristics (approach speed, wingspan, aircraft weight, runway length requirements, etc.) that are very similar to a typical high performance single-engine or multi-engine aircraft which are able to operate at most smaller GA airports.

According to FAA data, the number of experimental aircraft in the GA fleet increased by nearly 70 percent between 1994 and 2001. The introduction of several new or improved kit aircraft on the market coincided with sharply declining production of piston aircraft in the U.S. Although production of piston aircraft has gradually increased since GARA in 1994, it remains well below historic levels. Meanwhile, kit aircraft "production" appears to have matured to the point where it now consistently represents a significant portion of new aircraft being added to the GA fleet annually.

The FAA expects some activity segments to offset flat or declining numbers in other categories. For example, the FAA predicts that the multi-engine piston fleet will decline by 0.3 percent annually through 2015. This downward trend is attributed to fleet attrition and the lack of multi-engine piston aircraft production. Similarly, the single-engine piston fleet is expected to lose approximately 1,500 aircraft per year to attrition. While production of new light sport aircraft is expected to help arrest the downward trend, overall growth is expected to be less than 1 percent annually.

The FAA 2003-2020 TAF projects that total airport operations within the Northwest Mountain Region will increase at an annual average increase of approximately 1.23 percent through 2020. Based aircraft within the region are projected to increase at average annual rate of 1.2 percent through 2020.

Population & Economy

Creswell's population growth has been moderate in recent years and has generally outpaced Lane County as a whole. Between the 1990 and 2000 census, the population of Creswell increased by 47 percent, which equals an average annual increase of 3.94 percent. During the same period, Lane County population increased by 14 percent, which equals an average annual increase of 1.33 percent. Creswell's growth rate has maintained a similar pace since 2000, averaging 3.99

[15] FAA Aerospace Forecasts, Fiscal Years 2005-2016

percent annually; during the same period Lane County's average annual growth slowed to 0.85 percent. In 2006, Creswell's population was estimated at 4,525; Lane County's population was estimated at 339,740.[16] Creswell accounted for 1.33 percent of Lane County's population in 2006, up from 0.86 percent, as documented in the 1990 census.

Long-term population forecasts for Lane County reflect modest-to-moderate growth. The Oregon Office of Economic Analysis (OEA) projects Lane County population will increase 24 percent by 2025 and 43 percent by 2040. These long-term forecasts equate to average annual growth rates of approximately 1 percent. If Creswell's current share (1.33%) of Lane County population is maintained, the local population would increase to approximately 5,425 by 2025 and 6,280 by 2040, based on the OEA long-term projections.

The expectation of continued population growth for the community suggests that demand for aviation services at Hobby Field will also increase during the current planning period as the local economy and population expands.

Local and Regional Economy

The Creswell and Lane County economy was historically built heavily around the production of wood products. In recent years however, the economy has become increasingly diversified following a severe recession in the early 1980s that resulted in significant declines in wood products-related employment. Despite a continued decline in wood products employment levels through the 1990s, economic diversification has contributed to an overall increase in the region's workforce employment. According to data compiled by the Oregon Employment Department (OED),[17] the leading employment sectors within the Lane County region currently include trade, transportation and utilities; government; manufacturing; construction; and educational and health services.

Unemployment rates within the region have averaged between 6 and 8 percent since the mid-1980s, after reaching a high of 12.5 percent in 1983. In recent years, the region's unemployment levels have been relatively similar to statewide averages, although Lane County's unemployment rate of 6.8 percent held steady in 2001 and 2002, while Oregon's rate increased from 6.3 to 7.5 percent during the same period.

The OED economic outlook for Lane County projects moderate growth in employment (1.2 % annual average) through 2012. The largest increases are expected in the leading segments noted

[16] Portland State University Center for Population Studies (July 1, 2006)

[17] Oregon Employment Department Region 8 Economic Profile

above; only the lumber and wood products sector is expected to have an overall decline in employment levels (-200 jobs) during this period.

Airport-Specific Considerations

Hobby Field accommodates a wide range of general aviation activity. With commercial air service available in nearby Eugene, activity at Hobby Field is specifically focused on the use of small aircraft for personal, business and government transportation. For most small communities, having convenient access to air transportation is a significant factor in their ability to attract and retain business and industry. In its role as a community general aviation airport, Hobby Field is an important component in the local, regional and statewide transportation system, providing direct access to the nation's airport system.

A 1995 Oregon Department of Transportation (ODOT) economic impact study of Oregon's public use airports estimated the total economic output attributed to Oregon's public use airports. The economic output of Hobby Field was estimated at $1.91 million in 1995. This included both direct and secondary impacts for employment, payroll and output. It is anticipated that the level of economic output associated with Hobby Field has increased since the ODOT study was conducted 12 years ago based on increased business activity and overall use. One unique segment of activity at Hobby Field is skydiving, which has grown considerably in recent years. It is estimated that approximately 5,000 to 6,000 skydivers originate from Hobby Field on an annual basis from the two locally operated skydiving businesses. A large portion of these skydivers are visitors from outside the local community, who likely spend dollars within the community for food, lodging, gasoline, or other related services. The Oregon Department of Aviation plans to prepare a new statewide airport economic study that will update data and quantify the economic impacts associated with all activities at Hobby Field.

Recent Historic Activity

Based Aircraft

According to airport management estimates, 104 based aircraft were located at Hobby Field in 2005.[18] As noted in **Table 3-2**, the majority of based aircraft at Hobby Field are single-engine piston. The airport also accommodates a limited number of multi-engine piston aircraft, ultralights, and one piston helicopter. The airport does not currently have any locally-based turbine aircraft.

TABLE 3-2: 2005 BASED AIRCRAFT - HOBBY FIELD

Aircraft Type	2005 (Estimate)
Single Engine Piston	98
Multi-Engine Piston	3
Turbine	0
Helicopters	1
Ultralights	2
Total	**104**

Source: Airport Management Records

A review of historical data contained in statewide aviation system plans and FAA airport records indicate that the number of based aircraft at Hobby Field increased steadily from around 40 in 1970 to the current levels, just above 100. The current FAA TAF provides historical based aircraft data (estimates) dating back to 1985, with totals fluctuating between 54 and 110, in a generally upward trend. Although the annual counts have fluctuated considerably, the based aircraft estimate provided by airport management (104) is 60 percent above the TAF estimate of 65 for 1985, which equals an average annual increase of 2.6 percent over the last twenty years.

The overall increase in based aircraft coincided with an active period of hangar construction activity at Hobby Field. However, over the last few years, growth in based aircraft appears to have slowed. According to airport management, a moratorium on new hangar construction was implemented in 2001 by the local fire marshal in response to the airport's inadequate water supply for fire response. The moratorium has prevented construction of several hangars over the last four years, which has in turn, has tempered growth in activity. Water service improvements

[18] Airport management data (September 2005)

are planned when funding becomes available, which will again allow the airport to respond to demand for new hangars.

Aircraft Operations

Aircraft operations estimates for Hobby Field are available for seven separate years between 1981 and 2003, through the Oregon Department of Aviation's automated acoustical (RENS) activity counting program. In the absence of air traffic control tower records, RENS counts generally provide the most reliable estimates of activity for uncontrolled airports. The RENS program uses a counting device that is triggered by specific noise level (aircraft engine noise) normally associated with an aircraft takeoff. In the ODA program, four seasonal on-site data samples are normally collected over a twelve-month period (October to October) for use in creating statistically derived estimates of operations. The RENS activity counts conducted for Hobby Field since 1981 are summarized in **Table 3-3** and depicted in **Figure 3-1.**

TABLE 3-3: SUMMARY OF ODA ACTIVITY COUNTS - HOBBY FIELD

	1981	1989	1995	1996	1997	2000	2002
Annual Operations	26,196	41,610	38,561	25,838	24,416	31,601	22,363
Net Increase or Decrease Over Prior Count	--	+58.8%	-7.3%	-33.0%	-5.5%	+29.4%	-70.8%

Source: Oregon Department of Aviation, RENS acoustical counts.

As illustrated in **Figure 3-1,** there has been considerable fluctuation between individual RENS counts at Hobby Field since 1981. A number of factors can contribute to fluctuating activity counts including the price or availability of fuel, the volume of flight training activity, and even counting anomalies due to weather. As noted earlier, the ODA RENS counts are recorded over a 12-month period from October to October. The sharp decline indicated for 2002 represents traffic volume between October 2001 and October 2002. Virtually all general aviation activity during this period experienced sharp declines as a result of the events of September 11th 2001, subsequent flight restrictions, and the poor economic conditions that began to appear in the summer of 2001. Based on these factors, the most recent (2002) RENS is not considered to be an accurate reflection of current activity levels. However, the previous count conducted for 2000 appears to be relatively consistent with actual based aircraft levels and is more in line with other recent historic counts.

The seven activity counts recorded at Hobby Field since 1981 produce a slightly downward linear trend. However, it is difficult to see a correlation between the activity counts and the modest upward trend in based aircraft that occurred at the airport during the same period. Based on available data, the ratios of annual operations per based aircraft have varied from around 200

to nearly 800. It is not known whether this is a true indication of shifting activity trends at the airport or simply inaccurate data. In any event, the range of strongly fluctuating utilization ratios does not provide a clear indication of any particular future trend.

FAA TAF historic data (estimates) for aircraft operations at Hobby Field are available dating back to 1976. As with based aircraft totals, the operations counts for Hobby Field fluctuate widely, ranging from a low of 16,922 to 52,900. In reviewing the TAF data, it is apparent that annual totals are often carried over without change, which is evident in the period from 1989 to 1995 where annual operations were listed at 20,000 per year. The most recent adjustment appears to have been made in 1996, when operations were increased to 25,800. Since that time, the annual operations totals increased every year except 2001, at approximately 1.6 to 1.7 percent. **Figure 3-2** depicts the RENS counts in relation to TAF data. **Table 3-4** summarizes historic based aircraft and operations data for Hobby Field.

When detailed activity data is limited, the FAA recommends use of activity ratios ranging from 250 to 450 operations per based aircraft for non-towered general aviation airports. A ratio of 350 operations per based aircraft is recommended by FAA for medium activity general aviation airports with moderate to high levels of itinerant activity and low to medium use by based aircraft. For the purposes of estimating current air traffic activity at Hobby Field, a ratio of 333 operations per based aircraft was applied to the September 2005 count of based aircraft provided by airport management. Airport management reported some changes during the summer 2005, which led to a net increase from 99 to 104 based aircraft. Since this activity has occurred mid-way through the year, its effect on current-year activity estimates will be limited to the second half of the year, which warrants a slight reduction in the ratio. Based on a ratio of 333 operations applied to the current count of 104 locally based aircraft, activity for 2005 is estimated to be 34,600 operations

FIGURE 3-1: SUMMARY ODA ACTIVITY COUNTS - HOBBY FIELD

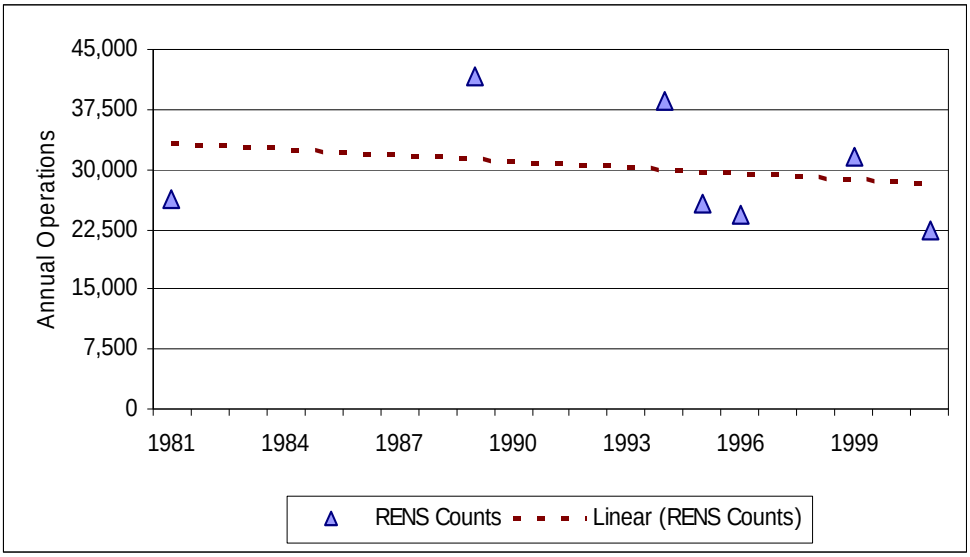


FIGURE 3-2: SUMMARY OF ODA ACTIVITY COUNTS & TAF DATA HOBBY FIELD

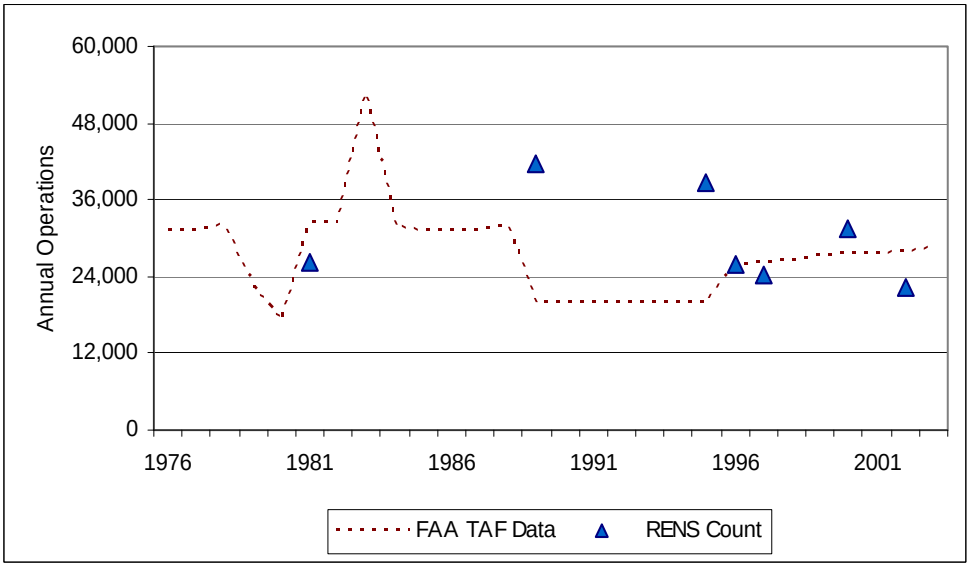


TABLE 3-4: SUMMARY OF HISTORICAL AVIATION ACTIVITY - HOBBY FIELD

Year	Aircraft Operations	Based Aircraft	Operations Per Based Aircraft	Data Source
1981	26,196	65[a]	403	1,2
1983	52,400	80	655	4
1984	22,600	69	328	3
1989	41,610	54	771	1,2
1995	38,561	76	507	1,2
1996	25,838	76	340	1,2
1997	24,416	88	278	1,2
2000	31,601	88	359	1,2
2002	22,363	110	203	1,2
2005	34,600	104	333	5,6

Notes:

a. TAF based aircraft estimate for nearest year (1985)

Data Sources:

1. ODA RENS Aircraft Activity Counter Program (OPERATIONS)
2. FAA TAF Data (BASED AIRCRAFT)
3. OASP Inventory
4. 1983 Airport Environmental Assessment
5. Airport Mgt Data (BASED AIRCRAFT)
6. David Miller, Century West Engineering Estimate (OPERATIONS)

REVIEW OF EXISTING FORECASTS

The existing aviation forecasts for Hobby Field are summarized below and in **Table 3-5**.

Oregon Aviation System Plan (OASP)

The 1997 OASP forecasts are the most recent statewide forecasts of aviation activity (1994 to 2014). These forecasts generally reflect modest growth in based aircraft and aircraft operations throughout Oregon. The 2000 Oregon Aviation Plan updated the 1997 forecasts by extrapolating previously defined growth rates out to 2018. The OASP forecasts for Hobby Field projected based aircraft and operations to increase by approximately 25 percent between 1994 and 2014, which equals an annual average growth of **1.12 percent**. Between 1994 and 2014, based aircraft were projected to increase from 96 to 120 and aircraft operations were projected to increase from 38,197 to 47,750. For 2018, based aircraft were projected to increase to 126, with aircraft operations increasing to 50,242.

The OASP forecast of based aircraft (106) for 2004 is very close to current levels, although the operations forecast (42,060) is 21 percent higher than current estimates. It is noted that the OASP operations forecasts reflect an aircraft utilization ratio (397 operations per based aircraft) that is considerably higher than current estimates and recent counts. As noted earlier, the 2000 RENS count (31,601) is considered relatively accurate, which yielded an activity ratio of 359 operations per based aircraft. The 1997/2000 OASP forecasts provide a reasonable comparison for development of new master plan forecasts.

Terminal Area Forecasts (TAF)

The Federal Aviation Administration (FAA) maintains forecasts for Hobby Field in the current TAF that extend to 2020. The TAF projects an increase in based aircraft from 115 (2005 estimate) to 141 in 2020. This reflects an increase of 23 percent over 15 years, which translates into an average annual growth rate of **1.37 percent**. It is noted that the TAF estimate of 115 based aircraft for 2005 is 11 higher than current airport management estimates (104). If the same TAF growth rate of 1.37 percent was applied to the current based aircraft count, the 2015 forecast would be in the range of 128 aircraft.

Aircraft operations are projected to increase from 29,371 (2005 estimate) to 36,469 in 2020. The increase of about 24 percent translates into an average annual growth rate of **1.45 percent**. The slightly higher growth projected for aircraft operations compared to based aircraft is reflected in a marginal increase in utilization ratios, ranging from 255 to 259.

The current-year TAF data are reasonably close to the estimated activity levels derived from other sources (airport management based aircraft data, consultant estimate of operations) and provide a reasonable comparison for development of new master plan forecasts. Current based aircraft totals at Hobby Field for 2005 are running about 10 percent lower than the 2005 TAF estimate; however, current aircraft operations are about 15 percent higher than 2005 TAF estimate, based on current Consultant estimates and as reflected in the 2000 RENS count.

1983 Airport Environmental Assessment (EA)

The 1983 EA prepared for the reconstruction of the airfield contains forecasts of based aircraft and operations that proved to be far more optimistic than actual activity. The 20-year forecasts (1983-2003) projected based aircraft to increase from 80 to 195, which reflects an average annual growth rate of **4.6 percent**. Aircraft operations were also forecast to increase at about **4.5 percent** annually, from a base year estimate of 52,400 operations (1981) to 138,400 by 2003. These forecasts contained numerous assumptions that later proved to be incorrect, which quickly rendered them obsolete.

TABLE 3-5: EXISTING AVIATION FORECASTS – HOBBY FIELD

Source	1994/95	1999/00	2004/05	2009/10	2014/15	2018	2020
Based Aircraft ***2005 Estimate: 104***							
1997 / 2000 OASP *(1.12% AAR)*	96	100	106	113	120	126	--
TAF *(1.37% AAR: 2005-2020)*	--	--	115	123	131	136	141
Aircraft Operations ***2005 Estimate: 34,600***							
1997 / 2000 OASP *(1.12% AAR)*	38,197	39,650	42,060	44,815	47,750	50,242	--
TAF *(1.45% AAR: 2005-2020)*	--	--	29,371	31,736	34,102	35,522	36,469

Note: Adjacent forecast years (i.e., 1999 OASP and 2000 TAF) have combined in this table for convenient comparison.

MASTER PLAN FORECASTS (2005-2025)

Local Market Conditions

As noted in the Inventory chapter, the airport service area defined for Hobby Field includes two other airports (Eugene and Cottage Grove) located within 20 miles that compete for general aviation activity. As a result of this geographically-defined competition, events at any of the airports within the common service area, such as new hangar construction, have the potential of affecting activity at all of the airports.

Eugene Airport recently updated its airport master plan, which included plans for significant expansion of general aviation (GA) facilities.[19] Based aircraft and GA operations are projected to increase at about 1.25 percent annually through 2017. The updated capital improvement program (2000-2017) for the airport includes a variety of improvements for GA facilities. These include construction of 40 additional T-hangar spaces; site development and taxiway access for 16 new conventional hangars; new tiedown apron (+52 spaces); and construction of a GA terminal. The following excerpt outlines the planned improvements targeted toward general aviation:

[19] Eugene Airport Master Plan -1997-2017 (Mead & Hunt, April 2000)

"General Aviation - There are currently limited opportunities for general aviation development at Eugene Airport. Therefore, a series of improvements are planned to accommodate existing and projected general aviation demand at Eugene Airport. This includes creating development areas for fixed-base operators, conventional hangars, executive hangars, T-hangars, tie-downs, and auto parking. The recommended airfield improvement plan, in fact, is a critical component in allowing general aviation facilities to expand east of Green Hill Road."

Cottage Grove State has not had a master plan or major airport layout plan update done since the late 1980s. The airport is constrained both physically and by the lack of developable property. Although modest growth in activity could be expected in the future, local site conditions are expected to continue to significantly constrain growth unless updated planning and property acquisition is undertaken by ODA to accommodate facility expansion.

Historically, Hobby Field has effectively competed for a significant share of the general aviation market by attracting and retaining a strong user base. The airport has the benefit of full-time on-site management, which provides a higher level of service than can be provided at airports without local management staffing, such as nearby Cottage Grove State. In addition, Hobby Field's sole focus is general aviation, which provides users an attractive, generally less expensive alternative to operating at commercial service airports, such as Eugene.

With water service improvements expected to be completed early in the current planning period, Hobby Field will be able to effectively compete for airport business, particularly demand for new hangar space. Hobby Field has sufficient land area to sustain moderate growth in based aircraft over the next several years, although it appears that the development capacity along the west side of the runway will eventually be reached and options for acquiring property on the east side of the runway may need to be considered.

It is reasonable to expect that a portion of existing built up demand will translate into construction activity within the next few years. The hangar waiting list maintained by airport management typically has more than 20 individuals. Of these individuals, the majority have aircraft currently located at other airports including Eugene, Cottage Grove, and from outside the local area. About one-third of the individuals have aircraft currently stored in open T-hangars or renting other hangar space at Hobby Field. The master plan forecasts will consider the current hangar waiting list and attempt to weigh the uncertainty associated with hangar waiting lists in general.

As noted earlier, the competition among airports located within a common service area can affect market conditions, including demand for hangar space. It is not uncommon for aircraft owners in search of hangar space to be listed on waiting lists at several different airports that are located

within a relatively short distance. Availability and cost are among the factors that are balanced with convenience (e.g., driving distance from home or office, etc.) when an aircraft owner considers where to base their aircraft. Based on these considerations, airport management should view their hangar waiting list as a general indication of interest, with the expectation that the numbers may decline as commitments are sought. If the airport considers funding and constructing hangars, a list of prospective tenants should be developed well in advance that indicates "substantial" interest. Prospective tenants may be charged a nominal non-refundable deposit to hold their reservation in order for the City to gauge interest and determine financial feasibility. Airports that have funded hangar construction through use of outside funds (commercial loans, etc.) are often required to demonstrate in advance of construction that agreements are in place for leasing a specific percentage of units (typically 75% +) to ensure reasonable feasibility for managing the debt service.

A factor that can also affect the pace of new hangar development is ownership (public vs. private) of the structures. For example, if the City intends to build and own new T-hangars, then the ability to fund hangar construction will dictate how quickly the response to market demand can occur. Alternatively, if new hangars are privately constructed, then the pace of development would be determined largely by market conditions and the willingness of private developers to accept the economic risks associated with new construction. In either development scenario, the airport's ability to provide developable hangar sites and airside access in a timeframe compatible with planned hangar construction is a critical element. It is unknown at this time precisely how new hangar construction will be funded, although for planning purposes it will be assumed that a combination of public and private funded construction will occur.

Beyond the existing pent-up demand for hangar space, which can be attributed to very unique circumstances, it is reasonable to expect that long-term growth in activity at Hobby Field will be relatively consistent with projected industry trends and rates experienced by other similarly-sized general aviation airports. Most conventional measures of the general aviation industry suggest modest growth in the range of 0.5 to 2 percent annually can be sustained over the next 10 to 25 years.

As described above, the planned expansion of GA facilities at Eugene Airport is expected to absorb a portion of local area demand through the next 10 to 15 years. Since a large number of potential hangar tenants for Hobby Field are currently located at Eugene Airport, it is not clear to what extent the planned improvements at Eugene Airport may affect the aircraft owners' interest in relocating. However, history suggests that both airports are able to be successful in attracting users without significantly diminishing the activity at the other airport. Therefore, in a period of overall growth in general aviation activity, both airports should experience growth in activity.

According to airport data, fuel sales at Hobby Field declined slightly in fiscal year 2004, although the airport has experienced a modest upward trend over the last three years ranging from 58,000 to 65,000 gallons of aviation gasoline (AVGAS) delivered per year. The airport has also sold a small amount of jet fuel (approximately 11,000 gallons) since the tanks were reconfigured in 2001. The fuel delivery trend is relatively consistent with recent based aircraft trends.

Forecast Assumptions

In order to develop new forecasts of aviation activity for Hobby Field, several assumptions have been made:

1. The local hangar construction moratorium will end by 2006 based on completion of water service improvements to the airport.

2. The existing hangar waiting list (22 individuals) maintained by airport management reflects a general indication of interest in rental space. However, in the absence of financial obligation (deposits, etc.), the level of certainty associated with the list cannot be precisely determined.

3. Construction activity targeted toward general aviation users at other airports in the local service area is expected to continue based on overall market conditions. In particular, Eugene Airport will aggressively compete for general aviation activity, based on its planned investment in GA facilities. To a lesser extent, new development at Cottage Grove State Airport will continue until all available lease areas are used. In the absence of effective planning and property acquisition, significant expansion of landside facilities at Cottage Grove State is not feasible.

4. Competition among fixed base operators (FBO) at Cottage Grove, Eugene and Hobby Field is expected to be a significant factor in the success of each airport within the local service area to attract new business and retain existing customers - both locally based and itinerant users.

5. Forecast increases in traffic volume at Eugene Airport will indirectly increase Hobby Field activity by further defining segments of general aviation users that prefer to operate at a less congested, more casual environment.

Updated Forecasts

Two forecast scenarios were developed for the Hobby Field Airport Master Plan that project similar and slightly more aggressive growth than the current FAA TAF and OASP forecasts for

the airport, which were summarized in the previous section. **Tables 3-6 and 3-7** summarize the updated based aircraft and operations forecasts for Hobby Field and the existing TAF and OASP forecast for comparison. The updated forecasts are depicted in **Figures 3-3 and 3-4**, at the end of this section.

Master Plan – Low

The "master plan low" forecast for based aircraft assumes that a modest level of demand for hangar space at Hobby Field has accumulated since the 2001 construction moratorium was implemented. The uncertainty about the ability of the hangar waiting list to produce new hangar tenants makes forecasting difficult. For this scenario, it is assumed that 30 percent of the 15 non-local aircraft on the current hangar waiting list will actually relocate to Hobby Field within the next five years. This appears to be reasonable based overall market conditions and the expectation that the current waiting list will be able to produce a sufficient number of new tenants to justify investment in a limited number of new hangars. It is assumed that this "existing" demand will be fully exhausted within the next five years. For forecasting purposes, the accumulation of existing demand represents a unique one-time surge in demand that is outside the normal growth that would be expected over time.

Normal growth in based aircraft is projected at a rate of 1.2 percent annually which, corresponds to the FAA's projected growth rate for based aircraft in the Northwest Region over the next 15 years. For the initial five years of the forecast period, based aircraft at Hobby Field will increase at average annual rate of 1.2 percent, plus 5 additional aircraft from the current hangar waiting list by 2010. Overall this represents a net increase of 11 aircraft between 2005 and 2010. Beyond 2010, based aircraft are forecast to increase at an average annual rate of 1.2 percent. Over the twenty-year planning period, the "master plan low" forecast for based aircraft results in a 32.7 percent increase, which equals an average annual growth of **1.42 percent.**

Due to the inconsistent data generated through the RENS activity counts at Hobby Field, the use of FAA-recommended activity ratios were used in projecting future aircraft operations. As noted earlier, for Hobby Field, a ratio of 350 operations per based aircraft is considered appropriate, based on FAA planning guidance for medium activity general aviation airports with moderate to high levels of itinerant activity and low to medium use by based aircraft. Over the twenty-year planning period, the "master plan low" forecast increase in aircraft operations is approximately 40 percent, which equals an average annual growth of **1.68 percent.** The slightly higher growth rate for aircraft operations reflects an increase in utilization from 333 (2005) to 350.

Master Plan – Regular

The "master plan regular" forecast for based aircraft assumes that a moderate level of demand for hangar space at Hobby Field has accumulated since the 2001 construction moratorium was implemented. In this slightly more aggressive scenario, it is assumed that a higher percentage (60 percent) of the 15 non-local aircraft on the current hangar waiting list will relocate to Hobby Field within the next five years. The majority of assumptions used in the "master plan low" scenario were maintained for this projection, although normal growth in based aircraft is projected at approximately 1.25 percent, which is slightly higher than the "low" forecast. This slight increase in growth is based on the assumption that Hobby Field will capture an increasingly large segment of general aviation activity within its service area as the result of effective planning and efficient facility management.

Based on these conditions, the number of based aircraft at Hobby Field in the initial five years of the forecast period will increase at average annual rate of 1.25 percent, plus 9 additional aircraft from the current hangar waiting list by 2010. Overall this represents a net increase of 16 aircraft between 2005 and 2010. Beyond 2010, based aircraft are forecast to increase at an average annual rate of approximately 1.25 percent. Over the twenty-year planning period, the "master plan regular" forecast for based aircraft results in a 39.4 percent increase, which equals an average annual growth of **1.68 percent.**

Based on a ratio of 350 operations per based aircraft, the "master plan regular" forecast increase in aircraft operations is approximately 46 percent over twenty years, which equals an average annual growth of **1.92 percent.** Beyond the initial surge of growth expected in the initial five years of the forecast period, aircraft operations are also projected to increase at annual rate of 1.25 percent.

Preferred Forecast

The "master plan regular" projections are recommended as the preferred forecast for based aircraft and aircraft operations at Hobby Field for the current twenty-year planning period (2005-2025). The forecasts are reasonably consistent with existing statewide and FAA forecasts and reflect the airport's potential to expand to accommodate demand. The preferred forecasts will be used to define aircraft fleet mix and other peaking indicators later in the chapter.

TABLE 3-6: UPDATED BASED AIRCRAFT FORECASTS – HOBBY FIELD

	Base Year 2005[1]	2010	2015	2020	2025
Base Year Estimate	104				
1997/2000 OASP *(1.27% AAR 2005-2018)*	107	114	121	126[2]	--
FAA TAF *(1.06% AAR 2005-2025)*	115	123	131	141	--
Master Plan - Low *(1.42% AAR 2005-2025)*	104	115	122	130	138
Master Plan – Regular *(1.68% AAR 2005-2025)* ***Preferred Projection***	**104**	**120**	**128**	**136**	**145**

1. Base year total reflects 9/05 aircraft count provided by airport management
2. OASP forecast listed for 2020 is nearest available year (2018).

TABLE 3-7: UPDATED OPERATIONS FORECASTS – HOBBY FIELD

	Base Year 2005[1]	2005	2010	2015	2020	2025
Base Year Estimate	34,600					
1997/2000 OASP *(1.27% AAR 2005-2018)*		42,597	45,387	48,360	50,242[2]	--
FAA TAF *(1.45% AAR 2005-2025)*		29,371	31,736	34,102	36,469	--
Master Plan - Low *(1.68% AAR 2005-2025)*		34,600	40,810	42,723	45,349	48,136
Master Plan – Regular *(1.92% AAR 2005-2025)* ***Preferred Projection***		**34,600**	**39,448**	**44,684**	**47,548**	**50,595**

1. Base year activity estimated by David Miller/Century West based on 2005 airport based aircraft records and FAA recommended activity ratio for medium-activity general aviation airport.
2. OASP forecast listed for 2020 is nearest available year (2018).

Design Aircraft/Air Traffic Distribution

The 2001 airport layout plan identifies a Beechcraft Baron 58, a light twin-engine aircraft as the current and future critical aircraft for Hobby Field. This aircraft is included in Airplane Design Group I and Approach Category B (B-I) and is classified as a "small" aircraft by FAA, since it weighs less than 12,500 pounds. The B-I (small) category includes the majority of light twin-engine piston aircraft that operate at Hobby Field on a regular basis. The airport currently has two locally based "B-I" light twin aircraft, including a Baron 58 and a Cessna 340; a Piper Seneca (A-I), a similar light twin is also based at the airport. By FAA definition, the "design aircraft" must have a minimum of 500 itinerant annual operations, which at Hobby Field, is met by a combination of locally based and itinerant aircraft. **For planning purposes, the recommended existing and future Airport Reference Code (ARC) for Hobby Field is B-I (small).** It is estimated that approximately 1.5 to 2 percent of current operations are generated by "B-I" light twin aircraft. This percentage is expected to remain relatively stable during the planning period.

A review of other existing forecasts provides some information on local and itinerant traffic at Hobby Field. The FAA TAF assumes a split of 60 percent itinerant and 40 percent local for the 2005 projection. The OASP forecast for 2004 estimated the operational split to be 75 percent itinerant and 25 percent local.

One unique activity segment at Hobby Field are skydiving operations, which are considered local since the aircraft remain close to the airport and the parachute drop area is located immediately adjacent to the airport. In 2005, skydiving activity was estimated to be approximately 2,000 operations, which equaled about 6 percent of total airport operations. The airport also accommodates a moderate level of flight training, which is predominantly local activity. For the purposes of preparing forecasts, the TAF estimate of 40%/60% local/itinerant split will be used for the current planning period.

TABLE 3-8: SUMMARY OF OPERATIONS BY ACTIVITY CATEGORY

	Existing 2005	2010	2015	2020	2025
Itinerant Operations (60%)					
General Aviation	20,410	23,269	26,360	28,049	29,847
Air Taxi	350	400	450	480	510
Total Itinerant	20,760	23,669	26,810	28,529	30,357
Local Operations (40%)	13,840	15,779	17,874	19,019	20,238
Total Operations	**34,600**	**39,448**	**44,684**	**47,548**	**50,595**
Subtotal Aircraft Approach Category B-I Operations (estimated to increase from 1.5 to 2 % of total ops.)	520	630	760	880	1,010
Design Aircraft - Airport Reference Code (ARC)	B-I (small)	B-I (small)	B-I (small)	B-I (small)	B-I (small)
Typical Stage Length	<500 miles	<500 miles	<500 miles	<500 miles	<500 miles
Instrument Operations	0	<500	<500	<500	<500

TABLE 3-9: SUMMARY OF OPERATIONS BY AIRCRAFT TYPE

Aircraft Type	**Estimated 2005**	**2010**	**2015**	**2020**	**2025**
Single Engine Piston	33,770 *(97.6%)*	38,462 *(97.5%)*	43,567 *(97.5%)*	46,312 *(97.4%)*	49,178 *(97.2%)*
Multi-Engine Piston	657 *(1.9%)*	749 *(1.9%)*	849 *(1.9%)*	903 *(1.9%)*	1,012 *(2.0%)*
Rotorcraft	173 *(0.5%)*	237 *(0.6%)*	268 *(0.6%)*	333 *(0.7%)*	405 *(0.8%)*
Total Operations	**34,600** *(100%)*	**39,448** *(100%)*	**44,684** *(100%)*	**47,548** *(100%)*	**50,595** *(100%)*

Numbers may not sum due to rounding.

TABLE 3-10: SUMMARY OF PEAK DEMAND

Activity Measure	**Actual 2004**	**2010**	**2015**	**2020**	**2025**
Annual Operations	34,600	39,448	44,684	47,548	50,595
Peak Month *(= 15% of Annual Ops.)*	*5,190*	*5,917*	*6,703*	*7,132*	*7,589*
Design Day (Design Day/31 days)	*167*	*191*	*216*	*230*	*245*
Design Hour (15% of Design Day)	25	29	32	35	37

FIGURE 3-3: UPDATED BASED AIRCRAFT FORECAST HOBBY FIELD

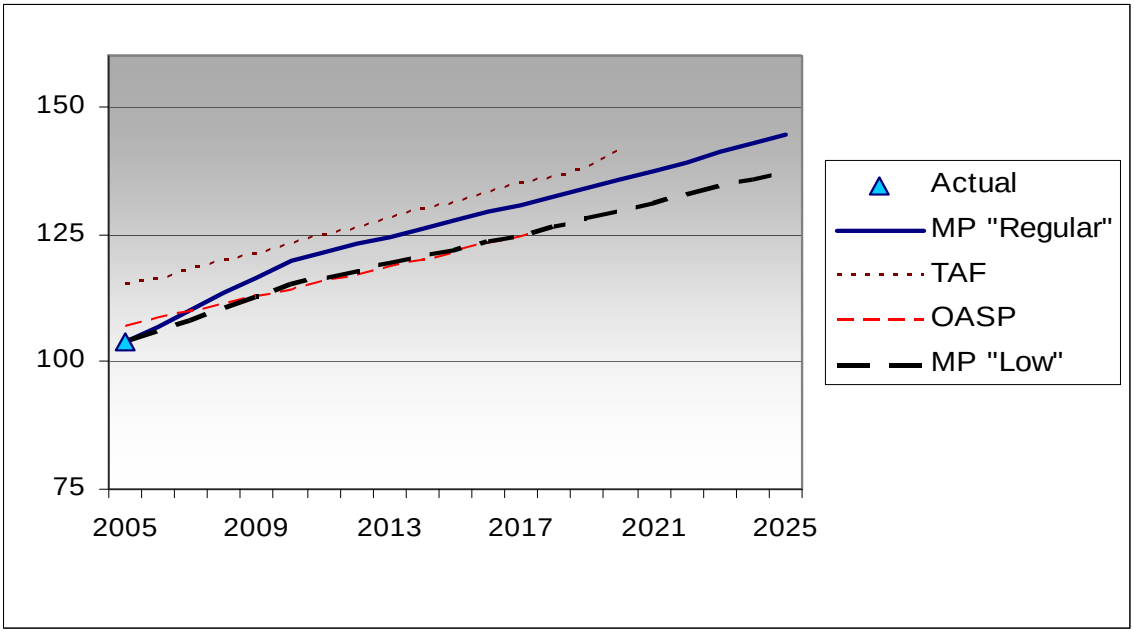
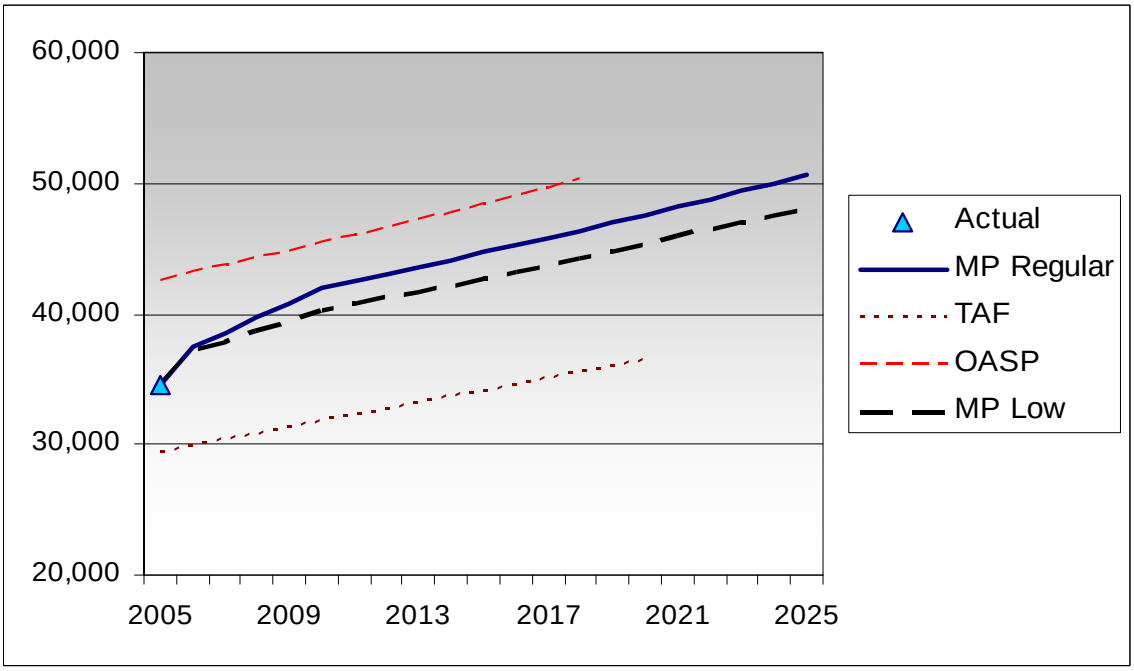


FIGURE 3-4: UPDATED AIRCRAFT OPERATIONS FORECAST HOBBY FIELD



Chapter Four
Airport Facility Requirements

CHAPTER FOUR
AIRPORT FACILITY REQUIREMENTS
INTRODUCTION

This chapter uses the results of the inventory and aviation activity forecasts conducted in **Chapters Two** and **Three**, as well as established planning criteria, to determine the airside and landside facility requirements through the current twenty-year planning period. Airside facilities include runways, taxiways, navigational aids and lighting systems. Landside facilities include hangars, fixed base operator (FBO) facilities, aircraft parking apron, aircraft fueling, automobile parking, utilities and surface access.

The facility requirements evaluation is used to identify the adequacy or inadequacy of existing airport facilities and identify what new facilities may be needed during the planning period based on forecast demand. Options for providing these facilities will be evaluated in **Chapter Five** to determine the most cost effective and efficient means for implementation.

Note: As indicated throughout the master plan report, Hobby Field has accommodated skydiving operations for many years. The facility requirements analyses contained in this chapter were conducted based on activities that existed at the airport in early 2006, including skydiving. Later in 2006, the city lease of an adjacent ODOT parcel used as a parachute drop zone was terminated and skydiving ground operations at the airport were suspended. For the purposes of maintaining the historical context for the master plan, the references to skydiving facilities, practices and operational issues have not been modified in this chapter or in the preliminary development alternatives contained in Chapter Five. The final resolution of this issue for purposes of facility planning is reflected on the airport layout plan (ALP) drawing.

OVERVIEW OF CONFORMANCE WITH FAA STANDARDS

This chapter contains detailed descriptions of primary planning assumptions and applicable FAA airport design and airspace planning standards to be used at Hobby Field in the master planning effort. These standards are consistent with the forecast activity (including the design aircraft) presented in the previous chapter and for runways used by small single-engine and multi-engine

aircraft with nonprecision instrument approach capabilities. For the convenience of the reader, a summary of the airport's current conformance to these standards is provided in **Table 4-1**. **Figures 4-1 and 4-2** illustrate the location of the non-conforming items identified for airport design standards and FAR Part 77 airspace. In addition, based on the consultant's facility assessment, the feasibility of meeting the primary FAA airport design standards and airspace planning criteria is summarized in **Table 4-2**. As noted earlier, the detailed technical evaluations for each of these issues are provided later in this chapter.

TABLE 4-1: HOBBY FIELD
OVERVIEW OF NON CONFORMING ITEM (FAA STANDARDS)

Item Number	Item	Description	Non-Conforming Items Airport Design Standards	Non-Conforming Items FAR Part 77 Airspace Surfaces
1.	Vehicle and foot traffic crossing the runway and parallel taxiway to access adjacent eastside parachute drop area from the west landside facilities.	Hobby Field supports a considerable amount of skydiving activity on a year-round basis. The designated parachute drop area is located immediately east of the airport (on leased land), adjacent to the northern 1,000 feet of the runway. Associated ground support and staging activities are generally conducted in front of the row of conventional hangars located opposite the drop area. Vehicle and foot traffic routinely cross the runway, parallel taxiway and associated protected areas when traveling between the staging area and the drop area.	Runway Safety Area (RSA) Obstacle Free Zone (OFZ) Object Free Area (OFA) Taxiway Safety Area Taxiway Object Free Area *Activity creates regular incursions into defined areas. The presence of vehicles and pedestrians in protected areas does not meet FAA clearing standards.*	Primary Surface *Vehicles and pedestrians located in defined area create hazard to aircraft and associated operations.*
2.	Public road located beyond north end of runway	Dale Kuni Road is a county road, located approximately 1,116 feet beyond the existing Runway 15 threshold (on centerline). The road travels in east-west direction with a slight taper that brings the portions located east of runway centerline slightly closer to the runway end.	Runway Protection Zone (RPZ) *The public road is located within the Runway 15 RPZ, which does not meet FAA clearing standards.* *A portion of the RPZ extends beyond airport ownership.*	Approach Surface (future) *Vehicles traveling on Dale Kuni Road do not obstruct the existing or future Rwy 15 20:1 approach surfaces. Approach clearances for vehicles traveling on the road are approximately 53:1 for the existing approach and 24:1 for the future approach, which reflects the 500-foot north runway extension currently depicted on the ALP.* *It is noted that trees, located approximately 940 feet from the current end of Runway 15 are identified as the controlling obstruction for both the existing and*

Item Number	Item	Description	Non-Conforming Items Airport Design Standards	Non-Conforming Items FAR Part 77 Airspace Surfaces
				future approach configurations (see item #4).
3.	Trees (Runway 15 Approach)	Based on 2003 survey, 80 to 100-foot + trees located on the north and south sides of the abutment for Dale Kuni Road (I-5 overpass) penetrate the existing and future approach surfaces for Runway 15 (as depicted on 2004 Airspace Plan).	None	Approach Surface *The groups of trees located near the Dale Kuni Road overpass on I-5 obstruct (+49 feet) the existing 20:1 approach surface for Runway 15 (Approximately 9:1 clear).* *Based on current heights, the trees will obstruct (+74 feet) the future Rwy 15 approach surface (approximately 3:1 clear) based on the 500-foot north runway currently depicted on the ALP.*
4.	Trees (Runway 33 Approach)	Based on 2003 survey, several groups of 80 to 100-foot + trees penetrate the existing and future approach surface for Runway 33 (as depicted on 2004 Airspace Plan).	None	Approach Surface *A group of trees located approximately 572 feet from the end of Runway 33 and 248 feet west of the extended runway centerline (just beyond the SW airport property line) obstruct (+48 feet) the existing and future 20:1 approach surfaces for Runway 33 (approximately 5:1 clear).* *Several other individual trees or groups of trees are identified as penetrating the existing/future 20:1 approach surfaces for Runway 33*
5.	West side aircraft apron, tiedowns and fueling	Several aircraft parking positions are located approximately 245 to 250 feet from runway centerline, both on the main apron and in the area fronting the northern row of conventional hangars. It appears that the nearest positions were located to meet the ADG I	None *The west aprons are located outside the defined areas for Runway 15/33. The noted aircraft tiedowns, while penetrating some Part 77 airspace surfaces do not conflict with ADG I*	Primary Surface Transitional Surface *The outer edge of the aircraft apron area and several tiedown positions appear to be located within the primary surface; most aircraft parked*

Item Number	Item	Description	Non-Conforming Items Airport Design Standards	Non-Conforming Items FAR Part 77 Airspace Surfaces
		taxiway OFA clearance standard (44.5 feet from centerline), based on the 200-foot runway-parallel taxiway separation. Some aircraft parked directly in front of the FBO or in the aircraft fueling area will penetrate the transitional surface, depending on tail height. The aircraft parking line (APL) depicted on the 2004 indicates the clearance required for an aircraft with a 10-foot tail height. Several existing tiedowns are located inside the 10-foot APL. Small airplane tail heights typically range from 8 feet (Cessna 150) to 10 feet (Beech Baron 58); many light twin engine aircraft have tail heights ranging from 10 to 13 feet.	*design standards.*	*within 50 to 60 feet (west) of the edge of the primary surface will penetrate the transitional surface.*
6.	West side hangars	Several existing structures are located inside the building restriction line (BRL) for Runway 15/33 that is depicted on the 2004 ALP. The BRL is established 376 feet from runway centerline to accommodate 18-foot roof heights (typical small hangar) without penetrating the utility-nonprecision instrument runway transitional surface. Hangars with higher roof heights would need to be located a greater distance from the runway to avoid airspace penetrations. Based on the 2003 survey, eight (8) hangars are located closer than 376 feet from the runway and one (1) additional hangar is located 385 feet from the runway centerline; all of the buildings penetrate the transitional surface	Building Restriction Line (BRL) *Several hangars located along the outer edge of the flightline are located too close to the runway to avoid Part 77 transitional surface penetration (see next column).*	Transitional Surface *Based on available survey data and estimates of building heights, eight (8) hangars appear to penetrate the runway transitional surface.* *At a minimum, all built items penetrating the protected airspace should be marked with red obstruction lights. All future proposed developments should avoid Part 77 airspace penetrations (to be verified through FAA Form 7460 submittal).* *Options for future relocation of existing hangars should be considered in the alternatives evaluation.*

Item Number	Item	Description	Non-Conforming Items Airport Design Standards	Non-Conforming Items FAR Part 77 Airspace Surfaces
		(estimated from <1 to 13 feet). The three (3) hangars located nearest the runway (two T-hangars and the EAA hangar) are located approximately 280 to 285 feet from runway centerline, with top elevations ranging from about 18 to 20 feet above the nearest point on the runway. The 2004 ALP reconfigured the future west landside development area to require all future hangar development to be consistent with the BRL.		
7.	Taxilane OFA	The center taxilane serving the south hangar development has an opening between building ends of approximately 60 feet at its narrowest point.	Taxilane Object Free Area *The existing taxilane OFA does not meet FAA clearing standards for ADG I aircraft (79 feet).*	None
8.	East side trees	Based on 2003 survey, several small groups of 30 to 50-foot trees located along the east side of the runway. The majority of trees are off airport property, with a small number located between the runway and east fence (property line).	None *Trees located along the east side of the runway are located beyond the defined areas (OFA, OFZ and RSA).*	Primary Surface Transitional Surface *Areas of trees located along east side of runway penetrate the primary and transitional surfaces.*
9.	West side trees	Based on 2003 survey, several groups of 60 to 100-foot high trees located beyond the south end of the runway (on the west side of the Runway 33 approach surface). The majority of these trees are located off airport property and penetrate the transitional surface, although a group of trees located adjacent to the EAA hangar appear to be located just off of airport property (opposite side of fence).	None *Trees located along the west side of the runway are located beyond the defined areas (OFA, OFZ and RSA).*	Transitional Surface *Trees located along west side of runway appear to penetrate the transitional surface near the end of Runway 33, particularly on the west side of the runway approach surface.*

Item Number	Item	Description	Non-Conforming Items Airport Design Standards	Non-Conforming Items FAR Part 77 Airspace Surfaces
10.	Property control. Runway 15 & 33 Runway Protection Zones (RPZ) and Inner Portion of Runway Approach Surfaces	The City does not control all property within both runway protection zones and the inner portion of both approach surfaces. Approximately the outer 2/3 of the Runway 33 RPZ and the corresponding portions of the approach surface, are located off airport property. The outer 100 to 150 feet of the Runway 15 RPZ and the corresponding portion of the approach surface is located off airport property. A public road (Dale Kuni) is located within the Rwy 15 RPZ.	Runway Protection Zone (Rwy 15 & 33) *Portions of RPZ not in airport ownership; public road located in Rwy 15 RPZ does not meet FAA clearing standard.* *Airport control of the RPZs through outright ownership is recommended if feasible; avigation easements for the portion of the RPZs located beyond outside of airport ownership is recommended as a basic protective measure.*	Approach Surface (Rwy 15 & 33) T*he ability of the airport to control activities and development within the inner approach surfaces is limited by private property ownership. Airport control of the areas through outright ownership is recommended, although including the area in an avigation easement may be an option.* *It is noted that the inner width of the runway approach surface and runway protection zone are not the same. For this reason, any avigation easements acquired to protect the Runway 15 & 33 approaches should include both the RPZ and the inner section of the approach surfaces.*

LEGEND

	EXISTING	FUTURE
FACILITIES		
BUILDINGS		
RUNWAY		
BUILDING RESTRICTION LINE (BRL)	BRL (E)	BRL (F)
AIRCRAFT PARKING LINE (APL)	APL (E)	APL (F)
AIRPORT PROPERTY LINE		
RUNWAY SAFETY AREA (RSA)		
OBJECT FREE AREA (OFA)		
OBSTACLE FREE ZONE (OFZ)		
RUNWAY PROTECTION ZONE (RPZ)		
GROUND CONTOURS	530	530
AIRPORT REFERENCE POINT (ARP)		
PROPOSED AIRFIELD PAVEMENT	NONE	
VISUAL GUIDANCE INDICATORS	VASI	PAPI
WIND INDICATOR		
AVIGATION EASEMENT		
PROPOSED ACCESS ROAD	NONE	
BEACON		SAME
THRESHOLD LIGHTS		
SEGMENTED CIRCLE WIND INDICATOR		
PARACHUTE		SAME
VEHICLE & FOOT TRAFFIC		

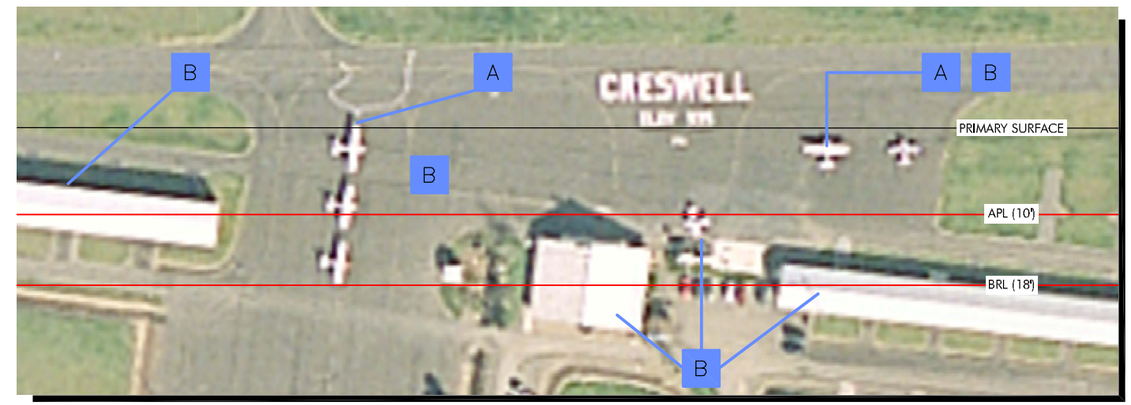
FAR PART 77 SURFACE PENETRATIONS/CONFLICTS

- **A** PRIMARY SURFACE: AIRCRAFT PARKING; VEHICLE/PED. CROSSING (RWY)
- **B** TRANSITIONAL SURFACE: AIRCRAFT PARKING; HANGARS AIRCRAFT FUELING
- **C** APPROACH SURFACE (RWY15): TREES
- **D** APPROACH SURFACE (RWY 33): TREES
- **E** PRIMARY SURFACE: TREES
- **F** TRANSITIONAL SURFACE: TREES

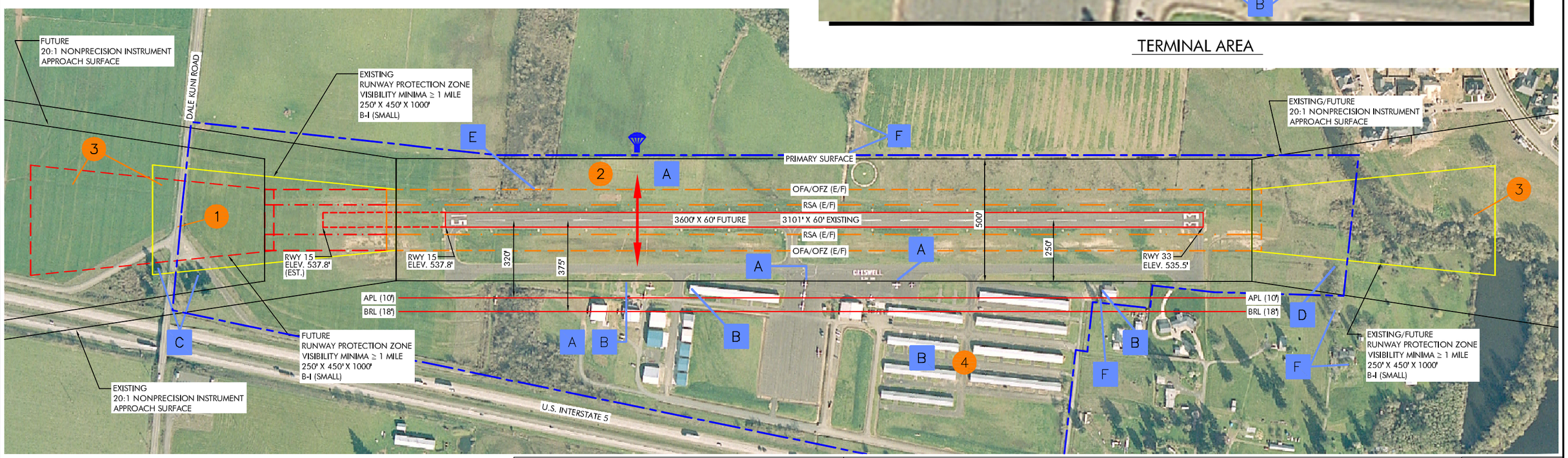
FAA AIRPORT DESIGN STANDARDS

- **1** RPZ: PUBLIC ROAD
- **2** RSA, OFA, OFZ: VEHICLE & PEDESTRIAN INCURSIONS (SKYDIVING)
- **3** RPZ: PROPERTY CONTROL
- **4** TAXILANE OFA: HANGARS

0 60 120
SCALE OF FEET
SCALE: 1"=60'



TERMINAL AREA



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CENTURY WEST ENGINEERING CORPORATION

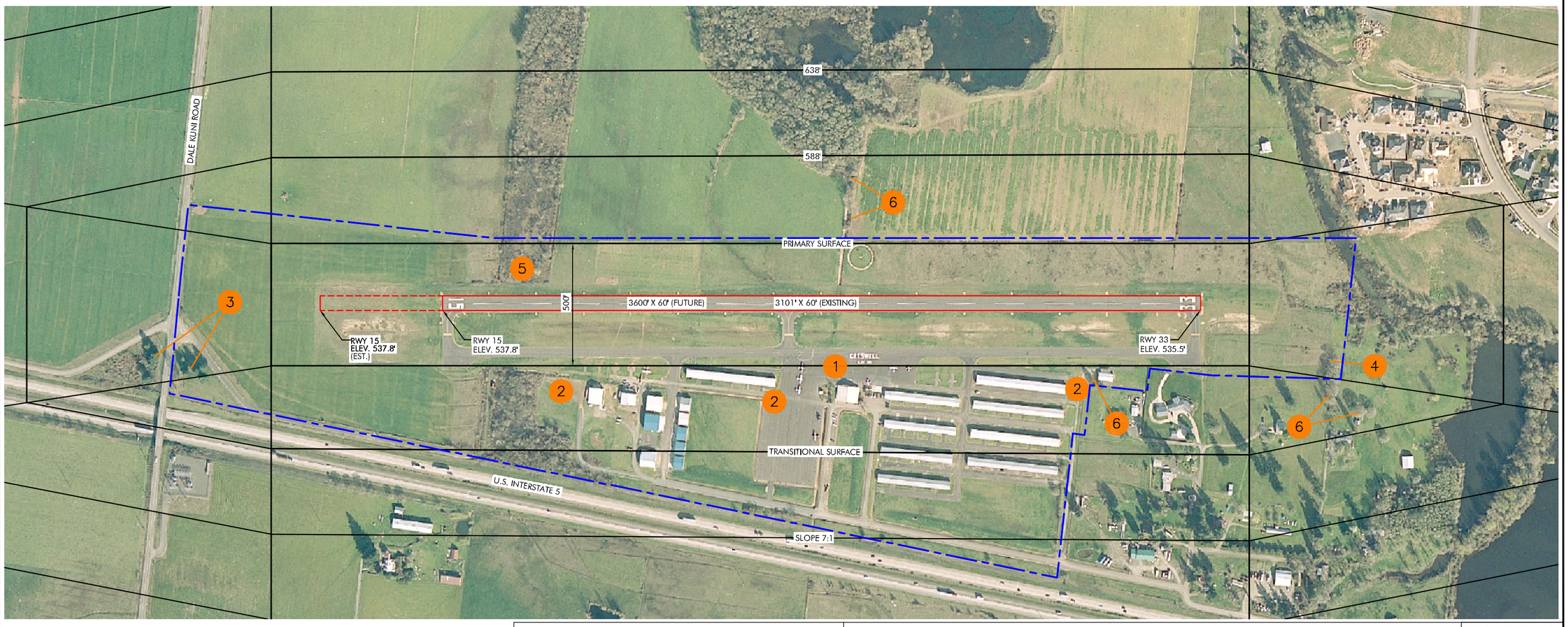
HOBBY FIELD AIRPORT MASTER PLAN NONSTANDARD ITEMS

FIGURE NO.

4-1

FAR PART 77 SURFACE PENETRATIONS/CONFLICTS

1. PRIMARY SURFACE: AIRCRAFT PKG.
2. TRANSITIONAL SURFACE: AIRCRAFT PKG.; HANGARS
3. APPROACH SURFACE (RWY 15): TREES
4. APPROACH SURFACE (RWY 33): TREES
5. PRIMARY SURFACE: TREES
6. TRANSITIONAL SURFACE: TREES



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AERIAL PHOTO FLOWN FOR CENTURY WEST ENGINEERING BY BERGMAN PHOTOGRAPHIC SERVICE 3/16/04

CENTURY WEST ENGINEERING CORPORATION

HOBBY FIELD AIRPORT MASTER PLAN
FAR PART 77 - OBSTRUCTIONS NONSTANDARD ITEMS

FIGURE NO.

4-2

TABLE 4-2: HOBBY FIELD
OVERVIEW OF CONFORMANCE WITH FAA STANDARDS

Standard	Non Conforming Use	Feasibility of Mitigating Item		
		Low	Medium	High
Airport Design Standards **Airport Design Group I – (Small Aircraft Exclusively) [ADG-I (small)]**				
1. Runway Length	Existing runway length of 3,100 feet is 30 feet less than the distance required to accommodate 95% of small airplane fleet at Creswell. The ability to accommodate 95% of the typical aircraft activity is considered to be a reasonable planning standard under most conditions. A previously-planned 500-foot north extension of the runway (to 3,600 feet), would accommodate approximately 99 percent of the small airplane fleet.			
2. Runway Width	Existing runway width of 60 feet, meets the ADG I standard (60 feet).			
3. Runway Shoulder Width	Shoulders (gravel) generally appear to meet ADG I standard (10 feet).			
4. Runway Safety Area (RSA)	RSA appears to meet dimensional and surface condition standards. However, regular incursions into the RSA are created by vehicles and pedestrians using the designated parachute drop zone located on the east side of the runway, opposite the loading area used by local skydiving operators (northern 1,000 feet of the runway). Options for addressing parachute ground and runway operational conflicts to be included in alternatives evaluation.			
5. Runway Object Free Area (OFA)	OFA appears to meet dimensional and clearance standards, with exception of the vehicle and pedestrian activity crossing the runway. Options for addressing parachute ground and runway operational conflicts to be included in alternatives evaluation.			
6. Obstacle Free Zone (OFZ)	OFZ appears to meet dimensional and clearance standards, with exception of the vehicle and pedestrian activity crossing the runway. Options for addressing parachute ground and runway operational conflicts to be included in alternatives evaluation.			

Standard	Non Conforming Use	Feasibility of Mitigating Item		
		Low	Medium	High
7. Runway Protection Zones (RPZ)	Dale Kuni Road located within Rwy 15 RPZ.			
8. Taxiway Width	Existing east parallel taxiway width (35 feet) exceeds ADG I standard (25 feet wide).			
9. Runway-Parallel Taxiway Separation	Existing 200-foot separation exceeds ADG I (small) standard (150 feet) for runway separation. It is noted that the existing taxiway separation would not meet the full ADG I (including large airplanes) or ADG II standard.			
10. Taxiway and Taxilane Object Free Area	The parallel taxiway OFA appears to meet ADG I dimensional and clearing standards (measured outward 44.5 feet from taxiway centerline); several aircraft tiedowns appear to be located just at the edge of the taxiway OFA. Options for addressing parachute-related vehicle and foot traffic conflicts with taxiway OFA to be included in alternatives evaluation. The center taxilane serving the south hangar development area does not meet ADG I taxilane OFA width standard. The opening between the ends of hangars is approximately 55 to 60 feet, considerably less than the ADG I taxilane OFA standard of 79 feet. Modifying the existing hangars to widen the opening should be considered as each building reaches the end of its useful life or when any substantial renovation is planned. The 2004 ALP depicts the construction of a new taxilane at the south end of the hangar development that would be designed to fully meet the taxilane OFA clearance standard. Additional survey is needed to verify that taxilane and relocated fence can be accommodated entirely within existing airport property.			
11. Taxiway Safety Area	Edges of parallel taxiway appear to meet standard and no obstructions are known aside from incursions created by parachute-related vehicle and foot traffic (to be addressed in alternatives evaluation).			
12. Aircraft Hold Lines	Aircraft hold lines marked on taxiway connections to runway meet ADG I (small) standard.			
13. Aircraft Parking Areas	Existing aircraft parking areas are located outside of defined areas (OFA, OFA, RSA), but some positions appear to be			

Standard	Non Conforming Use	Feasibility of Mitigating Item		
		Low	Medium	High
	located within primary surface and several other aircraft parking positions penetrate the runway transitional surface. Relocation of aircraft parking areas outside primary surface appears to be feasible; primary and transitional surface penetrations should be addressed in the airfield development alternatives evaluation.			
14. Building Restriction Lines	Nine existing hangars penetrate the transitional surface west of the runway. The hangar closest to the runway is the open door T-hangar located mid-runway (approximately 265 feet from runway centerline). Several other hangars are located approximately 280 to 330 feet from the runway centerline. The 2004 ALP reconfigured the future west landside development area to require all future hangar development to be consistent with the BRL. At a minimum, all built items penetrating the protected airspace should be marked with red obstruction lights. Options for future relocation of existing hangars should be considered in the alternatives evaluation.			
15. Airfield Lighting and Marking	Runway Edge Lighting: Good Airport Beacon: Good PAPI (Rwy 15): Good Runway Marking: Good Taxiway Marking: Fair Lighted Wind Cone: Good Signage: N/A Obstruction Lighting: Fair to Poor (several hangars penetrating Part 77 transitional surface are not lighted)			
FAR Part 77 Utility/Nonprecision Instrument				
1. Primary Surface	The western edge of the Primary Surface appears to extend over several existing aircraft tiedowns located approximately 45 feet from parallel taxiway centerline (245 feet from runway centerline). Two small groups of trees are located in			

Standard	Non Conforming Use	Feasibility of Mitigating Item		
		Low	Medium	High
	the Primary Surface on the east side of the runway. Relocation of aircraft parking positions outside of Primary Surface is feasible. Removal of all trees/bushes within Primary Surface is feasible.			
2. Approach Surfaces	Existing Approach Surface clearances are limited by trees (north and south). Lowering or removal of trees beyond airport property may be feasible.			
3. Transitional Surface	Areas of penetration created by trees on both sides of the runway. Nine (9) hangars located on west side of the runway and aircraft parked in numerous existing tiedowns penetrate the transitional surface on the west side of the runway. Lowering or removal of trees on airport property appears feasible. Avigation easements may be required to protect airspace located beyond airport ownership. Relocation of oldest hangars located near runway may be feasible; all built items penetrating the transitional surface should be marked with obstruction lighting if not removed.			
4. Horizontal Surface	Group of trees located approximately 3,200 feet east of runway penetrates the horizontal surface (+86 feet). Removal or lowering may be feasible.			
5. Conical Surface	Small area of terrain (Creswell Butte) located approximately 8,700 feet SW of south end of runway. Removal/lowering not considered feasible; obstruction lighting required on all structures located on butte.			

1992-2004 Airport Layout Plan Overview

The airport layout plan (ALP) for Hobby Field has been periodically updated over the last several years to reflect current conditions and configurations for planned improvements. In 1992, a basic evaluation of airport design standards was done in conjunction with the development of the first computer-generated ALP for Hobby Field.[20] The 1992 ALP maintained the basic facility planning criteria previously recommended in the previous ALP (1983) used to support the major airfield improvements conducted in the late 1980s. The existing airport reference code (ARC)[21] was listed as "B-I" and the future ARC was listed as B-II. Existing and future runway pavement strength was listed at 12,500 pounds for aircraft with single wheel landing gear. The 1992 ALP depicted a future 500-foot runway extension at the Runway 15 end and a future relocated parallel taxiway to meet the ADG II runway separation standard of 240 feet. The narrative report noted that most existing facilities were consistent with ADG I standards (for small aircraft) and that a future upgrade to ADG II standards would require substantial reconfiguration of airside and landside facilities.

In 2000, the ALP was updated in conjunction with developing a new airport land use plan to support local land use planning activities.[22] During that project, the Consultant reevaluated prior planning recommendations and proposed a change in both the existing and future ARC to B-I (small), consistent with aircraft usage, site constraints, and existing facility configurations. It was recognized that upgrading existing facilities to accommodate large aircraft (ADG I or II) would require the relocation of the parallel taxiway 25 or 40 feet west, which would significantly impact several existing landside facilities. In addition, refinements in the configuration of future landside developments (hangars, aircraft parking, access roads, etc.) in the northwest corner of the airport were incorporated into the plan update. The existing and future design aircraft was identified as Beechcraft Baron, which represented a typical light twin-engine aircraft weighing less than 12,500 pounds. This update was coordinated with FAA in conjunction with review of a proposed hangar development project (south hangar area), although formal approval was not issued.

In 2004, the ALP and Airspace Plan drawings were updated as part of a statewide project to develop GPS non-precision instrument approaches at several Oregon airports.[23] The project included an obstruction survey and obstruction chart, in addition to updating the ALP and FAR

[20] Summary of Airport Design Standards for the Airport Layout Plan Update (David Miller, SFC Engineering, May 1992)

[21] Airport Reference Code is defined by airplane design group (wingspan) and aircraft approach category (approach speed)

[22] Airport Layout Plan Update (D. Miller, Century West Engineering, 2000)

[23] Airport Layout Plan Update (D. Miller, Century West Engineering, 2004)

Part 77 airspace plan for FAA review. Most of the revisions made in the 2000 ALP update were retained in the 2004 update, although the airspace associated with the airport was upgraded from visual to non-precision instrument for small aircraft. The 2004 ALP and associated drawings were approved by FAA in August 2004 with B-I (small) listed as the existing and future ARC based on a Beechcraft Baron, light twin-engine aircraft.

Airport Master Planning Development Overview

The option of upgrading facilities to accommodate larger aircraft is something that most small airports consider during the master planning process. Several larger general aviation aircraft, particularly turboprops and business jets are classified as "large" aircraft included in ADG I and II. Most general aviation or business class "large" aircraft weigh between 12,500 and 60,000 pounds, although several large business jets exceed 60,000 pounds. From an airport planning perspective, the dimensional standards associated large aircraft (ADG I or II) are generally greater than the corresponding ADG I standards defined for "small aircraft exclusively."

In the case of Hobby Field, the feasibility of major facility expansion is limited by physical site characteristics that would limit significant runway extensions or increase the lateral separations required for the runway-taxiway system and adjacent landside developments (aircraft parking, fueling, hangars, etc.). The limited land area currently available to accommodate future landside facility needs (hangar, apron, etc.) would be largely consumed by the relocation of existing facilities, which would significantly limit space to accommodate new tenants.

In addition to the lateral expansion constraints, the length of the runway cannot be significantly increased beyond the previously recommended length of 3,600 feet without property acquisition and relocation or closure of Dale Kuni Road, north of the runway. In particular, the feasibility of upgrading to ADG II standards must consider the need to provide adequate runway length to accommodate a wide range of business aircraft. At Creswell, a runway length between 4,000 and 4,600 feet would be required to accommodate most small or medium business jets during warmer months without significant operating weight restrictions.

The availability of nearby Eugene Airport to accommodate larger business aircraft allows Hobby Field to focus on its role as a community general aviation airport that can accommodate a wide range of general aviation and limited business aviation activity. This functional role is consistent with use by predominantly small single engine and multi engine aircraft weighing 12,000 pounds or less.

Short of significant eastward expansion (property acquisition) of the airport and relocation of Dale Kuni Road beyond the north end of the runway, it does not appear highly feasible to

upgrade the airfield facilities beyond current small aircraft capabilities. A comparison of the airport's current ability to meet specific ADG I and II design standards (based on existing property and public road configurations) is also provided in **Table 4-6**, later in the chapter.

LAND UTILIZATION

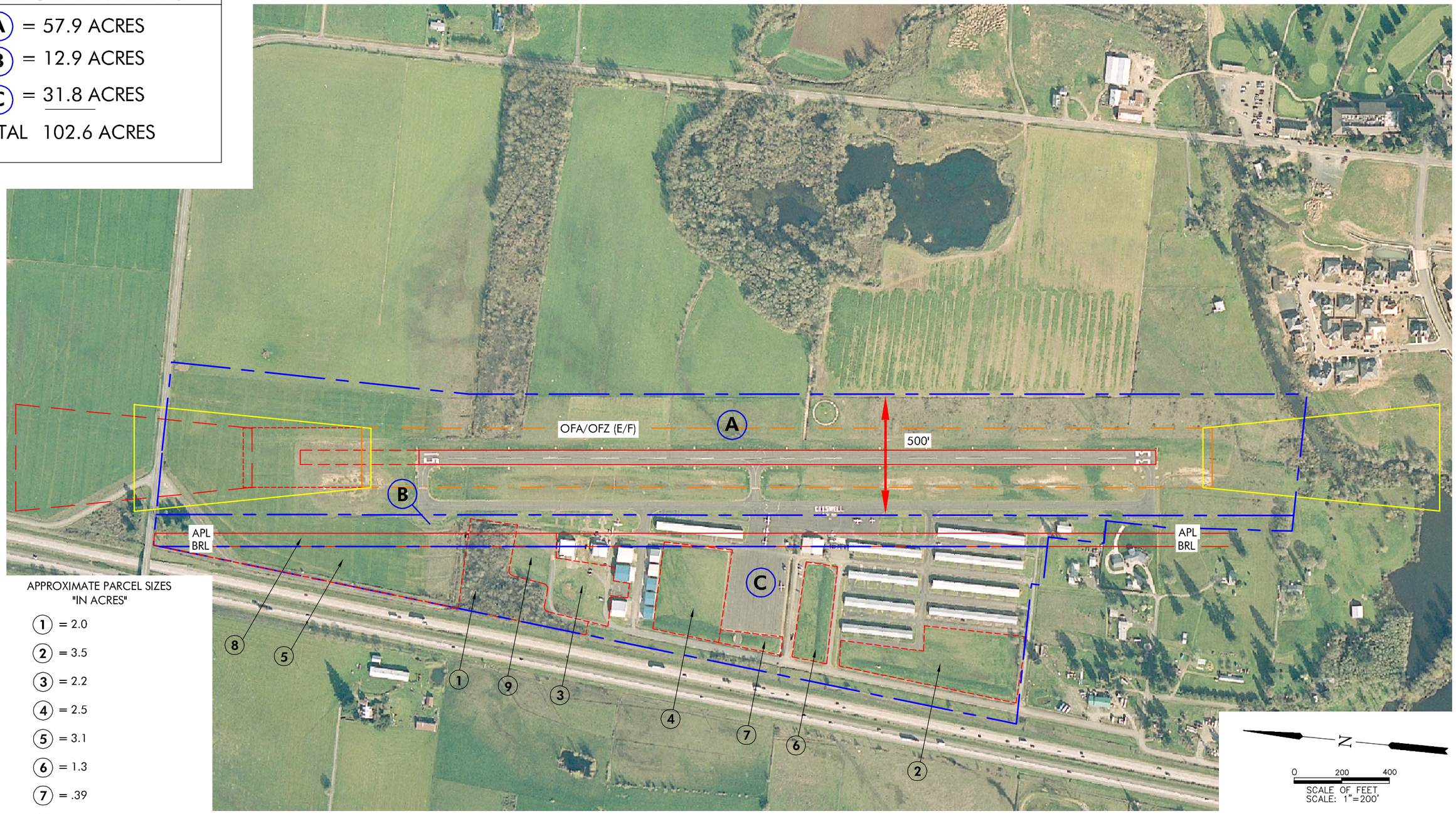
The total airport land area consists of approximately 102.6.acres, which includes the airside area (runway-taxiway system, protected areas, etc.) and the west landside area (aircraft storage, support facilities, etc.). A narrow section of airport land located on the east side of the runway (between the runway and the east property line) is largely undeveloped. The airside area of the airport accounts for approximately 59 percent of the airport's total land base. The landside areas account for approximately 41 percent of the airport. **Table 4-3** summarizes existing airport land uses based on current and planned airfield configurations, as depicted on the current airport layout plan (ALP). **Figure 4-3** depicts the existing configuration of the Hobby Field's land areas.

The City previously leased approximately 4 acres of land that abuts the east side of the airport (near the north end of the runway) from the Oregon Department of Transportation (ODOT). This parcel accommodated a designated parachute drop zone (off airport property) for skydiving operations that originated from Hobby Field. This lease was terminated in late 2006.

TABLE 4-3: HOBBY FIELD LAND USE CONFIGURATION

Existing Land Use	Acreage	Percentage of Total Airport Property
Airside *(Developed or Reserved)* Runway, Runway Extension Reserve, Parallel Taxiway, Runway Protection Zones, Object Free Area, Runway Safety Area, Obstacle Free Zone, Primary Surface.	60.1	58.6%
West Landside Area 1 *(Area between existing Taxiway OFA and Future Aircraft Parking Line – as depicted on 2004 ALP)* Aircraft Apron, Hangars, Vehicle Parking, Access Roads, Undeveloped Land	6.8	6.6%
West Landside Area 2 *(Area located from west BRL to western airport property line – as depicted on 2004 ALP)* Aircraft Apron, Hangars, Vehicle Parking, Access Roads, Undeveloped Land.	35.7	34.8%
Total	**102.6**	**100%**
East Lease (ODOT) – Parachute Landing Area *(lease terminated in 2006)*	**4**	**--**

AIRPORT LAND AREAS	
A	= 57.9 ACRES
B	= 12.9 ACRES
C	= 31.8 ACRES
TOTAL	102.6 ACRES



APPROXIMATE PARCEL SIZES
"IN ACRES"

1	= 2.0
2	= 3.5
3	= 2.2
4	= 2.5
5	= 3.1
6	= 1.3
7	= .39
8	= 1.3
9	= .21
TOTAL	= 16.5

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CENTURY WEST ENGINEERING CORPORATION

HOBBY FIELD AIRPORT MASTER PLAN DEVELOPABLE AREAS

FIGURE NO.

4-3

Airside Area

The airside area of the airport consists of the runway-parallel taxiway system and the associated protected areas (safety areas, object free areas, runway primary surface, runway protection zones, etc.) As noted earlier, the 2004 update of the airport layout plan (ALP) incorporated the larger setbacks required to accommodate a future instrument approach to Runway 33. Of these items, the primary surface represents the widest protected area, extending 250 feet in both directions of the runway centerline. The primary surface is the FAR Part 77 airspace surface that surrounds the runway and must be kept free of obstructions (e.g., terrain, parked aircraft, structures, or other items) that could create "a hazard to air navigation."

Based on this configuration, the airside area (500 feet wide) extends the entire length of the runway, with additional areas encompassing the RPZ (runway protection zone) and other protected areas located beyond the runway ends. This area totals approximately 56 acres, which is about 57 percent of the airport land base. The majority of this area is not suitable to accommodate landside facilities such as aircraft parking or hangars; a small, narrow area (approximately 2.2 acres) located at the northeast corner of the airport is located outside the primary surface and other defined airside areas, although height limits would be required for any potential development to avoid penetrating the runway transitional surface slope (see below).

The wider primary surface associated with instrument approach capabilities affects the location of the transitional surface, outwardly sloping surfaces that extend from the edges of the primary surface, up to an elevation 150 feet above the published airport elevation. Some existing aircraft tiedowns and hangars may need to be relocated in the future to reduce the number of obstructions to these protected airspace surfaces. At a minimum, red obstruction lighting should be added to any buildings penetrating airspace surfaces. Aircraft tiedowns are generally relocated to eliminate obstructions and any new development should avoid penetrating the surface.

In its current configuration, the runway and most required clear areas associated with the airside facilities are contained within airport property. The runway protection zones (RPZ) for both runway ends extend beyond airport property, which is does not fully conform to FAA standards. In cases where RPZs cannot be controlled outright through airport ownership, purchase of airspace rights and placing limitations on development type/density through avigation easements can provide some level of protection to the airport.

Landside Area

The areas on the airport currently capable of accommodating landside development are located on the west side of the runway. The distance from the runway to the east airport property line is not sufficient to accommodate landside development that would be compatible with airside facility requirements.

The western landside area consists of approximately 42 acres, of which about 16 acres remain undeveloped. In addition, nearly 7 acres of existing landside development area nearest the runway is affected by the increased development setbacks associated with planned instrument approach capabilities. Some reconfiguration/relocation of facilities within this area may be required to meet clearance standards and development of new facilities (hangars, etc.) would be significantly limited due to height restrictions. This, in turn, may reduce the amount of currently undeveloped acreage that would be available to accommodate new development needs.

The undeveloped areas of the airport are divided almost evenly between the southern and northern sections on the airport's west side. Approximately 2 acres of this area is the forested area located near the north end of the runway, which may contain wetlands. A preliminary evaluation of wetland mapping will be conducted during the environmental review for the master plan. It appears that the potentially developable landside areas of the airport range from 14 to 16 acres.

Although the undeveloped landside areas are limited at Hobby Field, it appears that the airport has adequate land to accommodate forecast demand for hangars, aircraft parking and associated facilities for the current 20-year planning period. However, if construction of hangars accelerates significantly beyond historic trends and 20-year forecast demand, the west landside area will soon begin to approach capacity. It may be appropriate to consider future property acquisition to accommodate developing facilities on the east side of the runway.

Based on relatively scarce land availability, optimizing the configuration of landside facilities on the west side of the runway represents one of the most significant issues to be addressed in the master plan's development alternatives analyses.

PARACHUTE LANDING AREA

Hobby Field has a designated parachute jumping area identified in the FAA Airport/Facility Directory (AFD): ***"15 NM 120 degrees Eugene; maximum altitude 15,000 feet; 5 NM radius; Sunrise to Sunset Daily."*** As noted earlier, the airport suspended parachute operations at the airport in late 2006 and terminated a lease for an adjacent four-acre landing area. The following sections describe the conditions that were in place in early 2006.

Ground Activities

The designated skydiving landing area is located off airport property, approximately 250 to 300 feet east of the runway (northern section), on land leased by the City from ODOT. There are no other public use facilities located on the east side of the runway and no defined public access is provided to the east side of the airport or to the adjacent leased land. The parachute landing area is located directly opposite the hangars and staging area used by local skydiving operators on the west side of the runway, approximately 700 to 800 feet south of the Runway 15 threshold.

According to users and airport management, it is common practice for skydivers to walk across the runway and parallel taxiway after landing in the designated drop zone in order to return to the skydiving aircraft staging area on the west side of the runway. In some instances, support vehicles will drive across the runway-parallel taxiway to pick up skydivers and return them to the staging area to prepare for another jump.

Despite a high level of airport situational awareness among skydivers and the supervision provided by the skydiving operators, these ground activities create a potential hazard for aircraft and fall within the FAA's definition of runway incursion:

A runway incursion *is "any occurrence in the airport runway environment involving an aircraft, vehicle, person, or object on the ground that creates a collision hazard or results in a loss of required separation with an aircraft taking off, intending to take off, landing, or intending to land."*

The opening sentence in the FAA's 2005 National Runway Safety Report[24] provides a clear indication of the emphasis placed on the runway incursion problem: *"One of the FAA's top priorities is to reduce the frequency of runway incursions and the risk of runway collision."* Although the FAA's enforcement focus is currently directed toward towered airports, the design standards intended to prevent/correct this problem do not significantly distinguish between towered and non-towered airports. As a result, it is reasonable to assume that the FAA will expect the master plan to thoroughly address the runway incursion issue at Hobby Field. To accomplish this, other options will need to be considered in the alternatives evaluation to ensure that skydiving operations are entirely compatible with the overall airport safety requirements at Hobby Field.

[24] Runway Safety Report – August 2005. FAA Air Traffic Organization; Safety Services.

Airspace/Air Traffic

It appears that normal airport traffic pattern operations are not adversely affected by the activity. Pilots are generally aware when skydiving activity is occurring based on traffic observation and monitoring the common traffic advisory/Unicom frequency. In addition, advisory information is published in the AFD and is noted on aeronautical charts. However, local pilots have reported occasions when skydivers have missed the designated east side landing area by a wide margin, landing either directly on the runway or parallel taxiway or on the west side of the runway.

Parachute operations are regulated by FAR Part 105. FAR Section 105.17 "*requires prior approval of the airport management for jumps made over or onto an airport. However, a parachutist may drift over an airport without prior approval if the chute is fully open, he/she is at least 2,000 feet above the airport traffic pattern, and he/she avoids creating a hazard to air traffic or to persons and property on the surface.*"

INSTRUMENT APPROACH CAPABILITIES

Hobby Field does not currently have a published instrument approach procedure (IAP), although the survey work required to design a new IAP was completed as part of the 2004 ALP update project. Based on preliminary analysis performed by the FAA's Flight Procedures Office (FPO), it was determined that the best approach capabilities for Hobby Field are likely to be obtained by developing an approach to the Runway 33 end, with a 15-degree final approach course offset to the southwest.

In recent years, the ongoing evolution of satellite-based navigation (SATNAV) technology has led to the development of systems able to provide vertical guidance capabilities nearly comparable to conventional ground-based precision instrument approach systems. Currently, the FAA is developing instrument approaches for general aviation airports based on the Wide Area Augmentation System (WAAS). WAAS uses a network of ground reference stations that monitor Global Positioning System (GPS) satellite signals. WAAS allows GPS signal accuracy to improve from 20 meters to approximately 1.5 to 2 meters. This has allowed development of instrument approaches with both vertical and horizontal guidance. The vertical guidance component (LPV) enables aircraft to descend as low as 250 feet above the runway with visibility minimums of ¾ mile. It is expected that the new instrument approach for Hobby Field will be a WAAS procedure designed to accommodate Approach Category A and B aircraft.

Based on current FAA airspace planning guidance for WAAS/LPV approaches, general aviation airports are not required to define and protect airspace surfaces comparable to that required for precision instrument approaches, such as instrument landing system (ILS). The primary surface required for a runway equipped with an ILS is 1,000 feet wide, which would encompass almost

the entire airport. Based on the planned widespread application of this technology to smaller airports, it appears that the airspace clearance requirements may be formally modified in the future.

AIRSPACE

As noted in the Inventory, Hobby Field is located in an area of Class E airspace (uncontrolled airport). The terminal and enroute (IFR airways, military training routes, etc.) airspace structure in the vicinity of Hobby Field is relatively uncomplicated and is not expected to constrain future airport development or operation. The airspace surfaces defined for Hobby Field are based on the requirements associated with utility runways;[25] (planned) non-precision instrument approach capabilities; and an ultimate runway length of 3,600 feet.[26]

The airspace surfaces for Runway 15/33 are free of terrain penetrations with the exception of one small area (Creswell Butte) located approximately 6,700 feet from the end of Runway 33, at the outer edge of the conical surface. An obstruction survey was conducted in 2003 in conjunction with the update of the airspace plan. The survey provided accurate obstruction location and elevation data for most items located in the approach, primary and transitional surfaces. The 2004 Airspace Plan lists 51 items within the obstruction table. However, 13 of the items are not actual obstructions, but are provided for reference only, based on their overall significance in relation to the runway.

Several trees or groups of trees were identified within the approach surfaces for both runways. The plan recommends clearing the trees to eliminate the approach surface obstructions. Dale Kuni Road passes under the Runway 15 approach surface, approximately 600 feet from the future runway end. Vehicles traveling on the public roadway do not obstruct the existing approach surface and it appears that the future approach surface for Runway 15 will also remain unobstructed.

In addition to depicting the standard FAR Part 77 imaginary surfaces, the 2004 Airspace Plan also depicts a defined area that coincides with a future offset instrument approach for Runway 33. This area is intended to define a protected area required under the guidelines used by FAA to design terminal instrument procedures. Based on preliminary design evaluations, it is anticipated that the final approach segment for the procedure would be offset up to 15 degrees west,

[25] In FAR Part 77, utility runways are designed to accommodate aircraft weighing less than 12,500 pounds.

[26] Hobby Field – FAR Part 77 Airspace Plan and Airport Layout Plan (ALP) (Century West Engineering , August 2004)

intersecting the extended runway centerline approximately 3,000 feet beyond the end of the runway. No additional obstructions are identified within the offset area.

As noted in the A/FD remarks section, Runway 33 is designated as the calm runway at Hobby Field. Both runway ends use standard left-hand traffic patterns. When Runway 33 is in use, the airport traffic pattern is located on the west side of the runway. When Runway 15 is in use, the traffic pattern is located on the east side of the runway.

AIRPORT DESIGN STANDARDS

The selection of the appropriate design standards for the development of airfield facilities is based primarily upon the characteristics of the aircraft that are expected to use the airport. The most critical characteristics are the approach speed and wingspan of the design aircraft anticipated for the airport. The **design aircraft** is defined as the most demanding aircraft type operating at the airport with a minimum of 500 annual itinerant operations (takeoffs and landings).

Federal Aviation Administration (FAA) **Advisory Circular (AC) 150/5300-13, Airport Design**, serves as the primary reference in planning airfield facilities. Federal Air Regulation **FAR Part 77, Objects Affecting Navigable Airspace**, defines airport imaginary surfaces, which are established to protect the airspace immediately surrounding a runway. The airspace and ground areas surrounding a runway should be free of obstructions (i.e., structures, parked aircraft, terrain, trees, etc.) to the greatest extent possible.

FAA **Advisory Circular 150/5300-13** groups aircraft into five categories based upon their approach speed. Categories A and B include small propeller aircraft, some smaller business jet aircraft, and some larger aircraft with approach speeds of less than 121 knots. Categories C, D, and E consist of the remaining business jets as well as larger jet and propeller aircraft generally associated with commercial and military use; these aircraft have approach speeds of 121 knots or more. The advisory circular also establishes six airplane design groups (ADG), based on the physical size (wingspan) of the aircraft. The categories range from ADG I, for aircraft with wingspans of less than 49 feet, to ADG VI for the largest commercial and military aircraft. ADG I is further divided into two subcategories: runways serving “small airplanes exclusively” and runways serving aircraft weighing more than 12,500 pounds. Aircraft with a maximum gross takeoff weight of less than 12,500 pounds are classified as “small aircraft” by the FAA. A summary of typical aircraft and their respective design categories is presented in **Table 4-4.**

TABLE 4-4: TYPICAL AIRCRAFT & DESIGN CATEGORIES

Aircraft	Airplane Design Group	Aircraft Approach Category	Maximum Gross Takeoff Weight (Lbs)
Piper PA-28/32 Cherokee	A	I	2,550
Cessna 182	A	I	2,950
Cirrus SR20	A	I	3.000
Lancair Columbia 300	A	I	3,400
Cessna 206	A	I	3,600
Beechcraft Bonanza A36	A	I	3,650
Cessna 210	A	I	3,850
Socata/Aerospatiale TBM 700	A	I	6,579
Beechcraft Baron 58	B	I	6,200
Eclipse 500	B	I	5,640
Cessna Mustang	B	I	Apprx. 8,000
Piper Aerostar 602P	B	I	6,000
Cessna P337 Skymaster	B	I	4,630
Cessna 402	B	I	6,300
Cessna 421	B	I	7,450
Cessna Citation CJ1 (CE525)	B	I	10,600
Beechcraft Super King Air 200	B	II	12,500
Piper Malibu	A	II	4,300
Cessna Caravan 1	A	II	8,000
Pilatus PC-12	A	II	9,920
Cessna Citation CJ2 (CE525A)	B	II	12,375
Cessna Citation Bravo (CE550)	B	II	14,800
Dassault Falcon 20	B	II	28,660
Learjet 60	C	I	23,100
Canadair Challenger	C	II	45,100
Gulfstream IV (G450)	D	II	71,780

Source: FAA Advisory Circular (AC) 150/5300-13 (change 7); Jane's Aircraft Guide; aircraft manufacturer data.

Design Aircraft

As noted in Chapter Three, current and forecast activity consists of predominantly small single-engine and multi-engine piston aircraft. It is anticipated that Hobby Field will accommodate a limited amount of turbine aircraft activity during the current twenty-year planning period, although this too, is expected to be generally limited to small aircraft.

The 2004 ALP identifies the existing and future design aircraft as a Beechcraft Baron, a typical light twin-engine aircraft that weighs less than 12,500 pounds. This aircraft has an approach speed of 96 knots and a wingspan of 37.8 feet, which corresponds to airport reference code (ARC) B-I (small).

Based on forecast air traffic, site considerations, prior planning recommendations, and FAA airport planning/design guidelines, the use of design standards based on **Aircraft Approach Category B and Airplane Design Group I (small aircraft exclusively) is recommended for Runway 15/33 (*Airport Reference Code - ARC B-I (small)*).** Under FAR Part 77, "utility" airspace surfaces are consistent for runways designed to accommodate with ADG I aircraft. These design standards and the comparable standards for ADG I (including large and small aircraft) and ADG II are summarized in **Table 4-5**. A summary of Hobby Field's current conformance with these design standards and FAR Part 77 airspace surfaces are presented in **Table 4-6**.

As indicated in the table, Runway 15/33 meets most ADG I (small) dimensional standards, although the operational conflicts created by skydiving ground operations impact the majority of the defined standards. Hobby Field would not be able to meet the majority of ADG I or ADG II standards for Approach Category A and B aircraft (large and small aircraft) without significant relocation of major facilities including the parallel taxiway, aircraft apron, FBO, several hangars, and aircraft fueling area. Detailed descriptions of the Part 77 airspace surfaces and the applicable airport design standards are presented later in this chapter.

TABLE 4-5: AIRPORT DESIGN STANDARDS SUMMARY (DIMENSIONS IN FEET)

Standard	Runway 15/33 *Existing Conditions*	ADG I[1] (small aircraft exclusively)	ADG I[1] A&B Aircraft	ADG II[2] A&B Aircraft
Runway Length	3,101	3,130/3,740[3]	3,130/3,740[3]	5,370[4]
Runway Width	60	60	60	75
Runway Shoulder Width	10	10	10	10
Runway Safety Area Width	120	120	120	150
Runway Safety Area Length (Beyond Rwy End)	240	240	240	300
Obstacle-Free Zone Width	250	250	400	400
Object Free Area Width	250	250	400	500
Object Free Area Length (Beyond Rwy End)	240	240	240	300
Primary Surface Width	500	500	500	500
Primary Surface Length (Beyond Rwy End)	200	200	200	200
Runway Protection Zone Length	1,000	1,000	1,000	1,000
Runway Protection Zone Inner Width	250	250	500	500
Runway Protection Zone Outer Width	450	450	700	700
Runway Centerline to:				
Parallel Taxiway/Taxilane Centerline	200	150	225	240
Aircraft Parking Area	Apprx. 245'	125/320[5]	200/320[6]	250/320[6]
Building Restriction Line	285[8]	376[7]	376[7]	376[7]
Taxiway Width	35	25	25	35
Taxiway Shoulder Width	10	10	10	10
Taxiway Safety Area Width	49	49	49	79
Taxiway Object Free Area Width	89	89	89	131
Taxiway Centerline to Fixed/Movable Object	Apprx. 45'	44.5	44.5	65.5
Taxilane Object Free Area Width	79	79	79	115
Taxilane Centerline to Fixed/Movable Object	39.5	39.5	39.5	39.5

1. Utility (nonprecision instrument) runways (Per FAR Part 77); all other dimensions reflect visual runways and runways with not lower than 3/4-statute mile approach visibility minimums (per AC 150/5300-13, Change 7). RPZ dimensions bases on visual and not lower than 1-mile approach visibility minimums.
2. Larger than Utility (nonprecision instrument) runways (Per FAR Part 77); all other dimensions reflect visual runways and runways with not lower than 3/4-statute mile approach visibility minimums (per AC 150/5300-13, Change 7). RPZ dimensions bases on visual and not lower than 1-mile approach visibility minimums.
3. Runway length required to accommodate 95 and 100 percent of General Aviation Fleet 12,500 pounds or less. 82 degrees F, 3-foot change in runway centerline elevation.
4. Runway length required to accommodate 75 percent large airplane fleet (60,000 pounds or less) at 60 percent useful load. 82 degrees F, 3-foot change in runway centerline elevation.
5. FAA standard assuming no parallel taxiway / Dimension based on existing parallel taxiway OFA clearance and distance to clear 10-foot aircraft tail height (typ. small single-engine) in transitional surface for nonprecision instrument approach.
6. FAA standard assuming no parallel taxiway / Dimension based on standard parallel taxiway OFA clearance and distance to clear 10-foot aircraft tail height (typ. small single-engine) in transitional surface for nonprecision instrument approach.
7. Distance to protect parallel taxiway object free area and accommodate an 18-foot structure (at the BRL) without penetrating the 7:1 Transitional Surface.
8. Distance of nearest building to runway centerline.

TABLE 4-6: CONFORMANCE WITH FAA DESIGN STANDARDS & FAR PART 77 IMAGINARY SURFACE CLEARANCES

Item	*Airplane Design Group I (Small Aircraft Exclusively)*	*Airplane Design Group I A & B Aircraft*	*Airplane Design Group II A & B Aircraft* [1]
Runway Safety Area	No[2]	No[2]	No
Runway Object Free Area	No[2]	No[2]	No
Runway Obstacle Free Zone	No [2]	No[9]	No
Taxiway Safety Area	No [2]	No[3]	No
Taxiway Object Free Area	No [2]	No[3]	No
Taxilane Object Free Area	No[15]	No[15]	No[15]
Building Restriction Line – West	No[4]	No[4]	No
Aircraft Parking Line – West	No[5]	No[5]	No
Runway Protection Zones	No[6]	No[6]	No
Runway-Parallel Taxiway Separation	Yes	No	No
Runway Width	Yes	Yes	No
Runway Length	Yes	No[7]	No[8]
Taxiway Width (Parallel)	Yes	Yes	Yes
Approach Surfaces (Req. Slope/Clear)	20:1/No[14]	34:1/No[14]	34:1/No[14]
Primary Surface (Clear)	No[10]	No[10]	No[10]
Transitional Surface (Clear)	No[11]	No[11]	No[11]
Horizontal Surface (Clear)	No[13]	No[13]	No[13]
Conical Surface (Clear)	No[12]	No[12]	No[12]

1. Existing facilities generally not currently designed based on ADG II dimensional standards. Some ADG II design standards could be met without difficulty, although most would require reconfiguration and relocation of existing facilities.
2. Currently meets dimensional standard, however, incursions into the area from vehicle and foot traffic associated with skydiving ground operations are not consistent with FAA standards.
3. Parallel Taxiway would need to be relocated 25 feet west to meet ADG I (A&B) standard and the required taxiway clearances would impact parked aircraft and hangars; incursions identified in item 2 also impact this standard,
4. Several hangars located within recommended BRL associated with future instrument approach. Obstruction lighting recommended for most hangars; relocation of T-hangars nearest the runway should be considered.
5. Several aircraft parking positions located within recommended APL associated with future instrument approach. Relocation of aircraft parking positions is recommended.
6. Dale Kuni Road located within existing Runway 15 RPZ.
7. Per FAA Runway Length Model: Existing runway length is approximately **83 percent** of the FAA-recommended length required to accommodate 100% of small aircraft fleet.
8. Per FAA Runway Length Model: Existing runway length is approximately **58 percent** of the FAA-recommended length required to accommodate 75% of large aircraft weighing less than 60,000# at 60% useful load.
9. Parallel taxiway (taxiing aircraft) located within large aircraft OFZ dimension.
10. Parked aircraft, trees located within 500-foot wide primary surface.
11. Parked aircraft, hangars and trees located within transitional surface.
12. Area of terrain located in conical surface, SW of runway.
13. Area of trees located east of runway.
14. Trees located within 20:1 approach surfaces for Runways 15 and 33 (existing and ultimate); surface slopes recommended based on future nonprecision instrument approach capabilities.
15. South hangar area center taxilane does not meet ADG I (or greater) taxilane object free area dimensional standard.

Airport Design Standards Note:

The airport planning criteria recommended for Runway 15/33 at Hobby Field are based on the following assumptions:

Visual runways and runways with not lower than ¾ statute mile approach visibility minimums. Runway protection zones (RPZ) are based on a visibility standard of "visual and not lower than 1-mile" for runways expected to serve small aircraft exclusively. All references to the "standards" are based on these approach visibility assumptions, unless otherwise noted. (Per FAA Advisory Circular 150/5300-13, change 10).

Airport Design Standards are based on Airport Reference Code (ARC) B-I (small). The ultimate FAR Part 77 airspace planning criteria is based on "utility" runways with nonprecision instrument approaches.

Runway Safety Area (RSA)

The FAA defines runway safety area (RSA) as "A defined surface surrounding the runway prepared or suitable for reducing the risk of damage to airplanes in the event of an undershoot, overshoot, or excursion from the runway." Runway safety areas are most commonly used by aircraft that inadvertently leave (or miss) the runway environment during landing or takeoff.

By FAA design standard, the RSA *"shall be:*

(1) cleared and graded and have no potentially hazardous ruts, humps, depressions, or other surface variations;

(2) drained by grading or storm sewers to prevent water accumulation;

(3) capable, under dry conditions, of supporting snow removal equipment, aircraft rescue and firefighting equipment, and the occasional passage of aircraft without causing structural damage to the aircraft; and

(4) free of objects, except for objects that need to be located in the runway safety area because of their function. Objects higher than 3 inches above grade should be constructed on low impact resistant supports (frangible mounted structures) of the lowest practical height with the frangible point no higher than 3 inches. Other objects such as manholes should be constructed at grade. In no case should their height exceed 3 inches."

The FAA, emphasizing the significance placed on meeting runway safety area standards provides the following guidance *"RSA standards cannot be modified or waived like other design standards. The dimensional standards remain in effect regardless of the presence of natural or man-made objects or surface conditions that might create a hazard to aircraft that leave the runway surface…A continuous evaluation of all practicable alternatives for improving each sub-standard RSA is required until it meets all standards…"*

The recommended transverse grade for the lateral RSA ranges between 1½ and 5 percent from runway shoulder edges. The recommended longitudinal grade for the first 200 feet of extended RSA beyond the runway end is 0 to 3 percent. The remainder of the RSA must remain below the runway approach surface slope. The maximum negative grade is 5 percent. Limits on longitudinal grade changes are plus or minus 2 percent per 100 feet within the RSA. The airport sponsor should regularly clear the RSA of brush or other debris and periodically grade and compact the RSA to maintain FAA standards.

The RSA along the sides and beyond the ends of Runway 15/33 appears to be cleared, graded and free of fixed physical obstructions, within the ADG I (small) dimensions. Items located within the RSA, such as runway edge lights or threshold lights are mounted on frangible supports (breakable coupling and disconnect plug). Any future lighting (such as PAPI, REILS, etc.) located within the RSA will also need to meet the FAA frangibility standard.

As noted earlier, a designated skydiving landing zone is located on the opposite side of the runway from the aircraft staging area used by skydiving operators at Hobby Field. While the landing area is well outside the defined RSA, incursions into the RSA are created by vehicles and skydivers crossing the runway, which does not meet the FAA clearing standard.

Runway Object Free Area (OFA)

Runway object free areas (OFA) are two dimensional surfaces intended to be clear of ground objects that protrude above the runway safety area edge elevation. Obstructions within the OFA may interfere with aircraft flight in the immediate vicinity of the runway. The FAA defines the OFA clearing standard:

"The OFA clearing standard requires clearing the OFA of above ground objects protruding above the runway safety area edge elevation. Except where precluded by other clearing standards, it is acceptable to place objects that need to be located in the OFA for air navigation or aircraft ground maneuvering purposes and to taxi and hold aircraft in the OFA. Objects non-essential for air navigation or aircraft ground maneuvering purposes are not to be placed in the OFA. This includes parked airplanes and agricultural operations."

The OFA along the sides and beyond the ends of Runway 15/33 appears to be free of fixed obstructions, within the ADG I (small) dimensions. All aircraft parking positions are located outside the OFA. The City should periodically inspect the OFA and remove any objects that protrude into the OFA, particularly brush or trees.

As with the RSA noted above, the parachute landing area is located well outside the OFA, however, incursions into the OFA are created by vehicles and skydivers crossing the runway, which does not meet the FAA clearing standard.

Obstacle Free Zone (OFZ)

The OFZ is a plane of clear airspace extending upward to a height of 150 feet above runway elevation, which coincides with the FAR Part 77 horizontal surface elevation. The FAA defines the following clearing standard for the OFZ:

"The OFZ clearing standard precludes taxiing and parked airplanes and object penetrations, except for frangible visual NAVAIDs that need to located in the OFZ because of their function."

The OFZ may include the Runway OFZ, the Inner-approach OFZ (for runways with approach lighting systems), and the Inner-transitional OFZ (for runways with lower than ¾-statute mile approach visibility minimums. For Hobby Field, only the Runway OFZ is required based on runway configuration and planned approach capabilities. The FAA defines the Runway OFZ as:

"The runway OFZ is a defined volume of airspace centered above the runway centerline. The runway OFZ is the airspace above a surface whose elevation at any point is the same as the elevation of the nearest point on the runway centerline. The runway OFZ extends 200 feet beyond each end of the runway."

The standard OFZ for runways serving small aircraft is 250 feet wide. This dimension corresponds with the visual approaches for the existing runway and would also accommodate non-precision instrument approaches (not lower than ¾ mile approach visibility minimums).

The OFZ for Runway 15/33 appears to be mostly free of physical obstructions and meets the small aircraft dimensional standards. As with the RSA and OFA noted above, the parachute landing area is located well outside the OFZ, however, incursions into the OFZ are created by vehicles and skydivers crossing the runway, which does not meet the FAA clearing standard.

The exit taxiways connecting to the runway have aircraft hold lines located 125 feet from runway centerline, which marks the outer edge of the existing OFZ boundary. The holding area at the end of Runway 15 has adequate space to allow aircraft to remain clear of the OFZ.

Taxiway Safety Area

The taxiways at Hobby Field include a full-length parallel taxiway and several access taxiways or taxilanes serving aircraft parking apron and hangars. The taxiways vary in width (20 to 35 feet) and appear to meet the dimensional standard (49 feet) for ADG I safety areas. For the parallel taxiway, which is 35 feet wide, the outer edge of the taxiway safety area extends only 7 feet from the edge of pavement. The taxiway safety areas should be regularly cleared of brush or other debris and periodically graded and compacted to maintain FAA standards.

Similar to other protected areas described earlier, vehicles and skydivers crossing the parallel taxiway conflict with the FAA's taxiway safety area clearing standard.

Taxiway/Taxilane Object Free Area

A taxiway or taxilane object free area (OFA) is intended to protect taxiing aircraft from obstructions that could interfere with safe movement, particularly at night or during reduced visibility conditions. The ADG I standard for taxiway OFA width is 89 feet (44.5 feet from taxiway centerline). Based on FAA clearance requirements, no parked aircraft or structures should be located within this area. It appears that the eastern-most aircraft tiedown positions and open front T-hangar located nearest the parallel taxiway are located just clear of the ADG I taxiway OFA. However, similar to other protected areas described earlier, vehicles and skydivers crossing the parallel taxiway conflict with the FAA's taxiway OFA clearing standard.

The ADG I taxilane OFA dimension is 79 feet (39.5 feet from taxilane centerline), which applies to taxilanes located between tiedown or hangar rows. The center taxilane serving the south T-hangar development has less than 60 feet of opening between the ends of the hangars, which does not meet the ADG I taxilane OFA standard. As a recommended improvement, the 2004 ALP depicts a future taxilane being added at the south end of the hangar development, with a standard 79-foot wide OFA. The spacing between hangars rows in the south development area appears to meet the 79-foot OFA dimensional standard.

Building Restriction Line (BRL)

A building restriction line (BRL) identifies suitable locations on an airport where structures can be located to be compatible with safe runway operations. Buildings should not conflict with the recommended airport design standards or the protected airspace defined for a particular runway. The location of the BRL is measured from the runway centerline outward in a perpendicular direction. Additional development setbacks may be determined by parallel taxiway clearances. However, most BRLs are defined by the ability to protect the FAR Part 77 primary and transitional surfaces that extend outward along the sides of a runway. The amount of setback

required is directly related to class of runway (large or small aircraft) and the most demanding approach type of the runway (visual, non-precision instrument, precision instrument).

The 2004 Airport Layout Plan (ALP) depicts a 376-foot building restriction line (BRL) on the west side of Runway 15/33 and a 250-foot BRL on the east side of the runway, which generally coincides with the eastern airport property line. The west (376-foot) BRL is compatible with the requirements for small aircraft and (future) non-precision instrument approaches, accommodating structures with an 18-foot roof height (measured as actual elevation above the runway at its nearest point). The BRL is intended to provide general guidance for building locations; larger buildings would require greater separation distances, depending on their roof heights. For example, a 24-foot high structure, typical of a medium conventional hangar, would need to be located approximately 420 feet from the runway centerline to avoid penetrating the runway transitional surface.

At small airports, most T-hangars have roof heights typically ranging from 16 to 20 feet (measured at the peak). It is noted that when T-hangars are constructed parallel to the runway centerline, the maximum height of the roof is generally located 20 to 25 feet beyond the BRL (equal to one-half the building width) along the roof line. Based on the fixed transitional surface slope of 7:1, a T-hangar with the front side located at the 376-foot BRL could have upper roof height of approximately 21 to 22 feet.

Small and medium size conventional hangars typically have roof heights from 18 to 26 feet; larger conventional hangars can exceed 60 feet, although roof heights are often 35 feet or lower. In general, it is possible to locate aircraft parking aprons and T-hangars closer to a runway than larger conventional hangars, based on the typical aircraft tail heights or building designs.

Based on the recent shift of the BRL, eight existing buildings on the west side of the runway are identified inside the BRL. These eight buildings, and one additional conventional hangar located just beyond the BRL are listed as obstructions on 2004 Airspace Plan. The nearest buildings to Runway 15/33 include two T-hangars and the EAA hangar, which are located adjacent to the west parallel taxiway, approximately 285 feet from runway centerline.

The Airspace Plan recommended adding obstruction lights for all built objects (buildings, power poles, etc.) that penetrate the transitional surface. Relocation of the two T-hangars located nearest the runway is recommended when the hangars reach the end of their useful lives, or sooner if practical. Trees should be trimmed or removed entirely within the Part 77 surfaces, particularly for the close-in surfaces (primary, transitional and approach). Future hangars should be configured to avoid penetrating the transitional surface.

As noted earlier, the eastern 250-foot BRL generally coincides with the eastern airport property boundary and the eastern edge of the runway primary surface. Although the area located on the east side of airport is not currently developed, a development setback should be established to coincide with the maximum allowable structure heights within the existing zoning. Assuming building heights up to 35 feet, a BRL should be established approximately 495 feet from the runway centerline. Protection of the airport from incompatible land uses through establishing an airport overlay zone that corresponds to all FAR Part 77 surfaces is the recommended mechanism for controlling heights of development within the 9,000-foot (horizontal and conical surfaces) radius that extends from each runway end. In the event property was acquired on the east side of the airport for future airport-related development, the BRL would need to be reviewed based on the planned facility development.

The responsibility to control obstructions (i.e., identify, remove or light) surrounding an airport rests with the airport sponsor and local land use authorities. In cases where obstructions are identified beyond airport property, avigation easements should be acquired by airport to preserve the integrity of the protected airspace, particularly within the inner approach surfaces (generally corresponding to the runway protection zones). For obstructions that cannot be removed or eliminated outright, marking the obstruction with red obstruction lights is considered the minimum action recommended for providing pilots with adequate visual recognition of potential hazards.

Runway Protection Zone (RPZ)

The FAA provides the following definition for runway protection zones (RPZ):

"The RPZ's function is to enhance the protection of people and property on the ground. This is achieved through airport owner control over RPZs. Such control includes clearing RPZ areas (and maintaining them clear) of incompatible objects and activities. Control is preferably exercised through the acquisition of property interest in the RPZ. The RPZ is trapezoidal in shape and centered about the extended runway centerline. The RPZ begins 200 feet beyond the end of the area useable for takeoff or landing."

The RPZ dimensions (250 x 450 x 700 feet), recommended for Runways 15 and 33 are based on "small aircraft exclusively" with approach visibility minimums "visual and not lower than 1-mile." The 2004 ALP depicts RPZs that are consistent with this facility classification and use. Dale Kuni Road is located within both the existing and future RPZs for Runway 15, which are located partially beyond airport property. A portion of the Runway 33 RPZ is also located beyond airport property. The 2004 ALP depicts avigation easements for the portions of the RPZ

that extend beyond current airport property. Airport management should ensure that easements are actively maintained as part of the land use controls associated with the airport.

As noted above, RPZs with buildings, roadways, or other items do not fully comply with FAA standards. It is recognized that realigning major surface roads/routes located within the RPZs may not be highly feasible. However, where possible, the City and Lane County should discourage development within the RPZs (particularly structures) that is inconsistent with FAA standards.

Aircraft Parking Line (APL)

Aircraft parking lines (APL) are used to identify suitable locations for aircraft parking that do not conflict with recommended runway clear areas, development setbacks or protected airspace.

The 2004 ALP depicts a western APL located 320 feet from runway centerline. As with the BRL, the location of the APL reflects recent changes in airfield configuration to accommodate a planned upgrade from visual to nonprecision instrument approach capabilities.

Several existing tiedown positions are located approximately 245 feet from the runway centerline, which places them partially within the runway primary surface and transitional surface. Although these tiedowns were originally configured to remain clear of the ADG I taxiway object free area, they now create airspace obstructions. The majority of apron fronting the FBO and portions of the fueling area are located inside the 320-foot APL. In addition, aircraft that are occasionally parked in the grass area in front of the north row of hangars, immediately west of the parallel taxiway also penetrate the runway primary/transitional surfaces. Options for reconfiguring these landside facilities to eliminate/reduce airspace obstructions should be considered in the alternatives analysis.

The majority of aircraft parking positions on the airport are located on the main tiedown apron, which is located beyond the APL. Tail heights of 10 feet or less are typical of most light aircraft, although several light twin or business aircraft often have tail heights ranging from 12 to 15 feet. The 320-foot APL will accommodate an aircraft with a 10-foot tail height without penetrating the transitional surface. Designated parking positions for larger aircraft, such as light twins, should be located with increased runway separation distances to avoid transitional surface penetrations. Parking locations for larger aircraft should be adjusted accordingly from the APL based on the typical tail height. For example an aircraft with a 15-foot tail height (Cessna 421 typ.) would need to be parked approximately 355 feet from the runway centerline to avoid penetrating the transitional surface.

Runway-Parallel Taxiway Separation

Runway 15/33 is served by a full-length parallel taxiway/taxilane with a separation of 200 feet, which exceeds the ADG I (small aircraft exclusively) design standard of 150 feet. It is noted that the ADG I standard (approach category A and B aircraft) for runway-parallel taxiway separation is 225 feet, which could not be met at Hobby Field without significant facility reconfiguration.

FAR PART 77 SURFACES

Airspace planning for U.S. airports is defined by Federal Air Regulations FAR Part 77 – Objects Affecting Navigable Airspace. FAR Part 77 defines imaginary surfaces (airspace) to be protected surrounding airports. **Figures 4-4a and 4-4b** illustrate generic plan and isometric views of the Part 77 surfaces.

The 2004 Airport Airspace Plan[27] depicts airspace surfaces that are consistent with non-precision approach capabilities and utility runways based on an ultimate runway length of 3,600 feet The use of "utility" standards based on future non-precision approach capabilities (per Part 77) is appropriate for defining long-term airspace planning for Hobby Field. **Table 4-7** summarizes FAR Part 77 standards with the corresponding runway type and approach capability.

TABLE 4-7: FAR PART 77 AIRSPACE SURFACES- HOBBY FIELD

Item	Utility (visual)[1]
Width of Primary Surface	500 feet
Radius of Horizontal Surface	5,000 feet
Approach Surface Width at End	2,000 feet
Approach Surface Length	5,000 feet
Approach Slope	20:1

1. Utility runways are designed for aircraft weighing 12,500 pounds or less.

As part of the most recent airspace plan development, an obstruction survey was conducted in August 2003. Through that survey and other available data, 51 items were identified and listed in the obstruction table for the 2004 Airspace Plan. The majority of obstructions were trees, buildings, power poles, etc. A small area of terrain penetration was identified within the conical surface, southwest of the runway.

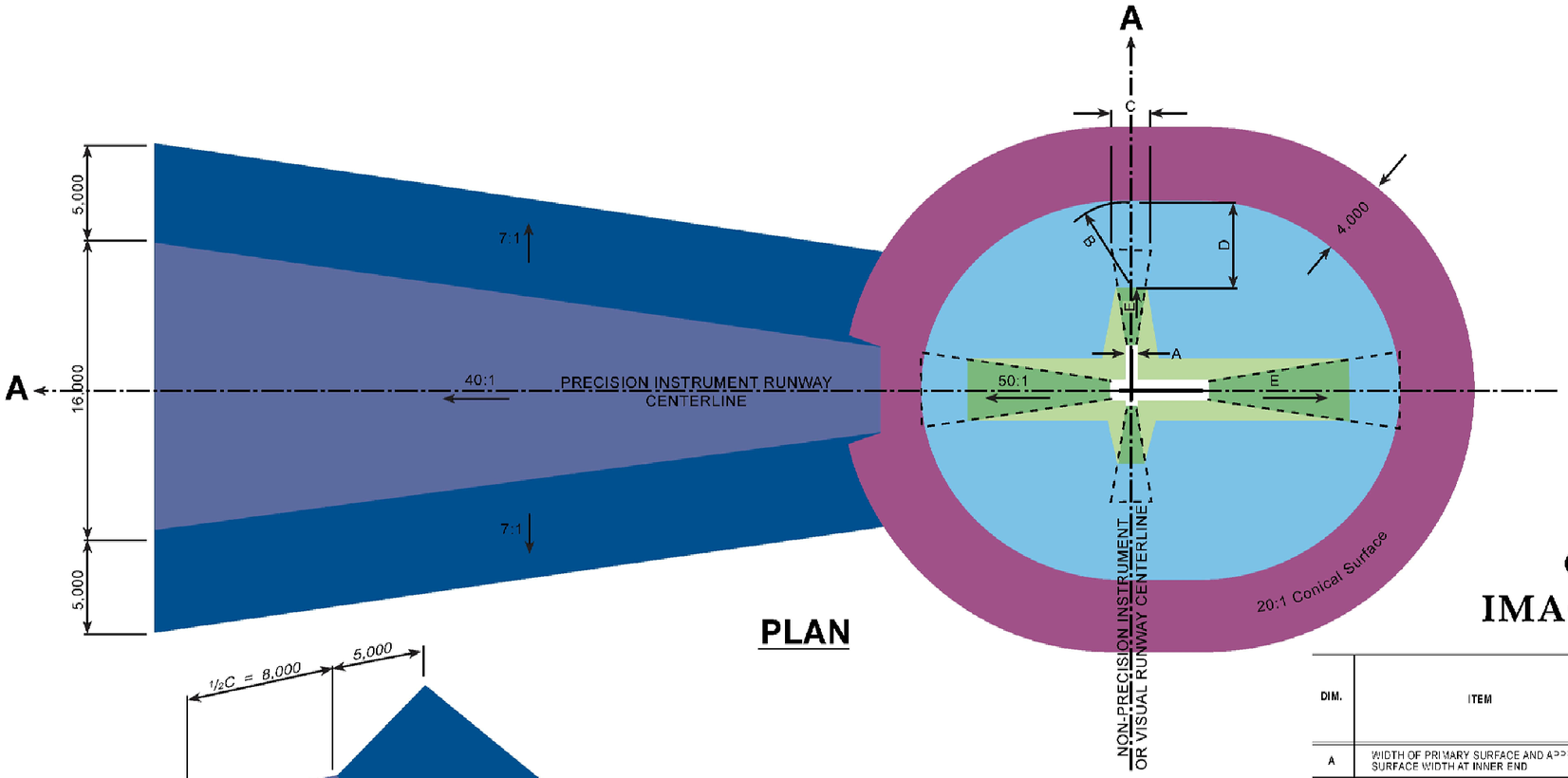
[27] Airport Airspace Plan (Century West Engineering, 2004)

Approach Surfaces

Runway approach surfaces extend outward and upward from each end of the primary surface, along the extended runway centerline. As noted earlier, the dimensions and slope of approach surfaces are determined by the type of aircraft intended to use the runway and most demanding approach planned for the runway.

The 2004 Airspace Plan depicted ultimate utility nonprecision instrument approach surfaces for Runway 15/33 with slopes of 20:1. In addition, based on a preliminary assessment of instrument approach feasibility performed by the FAA's Flight Procedures Office (FPO), an offset protected surface is depicted on the airspace plan that corresponds with an offset approach course that would intersect with the extended runway centerline, approximately 3,000 feet from the inner edge of the standard Part 77 approach surface.

The 2004 Airspace Plan depicted several surveyed obstructions (mostly individual trees or tree groups) within the runway approach surfaces. In most cases, the trees penetrating the approach surfaces are recommended for removal or lowering.



PLAN

SURFACE SLOPE KEY

- HORIZONTAL SURFACE
- 20:1
- 7:1
- 7:1
- VARIES (SEE "E" VALUE IN TABLE BELOW)
- 40:1 (PRECISION INSTRUMENT RUNWAY ONLY)

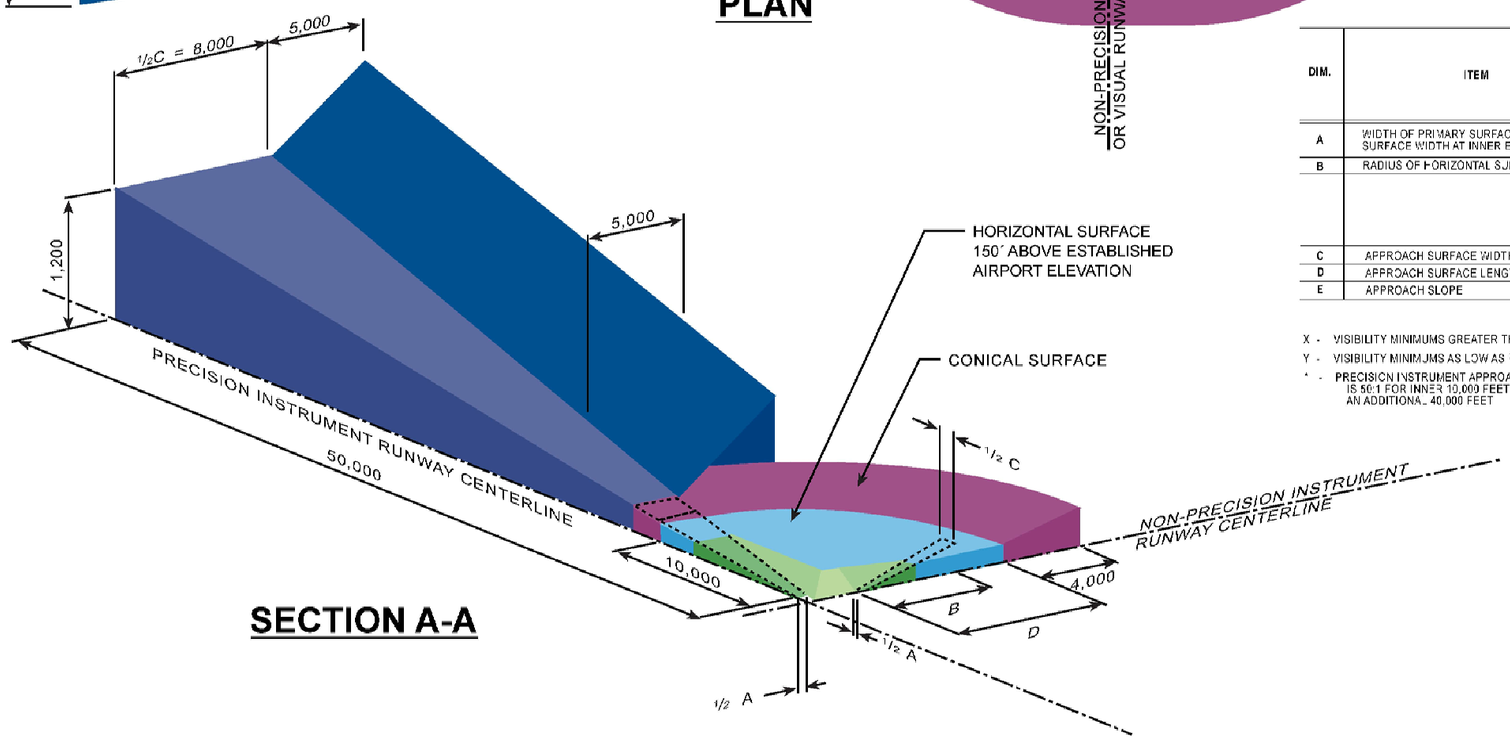
CIVIL AIRPORT IMAGINARY SURFACES

DIM.	ITEM	DIMENSIONAL STANDARDS (FEET)					
		VISUAL RUNWAY		NON-PRECISION INSTRUMENT RUNWAY			PRECISION INSTRUMENT RUNWAY
		UTILITY	LARGER THAN UTILITY	UTILITY	LARGER THAN UTILITY X	LARGER THAN UTILITY Y	
A	WIDTH OF PRIMARY SURFACE AND APPROACH SURFACE WIDTH AT INNER END	250	500	500	500	1,000	1,000
B	RADIUS OF HORIZONTAL SURFACE	5,000	5,000	5,000	10,000	10,000	10,000
		VISUAL APPROACH		NON-PRECISION INSTRUMENT APPROACH			PRECISION INSTRUMENT APPROACH
		UTILITY	LARGER THAN UTILITY	UTILITY	LARGER THAN UTILITY X	LARGER THAN UTILITY Y	
C	APPROACH SURFACE WIDTH AT END	1,250	1,500	2,000	3,500	4,000	16,000
D	APPROACH SURFACE LENGTH	5,000	5,000	5,000	10,000	10,000	*
E	APPROACH SLOPE	20:1	20:1	20:1	34:1	34:1	*

X - VISIBILITY MINIMUMS GREATER THAN 3/4 MILE

Y - VISIBILITY MINIMUMS AS LOW AS 3/4 MILE

* - PRECISION INSTRUMENT APPROACH SLOPE IS 50:1 FOR INNER 10,000 FEET AND 40:1 FOR AN ADDITIONAL 40,000 FEET



SECTION A-A

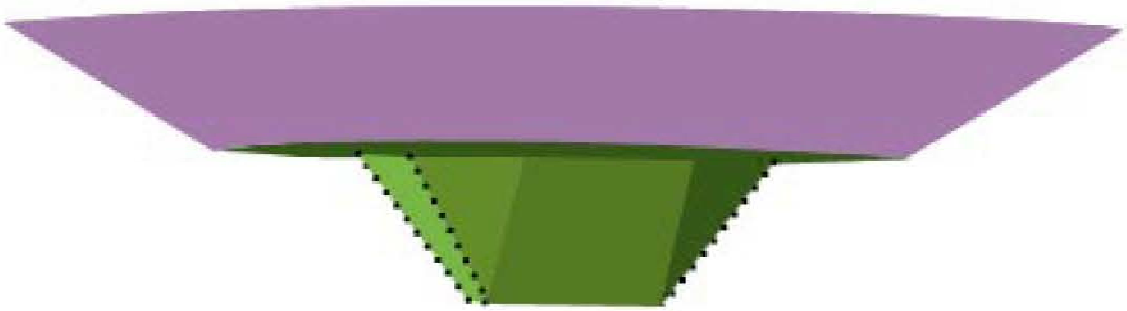
IMAGE SOURCE: WASHINGTON STATE DEPARTMENT OF TRANSPORTATION (AVIATION DIVISION).

CENTURY WEST ENGINEERING CORPORATION

FAR PART 77 DIAGRAM

FIGURE

4-4A



PROTECTED AIRSPACE

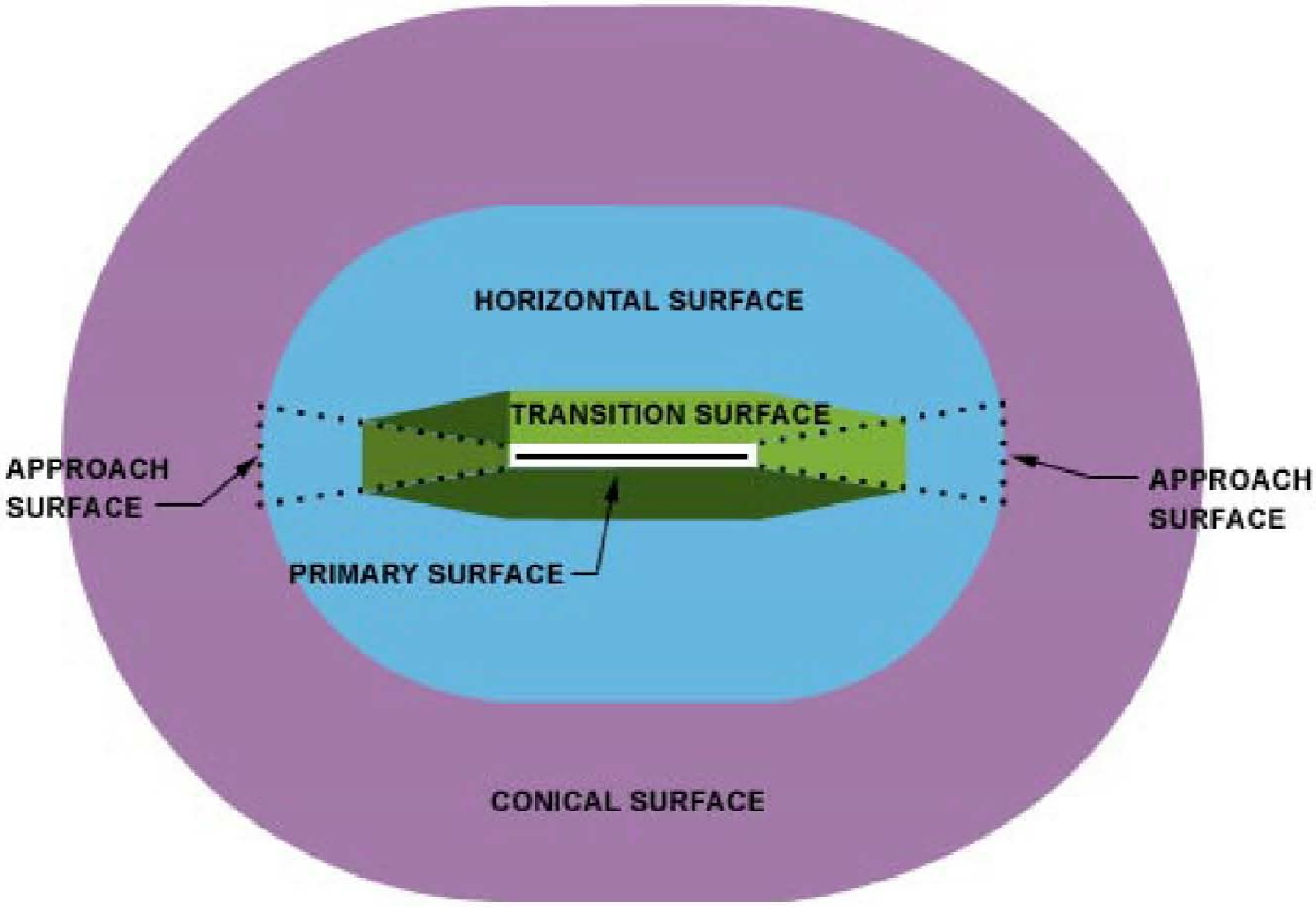


IMAGE SOURCE: WASHINGTON STATE DEPARTMENT OF TRANSPORTATION (AVIATION DIVISION).

CENTURY WEST ENGINEERING CORPORATION	FAR PART 77 PLAN & PROFILE DETAIL	FIGURE 4-4B

Primary Surface

The primary surface is a rectangular plane of airspace, which rests on the runway (at centerline elevation) and extends 200 feet beyond the runway end. The primary surface end connects to the inner portion of the runway approach surface. The primary surface recommended for Runway 15/33 is based on utility/nonprecision runway standards (500 feet wide). The primary surface should be free of any penetrations, except items with locations fixed by function (i.e., PAPI, runway or taxiway edge lights, etc.).

The 2004 Airspace Plan depicts four primary surface obstructions, including trees, the lighted windsock and the Runway 15 PAPI. The trees are recommended for removal; the PAPI and windsock have locations fixed by function and no action is necessary beyond ensuring that the items are mounted on frangible supports.

Portions of aircraft (wingtips, tails, etc.) parked in several tiedowns located immediately adjacent to the parallel taxiway appear to penetrate the primary surface. These tiedowns should be relocated to eliminate any primary surface penetration. It is also recommended that airport management inspect the surface area to ensure that no terrain or other obstructions are located within the boundaries and elevation of the primary surface, prior to the commissioning of a new instrument approach and subsequently on a regular basis.

Transitional Surface

The transitional surface is located at the outer edge of the primary surface, represented by a plane of airspace that rises perpendicularly at a slope of 7 to 1, until reaching an elevation 150 feet above runway elevation. This surface should be free of obstructions (i.e., parked aircraft, structures, trees, etc.).

The 2004 Airspace Plan depicted several surveyed obstructions within the runway transitional surfaces, particularly on the west side of the runway. The most common obstructions are trees, hangars and power poles. In most cases, objects penetrating the transitional surfaces are recommended for removal or lowering (trees) or lighting (buildings, power poles, etc). Nine hangars were identified as penetrating the west side transitional surface; at a minimum, any building that penetrates the surface should be marked with a roof-mounted obstruction light. Relocation of existing buildings may also be considered where feasible and no new structures should be permitted that would penetrate the transitional surface.

Horizontal Surface

The horizontal surface is a flat plane of airspace located 150 feet above runway elevation. Based on the "utility" runway designation, the outer boundary of the Runway 15/33 horizontal surface is defined by two 5,000-foot radii, which extend from the runway ends (the intersection point of the extended runway centerline, the outer edge of primary surface, and the inner edge of the approach surface). The outer points of the radii for each runway are connected to form an oval, which is defined as the horizontal surface. The elevation of the horizontal surface for Runway 15/33 is based on the published elevation of the airport (538 feet MSL), plus 150 feet (688 feet).

No areas of terrain penetration are identified within the horizontal surface depicted on the 2004 Airspace Plan, although a group of trees was identified approximately 3,200 feet east of the runway that penetrate the surface by 86 feet. These trees are recommended for removal or lowering.

Conical Surface

The conical surface is an outer band of airspace, which abuts the horizontal surface. The conical surface begins at the elevation of the horizontal surface and extends outward 4,000 feet at a slope of 20:1. The top elevation of the conical surface is 200 feet above the horizontal surface and 350 feet above airport elevation. One area of terrain penetration (approximately 92 feet) is identified within the conical surface on the 2004 Airspace Plan, southwest of the runway. The terrain or any items located on the terrain, such as radio or cellular towers, require obstruction lighting.

AIRSIDE REQUIREMENTS

Airside facilities are those directly related to the arrival and departure and movement of aircraft:

- *Runways*
- *Taxiways*
- *Airfield Instrumentation and Lighting*

Runways

The adequacy of the existing runway system at Hobby Field was analyzed from a number of perspectives including runway orientation, airfield capacity, runway length, and pavement strength.

Runway Orientation

The orientation of runways for takeoff and landing operations is primarily a function of wind velocity and direction, combined with the ability of aircraft to operate under adverse wind conditions. When landing and taking off, aircraft are able to maneuver on a runway as long as the wind component perpendicular to the aircraft's direction of travel (defined as crosswind) is not excessive. For runway planning and design, a crosswind component is considered excessive at 12 miles per hour for smaller aircraft (gross takeoff weight 12,500 pounds or less) and 15 miles per hour for larger aircraft. FAA planning standards indicate that an airport should be planned with the capability to operate under allowable wind conditions at least 95 percent of the time.

It was noted in the 1983 Environmental Assessment for the construction (and reorientation) of a new runway that the former runway alignment at Hobby Field “would enjoy a 95 percent or greater wind coverage based upon the 12 mph crosswind component as recommended by the FAA” (based on available data from Eugene Airport). It was determined that the minor rotation of the runway to the northwest would have a “negligible” impact on the wind coverage provided by the former 160-340 degree runway orientation. No tabulated wind data is available for Hobby Field; the alignment of Runway 15/33 will be overlaid on the Eugene Airport wind rose and added to the updated airport layout plan for reference. Wind coverage on Runway 15/33 is generally considered to be adequate, although occasional periods of moderate-to-strong crosswinds are not uncommon.

Runway Length

Runway length requirements are based primarily upon airport elevation, mean maximum daily temperature of the hottest month, runway gradient, and the critical aircraft type expected to use the runway. As noted earlier in this chapter, Runway 15/33 accommodates predominantly small single engine and multi engine piston aircraft weighing 12,500 pounds or less.

The existing dimensions, geometry and pavement strength of Runway 15/33 are consistent with FAA design criterion established for small airplanes. Based on these factors, the evaluation of runway length at Hobby Field should reflect the requirements of small airplanes. For planning purposes, general aviation runways that regularly accommodate light twin-engine aircraft activity should be capable of accommodating 95 to 100 percent of the small airplane fleet. A summary of FAA-recommended runway lengths for small and large aircraft based on local conditions is presented in **Table 4-8**. The runway length requirements for several small business jets that would be generally compatible with Runway 15/33 are also provided for comparison.

TABLE 4-8: FAA-RECOMMENDED RUNWAY LENGTHS

(From FAA Computer Model)

Runway Length Parameters for Hobby Field

- *Airport Elevation: 538 feet MSL*
- *Mean Max Temperature in Hottest Month: 82 F*
- *Maximum Difference in Runway Centerline Elevation: 3 feet*
- *Existing Runway Length: 3,101 feet*

Small Airplanes with less than 10 seats:	
75 percent of these airplanes	*2,600 feet*
95 percent of these airplanes	***3,130 feet***
100 percent of these airplanes	***3,740 feet***
Small airplanes with 10 or more seats	*4,230 feet*
Large Airplanes of 60,000 pounds or less:	
75 percent of these airplanes at 60 percent useful load	*5,370 feet*
75 percent of these airplanes at 90 percent useful load	*7,000 feet*
100 percent of these airplanes at 60 percent useful load	*5,500 feet*
100 percent of these airplanes at 90 percent useful load	*7,870 feet*
***Selected Small Business Jets**:*	
Cessna Citation CJI (6-7 passengers / 1 crew 10,600# MGW)[1]	*4,206 feet**
Cessna Citation CJ2 (6-7 passengers / 1 crew 12,375# MGW) [1]	*3,847 feet**
Eclipse 500 (4-5 passengers / 1 crew 5,640# MGW)	*2,155 feet***
Cessna Citation Mustang (5 passengers / 1 crew 8,000# MGW)[2]	*3,110 feet***

* Takeoff distances based on maximum gross weight and conditions listed above under requirements defined in FAR Part 25; passenger and/or fuel loads may be reduced based on aircraft operating weight limits and runway length available.

** Eclipse 500 data based on sea level and 59 degree temperature; takeoff distance required to reach 50 feet above runway.

1. FAR Part 25 Balanced Field Length at maximum certificated takeoff weight (accelerated/stop distance). Cessna Citation runway length requirements based on 15 degrees flaps, 82 degrees F, MGTW, distance to 35 feet above the runway; data provided by manufacturer (Cessna Citation Flight Planning Guides).
2. FAR Part 25 Balanced Field Length at maximum certificated takeoff weight (accelerated/stop distance); Sea Level; ISA.

Runway 15/33 (3,101 feet) is just 29 feet less than the FAA-recommended length (3,130 feet) required to accommodate 95 percent of the small airplane fleet under the conditions common during a typical summer day in Creswell. Under the same conditions, a runway length of 3,740 feet is required to accommodate 100 percent of the small airplane fleet, which would include most business class twin-engine piston, turboprop and light jets weighing less than 12,500 pounds.

The most recent FAA-approved Airport Layout Plan (2004) for Hobby Field[28] depicts a future 500-foot extension at the north end of Runway 15/33, which would increase runway length to 3,600 feet. Based on the FAA's runway length model, this previously recommended extension would allow the runway to accommodate approximately 99 percent of the small airplane fleet.

It is noted that the 3,600-foot "ultimate" runway length recommendation first appeared in the 1983 Airport Layout Plan,[29] prior to the reconfiguration of the airfield and construction of Runway 15/33. This runway length recommendation has been consistently maintained through several subsequent ALP updates that occurred between 1990 and 2004. The recommendation continues to be appropriate based on forecast demand, FAA-recommended runway lengths for small airplanes, and the site characteristics of Hobby Field.

The existing width of Runway 15/33 is 60 feet, consistent with the ADG I standard. The existing runway width will accommodate both existing and forecast air traffic through the twenty-year planning period. No change in runway width is recommended.

Airfield Pavement

According to the data contained in the 2002 pavement condition report,[30] Hobby Field pavements ranged from "failed" to "excellent." **Table 4-9** summarizes the five-year maintenance program recommended for Hobby Field and additional pavement maintenance items anticipated during the current twenty-year planning period. The rate of deterioration of airfield pavements increases significantly as they age. A regular maintenance program of vegetation control, crackfilling, and sealcoating is recommended to extend the useful life of all airfield pavements.

For planning purposes, it is assumed that the useful life of most airfield pavements is approximately 20 years; however, the useful life can be significantly reduced if routine maintenance is performed on a less frequent basis. In some cases, the intervals between asphalt overlays or reconstruction can exceed 20 years depending on level and type of use, maintenance performed, weather conditions and the design of the pavement and underlying base course.

Most of the major airfield pavements at Hobby Field were constructed in 1987 as part of a major airfield reconfiguration and improvement project. These pavements are now approaching 20 years old and will require regular preventative maintenance to maximize remaining useful life. Vegetation removal and crackfilling should be performed annually; sealcoats should be applied

[28] Hobby Field Airport Layout Plan (Century West Engineering, August 2004)

[29] Airport Layout Plan , Hobby Field (Devco Engineering, 8/29/83)

[30] Pavement Consultants Inc. (11/2002 inspection).

on 5- or 6-year intervals. It is anticipated that the runway, main taxiway system and aircraft aprons will require 2-inch asphalt overlays in the early to middle of the current twenty-year planning period based on their age and current condition.

TABLE 4-9: SUMMARY OF RECOMMENDED AIRFIELD PAVEMENT MAINTENANCE

Pavement Section	5-Year Recommended Maintenance	Other Recommended Maintenance During 20-Year Planning Period[1]
Runway 15/33	No projects listed in 5-year PMMP maintenance plan (Table 2), although a slurry seal is identified graphically (Figure CE-6) for the runway. 2000 PMMP recommended a slurry seal for the runway in 2001. Assume slurry seal to be conducted in the 2006-2008 time period if not completed since 2001.	Slurry Seal (2011) Overlay (2014) Slurry Seal (2019) Slurry Seal (2024)
Parallel Taxiway	No projects listed in 5-year PMMP maintenance plan (Table 2), although a slurry seal is identified graphically (Figure CE-6) for the taxiway. 2000 PMMP recommended a slurry seal for the parallel taxiway in 2002. Assume slurry seal to be conducted in the 2006-2008 time period if not completed since 2002.	Overlay (2010) Slurry Seal (2015) Slurry Seal (2020)
Main Apron (South Section and Tiedown Area)	Slurry Seal and Fog Seal (2003-2007)	Overlay (2008) Slurry Seal (2013) Slurry Seal (2018) Slurry Seal (2023)
South T-Hangar Taxilanes	Slurry Seal or fog seal most north side T-hangar stub taxilanes and newer hangar taxilanes (2003-2007) Reconstruct or overlay center hangar taxilane, north side T-hangar stub taxilanes and one south stub taxilane (2003-2007)	Overlay remaining taxilanes (2008-2025) Slurry Seal as needed (2010, 2015, 2021)
North Hangar Taxiways/Taxilanes	Slurry Seal (2003-2007)	Overlay taxilanes as needed (2010-2025) Slurry Seal as needed (2010, 2015, 2021)

1. The dates identified for long-term pavement maintenance assume that all deferred 5-year maintenance recommended in Years 1, 2 and 3 (2003-2005), will be completed by 2006 with all subsequent schedules based on 5 year intervals for slurry seals and rehabilitation timing based on 2002 PCI ratings.

Runway 15/33

The 2002 PCI report rates the runway "very good." The report indicates that the runway rating will be "very good" in 2012. The 2000 PCI report recommended a slurry seal for the runway in Year 1 (2001). The 2002 PCI report does not list a specific slurry seal project for the runway in the 5-year maintenance program, which suggests that the previously recommended maintenance was completed. However, there is no record of that work noted in the 2002 PCI study. Slurry seal or fog seal projects are generally recommended to be completed on 5- or 6-year intervals. The specific timing of the next sealcoat project on the runway will depend on when the last sealcoat was completed. A sealcoat project for Runway 15/33 should be programmed between 2006 and 2010 based on the recommended interval between applications. Based on the age of the runway pavement, it is anticipated that an asphalt overlay will be required during the current 20-year planning period.

The published pavement strength of 12,000 pounds (single wheel) is adequate to accommodate regular operations with most aircraft and the section design (2" asphalt over 16" crushed aggregate base and aggregate subbase) is consistent with the FAA standard for runways designed to accommodate small aircraft.

Parallel Taxiway

The 2002 PCI report rates the parallel taxiway as "excellent." The report indicates that the taxiway rating will decline to "very good" by 2012. The 2000 PCI report recommended a slurry seal for the parallel taxiway in Year 2 (2002). As with the runway noted above, the 2002 PCI report does not list a specific slurry seal project for the taxiway in the 5-year maintenance program, which suggests that the previously recommended maintenance was completed. However, there is no record of that work noted in the 2002 PCI study. The specific timing of the next sealcoat project on the runway will depend on when the last sealcoat was completed. A sealcoat project for the parallel taxiway should be programmed between 2007 and 2011 based on the recommended interval between applications. Based on the age of the parallel taxiway pavement, it is anticipated that an asphalt overlay will be required during the current 20-year planning period.

Aircraft Apron

The 2002 PCI report rates the main apron "very good." The report indicates that with recommended maintenance, the apron rating will decline to "very good" by 2012. The PCI report recommended a slurry seal project in Year 1 (2003). Based on the age of the apron sections, it is anticipated that asphalt overlays will be required during the current 20-year planning period.

Hangar Taxiway/Taxilanes

In the 2002 PCI report, the hangar taxiway/taxilane pavements ranged from "very poor" to "excellent." The PCI report recommended fog seals or slurry seals for all hangar taxiway/taxilanes in years 1 through 4 (2003-2007), except for those requiring rehabilitation or reconstruction. Several stub taxilanes in the south hangar development area have deteriorated beyond the point where sealcoats are effective and will require overlays or reconstruction and overlay. A schedule of periodic maintenance will be required for rehabilitated or reconstructed taxilanes.

Airfield Capacity

The capacity of a single runway with a parallel taxiway typically ranges between 60 to 90 operations per hour during visual flight rules (VFR) conditions. The 20-year forecast of peak hour activity at Hobby Field is estimated to be 37 aircraft operations, which is generally within the capabilities of a single runway served by a full length parallel taxiway. The existing runway/taxiway configuration provides efficient ground movement for aircraft and except for unusual events such as air shows or fly-ins, average delay should remain reasonable.

Taxiways

Runway 15/33 is served by a full-length parallel taxiway/taxilane on the west side. As noted earlier, the existing runway-taxiway separation meets ADG I (small) standards. The width of the parallel taxiway is 35 feet, which exceeds the ADG I standard of 25 feet.

The aircraft holding areas located at both ends of the runway on the parallel taxiway allows pre-departure aircraft checks and run-ups to be conducted without blocking taxiway access to the runway for other aircraft. The holding areas are also located outside the runway object free area (OFA) and obstacle free zone (OFZ). With the exception of the previously noted ground operations associated with skydiving, there are no noted conflicts with the protected areas defined for the parallel taxiway.

Airfield Instrumentation, Lighting and Marking

Runway 15/33 has medium intensity runway edge lighting (MIRL), the standard for general aviation runways. The existing MIRL system was installed in the late 1980s when the reoriented runway was constructed. The system appears to be in good condition with no significant problems reported by airport management. Replacement of the MIRL system should be expected by midway through the current twenty-year planning period, as the system reaches the end of its useful life (typically 20 to 30 years).

Runway 15 is equipped with a Precision Approach Path Indicator (PAPI), which is the primary visual guidance system currently used at general aviation airports. Runway 33 is not equipped with any visual guidance indicator system. A PAPI should be added to Runway 33 based on current need; replacement of the Runway 15 PAPI unit may be required during the current twenty-year planning period as the unit reaches the end of its useful life.

Runway 15/33 is not equipped with runway end identifier lights (REILS). REILs consist of two sequenced strobes that provide rapid and positive identification at the approach end of the runway. REILs improve utilization of the runway during nighttime and poor visibility condition and are recommended for instrument runways without approach lights. REILs would be recommended for both ends of the runway to improve safety for landing in conjunction with development of an instrument approach.

The existing taxiway system does not have lighting or edge reflectors. Based on the relatively low level of nighttime operations, edge reflectors should be adequate for current operations.

Overhead lighting is available in most aircraft hangar and apron areas. Additional flood lighting is recommended for all expanded operations areas for improved utilization and security.

Runway 15/33 has basic runway markings (runway numbers, centerline stripe) that are in good to fair condition. An upgrade in runway markings will be required in conjunction with the development of a new instrument approach. Despite the vertical (precision) guidance component of most WAAS approaches, the FAA has indicated that non-precision instrument runway markings are generally adequate for smaller runways (longitudinal threshold markers, runway numbers and a centerline stripe). If possible, the runway markings should be upgraded in conjunction with an upcoming sealcoat project.

On-Field Weather Data

The airport does not have automated weather observation system (AWOS/ASOS) or 24-hour human observation. The availability of weather data from Eugene Airport (approximately 15 nautical miles) appears to be adequate for most pilots' needs.

LANDSIDE FACILITIES

The purpose of this section is to determine the space requirements during the planning period for landside facilities. The following types of facilities are associated with landside aviation operations areas:

- *Hangars*
- *Aircraft Parking and Tiedown Apron*
- *Fixed Base Operator (FBO) Facilities*

Hangars

In late 2005 there were a total of 21 hangars located on the airport including nine T-hangars (97 storage units) and 12 conventional hangars (FBO maintenance hangar, the EAA hangar, and eleven other hangars used for commercial business and aircraft storage). One additional aircraft hangar is located off airport property near the southwest corner of the airport, with taxiway access to the aircraft holding area for Runway 33. As noted in the Inventory and Forecast chapters, there have been no new hangars constructed at the airport for several years due to the unavailability of water service to provide adequate fire protection. A project to extend City water to the airport is expected to be completed in 2006 or shortly thereafter, which will remove this development constraint.

For planning purposes, it is estimated that the percentage of the airport's locally based aircraft stored in hangars will be 90 percent during the current planning period (10 percent parked on apron). This level is slightly lower than current and recent historic trends, which appears to be closer to 95 percent. However, a 90/10 split provides a relatively conservative breakdown in future aircraft storage requirements that is consistent with many northwest general aviation airports and allows for some shifts in demand for aircraft storage (hangar versus apron).

It is anticipated that future hangar demand will be reflected primarily in newly arriving aircraft, but also includes aircraft currently located at the airport (parked on tiedown aprons or stored in other hangars). Some level of hangar vacancy is generally found at most airports as aircraft relocate to other available hangar space or by moving to other airports. However, for planning purposes, it will be assumed that all existing hangar space is committed and that future demand will need to be met through new construction. In reality, the strength of the local market supply and demand will dictate the pace of new hangar construction requirements.

A planning standard of 1,500 square feet per based aircraft stored in hangars is used to project gross space requirements. As indicated in the aviation activity forecasts, the number of based aircraft at Hobby Field is projected to increase by 41 aircraft during the twenty-year planning

period, although demand for hangars will also be partially driven by existing aircraft. Based on projected hangar utilization levels, long-term demand for new hangars is estimated to be 37 spaces, or approximately 55,500 square feet. The projected hangar needs are presented in **Table 4-10**.

Individual aircraft owners needs vary and demand can be influenced by a wide range of factors, often beyond the control of an airport. For this reason, it is recommended that additional hangar development reserve areas be identified to accommodate any unanticipated demand. Reserves should be established to accommodate a combination of conventional hangars and T-hangars.

In addition to aircraft storage requirements, space should be reserved for larger commercial hangars. It is not possible to predict these space requirements with any degree of certainty since the decision to invest in this type of facility depends on numerous business factors. However, for planning purposes, expansion of FBO hangar space should be assumed and areas should be reserved for a variety of conventional hangars commonly used by commercial tenants.

Aircraft Parking and Tiedown Apron

Aircraft parking apron should be provided for locally based aircraft that are not stored in hangars and for transient aircraft visiting the airport. As noted in the Inventory chapter, Hobby Field has two primary aircraft apron areas with a total of 37 designated tiedown positions. In addition to the paved aprons, an unpaved area located in front of the north row of conventional hangars also accommodates limited aircraft parking for local skydivers.

The front portion of the apron accommodates FBO operations, aircraft fueling, aircraft loading/unloading, maintenance hangar access, and a limited number of parking positions. During recent airport visits, fewer than 10 aircraft have typically been observed parked on the aprons. The current estimate 5 percent of locally based aircraft currently parked on an apron would account for 5 aircraft; the remaining aircraft are believed to be transient. For planning purposes it is assumed that 10 percent of Hobby Field's based aircraft fleet will be accommodated on an aircraft apron during the current planning period.

The long-term (2025) forecast of 145 based aircraft will require about **15 local tiedown positions**. However, since the projections of demand are dependent on the availability of new hangar space, which cannot be assured, it would be appropriate to maintain enough parking to account for changes in activity patterns. The combined demand for locally based and itinerant parking can be monitored to determine when demand for additional parking capacity becomes sufficient to warrant apron expansion. Locally based aircraft tiedowns are planned at 300 square yards per position.

FAA **Advisory Circular 150/5300-13** suggests a methodology by which itinerant parking requirements can be determined from knowledge of busy-day operations. At Hobby Field, the demand for itinerant parking spaces was estimated based on 30 percent of busy day itinerant operations (30% of busy day itinerant operations divided by two, to identify peak parking demand). By the end of the twenty-year planning period, itinerant parking requirements are estimated to be **22 light aircraft tiedowns**. The FAA planning criterion of 360 square yards per itinerant aircraft was applied to the number itinerant spaces to determine future itinerant ramp requirements.

In addition to light aircraft parking positions, the airport accommodates itinerant business aircraft. Short term loading and unloading typically occurs in front of the FBO, but convenient longer term parking should be provided in an area that is well clear of runway and airspace setbacks and to avoid congestion in the FBO and fueling area, yet close to the FBO to provide the desired level of convenience. Initially, two parking (drive through) spaces capable of accommodating a typical light twin-engine aircraft should be adequate to accommodate periodic demand.

The aircraft parking area requirements are summarized in **Table 4-10.** As noted in Table 4-10, the existing parking capacity of the apron exceeds projected demand. However, the potential elimination of several existing tiedowns located nearest the runway would reduce available capacity.

As with aircraft hangars, reserve areas should be identified to accommodate unanticipated demands for aircraft parking, which may exceed current projections. A development reserve area equal to 50 percent of the 20-year parking demand will provide a conservative planning guideline to accommodate unanticipated demand, changes in existing apron configurations, and demand beyond the current planning period. The location and configuration of the development reserves will be addressed in the alternatives analysis.

Helicopter Parking

Hobby Field accommodates occasional itinerant helicopter activity. It is recommended that a designated helicopter parking area be located on the apron with adequate separation from fixed wing tiedowns. Initially, it appears that one designated parking positions would be adequate to accommodate periodic demand.

TABLE 4-10: APRON AND HANGAR FACILITY REQUIREMENTS SUMMARY

Item	Base Year (2005)	2010	2015	2020	2025
Based Aircraft (Forecast)	**104**	**120**	**128**	**136**	**145**
Aircraft Parking Apron *(Existing Facilities)*					
Light Aircraft Tiedowns (paved)	37				
Light Aircraft Tiedowns (unpaved – fronting North hangars)	5				
Total Apron Area	18,880 sy				
Projected Needs *(Demand)* [1]					
Itinerant Aircraft Parking (@ 360 SY each)		17 spaces / 6,120 sy	19 spaces / 6,840 sy	21 spaces / 7,560 sy	22 spaces / 7,920 sy
Locally-Based Tiedowns (@ 300 SY each)		12 spaces / 3,600 sy	13 spaces / 3,900 sy	14 spaces / 4,200 sy	15 spaces / 4,500 sy
Business Aircraft Parking Demand (@ 625 SY each)		2 spaces / 1,250 sy	2 spaces / 1,250 sy	2 spaces / 1,250 sy	3 spaces / 1,875 sy
Itinerant Helicopter Parking (@ 1,200 SY each)		1 space / 1,200 sy	1 space / 1,200 sy	1 space / 1,200 sy	2 spaces / 2,400 sy
Total Apron Needs		**32 spaces 12,170 SY**	**35 spaces 13,190 SY**	**38 spaces 14,210 SY**	**42 spaces 16,695 SY**
Aircraft Hangars *(Existing Facilities)*					
Existing Hangar Spaces	107 spaces (estimated)				
Projected Needs *(Demand)* [2]					
(New) Hangar Space Demand (@ 1,500 SF per space) *(Cumulative 20-year projected demand: 37 spaces / 55,500 SF)*		**+14 spaces / 21,000 sf**	**+7 spaces / 10,500 sf**	**+7 spaces / 10,500 sf**	**+9 spaces / 13,500 sf**

1. Aircraft parking demand levels identified for each forecast year represent forecast gross demand, which may be accommodated through a combination of existing and future parking areas.

2. Hangar demand levels identified for each forecast year represent the net increase above current hangar capacity.

FBO Facilities

The FBO building has office and classroom space, restrooms, and pilot & passenger waiting areas. FBO facility requirements are driven primarily by market conditions and the particular needs of the FBO and its customers. Because future FBO facility needs are difficult to quantify, the best planning approach is to identify development reserves that could accommodate new or expanded FBO facilities. The 2004 ALP identifies the area directly adjacent (north) of the current FBO hangar as a development reserve for an expanded FBO hangar. Replacement of the existing FBO building may also be desired in the future. Although the current site has limited space for expansion, it appears to be the most centrally-located site adjacent to the vehicle parking area and access road.

Although it appears unlikely that Hobby Field will be able to support more than one FBO during the current planning period, the airport should be capable of accommodating an additional FBO, should that interest develop. In order to meet FAA grant assurances, the airport needs to provide equal access to prospective tenants, without discrimination. However, in the event that interest in establishing a new FBO occurs, the airport's minimum standards guidelines for fixed base operators (FBO) should define the minimum services that would be required.

Surface Access Requirements

Surface access to the airport appears to be adequate for the planning period. Extensions and improvement for internal airport access roads will be required to serve new landside developments. As noted earlier, alternative access options for the parachute drop zone will need to be evaluated. The development of a controlled internal airport access road that is located outside the runway safety area, object free area and obstacle free zone may be feasible for providing access to the east side of the runway (around the north end). Alternatively, extending a west side airport access road north, to connect with Dale Kuni Road is an option.

The vehicle parking area adjacent to the FBO is located adjacent to the access road loop and appears to be adequate for most user needs. However, in the event that the existing drain field is replaced with sanitary sewer service, the existing access road and parking could be reconfigured to accommodate additional aircraft parking and hangar space (as depicted on the 2004 ALP). Approximately 27 reconfigured vehicle parking spaces are identified on the 2004 ALP adjacent the FBO and reconfigured access road. This amount of parking appears to be adequate for projected demand, particularly if additional parking is provided adjacent to new hangar developments.

It was noted during the inventory phase of the master plan that public parking needs associated with skydiving operations were unique. Currently, the undeveloped areas located west of the hangars used by local skydiving operations are often used for vehicle parking. As this area develops with new hangars, vehicle parking will need to be accommodated elsewhere. Some changes in public vehicle access may also be required to separate vehicles and taxiing aircraft.

A planning standard of 0.5 to 1.0 vehicle parking spaces per based aircraft is often used to estimate parking demand levels for non-commercial hangars. Future commercial hangar developments should be planned to meet City of Creswell parking requirements for commercial businesses. For larger hangars, a formula based on the square footage of the building is often used to determine vehicle parking requirements. This is a common approach for establishing off-street parking in most communities. For the peak demand associated with weekend skydiving, unimproved overflow parking areas may also be needed.

SUPPORT FACILITIES

Aviation Fuel Storage

As noted in the inventory chapter, Hobby Field has both aviation gasoline (AVGAS) and jet fuel available for sale. The airport has two underground fuel storage tanks (10,000 gallons each) that were installed in 2000. The tanks are owned by the City of Creswell. The double wall storage tanks and underground piping is constructed of fiberglass and meets all current Oregon DEQ and federal EPA regulations for leak detection, vapor recovery and spill containment. The tanks and fueling facilities are located south of the FBO on the FBO apron.

The frequency of restocking fuel would be expected to increase as aircraft activity increases. A review of historic fuel deliveries over the last several years indicates that AVGAS deliveries probably occur on nearly a monthly basis during peak summer months, but may be every other month or longer during the winter. Jet fuel sales volume has historically been very low compared to AVGAS sales at Hobby Field and the existing storage capacity is adequate to accommodate a significant increase in sales volume. The existing capacity of both AVGAS and jet fuel storage appears to be adequate to accommodate forecast aviation demand.

As noted earlier, the increased development setbacks associated with the runway create some constraints on the existing landside facilities, including transitional surface penetrations for aircraft fueling on the apron. The configuration of the fuel dispensing area should be evaluated in the development alternatives.

Airport Utilities

As noted earlier, a project to extend City water to the west side of the airport is expected to be completed in 2006 or soon thereafter. Extending water service to the airport will provide adequate fire response capabilities to allow new hangar construction, which has not been permitted for several years.

The airport is not currently served with (City) sanitary sewer; a drain field located within the terminal loop roadway is used by the FBO building. Replacing the airport's drain field septic system with sanitary sewer service will be considered among future utility upgrades by the City. The airport has electrical (Pacific Power & Light) and telephone service. Natural gas service is not currently available at the airport. Public telephone and restrooms are located in the airport FBO building.

On-airport extensions of water and electrical service will be required to develop the north section of the airport (west side of runway) for hangars.

Security

The airport has standard chain-link fencing located along a large portion of its northern boundary, extending southward on the east and west sides of the airport, with wire fencing in other areas. Additional chain link fencing with vehicle gates is located adjacent to the aircraft apron and vehicle parking lot. A project to extend the chain link fencing around the airport perimeter is currently underway; the schedule for completion will depend on funding availability.

There are no major security concerns at the airport, although providing chain-link fencing and gates along exposed areas of airfield activity is recommended to reduce unauthorized human access. As noted earlier, a vehicle and pedestrian control issue has been identified near north end of the runway where skydiving operations are staged.

Additional flood lighting should be provided around the aircraft parking apron, fueling area, and hangar areas to maintain adequate security.

FACILITY REQUIREMENTS SUMMARY

The projected twenty-year facility needs for Hobby Field are summarized in **Table 4-11**. The forecasts of aviation activity contained in Chapter Three anticipate modest-to-moderate growth in activity that will result in specific airside facility demands. The existing airfield facilities have the ability to accommodate a significant increase in activity, with targeted facility improvements. For the most part, the need for new or expanded facilities, such as aircraft hangars, will be market

driven, although there will be significant costs associated with site preparation, utility extensions, and taxiway construction.

TABLE 4-11: FACILITY REQUIREMENTS SUMMARY

Item	Short Term	Long Term
Runway 15/33	Pavement Maintenance[1] Upgrade Rwy Markings to NPI in conjunction with new instrument approach	Pavement Maintenance Overlay Runway 500-foot (north) Runway Extension
Parallel Taxiway	Pavement Maintenance Overlay/Reconstruct South Hangar Taxilanes Construct Taxiways/Taxilanes for New Hangar Areas	Pavement Maintenance Construct Taxiways/Taxilanes for New Hangar Areas Overlay Parallel Taxiway Overlay North Hangar Taxiways/Taxilanes Extension in conjunction with runway extension
Aircraft Aprons	Pavement Maintenance Reconfigure Aircraft Tiedowns (based on design standards and airspace clearance requirements)	Pavement Maintenance Overlay Apron Apron Development Reserves
Hangars	Develop T-hangar and Conventional Hangar sites (market demand)	FBO Hangar Reserve Define Additional Hangar Development Areas and Reserves
Navigational Aids and Lighting	PAPI (Rwy 33) Flood Lighting (a/c parking & hangar areas)	REIL (Rwy 15 & 33) Additional Flood Lighting As Required
Fuel Storage	Evaluate Relocation of Fueling Area	Same
FBO Facilities	FBO Building/Apron Expansion Reserve	Reserve for 2nd FBO
Utilities	Extend City Water to Airport Extend Electrical and Water to New Hangar Areas	Same Extend Sanitary Sewer to Airport Redevelop Drain Field Area
Roadways & Vehicle Parking	Extend Internal Access Roads to New Facilities; Vehicle Parking Adjacent to Commercial Hangars Address Skydiver Access Requirements for East Side of Runway.	Same
Security	Airport Fencing; Electronic Vehicle Gates Flood Lighting	Same

1. Vegetation control, crackfill, sealcoat

Chapter Five
Airport Development Alternatives

CHAPTER FIVE
AIRPORT DEVELOPMENT ALTERNATIVES
INTRODUCTION

This chapter presents preliminary development alternatives for accommodating the forecast demand and facility needs defined in the previous chapters. As noted in the facility requirements evaluation, long-term planning for Hobby Field will continue to be based on small single- and multi-engine aircraft included in airplane design group I (ADG I), as defined in the last airport layout plan (ALP). Based on the recommendations of the 2004 ALP and the site characteristics of the airport, the previously recommended north runway extension is included in all of the alternatives being considered. Therefore, the primary focus of this alternatives evaluation will be to address current and long-term landside needs, including hangars, aircraft parking and associated improvements.

Based on 20-year forecast demand for aviation facilities, it appears that the existing airport property area has adequate capacity to meet development needs. However, two specific concerns suggest that a longer-term view of airport property needs should also be considered in the master planning process.

First, the forecast of based aircraft, while providing a reasonable expectation of growth, has the potential of underestimating land requirements if hangar construction activity exceeds current expectations. Hangar construction, particularly T-hangars, often involves an element of speculation. In some cases, the mere presence of new hangars at a competitive rental price has the ability to draw aircraft from other airports. As noted in the forecast chapter, Hobby Field's service area includes the entire Eugene-Springfield Metropolitan area. This, combined with the unmet local demand for new hangar space at Hobby Field in the last several years, creates a degree of uncertainty that suggests a need to both meet forecast demand and provide a substantial development reserve to accommodate any unforeseen demand. Based on the preferred master plan forecast of approximately 40 additional aircraft over the next twenty years, establishing sufficient land areas to provide a 100 percent development reserve (an additional 40 aircraft) will provide the ability to respond to any unforeseen growth spurts through the current planning period.

The second concern has to do with the undeveloped nature of the lands surrounding the airport. The majority of the land areas located immediately east of the airport are currently in agricultural use. Lands surrounding airports generally develop over time to include a variety of uses, not all of which are compatible with airport operations. Therefore, from a long-term land use perspective there is concern that the currently undeveloped land could eventually be converted to a use that could adversely affect airport operations. It is also noted that the availability of undeveloped land adjacent to the airport is finite. Without adequate preservation efforts, the probability of the land being developed in a non-aviation use and therefore not being available for future airport use is very high.

As noted in the facility requirements chapter, the remaining developable land on the west side of the airport consists of approximately 15 acres. The capacity of this area depends on the type and configuration of future landside facilities. An example of typical development densities can be found in the south hangar area where build out of the remaining available area is planned. This area abuts the airport access road and has development configuration limits similar to other undeveloped areas on the west side of the runway. As depicted on the 2004 airport layout plan, this area (approximately 3.5 acres) will accommodate a 14-unit T-hangar and approximately 12 single sided hangars spaces (side by side units with common roof or individual units). The 152,000 square foot development area will require approximately 5,800 feet per aircraft (assuming one aircraft per hangar), including space for circulation and required development setbacks. This development configuration yields a ratio of approximately 7.5 aircraft per acre.

Based on the availability of 15 developable acres, the west side of the airport could accommodate approximately 111 aircraft. However, since the west side development area has a triangular shape that narrows considerably toward the north end of the airport, potential development would likely include larger “unusable” areas due to odd angles or inadequate development depth. In addition, continued development of the west side of the airport will require increased vehicle access and parking, which reduces the areas available for aviation-use facilities further. A small portion of this area may also contain wetlands that may need to be avoided or mitigated.

It is noted that the 2004 ALP depicts 27 new conventional hangars north of the main apron in addition to the south hangar development (approximately 26 new aircraft spaces). Assuming that each of the north end conventional hangars would average 1.5 aircraft per unit, the overall capacity of the two areas would be approximately 65 additional aircraft. This capacity may be changed based on the configuration of the new master plan preferred alternative.

Overall, it appears that the west side of the airport will be able to support landside development needs for many years to come. The question of timing represents an unknown that cannot be fully defined at this point. However, it appears reasonable to assume that even if the projected 20-year

landside facility needs are fully accommodated within current airport boundaries, the ability to sustain development beyond the current planning horizon will be significantly limited.

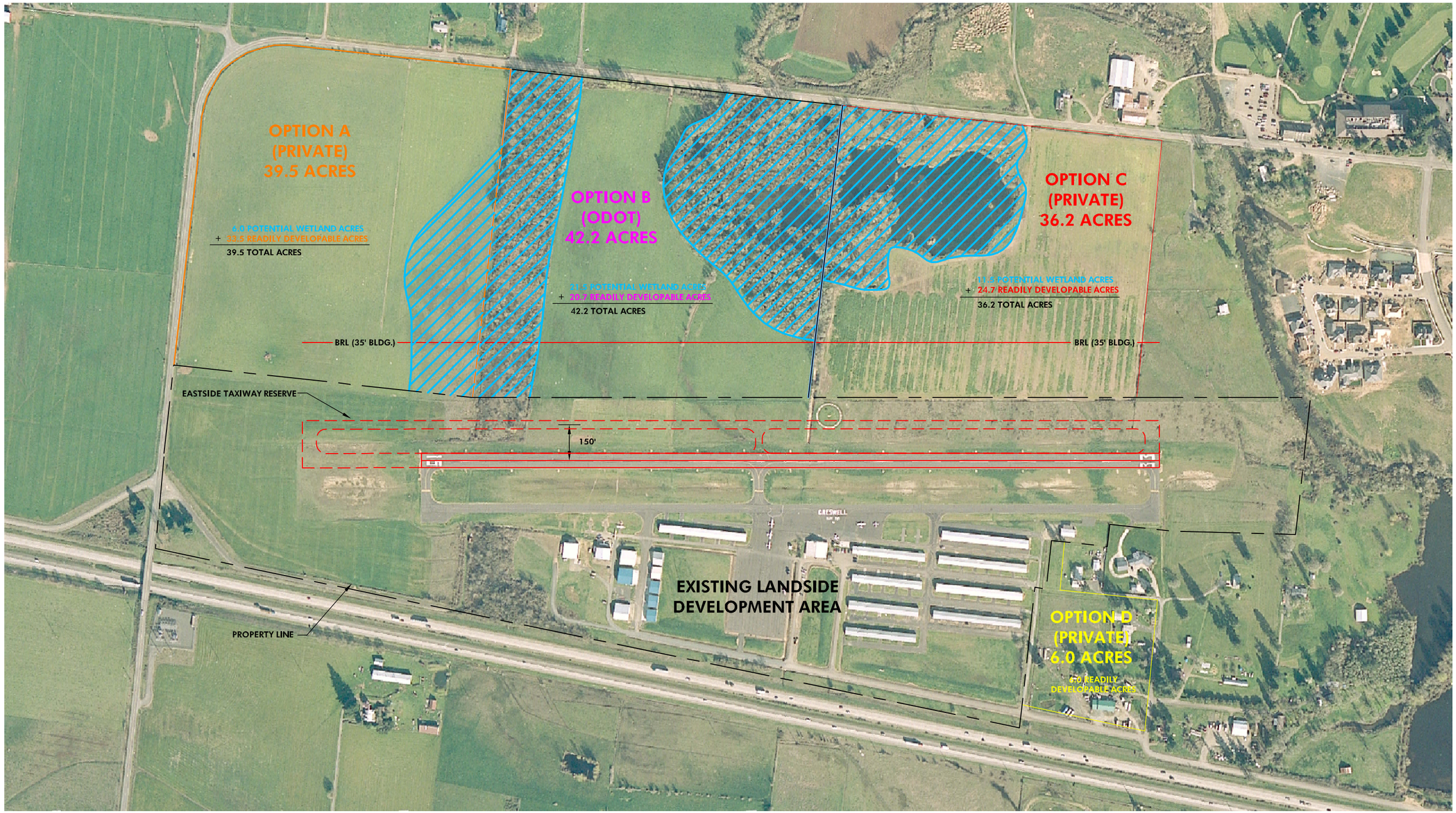
In the case of Hobby Field, the existing airport land base appears to have adequate capacity to meet current and projected needs through the current 20-year planning period. However, the ability to sustain long-term development does appear to have specific limits. It is also apparent that the future availability of adjacent undeveloped lands cannot be assured. For this reason, some consideration should be given to identifying and acquiring suitable parcels that would be compatible with the overall operational requirements of the airport.

LAND USE – LONG TERM OPTIONS

Figure 5-1 identifies four areas of property that each abut the airport and would be suitable for future airport development. The areas are identified as Options A-D, varying in size from about 6 acres to 42 acres. The larger parcels are shown in their entirety, including potentially undevelopable areas since acquisition is not always limited to only the most usable areas within a parcel.

The areas located on the east side of the runway are generally undeveloped and have historically supported local agricultural use. For reference purposes, an east side building restriction line (BRL) is depicted to identify the setback required (from the runway and potential east side parallel taxiway) to avoid conflicts with FAA airport design or airspace planning standards with a structure with a 35-foot roof height. Regardless of whether one or more of these adjacent parcels are acquired, establishing height restrictions for future development is recommended to avoid conflicts with the airport.

The smaller area (Option D) located on the west side of the runway, adjacent to the south hangar area currently has a mixture of uses including rural residential and commercial. This property directly abuts the south hangar area and has existing surface access making it very suitable for potential airport use.



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CENTURY WEST
ENGINEERING CORPORATION

CRESWELL-HOBBY FIELD AIRPORT MASTER PLAN

LONGTERM DEVELOPMENT RESERVE OPTIONS

FIGURE NO.

5-1

PRELIMINARY DEVELOPMENT ALTERNATIVES

The process of evaluating new development alternatives began by reviewing the recommended facility configurations from the 2004 airport layout plan (ALP) in addition to creating different alternatives for landside facilities. As noted earlier, a 500-foot north runway extension is included in each of the alternatives based on the validation of prior planning.

Three preliminary alternatives are presented (**Figures 5-2, 5-3 and 5-4**) to address future facility needs. These alternatives concentrate all future facility improvements on the west side of the airport. The new hangar development areas located at the north end of the west landside area will be accessed from an extension of the airport access road to connect with the existing road system and Dale Kuni Road. Improved fencing and electronic controlled vehicle access gates are recommended within the development area to limited vehicle access on hangar taxiways, taxilanes and the aircraft apron.

The conceptual alternatives are intended to encourage an open discussion of development needs and priorities through a collaborative process between the consultant, city staff, members of the airport commission, the FAA and airport users. The process will allow the widest range of ideas to be considered and the most effective facility development concept to be defined.

Through the process of evaluating preliminary concepts, a preferred alternative will emerge that can best accommodate all required facility improvements. A narrative and graphic depiction of the preferred alternative is presented at the end of this chapter. The refinement of the preferred alternative will continue as it is integrated into the airport layout plan drawing. A brief summary of each alternative is presented on the following pages and the alternatives are also presented graphically.

Preliminary Alternative A

Alternative A (**Figure 5-2**) reflects the recommended facility layout depicted on the current FAA-approved (2004) airport layout plan (ALP). The primary landside improvements are divided into three areas:

- *South Hangar Area*
- *Terminal Area*
- *Northwest Section of Airport*

The south hangar area development includes a build out of the existing hangar area with one additional (14 unit) T-hangar and several one-sided conventional hangars (or larger consolidated hangars - approximately 12 units) located in the last hangar row with east-facing hangar doors. An

additional hangar taxilane is needed to serve the western-most row of hangars and a second access taxilane will be located along the southern end of the south hangar development area. This unimproved roadway is currently used to access the EAA hangar and to provide emergency vehicle access to the airport. The access taxiway will require a clear area 79 feet wide, measured from the south end of the hangars to the fence that runs along the airport property line. A survey may be needed to precisely locate the property line and to determine if adequate obstruction clearance can be provided. In the event that the existing clearance is not adequate, acquisition of a narrow strip of property may be required.

This alternative includes an expansion of terminal area facilities and a reconfiguration of the existing airport access loop roadway and vehicle parking areas. Southward expansion from the main tiedown apron would require elimination of the existing drain field and extension of sanitary sewer to the terminal area. This alternative provides additional light aircraft parking in three north-south rows combined with reconfiguration of several existing tiedown positions along the outer edges of the existing apron.

The north side of the tiedown apron is configured for medium and large conventional hangars that could be used for commercial-related aviation activities or aircraft storage. The hangars would abut the north edge of the apron and also require two smaller sections of apron on the east and west sides of the outer hangar rows to provide aircraft access. As depicted, the area accommodates 6 conventional hangars, although changes in building size could increase or decrease that number. The open fronted T-hangar located immediately northeast of the tiedown apron would be removed/relocated to accommodate new development and aircraft circulation. Vehicle access to the new hangar area would be provided by an access road extension on the south side of the adjacent row of five conventional hangars.

The northwest section of the airport is configured with several stub taxiways extending from the parallel taxiway to the adjacent hangar area. The hangar rows are configured in an east-west alignment behind the 18-foot (roof height) BRL. As depicted, the area accommodates 20 conventional hangars, although changes in building size could increase or decrease that number. Surface access road improvements within the northwest area are depicted in addition to an extension of the existing airport access road to connect with Dale Kuni Road.

Preliminary Alternative B

Alternative B (Figure 5-3) retains the south hangar layout as depicted in Alternative A, but provides a significant reconfiguration of the terminal area and a different development pattern for the north sections of the west development area.

The terminal area includes a major reconfiguration of the access road and parking areas and an expansion reserve for a new FBO hangar. The aircraft fueling location is also relocated to the main tiedown apron to provide additional space and address runway clearance issues for the main apron located along the parallel taxiway. Because the existing fuel storage tanks are relatively new, it is anticipated that the new dispensing point could be connected to the tanks by underground piping rather than relocating the tanks.

The redevelopment of the terminal area also includes space for additional conventional hangars around the perimeter of the existing apron and adjacent to the north extension of the apron. The existing parking layout on the main tiedown apron would be reconfigured to accommodate the expanded FBO and fueling facilities. The larger hangar spaces located along the south edge of the apron would be ideally suited for business-related aviation uses. Additional vehicle parking and landscaping would be developed throughout the terminal area.

The lower section of the north development is configured for two new rows of smaller conventional hangars and vehicle parking is provided immediately west of the existing outer row of hangars. Based on the existing skydiving activity that generates considerable vehicle traffic and parking needs, development of a nearby parking area would significantly reduce congestion in this area. An access taxiway would extend from the parallel taxiway to serve the new hangar rows.

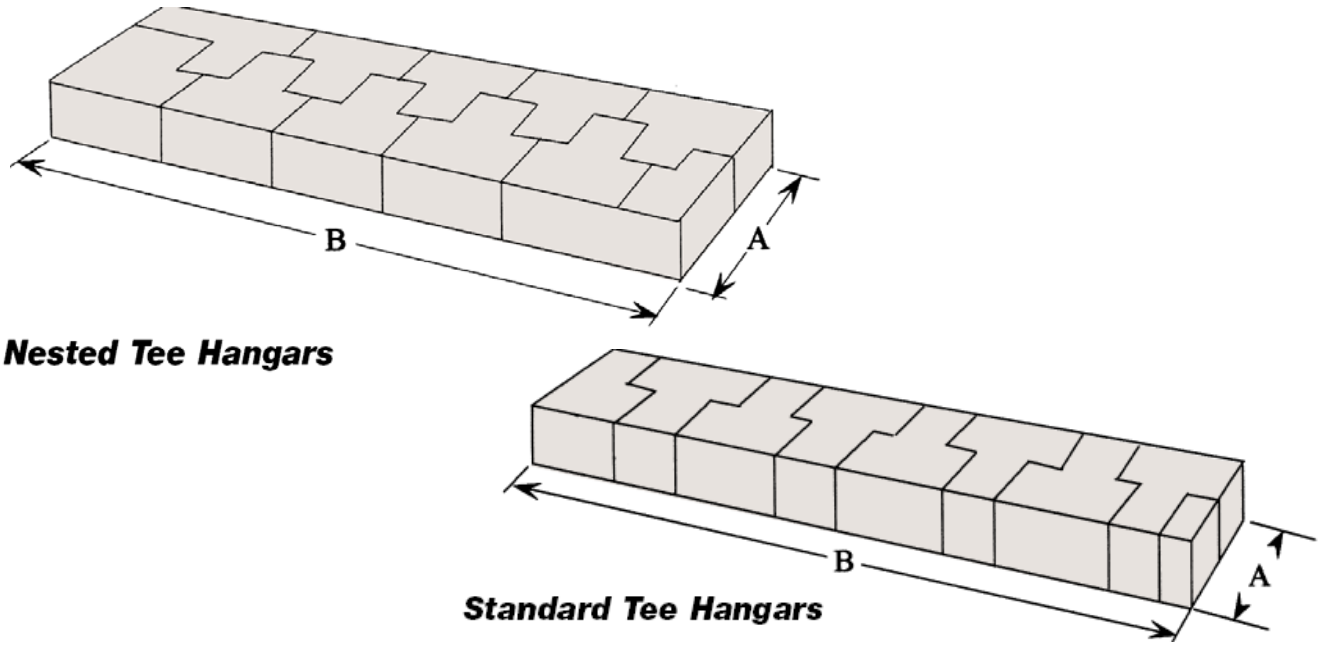
The northern section of landside development consists of several (8-12 unit) T-hangars aligned parallel to the runway. The hangar rows are served by a series of taxilanes that connect to the parallel taxiway and existing landside developments to the south.

The north extension of the west side airport access road described in Alternative A is retained in this alternative. Additional vehicle parking is provided adjacent to the roadway and hangars. In addition to public access, this alternative also includes an internal access road that extends from Dale Kuni Road at the northeast corner of the airport, along the eastern airport boundary to access the adjacent parachute drop area. As noted in the facility requirements chapter, the current practice of vehicles and parachutists crossing the runway-parallel taxiway system is not consistent with FAA clearing requirements for runway safety areas. Re-routing this traffic clear of the runway is necessary to meet the FAA standards. This alternative would route vehicles around the north end of the airport via the west side access road (extended) and Dale Kuni Road. A vehicle gate would be located at the NE entry point to limit access to authorized airport users.

Preliminary Alternative C

Alternative C (Figure 5-4) retains the south hangar layout as depicted in the previous alternatives and some of the terminal area reconfiguration, access and vehicle parking improvements from

Alternative B. However, this alternative locates three new T-hangars on the north side of the terminal apron and smaller conventional hangars in the north development area. Due to the relatively limited space available in this area, the hangars rows are configured to accommodate "standard" T-hangars, rather than "nested" T-hangars. Standard hangars designed for small aircraft are typically 36 feet wide ("A" dimension in diagram below); nested T-hangars for small aircraft are typically 50 to 54 feet wide.



This alternative reduces the existing capacity of aircraft parking on the existing apron as hangar development occurs around the apron perimeter. However, based on the forecasts of aircraft parking demand, it appears that the apron will still have adequate parking space when fully developed.

The northern hangar area is configured in a single row of east facing conventional hangars. Based on the typical size small/medium convention hangars, a 24-foot BRL is identified to locate the front of the hangar row and the adjacent hangar taxilane. The stub access taxiway that would serve the lower section of the hangar (adjacent to the skydiving operations) would also provide access to four additional hangar spaces located behind the main row.

This alternative includes an internal access road that extends from north end of the west development area, along the inside of the airport boundary to the adjacent parachute drop area. The road is located entirely outside the runway safety area, object free area, and obstacle free zone. Vehicles traveling on the road will not obstruct the existing or future Runway 15 approach surface. Vehicle gates would be located at both ends of the road to limit access to authorized airport users.

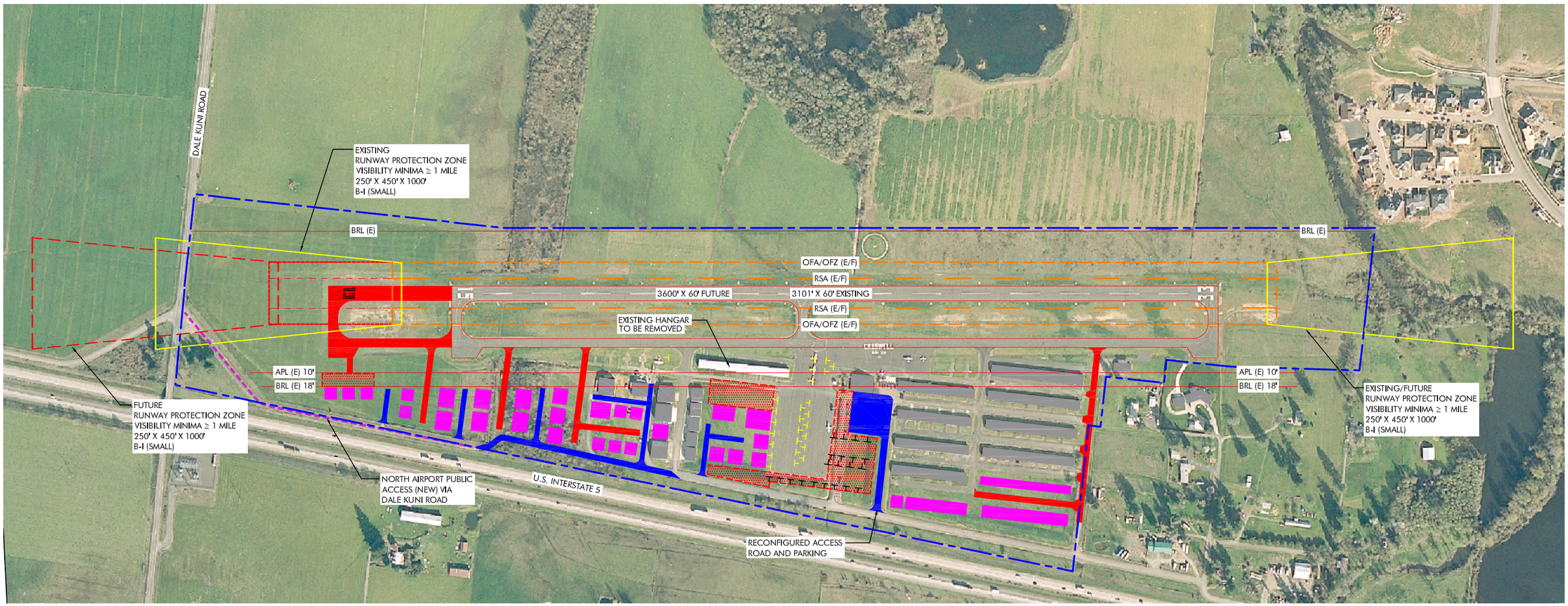
LEGEND

	EXISTING	FUTURE
FACILITIES		
BUILDINGS		
RUNWAY		
BUILDING RESTRICTION LINE (BRL)	BRL (E)	BRL (F)
AIRCRAFT PARKING LINE (APL)	APL (E)	APL (F)
AIRPORT PROPERTY LINE		
RUNWAY SAFETY AREA (RSA)		
OBJECT FREE AREA (OFA)		
OBSTACLE FREE ZONE (OFZ)		
RUNWAY PROTECTION ZONE (RPZ)		

- VEHICLE ACCESS RD. / PARKING
- PROPOSED APRON PAVEMENT
- PROPOSED HANGAR
- LANDSCAPING
- TAXIWAY/TAXILANE

KEY FEATURES

1. NO PROPERTY ACQUISITION.
2. 500-FOOT RUNWAY & PARALLEL TAXIWAY EXTENSION.
3. TERMINAL AREA IMPROVEMENTS:
   - APRON EXPANSION.
   - ACCESS ROAD & AUTO PARKING RECONFIGURATION.
   - CONVENTIONAL HANGARS NORTH OF MAIN APRON.
   - T-HANGARS SOUTH OF TERMINAL AREA.
4. ROAD IMPROVEMENTS TO SERVE NEW NW AIRPORT DEVELOPMENTS.



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CRESWELL-HOBBY FIELD AIRPORT MASTER PLAN

DEVELOPMENT ALTERNATIVE A (2004 ALP)

FIGURE NO.

5-2

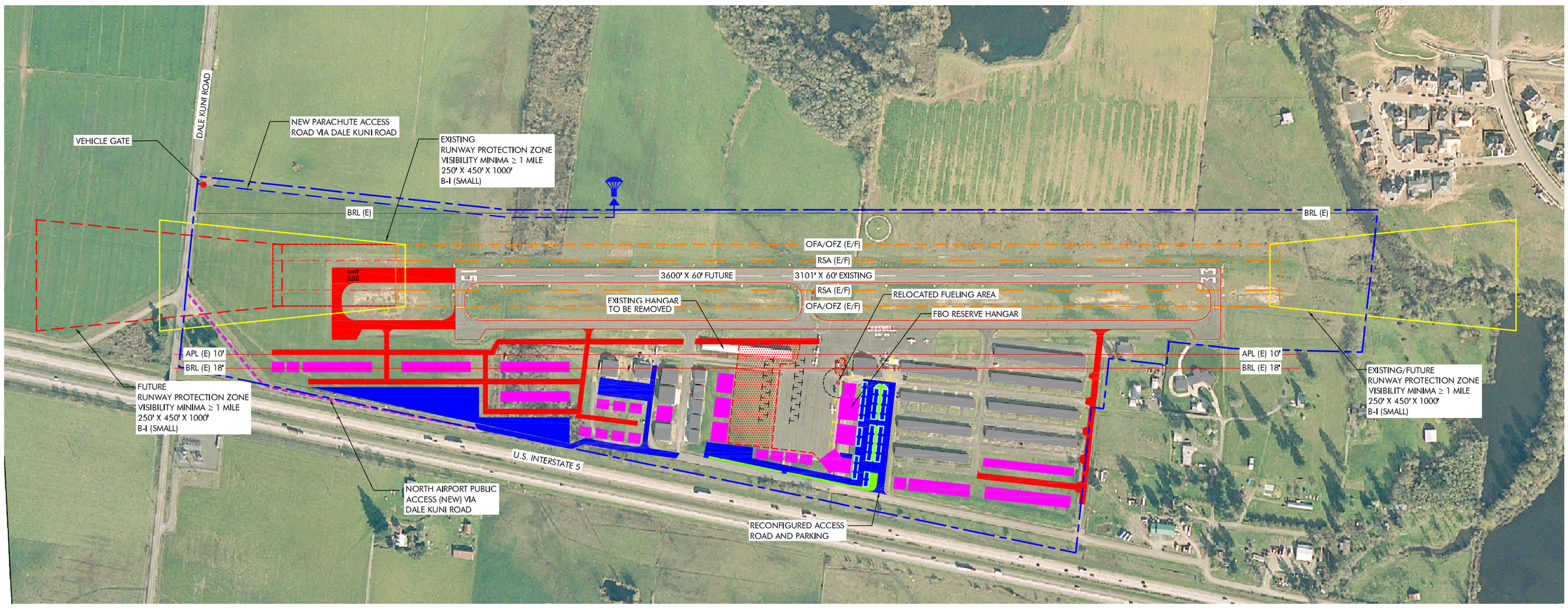
LEGEND

	EXISTING	FUTURE
FACILITIES		
BUILDINGS		
RUNWAY		
BUILDING RESTRICTION LINE (BRL)	BRL (E)	BRL (F)
AIRCRAFT PARKING LINE (APL)	APL (E)	APL (F)
AIRPORT PROPERTY LINE		
RUNWAY SAFETY AREA (RSA)		
OBJECT FREE AREA (OFA)		
OBSTACLE FREE ZONE (OFZ)		
RUNWAY PROTECTION ZONE (RPZ)		
PARACHUTE		SAME

- VEHICLE ACCESS RD./PARKING
- PROPOSED APRON PAVEMENT
- PROPOSED HANGAR
- LANDSCAPING
- TAXIWAY/TAXILANE
- PARACHUTE ACCESS ROAD

KEY FEATURES

1. NO PROPERTY ACQUISITION.
2. 500-FOOT RUNWAY & PARALLEL TAXIWAY EXTENSION.
3. NORTH AIRPORT ACCESS ROAD (NE CORNER OF AIRPORT).
4. TERMINAL AREA RECONFIGURATION:
   - RELOCATED FUELING AREA.
   - FBO EXPANSION RESERVE.
   - RECONFIGURED ACCESS ROAD; EXPANDED AUTO PARKING.
   - RECONFIGURED TIEDOWN.
   - ADDITIONAL HANGAR DEVELOPMENT NORTH OF APRON.
5. T-HANGAR DEVELOPMENT-NORTH & SOUTH AREAS.
6. AUTO PARKING & ACCESS IMPROVEMENTS NW AIRPORT.



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CRESWELL-HOBBY FIELD AIRPORT MASTER PLAN

DEVELOPMENT ALTERNATIVE B

FIGURE NO.

5-3

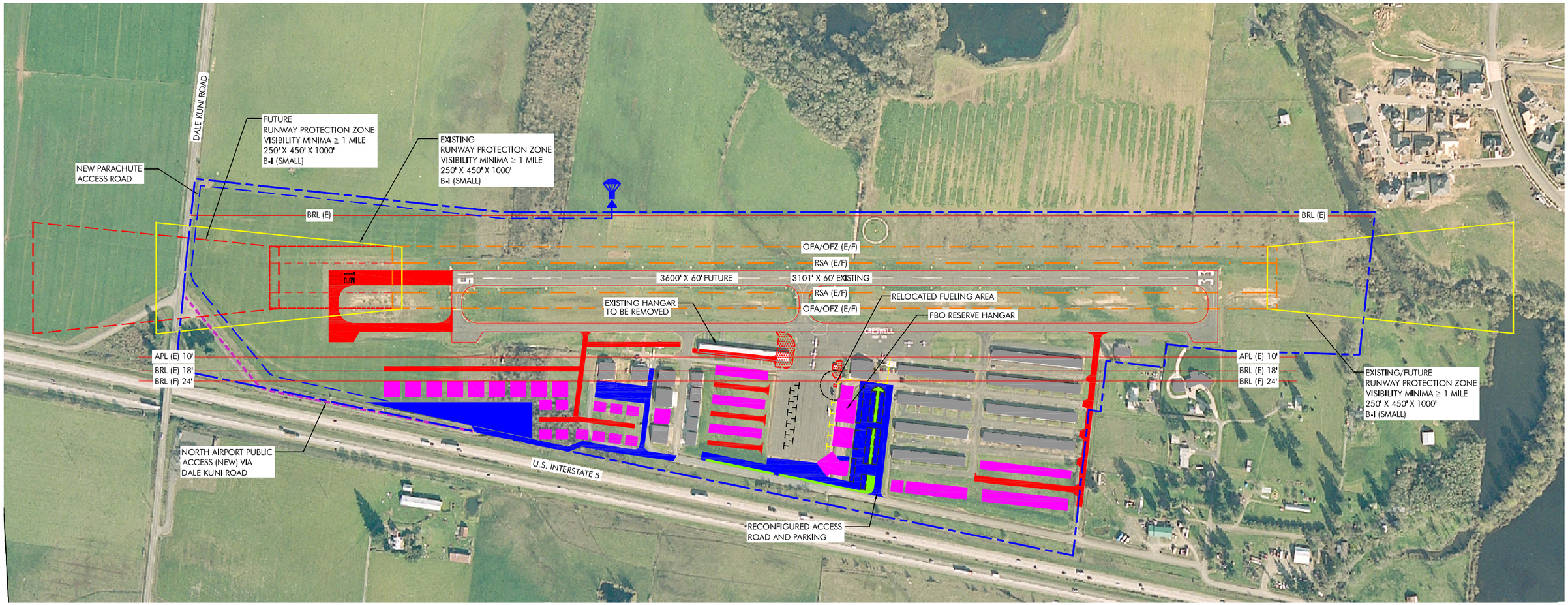
LEGEND

	EXISTING	FUTURE
FACILITIES		
BUILDINGS		
RUNWAY		
BUILDING RESTRICTION LINE (BRL)	BRL (E)	BRL (F)
AIRCRAFT PARKING LINE (APL)	APL (E)	APL (F)
AIRPORT PROPERTY LINE		
RUNWAY SAFETY AREA (RSA)		
OBJECT FREE AREA (OFA)		
OBSTACLE FREE ZONE (OFZ)		
RUNWAY PROTECTION ZONE (RPZ)		
PARACHUTE		SAME

- VEHICLE ACCESS RD./PARKING
- PROPOSED APRON PAVEMENT
- PROPOSED HANGAR
- LANDSCAPING
- TAXIWAY/TAXILANE
- PARACHUTE ACCESS ROAD

KEY FEATURES

1. NO PROPERTY ACQUISITION.
2. 500-FOOT RUNWAY & PARALLEL TAXIWAY EXTENSION.
3. NORTH AIRPORT ACCESS ROAD (INSIDE FENCE ACCESS TO PARACHUTES).
4. TERMINAL AREA RECONFIGURATION:
   - RELOCATED FUELING AREA (UNDERGROUND PIPE FROM EXISTING TANKS).
   - FBO EXPANSION RESERVE.
   - RECONFIGURED ACCESS ROAD; EXPANDED AUTO PARKING.
   - RECONFIGURED TIEDOWN.
   - ADDITIONAL T-HANGAR DEVELOPMENT NORTH OF APRON.
5. CONVENTIONAL HANGAR DEVELOPMENT-NORTH AREAS.
6. AUTO PARKING & ACCESS IMPROVEMENTS NW AIRPORT.



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CRESWELL-HOBBY FIELD AIRPORT MASTER PLAN
DEVELOPMENT ALTERNATIVE C

FIGURE NO.
5-4

PREFERRED ALTERNATIVE

Based on their review of the options presented, the City of Creswell Airport Commission and staff supported a preferred alternative that contains most of the elements included in Preliminary Alternative C, with some refinement:

- **Runway and Parallel Taxiway:** A 500-foot extension located at the north end of the runway designed to accommodate small airplanes.

- **Southwest Landside Development Area:** Develop one new double-sided T-hangar and several single-sided conventional hangars on the remaining undeveloped hangar rows (west edge and southwest corner). A new hangar taxilane is recommended on the south edge of the hangar development area to provide standard taxilane object free area clearances (79 feet wide clear area, centered on the taxilane). An older existing T-hangar located immediately south of the fueling area will be removed at the end of its useful life and replaced with light aircraft parking. Several existing aircraft parking positions on the FBO apron will be eliminated to clear the nonprecision instrument runway primary surface.

- **Terminal Area:** Landside and surface access improvements phased over time based on demand. The terminal area access road and vehicle parking would be reconfigured once the airport's existing septic drain field can be eliminated (extension of city sewer service to airport). Reconfiguration of the main tiedown apron to accommodate commercial hangar development on the south side of the apron. An aircraft fueling area reserve is identified near the southeast corner of the tiedown apron to accommodate the potential relocation of fueling activities to provide additional space. The north side of the main tiedown apron would be reconfigured to accommodate construction of three north-south hangar taxilanes and three 8-unit "standard" T-hangars. An older existing open front T-hangar located immediately north of the FBO apron will be removed and a new north-south taxilane will be constructed to provide access the eastern-most T-hangar and between the FBO apron and the existing north hangar area taxilane. Additional improvements in apron/taxilane pavement are recommended to improve aircraft ground movement in the terminal area. Additional vehicle parking will be developed as needed, adjacent to the airport access road and the main tiedown apron.

- **Northwest Landside Development Area:** Future development of small and medium size conventional hangars will occur in the northern section of the airport's west landside area. Initially, the undeveloped hangar sites that have direct or nearby taxilane access will be improved. The recommended configuration of a new north hangar area and taxilane system is designed to work with the relatively narrow space available between the runway/parallel

taxiway and the west airport access road. Additional vehicle access roads and parking will be developed to serve the north hangar area.

- **East Airport Access:** An internal airport access road is included in the preferred alternative to provide access to the east side of the airport that does not conflict with airfield operations. The roadway was originally conceived to address the needs of locally-based skydivers who required frequent access to the east side parachute drop area. Although this use is not currently active, the road has been retained to provide airport access for maintenance and emergency response, and the potential for future east side property acquisition.

- **Property Acquisition:** Several areas located adjacent to the airport are identified as "future airport development reserve." The City has expressed interest in acquiring available areas as they become available to preserve the long-term viability of the airport site and the facility needs that may extend beyond the current twenty-year planning period.

- Maintain ARC B-I (small aircraft) airport design standards and utility runway designation for airspace planning purposes.

Figure 5-5 illustrates the preferred alternative. This information will be incorporated into the ALP drawing presented in Chapter Six.

Note: The preliminary development alternatives presented earlier in this chapter illustrate the progressive process of alternatives evaluation and do not necessarily reflect the final preferred configuration of facilities depicted on the airport layout plan that resulted from the overall review process. These figures are intentionally not modified in order to maintain an accurate chronology of the evaluation process. Similarly, the refinement of the preferred alternative continues as information is integrated into the ALP. While **Figure 5-5** depicts the preferred alternative as conceptually envisioned, the ALP provides more detail and represents the configuration of facilities agreed upon between the City and FAA.

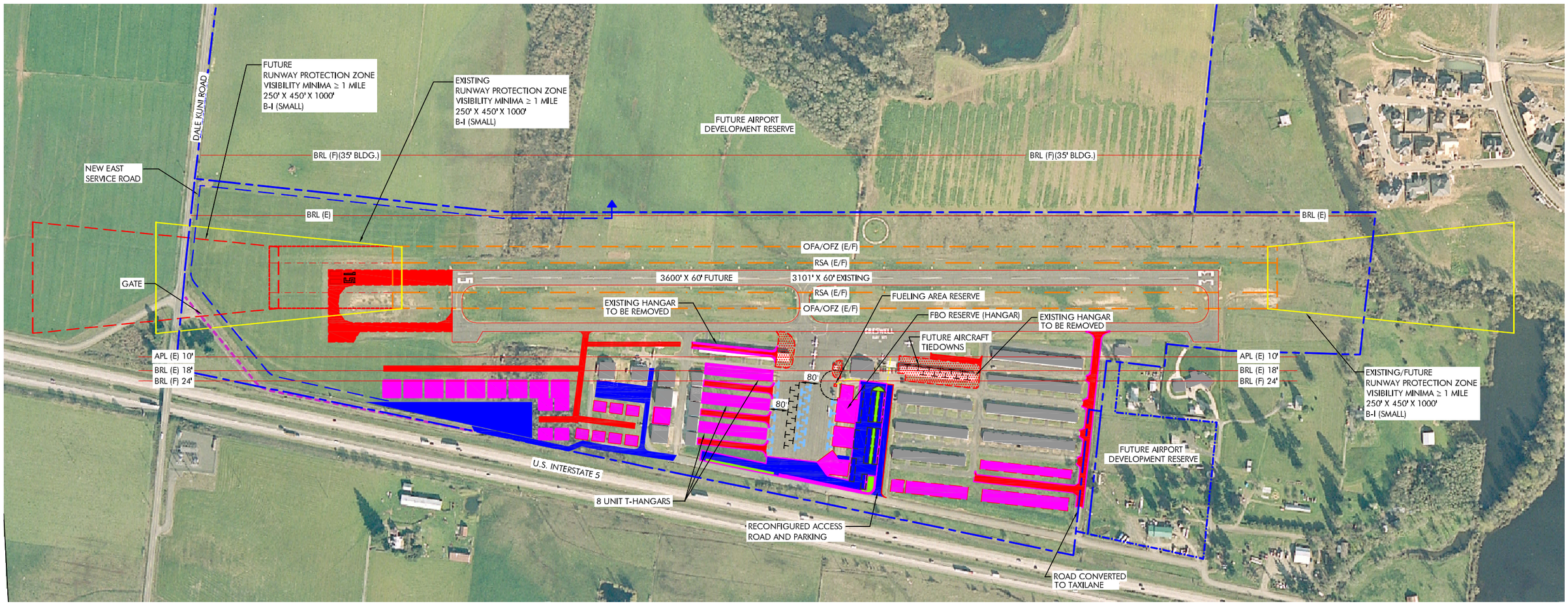
LEGEND

	EXISTING	FUTURE
FACILITIES		
BUILDINGS		
RUNWAY		
BUILDING RESTRICTION LINE (BRL)	BRL (E)	BRL (F)
AIRCRAFT PARKING LINE (APL)	APL (E)	APL (F)
AIRPORT PROPERTY LINE		
RUNWAY SAFETY AREA (RSA)		
OBJECT FREE AREA (OFA)		
OBSTACLE FREE ZONE (OFZ)		
RUNWAY PROTECTION ZONE (RPZ)		
PARACHUTE	NONE	SAME

- VEHICLE ACCESS RD./PARKING
- APRON PAVEMENT
- HANGAR
- LANDSCAPING
- TAXIWAY/TAXILANE
- AIRPORT SERVICE ROAD

KEY FEATURES

1. AUTO PARKING & ACCESS IMPROVEMENTS NW AIRPORT.
2. 500-FOOT RUNWAY & PARALLEL TAXIWAY EXTENSION.
3. NORTH AIRPORT ACCESS ROAD (INSIDE FENCE ACCESS TO EASTSIDE).
4. TERMINAL AREA RECONFIGURATION:
   - FUELING AREA RESERVE (UNDERGROUND PIPE FROM EXISTING TANKS).
   - FBO EXPANSION RESERVE.
   - RECONFIGURED ACCESS ROAD; EXPANDED AUTO PARKING.
   - RECONFIGURED TIEDOWN.
   - ADDITIONAL T-HANGAR DEVELOPMENT NORTH OF APRON.
5. CONVENTIONAL HANGAR DEVELOPMENT-NORTH AREAS.
6. EAST AND WEST AIRPORT DEVELOPMENT RESERVES.



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CRESWELL-HOBBY FIELD AIRPORT MASTER PLAN

PREFERRED ALTERNATIVE

FIGURE NO.

5-5

Chapter Six
Airport Layout Plan Drawings

CHAPTER SIX
AIRPORT LAYOUT PLAN DRAWINGS
INTRODUCTION

The options that were considered for the long-term development of Hobby Field were described in the development alternatives (Chapter Five). This evaluation resulted in the selection of a preferred alternative. The preferred alternative has been incorporated into the airport layout plan drawings, which are summarized in this chapter. The set of airport plans, which is referred to in aggregate as the "Airport Layout Plan" (ALP) has been prepared in accordance with FAA guidelines. The drawings illustrate existing conditions, recommended changes in airfield facilities, existing and recommended property ownership, land use, and obstruction removal. The ALP set is presented at the end of this chapter:

- *Drawing 1 – Cover Sheet*
- *Drawing 2 – Airport Layout Plan*
- *Drawing 3 – Terminal Area Plan*
- *Drawing 4 – FAR Part 77 Airspace Plan*
- *Drawing 5 – Airport Land Use Plan with 2010 Noise Contours*

Airport Layout Plan

The Airport Layout Plan (ALP) drawing presents the existing and ultimate airport layout and depicts the improvements that are recommended to enable the airport to meet forecast aviation demand. Data blocks for the overall airport and the runway are presented on the ALP; airport vicinity and location maps are included on the cover sheet. A declared distances table, legend of symbols and line types, and building/facility table (with corresponding numbers depicted on the airport layout plan drawing) are also provided.

The improvements depicted on the ALP reflect all major airfield developments recommended in the twenty-year planning period. Decisions made by the City regarding the actual scheduling of projects will be based on specific demand and the availability of funding. Long-term development reserves are also identified on the ALP to accommodate potential demand that could exceed current expectations or could occur beyond the current twenty-year planning period.

The major items depicted on the ALP are summarized below:

- The runway and parallel taxiway are extended 500 feet on the north end;
- Terminal area facilities are reconfigured/expanded to accommodate demand for aircraft parking, hangar development and vehicle access and parking;
- Continued development of the south hangar area including hangar rows, and new hangar taxilanes;
- Future development of the north hangar area including hangar rows, new hangar taxilanes, and access roads and vehicle parking to serve the new north landside development area; and
- Infill development of aircraft hangars within existing landside areas with taxiway access or apron frontage.

Projects such as maintenance or reconstruction of airfield pavements, which are not depicted on the ALP, are described in the Capital Improvements Program, in **Chapter Seven**.

Terminal Area Plan

The Terminal Area Plan provides an enlarged scale view of existing facilities and recommended improvements in the main terminal area. The detailed view illustrates the reconfiguration of the existing aircraft tiedowns on the main apron recommended to accommodate hangar development adjacent to the apron.

A schematic view of the airport property and adjacent reserve areas was included on this drawing due to space constraints on the ALP. The reserve areas are identified for potential acquisition in the future as the existing landside areas reach capacity.

Airspace Plan

The **FAR Part 77** Airspace Plan for Hobby Field was developed based on Federal Aviation Regulations **FAR Part 77, Objects Affecting Navigable Airspace**. The Airspace Plan provides the plan view of the airspace surfaces, profile views of the runway approach surfaces, and a detailed plan view of the runway approach surfaces. This information is intended to define and protect the airspace surfaces from encroachment due to incompatible land uses, which could adversely affect safe airport operations. By comparing the elevations of the airspace surfaces with the surrounding terrain, an evaluation of potential obstructions to navigable airspace was conducted.

The airspace surfaces depicted for Hobby Field reflect the ALP-recommended (ultimate) runway length of 3,600 feet for Runway 15/33. Based on the current and planned use of B-I (small aircraft) design standards, Runway 15/33 will be designed for use by aircraft weighing 12,500 pounds and less, which places it in the "utility" category under FAR Part 77.

The Runway 35 approach is planned based on future nonprecision instrument approach capabilities. As noted in the facility requirements analysis, based on a preliminary analysis conducted by FAA, it appears that the best approach minima can be obtained through a slight offset of the approach surface that extends along the runway centerline. The Runway 15 end is planned for visual approaches; this configuration is also compatible with development of a non-precision instrument approach with a circling procedure that is authorized for daytime use. A 5,000-foot horizontal surface radius is used for each runway end to protect future airspace capabilities.

A small area of terrain penetration is identified at the outer edge of the conical surface, southwest of the runway. No terrain obstructions are identified within the runway approaches, primary surface or transitional surfaces. However, numerous trees and bushes are located near the runway, many of which appear to penetrate the primary and transitional surfaces. Several existing hangars located on the west side of the runway penetrate the runway transitional surface. The obstruction table depicted on the drawing lists 52 items, most of which are trees. The recommended disposition of obstructions is noted in the table.

The approach surface plan and profile drawing provides additional detail for the runway approaches and the runway protection zones. The profile view depicts existing and future 20:1 approach surfaces, in addition to the 20:1 offset approach path defined for Runway 35.

Airport Land Use Plan with 2010 Noise Contours

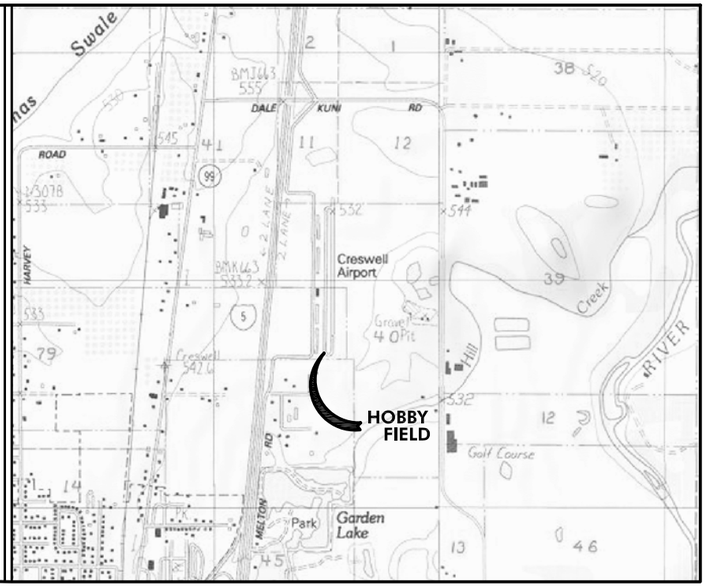
The Airport Land Use Plan for Hobby Field depicts existing zoning in the immediate vicinity of the airport. The area surrounding the airport is predominately zoned agricultural, although areas of rural residential zoning are located in the vicinity of the airport within one to two miles in all directions; a more dense, residential area is located immediately southeast of the runway.

Noise exposure contours based on the 2010 forecasts of aircraft activity are depicted on the Land Use Plan. The noise contours were created using the FAA's Integrated Noise Model (INM). Data from activity forecasts and aircraft fleet mix are combined with common flight tracks and runway use to create a general indication of airport-generated noise exposure. The noise contours are plotted in 5 DNL increments starting at 55 DNL. The size and shape of the contours is consistent with the airport's runway utilization and aircraft traffic. Although limited areas of residential

development exist in the vicinity of the airport, sparse development patterns appear to have prevented significant levels of aircraft noise exposure to more densely populated areas. One exception is a residential area located within several hundred feet of the south end of the runway (east of the extended runway centerline). It appears that a portion of this residential area is located within the 55 to 60 DNL noise contour. Local planning authorities should discourage land use patterns that would increase population densities in the vicinity of the airport, particularly beneath the runway approach surfaces and in areas of moderate or high noise exposure. See Chapter Eight for a detailed description of the noise analysis.

It is recommended that the City of Creswell and Lane County periodically update airport overlay zoning, as needed, to reflect the boundaries of the FAR Part 77 airspace surfaces, consistent with updated airport layout plans.

VICINITY MAP



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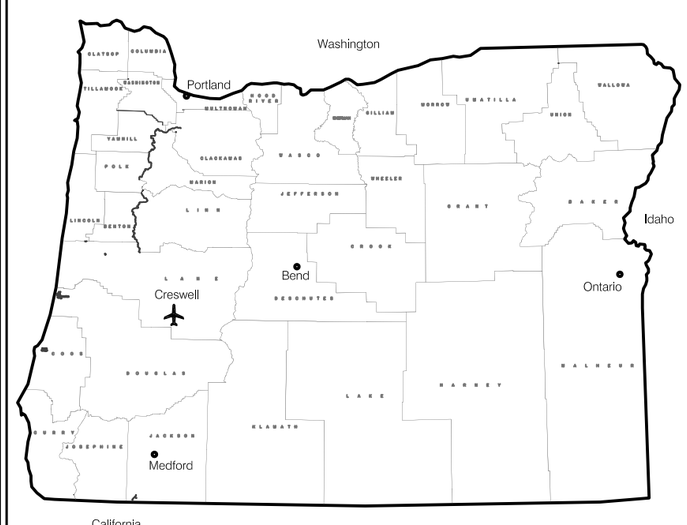
HOBBY FIELD
CITY OF CRESWELL
AIRPORT MASTER PLAN

CRESWELL, OREGON
CWEC PROJECT NO. 41324002.01
AIP NO. 3-41-0083-005
NOVEMBER 2007

LOCATION MAP



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INDEX

SHEET NUMBER	SHEET CONTENTS
1	COVER SHEET
2	AIRPORT LAYOUT PLAN
3	TERMINAL AREA PLAN
4	AIRSPACE PLAN
5	AIRPORT LAND USE PLAN WITH 2010 NOISE CONTOURS

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LEGEND

	EXISTING	FUTURE
FACILITIES		
BUILDINGS		
RUNWAY		
BUILDING RESTRICTION LINE (BRL)	BRL (E)	BRL (F)
AIRCRAFT PARKING LINE (APL)	APL (E)	APL (F)
AIRPORT PROPERTY LINE		
RUNWAY SAFETY AREA (RSA)		
OBJECT FREE AREA (OFA)		
OBSTACLE FREE ZONE (OFZ)		
RUNWAY PROTECTION ZONE (RPZ)		
GROUND CONTOURS	530	530
AIRPORT REFERENCE POINT (ARP)		
PROPOSED AIRFIELD PAVEMENT	NONE	
VISUAL GUIDANCE INDICATORS	PAPI	PAPI
WIND INDICATOR		
AVIGATION EASEMENT		
FENCE	X X	XX XX
PROPOSED ROAD/PARKING	NONE	
BEACON		SAME
THRESHOLD LIGHTS		
SEGMENTED CIRCLE WIND INDICATOR		
REIL	NONE	

AIRPORT DATA

	EXISTING	FUTURE
AIRPORT ELEVATION (MSL)	537.8'	538'.0
DATUM FOR ALL ITEMS	NAD 83/NAVD 88	SAME
AIRPORT REFERENCE POINT COORDINATES (ARP)	LAT. N 43° 55' 50.76" LONG. W 123° 00' 24.05"	LAT. N 43° 55' 54" LONG. W 123° 00' 25"
AIRPORT MAGNETIC VARIATION	17° 4' E (2004)	SAME
MEAN MAXIMUM TEMPERATURE	82° F	SAME
NPIAS ROLE	GA	GA
AIRPORT REFERENCE CODE (ARC)	B-I (SMALL)	B-I (SMALL)
AIRPORT CODE	77S	SAME
LAND OWNED IN FEE (ACRES)	APPROX. 102.6 ACRES	APPROX. 103.2 ACRES

DECLARED DISTANCES

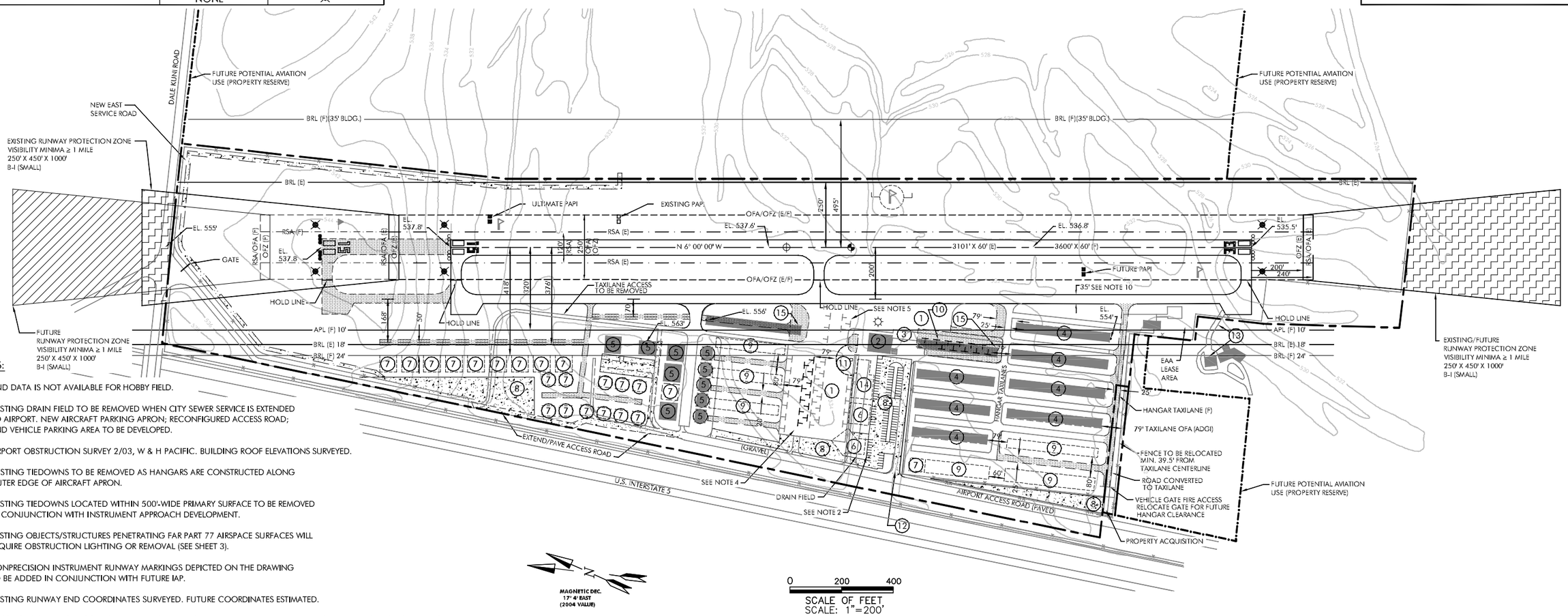
	RUNWAY 15		RUNWAY 33	
	EXISTING	FUTURE	EXISTING	FUTURE
TAKEOFF RUN AVAILABLE (TORA)	3101'	3600'	3101'	3600'
TAKEOFF DISTANCE AVAILABLE (TODA)	3101'	3600'	3101'	3600'
ACCELERATE-STOP DISTANCE (ASDA)	3101'	3600'	3101'	3600'
LANDING DISTANCE AVAILABLE (LDA)	3101'	3600'	3101'	3600'

RUNWAY DATA 15/33

		EXISTING	FUTURE
LENGTH AND WIDTH		3101' X 60'	3600' X 60'
PERCENT EFFECTIVE GRADIENT		0.1%	0.07%
PERCENT WIND COVERAGE (12 MPH)		95% ALL WEATHER	SAME
PAVEMENT TYPE		ASPHALT CONCRETE	SAME
PAVEMENT STRENGTH		12,500 SINGLE WHEEL	SAME
APPROACH SLOPE/TYPE		20:1/VISUAL	20:1/NONPRECISION INSTRUMENT (LNAV)
RUNWAY LIGHTING		MIRL	SAME
RUNWAY MARKING		BASIC	NPI
RUNWAY SAFETY AREA		3581' X 120'	4080' X 120'
OBJECT FREE AREA		3581' X 250'	4080' X 250'
OBSTACLE FREE ZONE		3501' X 250'	4000' X 250'
CRITICAL AIRCRAFT		BE-58	SAME
NAVIGATIONAL AIDS		NONE	GPS
APPROACH AND LANDING AIDS	15	PAPI	PAPI, REIL
	33	NONE	PAPI, REIL
RUNWAY END COORDINATES ★ (SEE NOTE 8)	15	LAT.N 43° 56' 05.99" LONG.W 123° 00' 26.20"	LAT.N 43° 56' 10.89" LONG.W 123° 00' 26.89"
	33	LAT.N 43° 55' 35.52" LONG.W 123° 00' 21.89"	SAME
TAXIWAY LIGHTING		NONE	REFLECTORS/MITL

BUILDING KEY

1. GA AIRCRAFT TIEDOWN APRON (EXISTING)
2. FBO/OFFICE/HANGAR (EXISTING)
3. AIRCRAFT FUELING (EXISTING)
4. T-HANGAR (EXISTING)
5. CONVENTIONAL HANGAR (EXISTING)
6. BUSINESS / COMMERCIAL HANGAR (FUTURE)
7. CONVENTIONAL STORAGE HANGAR (FUTURE)
8. AUTO PARKING (FUTURE)
9. T-HANGAR (FUTURE)
10. GA AIRCRAFT TIEDOWN APRON (FUTURE)
11. AIRCRAFT FUELING (FUTURE)
12. ACCESS ROAD (FUTURE RECONFIGURATION)
13. HANGAR (OFF AIRPORT/THROUGH-THE-FENCE)
14. FBO RESERVE
15. EXISTING HANGAR TO BE REMOVED



NOTES:

1. WIND DATA IS NOT AVAILABLE FOR HOBBY FIELD.
2. EXISTING DRAIN FIELD TO BE REMOVED WHEN CITY SEWER SERVICE IS EXTENDED TO AIRPORT. NEW AIRCRAFT PARKING APRON; RECONFIGURED ACCESS ROAD; AND VEHICLE PARKING AREA TO BE DEVELOPED.
3. AIRPORT OBSTRUCTION SURVEY 2/03, W & H PACIFIC. BUILDING ROOF ELEVATIONS SURVEYED.
4. EXISTING TIEDOWNS TO BE REMOVED AS HANGARS ARE CONSTRUCTED ALONG OUTER EDGE OF AIRCRAFT APRON.
5. EXISTING TIEDOWNS LOCATED WITHIN 500'-WIDE PRIMARY SURFACE TO BE REMOVED IN CONJUNCTION WITH INSTRUMENT APPROACH DEVELOPMENT.
6. EXISTING OBJECTS/STRUCTURES PENETRATING FAR PART 77 AIRSPACE SURFACES WILL REQUIRE OBSTRUCTION LIGHTING OR REMOVAL (SEE SHEET 3).
7. NONPRECISION INSTRUMENT RUNWAY MARKINGS DEPICTED ON THE DRAWING TO BE ADDED IN CONJUNCTION WITH FUTURE IAP.
8. EXISTING RUNWAY END COORDINATES SURVEYED. FUTURE COORDINATES ESTIMATED.
9. USGS TOPOGRAPHICAL CONTOUR MAPPING BASED ON NAVD 29. ALL OTHER ELEVATION DATA BASED ON SURVEY USING NAVD 88.
10. FUTURE PARALLEL TAXIWAY IMPROVEMENTS PER ADGI STANDARDS. AIRPORT SPONSOR TO PERFORM COST-BENEFIT ANALYSIS TO EVALUATE MAINTAINING CURRENT 35' WIDE TAXIWAY.

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0" 1"
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APPROVAL DATE: _____

MANAGER, SEATTLE ADO

CITY OF CRESWELL APPROVAL

APPROVAL DATE: _____

SIGNATURE

CENTURY WEST ENGINEERING CORPORATION
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DM	SLK	DM	AS SHOWN
DATE: NOVEMBER 2007		PROJECT NO: 41324002.01	

CITY OF CRESWELL HOBBY FIELD

AIRPORT LAYOUT PLAN

DRAWING NO. ▪

SHEET NO. 2 OF 5

LEGEND

	EXISTING	FUTURE
FACILITIES		
BUILDINGS		
RUNWAY		
BUILDING RESTRICTION LINE (BRL)	BRL (E)	BRL (F)
AIRCRAFT PARKING LINE (APL)	APL (E)	APL (F)
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OBSTACLE FREE ZONE (OFZ)		
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PROPOSED AIRFIELD PAVEMENT	NONE	
VISUAL GUIDANCE INDICATORS	PAPI	PAPI
WIND INDICATOR		
AVIGATION EASEMENT		
FENCE	X X	XX XX
PROPOSED ROAD/PARKING	NONE	
BEACON		SAME
THRESHOLD LIGHTS		
SEGMENTED CIRCLE WIND INDICATOR		
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AIRPORT CODE	77S	SAME
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RUNWAY MARKING		BASIC	NPI
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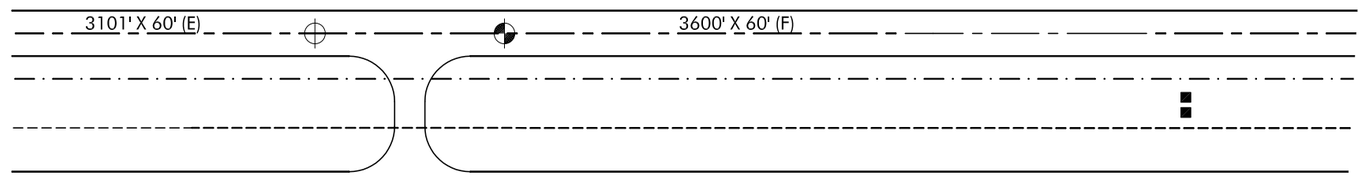
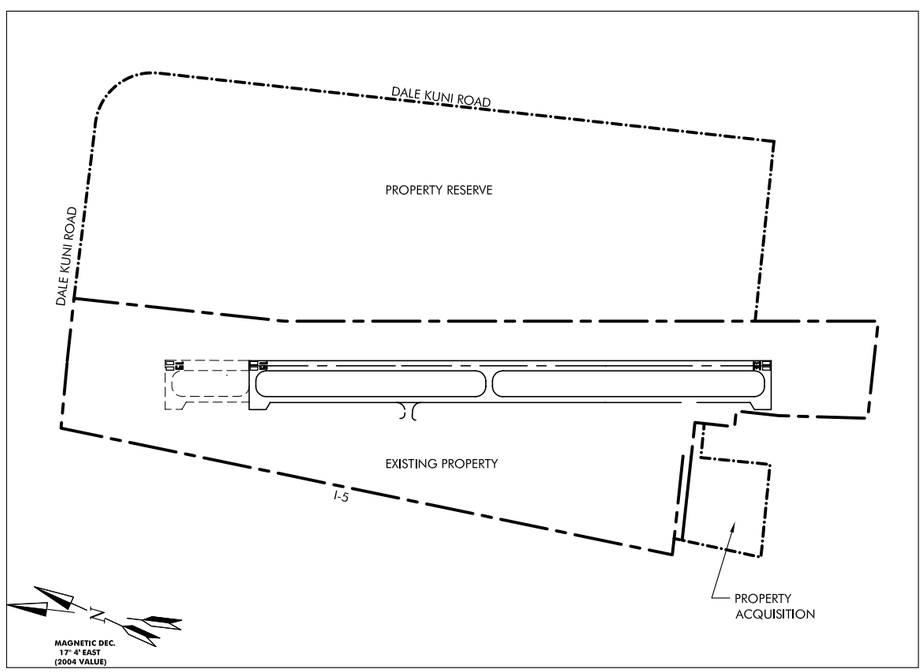
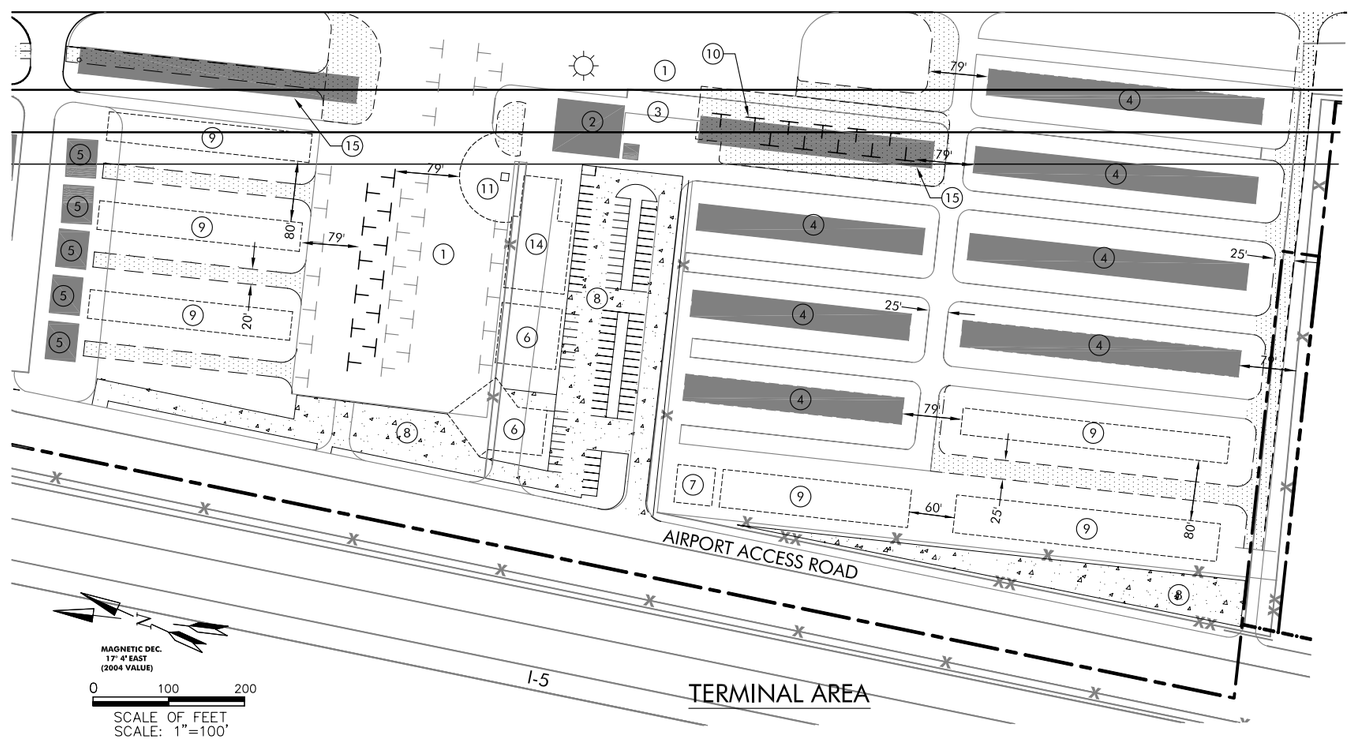




PROPERTY AREA



TERMINAL AREA

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SIGNATURE

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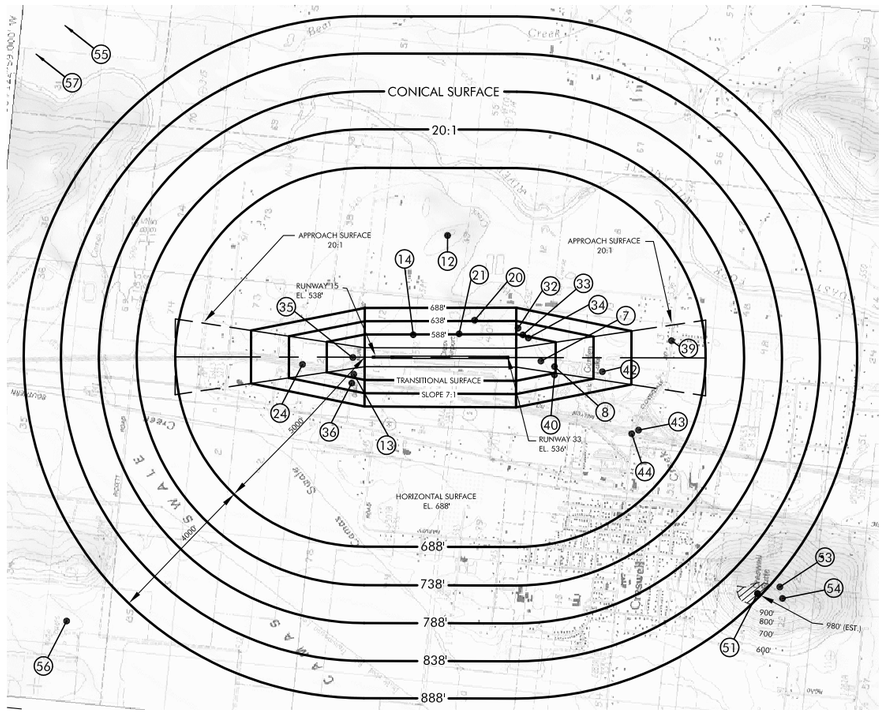
DM	SLK	WMR	AS SHOWN
DATE: NOVEMBER 2007		PROJECT NO: 41324002.01	

CITY OF CRESWELL HOBBY FIELD

TERMINAL AREA

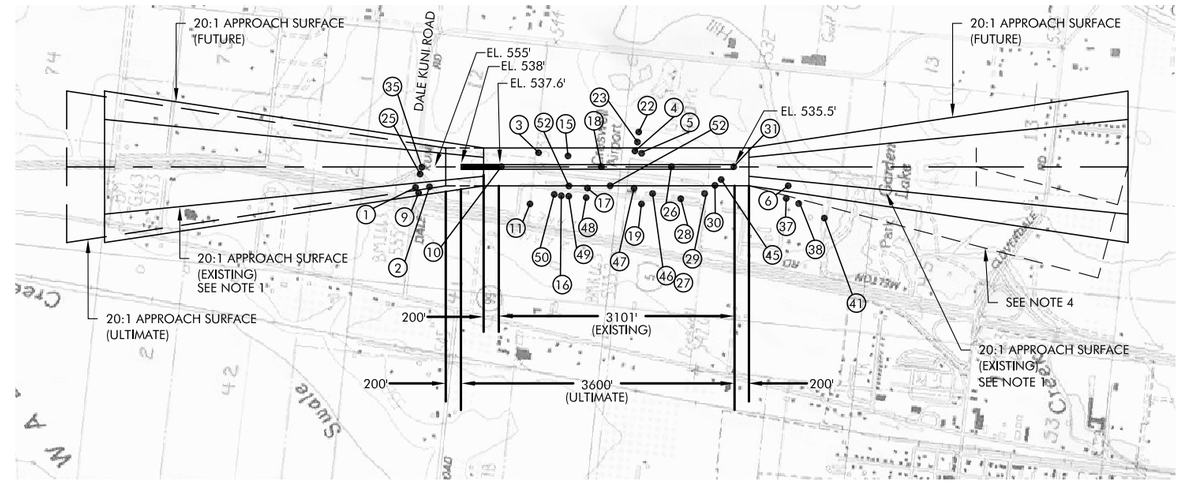
DRAWING NO. -

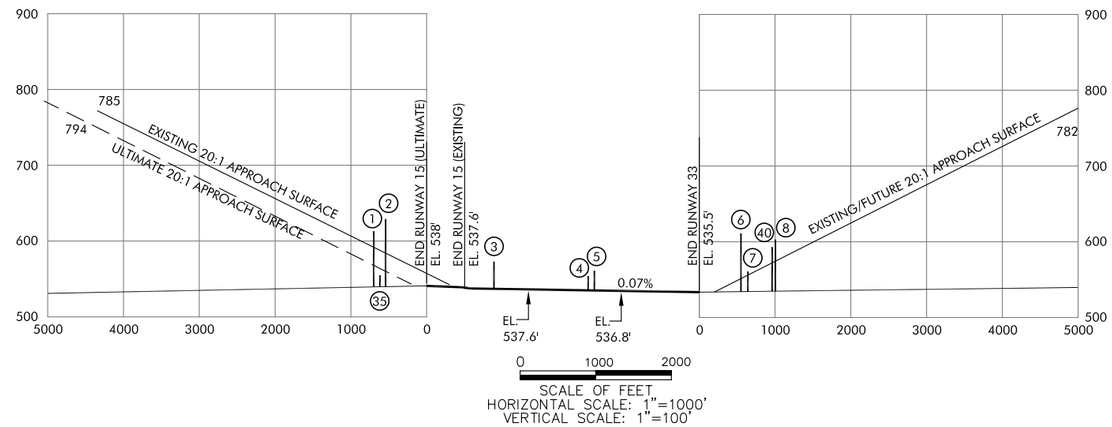
SHEET NO. 3 OF 5



0 2000 4000
SCALE OF FEET
SCALE: 1"=2000'

MAGNETIC DEC.
17° 4' EAST
(2004 VALUE)





0 1000 2000
SCALE OF FEET
HORIZONTAL SCALE: 1"=1000'
VERTICAL SCALE: 1"=100'

NO.	ITEM	PART 77 SURFACE	MSL ELEV	DISTANCE FROM RWY CL	DISTANCE FROM RWY END	AMOUNT OF PENETRATION (ESTIMATED)	AIRPORT PROPERTY	DISPOSITION
1	TREE GROUP	APPROACH (RWY 15)	613'	308' R	697'	38'	NO	CLEAR TREES
2	TREE GROUP	APPROACH (RWY 15)	629'	288' R	541'	61'	NO	CLEAR TREES
3	TREE GROUP	PRIMARY	573'	128' L	-888'	35'	YES	CLEAR TREES
4	TREE GROUP	PRIMARY	570'	190' R	-1490'	32'	YES	CLEAR TREES
5	LIGHTED WINDSOCK	PRIMARY	561'	190' L	2213'	32'	YES	NONE
6	TREE GROUP	APPROACH (RWY 33)	601'	248' L	572'	48'	NO	CLEAR TREES
7	TREE	APPROACH (RWY 33)	560'	88' L	650'	7'	NO	CLEAR TREE
8	2 TREES	APPROACH (RWY 33)	602'	234' L	1005'	37'	NO	CLEAR TREES
9	POWER POLE	TRANSITIONAL (RWY 15)	605'	330' R	655'	44'	NO	LIGHT
10	RWY SPOT ELEV	NONE	538'	0	500'	N/A	YES	NO OBSTRUCTION, REFERENCE ONLY
11	TREE GROUP	TRANSITIONAL (RWY 15)	576'	434' R	799'	12'	YES	CLEAR TREES
12	TREE GROUP	HORIZONTAL	774'	3183' L	1916'	86'	NO	CLEAR TREES
13	DALE KUNI ROAD	TRANSITIONAL (RWY 15)	575'	480' R	666'	-9'	NO	NO OBSTRUCTION, REFERENCE ONLY
14	TREE GROUP	TRANSITIONAL (RWY 15)	577'	456' L	902'	10'	NO	CLEAR TREES
15	PAPI LIGHTS	PRIMARY	N/A	92' L	1204'	N/A	YES	NO OBSTRUCTION, REFERENCE ONLY
16	BUILDINGS	TRANSITIONAL (RWY 15)	563'	365' R	1269'	9'	YES	LIGHT
17	BUILDINGS	TRANSITIONAL (RWY 15)	556'	282' R	1503'	11'	YES	LIGHT
18	RWY SPOT ELEV	NONE	538'	0	1666'	N/A	YES	NO OBSTRUCTION, REFERENCE ONLY
19	TREE GROUP	TRANSITIONAL (RWY 33)	598'	441' L	1367'	33'	NO	NONE
20	TREE GROUP	TRANSITIONAL (RWY 33)	637'	745' R	1400'	28'	NO	NONE
21	TREE GROUP	TRANSITIONAL (RWY 33)	598'	552' R	1513'	17'	NO	NONE
22	TREE GROUP	TRANSITIONAL (RWY 33)	616'	432' R	1433'	52'	NO	NONE
23	TREE GROUP	TRANSITIONAL (RWY 33)	552'	310' R	1440'	5'	NO	TRIM
24	INTERSTATE 5	APPROACH (RWY 15)	556'	188' R	1955'	-69'	NO	NO OBSTRUCTION, REFERENCE ONLY
25	POWER POLE	TRANSITIONAL (RWY 15)	580'	173' R	644'	7'	NO	LIGHT
26	RWY SPOT ELEV	NONE	537'	0	986'	N/A	YES	NO OBSTRUCTION, REFERENCE ONLY
27	POWER POLE	TRANSITIONAL (RWY 33)	569'	390' L	1254'	11'	YES	LIGHT
28	POWER POLE	TRANSITIONAL (RWY 33)	572'	429' L	930'	9'	YES	LIGHT
29	BUILDINGS	TRANSITIONAL (RWY 33)	554'	349' L	549'	2'	YES	LIGHT
30	TREE GROUP	TRANSITIONAL (RWY 33)	592'	337' L	432'	42'	YES	CLEAR TREES
31	RWY SPOT ELEV	NONE	535'	0	0	N/A	YES	NO OBSTRUCTION, REFERENCE ONLY
32	24" PINE TREE	TRANSITIONAL (RWY 33)	630'	676' R	21'	31'	NO	NONE

NO.	ITEM	PART 77 SURFACE	MSL ELEV	DISTANCE FROM RWY CL	DISTANCE FROM RWY END	AMOUNT OF PENETRATION (ESTIMATED)	AIRPORT PROPERTY	DISPOSITION
33	24" FIR TREE	TRANSITIONAL (RWY 33)	613'	522' R	147'	36'	NO	NONE
34	24" PINE TREE	TRANSITIONAL (RWY 33)	628'	489' R	304'	56'	NO	NONE
35	DALE KUNI ROAD	APPROACH (RWY 15)	555'	2' L	616'	-3'	NO	NO OBSTRUCTION, REFERENCE ONLY
36	POWER POLE	TRANSITIONAL (RWY 33)	600'	658' R	699'	-10'	NO	NO OBSTRUCTION, REFERENCE ONLY
37	TREE GROUP	TRANSITIONAL (RWY 33)	616'	437' L	529'	49'	NO	NONE
38	TREE GROUP	TRANSITIONAL (RWY 33)	656'	517' L	635'	75'	NO	CLEAR
39	CLOVERDALE RD	APPROACH (RWY 33)	563'	342' R	3989'	-123'	NO	NO OBSTRUCTION, REFERENCE ONLY
40	3 TREES	APPROACH (RWY 33)	592'	383' L	961'	20'	NO	CLEAR TREES
41	TREE GROUP	TRANSITIONAL (RWY 33)	601'	665' L	969'	-17'	NO	NO OBSTRUCTION, REFERENCE ONLY
42	FIR TREE	APPROACH (RWY 33)	633'	375' L	2153'	10'	NO	CLEAR TREES
43	CLOVERDALE RD	HORIZONTAL	581'	1945' L	3019'	-107'	NO	NO OBSTRUCTION, REFERENCE ONLY
44	FENCE	HORIZONTAL	575'	1993' L	3004'	-133'	NO	NO OBSTRUCTION, REFERENCE ONLY
45 ✱	BUILDING	TRANSITIONAL (RWY 33)	554'	280' L	360'	4'	YES	LIGHT
46 ✱	BUILDING	TRANSITIONAL (RWY 33)	554'	372' L	1290'	≤1	YES	LIGHT
47 ✱	BUILDING	TRANSITIONAL (RWY 33)	560'	320' L	1485'	13'	YES	LIGHT
48 ✱	BUILDING	TRANSITIONAL (RWY 15)	563'	385' R	1470'	6'	YES	LIGHT
49 ✱	BUILDING	TRANSITIIONAL (RWY 15)	563'	365' R	1325'	9'	YES	LIGHT
50 ✱	BUILDING	TRANSITIONAL (RWY 15)	563'	350' R	1075'	7'	YES	LIGHT
51 ✱	TERRAIN	CONICAL (RWY 33)	980'	6300' L	8700'	92'	NO	OBSTRUCTION LIGHT
52	PARKED AIRCRAFT	PRIMARY / TRANSITIONAL	560'	600'-2000' R	8700'	8' (TYP)	YES	RELOCATE PARKING
53	TOWER	NONE	1000'	6040' L	7171'	0'	NO	NO OBSTRUCTION, REFERENCE ONLY
54	TOWER	NONE	1089	6341' L	7241'	0'	NO	NO OBSTRUCTION, REFERENCE ONLY
55	TOWER	NONE	1666	12792' L	22422'	0'	NO	NO OBSTRUCTION, REFERENCE ONLY
56	TOWER	NONE	985	6979' R	8054'	0'	NO	NO OBSTRUCTION, REFERENCE ONLY
57	TOWER	NONE	845	20334' L	9849'	0'	NO	NO OBSTRUCTION, REFERENCE ONLY

NOTES:

1. EXISTING APPROACH SURFACES ARE DEPICTED FOR REFERENCE ONLY - UTILITY VISUAL (AV) PER FAR PART 77.25.
2. FUTURE/ULTIMATE AIRSPACE SURFACES REFLECT UTILITY NONPRECISION INSTRUMENT RUNWAY (ANP), PER FAR PART 77.25.
3. OBSTRUCTION HEIGHT AND LOCATION DATA BASED ON 8/03 OBSTRUCTION SURVEY PROVIDED BY W & H PACIFIC. OBSTRUCTIONS MARKED WITH AN ASTERISK (✱) ARE ESTIMATED - NO SURVEY DATA AVAILABLE.
4. THE APPROACH SURFACE FOR RUNWAY 33 DEPICTS AN ADDITIONAL DEFINED AREA BASED ON A 15° OFFSET. APPROACH PROCEDURE INTERSECTING THE EXTENDED RUNWAY CENTERLINE 3000 FEET FROM THE INNER EDGE OF THE STANDARD PART 77 APPROACH SURFACE.
5. IF 20:1 PENETRATORS ARE NOT REMOVED OR LIT, THEN SIAP NA AT NIGHT UNLESS VASI/PAPI USED. TERPS 251.
6. USGS TOPOGRAPHICAL CONTOUR MAPPING BASED ON NAVD 29. ALL OTHER ELEVATION DATA BASED ON SURVEY USING NAVD 88.

"THE PREPARATION OF THIS DOCUMENT MAY HAVE BEEN SUPPORTED, IN PART, THROUGH THE AIRPORT IMPROVEMENT PROGRAM FINANCIAL ASSISTANCE FROM THE FEDERAL AVIATION ADMINISTRATION (PROJECT NUMBER 3-41-0083-005)AS PROVIDED UNDER TITLE 49, UNITED STATES CODE, SECTION 47104. THE CONTENTS DO NOT NECESSARILY REFLECT THE OFFICIAL VIEWS OR POLICY OF THE FAA. ACCEPTANCE OF THIS REPORT BY THE FAA DOES NOT IN ANY WAY CONSTITUTE A COMMITMENT ON THE PART OF THE UNITED STATES TO PARTICIPATE IN ANY DEVELOPMENT DEPICTED THEREIN NOR DOES IT INDICATE THAT THE PROPOSED DEVELOPMENT IS ENVIRONMENTALLY ACCEPTABLE IN ACCORDANCE WITH APPROPRIATE PUBLIC LAWS."

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FEDERAL AVIATION ADMINISTRATION APPROVAL

APPROVAL DATE: _____

MANAGER, SEATTLE ADO

CITY OF CRESWELL APPROVAL

APPROVAL DATE: _____

SIGNATURE

CENTURY WEST ENGINEERING CORPORATION
6650 S.W. Redwood Lane, Suite 350
Portland, Oregon 97224
503-419-2130 phone ♦ 503-639-2710 fax
www.centurywest.com

DESIGNED BY:	DRAWN BY:	CHECKED BY:	SCALE:
DM	SLK	DM	AS SHOWN
DATE: NOVEMBER 2007		PROJECT NO: 41324002.01	

CITY OF CRESWELL HOBBY FIELD FAR PART 77 AIRSPACE PLAN

DRAWING NO.
▪

SHEET NO.
4 OF 5

LEGEND

LANE COUNTY, OR

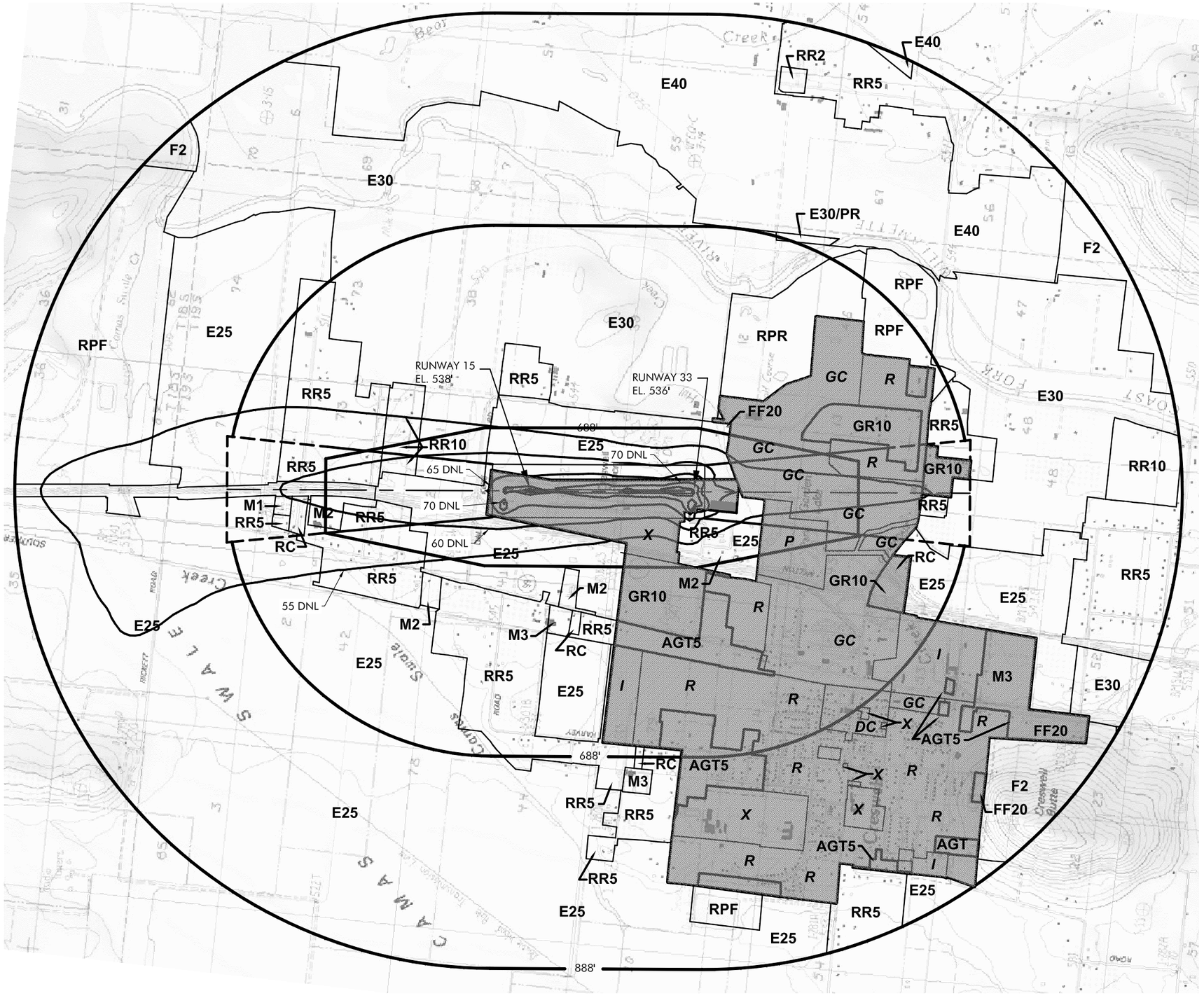
AGT	AGRICULTURE, GRAZING, TIMBER
AGT5	AGRICULTURE, GRAZING, TIMBER 5-ACRE MINIMUM
AO	AIRPORT OPERATIONS
E25	EXCLUSIVE FARM USE 25-ACRE MINIMUM
E30	EXCLUSIVE FARM USE 30-ACRE MINIMUM
E30/PR	EXCLUSIVE FARM USE 30-ACRE MINIMUM/ PARK AND RECREATION
E40	EXCLUSIVE FARM USE 40-ACRE MINIMUM
F2	IMPACTED FOREST LAND
FF20	FARM AND FORESTRY 20-ACRE MINIMUM
GR10	GENERAL RURAL 10-ACRE MINIMUM
M1	LIMITED INDUSTRIAL
M2	LIGHT INDUSTRIAL
M2/SR	LIGHT INDUSTRIAL/ RURAL INDUSTRIAL
M3	HEAVY INDUSTRIAL
RC	INDUSTRIAL PARK
RPF	RURAL PUBLIC FACILITY
RPR	RURAL PARK AND RECREATION
RR10	RURAL RESIDENTIAL 10-ACRE MINIMUM
RR2	RURAL RESIDENTIAL 2-ACRE MINIMUM
RR5	RURAL RESIDENTIAL 5-ACRE MINIMUM

CITY OF CRESWELL, OR

	CITY LIMITS
	URBAN GROWTH BOUNDARY
	2010 CONTOURS
GC	GENERAL COMMERCIAL
DC	DOWNTOWN COMMERCIAL
I	INDUSTRIAL
P	PARK AND OPEN SPACE
R	RESIDENTAL
X	PUBLIC FACILITY / GOVERNMENT

0 1000 2000
SCALE OF FEET
SCALE: 1"=1000'

MAGNETIC DEC.
17° 4' EAST
(2004 VALUE)



NOTE:

1. THE AIRPORT WAS ANNEXED INTO THE CRESWELL CITY LIMITS IN 2004. AIRPORT ZONING TO BE REVISED TO REFLECT CITY OF CRESWELL "AIRPORT" ZONING.

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APPROVAL DATE: _____
SIGNATURE

CITY OF CRESWELL APPROVAL
APPROVAL DATE: _____
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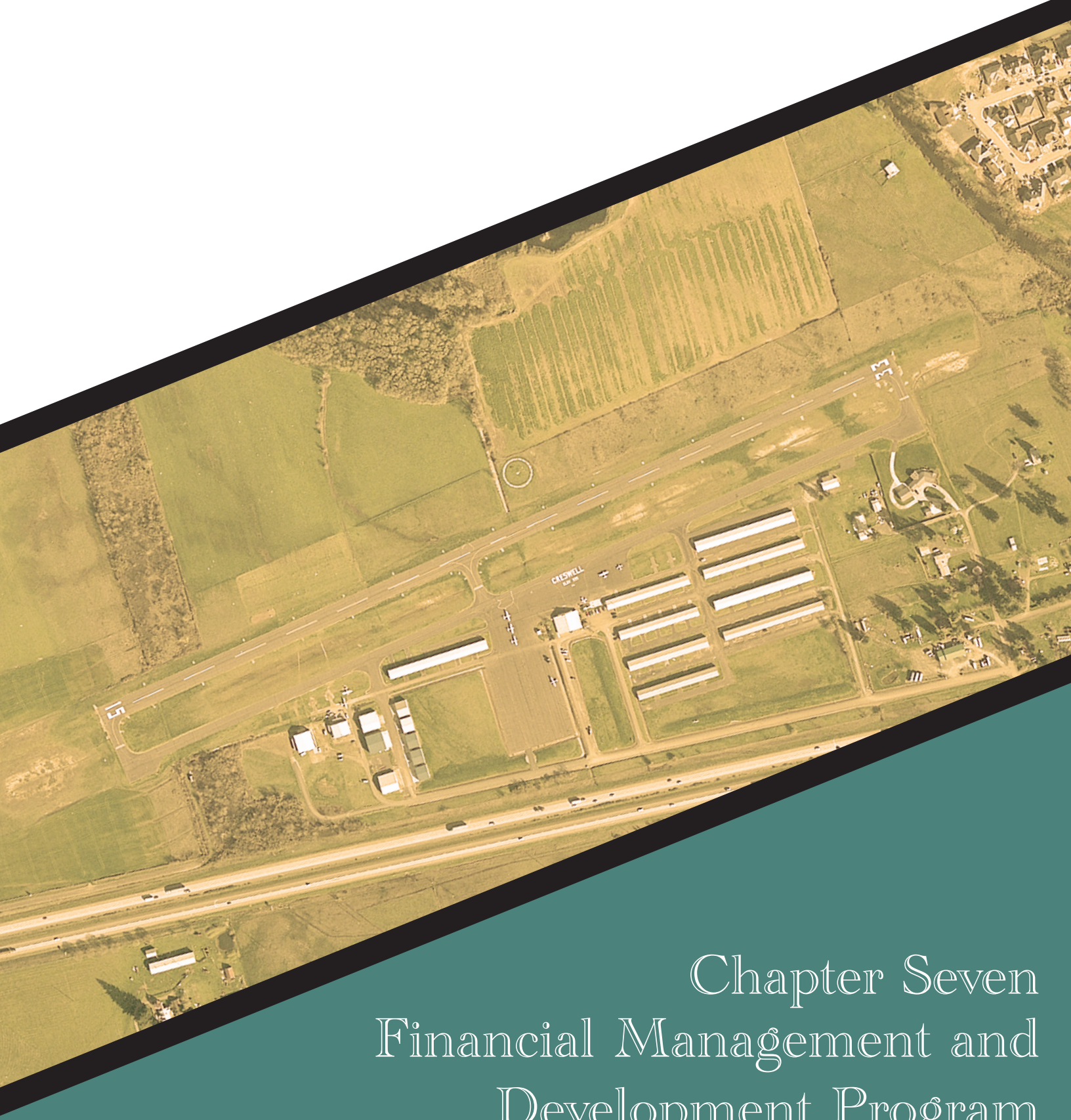
DESIGNED BY:	DRAWN BY:	CHECKED BY:	SCALE:
DM	SLK	DM	AS SHOWN
DATE: NOVEMBER 2007		PROJECT NO: 41324002.01	

CITY OF CRESWELL HOBBY FIELD
AIRPORT LAND USE PLAN AND 2010 NOISE CONTOURS

DRAWING NO. ▪

SHEET NO. 5 OF 5



Chapter Seven
Financial Management and Development Program

CHAPTER SEVEN
FINANCIAL MANAGEMENT AND DEVELOPMENT PROGRAM

The analyses conducted in the previous chapters have evaluated airport development need based on forecast activity and the associated facility requirements. One of the most important elements of the master planning process is the application of basic economic, financial and management rationale so that the feasibility of the implementation can be assured. The amount of local and outside funding (state, federal, etc.) that will be available during the current twenty-year planning cannot be guaranteed. In cases when the overall capital needs of an airport exceed available funding, projects will be deferred until funding can be obtained. In this situation, it is particularly important to establish and maintain priorities so that completion of the most essential improvements is assured.

Historically, the primary source of funding for major capital projects at the airport has been federal aviation trust fund monies with local matching funds provided by the City. Hangar construction, which has not been eligible for FAA funding in the past, has been funded largely by private tenants and the previous (private) owner of the airport. Utility improvements at the airport are also not typically eligible for FAA funding and have been locally funded. The planned extension of City water to the airport may be eligible for FAA funding based on the fire protection nature of the project.

The maintenance of airfield pavements ranges from very minor items such as crack filling to fog seals or patching. Minor pavement maintenance items such as crackfilling are not included in the capital improvement program, but will need to be undertaken by the City on an annual or semi-annual basis. The Pavement Management Program (PMP) managed by the Oregon Department of Aviation (ODA) provides funding assistance for airfield pavement maintenance on established multi-year cycles. This program is intended to preserve and maintain existing airfield pavements in order to maximize their useful lives and the economic value of the pavement. As noted earlier, several short-term pavement maintenance projects are identified for Hobby Field in the current PMP, which will require local matching funds.

AIRPORT DEVELOPMENT SCHEDULE AND COST ESTIMATES

The analyses presented in Chapters Three and Four, described the airport's overall development needs for the next twenty years. Estimates of project costs were developed for each project based on 2006 dollars. A 30 percent contingency overhead for engineering, administration, and unforeseen circumstances has been included in the estimated component and total costs. In future years, as the plan is carried out, these cost estimates can continue to assist management by adjusting the 2006-based figures for subsequent inflation. This may be accomplished by converting the interim change in the United States Consumer Price Index (USCPI) into a multiplier ratio through the following formula:

$$\frac{X}{I} = Y$$

Where:
X = USCPI in any given future year
Y = Change Ratio
I = Current Index (USCPI)

USCPI
201.60
(1982-1984 = 100)
December 2006

Multiplying the change ratio (Y) times any 2006-based cost figures presented in this study will yield the adjusted dollar amounts appropriate in any future year evaluation.

The following sections outline the recommended development program and funding assumptions. The scheduling has been prepared according to the facility requirements determined earlier. The projected staging of development projects is based upon anticipated needs and investment priorities. Actual activity levels may vary from projected levels; therefore, the staging of development in this section should be viewed as a general guide. When activity does vary from projected levels, implementation of development projects should occur when demand warrants, rather than according to the estimated staging presented in this chapter. In addition to major development projects, the airport will require regular facility maintenance.

A summary of development costs during the twenty-year capital improvement plan is presented in **Table 7-1**. The twenty-year CIP is divided between short-term and long-term projects. The table provides a listing of the major capital projects included in the twenty-year CIP, including

each project's eligibility for FAA funding. The FAA will not generally participate in vehicle parking, utilities, building renovations or projects associated with non-aviation developments. Some changes in funding levels and project eligibility were included in the current Airport Improvement Program (AIP) legislation (extends through FY 2007). FAA funding levels were increased to 95 percent, from the previous 90 percent funding level.

The general aviation entitlement funding level is currently established up to $150,000 per year, with a maximum rollover of four years. Projects such as hangar construction or fuel systems, which have not traditionally been eligible for funding, are currently eligible, although the FAA indicates that this category of project would be funded only if there were no other project needs at a particular airport. Based on the overall facility needs and anticipated levels of federal funding, it is recommended that the City development a financial strategy that is not exclusively dependent on use of FAA funds for new hangar construction. However, based on current FAA funding criteria, new T-hangar construction projects are listed in the CIP with 95 percent FAA funding.

The short-term phase of the capital improvement program includes the highest priority projects recommended during the first five years. Long-term projects are expected to occur beyond the next five years, although changes in demand or other conditions could accelerate or slow demand for some improvements. As with most airports, pavement related improvements represent the largest portion of CIP needs at Hobby Field during the current planning period.

Projects listed for 2006-207 are recently completed, underway or planned for the current year; any projects that cannot be completed in 2007 will be deferred to a future year.

City of Creswell
Hobby Field
2006-2026

20-YEAR CAPITAL IMPROVEMENT PROGRAM

Project	Qty.	Unit	Unit $	Total Cost*	FAA Eligible	Local
Phase I Projects (2006-2011)						
2006-2007						
Slurry Seal Runway; NPI Mkgs	20,700	SY	$4.00	$92,800	$88,160	$4,640
Slurry Seal Parallel Taxiway	14,200	SY	$4.00	$56,800	$53,960	$2,840
Slurry Seal Apron	19,200	SY	$4.00	$76,800	$72,960	$3,840
Slurry Seal South Hngr. Taxilanes	5,160	SY	$4.00	$20,640	$19,608	$1,032
Overlay/Reconstruct South Hngr. Taxilanes	3,420	SY	$45.00	$153,900	$146,205	$7,695
Slurry Seal North Hangar Taxilanes	3,450	SY	$4.00	$13,800	$13,110	$690
Subtotal				$414,740	$394,003	$20,737
Engineering & Contingency (30%)				*$124,422*	*$118,201*	*$6,221*
2006-2007 Total				**$539,162**	**$512,204**	**$26,958**
2008						
Airport Perimeter Fencing	4,000	LF	$18.00	$72,000	$68,400	$3,600
New South Hangar Area Taxilane; Fencing, Gate & Vehicle Parking	2,970	SY	$75.00	$237,750	$225,863	$11,888
Update Exhibit "A" drawing to depict current airport boundaries and acreages.	1	ea	$7,500	$7,500	$7,125	$375
Subtotal				$317,250	$301,388	$15,863
Engineering & Contingency (30%)				*$95,175*	*$90,416*	*$4,759*
2008- Total				**$412,425**	**$391,804**	**$20,621**
2009						
12-unit T-Hangar	1	ea	$280,000	$280,000	$266,000	$14,000
Subtotal				$280,000	$266,000	$14,000
Engineering & Contingency (30%)				*$84,000*	*$79,800*	*$4,200*
2009- Total				**$364,000**	**$345,800**	**$18,200**
2010						
REIL - Rwy 15 & 33 (in conjunction w/ IAP)	2	ea	$20,000	$40,000	$38,000	$2,000
PAPI - Rwy 33	1	ea	$60,000	$60,000	$57,000	$3,000
Construct East Airport Service Road (Gravel) & Environ.	3,100	LF	$40.00	$154,000	$146,300	$7,700
Subtotal				$254,000	$241,300	$12,700
Engineering & Contingency (30%)				*$76,200*	*$72,390*	*$3,810*
2010- Total				**$330,200**	**$313,690**	**$16,510**
2011						
Construct T-Hangar Taxilanes (North of Main Apron)	1,870	SY	$75.00	$140,250	$133,238	$7,013
Subtotal				$140,250	$133,238	$7,013
Engineering & Contingency (30%)				*$42,075*	*$39,971*	*$2,104*
2011- Total				**$182,325**	**$173,209**	**$9,116**
Total Phase I Projects				**$1,828,112**	**$1,736,706**	**$91,406**

Project	Qty.	Unit	Unit $	Total Cost*	FAA Eligible	Local
Phase II Projects (Years 2012-2016)						
Demo Existting T-Hangar (south of fuel area)	7,000	SF	$10.00	$70,000	$66,500	$3,500
Construct New Tiedown Area (south of fuel area)	4,230	SY	$75.00	$317,250	$301,388	$15,863
Slurry Seal Runway; NPI Mkgs. (Rwy 33 end)	20,700	SY	$4.00	$92,800	$88,160	$4,640
West Airport Access Road Extension (NW corner)	800	LF	$75.00	$60,000	$57,000	$3,000
West (Mid-Field) Hangar Access Road & Parking	550	LF	$40.00	$62,000	$58,900	$3,100
Overlay Main Apron	19,200	SY	$30.00	$576,000	$547,200	$28,800
Aircraft Wash Rack	1	ea	$25,000	$25,000	$23,750	$1,250
Slurry Seal Parallel Taxiway; repaint markings	14,200	SY	$4.00	$59,800	$56,810	$2,990
Slurry Seal South Hngr. Taxilanes	3,420	SY	$4.00	$13,680	$12,996	$684
Slurry Seal North Hangar Taxilanes	3,450	SY	$4.00	$13,800	$13,110	$690
Demo Existting T-Hangar (NE of Main Apron)	7,000	SF	$10.00	$70,000	$66,500	$3,500
Reconfigure Apron (new pvmt between main apron & P. Txy.	2,260	SY	$75.00	$169,500	$161,025	$8,475
Vehicle Parking (Mid-Field Hangar Area) (Gravel)	1,200	SY	$15.00	$38,000	$36,100	$1,900
8-unit T-Hangar	1	ea	$195,000	$195,000	$185,250	$9,750
Overlay South Hngr. Taxilanes	5,160	SY	$30.00	$154,800	$147,060	$7,740
Environmental Assessment (EA) (Runway Extension)	1	ea	$50,000	$50,000	$47,500	$2,500
Cultural Survey (north section of airport)	1	ea	$40,000	$40,000	$38,000	$2,000
Subtotal Phase II Projects				**$2,007,630**	**$1,907,249**	**$100,382**
Engineering & Contingency (30%)				**$602,289**	**$572,175**	**$30,114**
Total Phase II Projects				**$2,609,919**	**$2,479,423**	**$130,496**

City of Creswell
Hobby Field
2006-2026

20-YEAR CAPITAL IMPROVEMENT PROGRAM

Phase III Projects (Years 2017-2026)						
Slurry Seal South Hngr. Taxilanes	3,420	SY	$4.00	$13,680	$12,996	$684
Overlay South Hngr. Taxilanes	5,160	SY	$30.00	$154,800	$147,060	$7,740
Runway & Parallel Txy. Extension (500 feet); MIRL	5,200	SY	$75.00	$415,000	$394,250	$20,750
PAPI - Rwy 15 (replacement)	1	ea	$60,000	$60,000	$57,000	$3,000
Slurry Seal Apron	19,200	SY	$4.00	$76,800	$72,960	$3,840
Mid-Field (New/Reconfigured N-S Taxilane)	1,056	SY	$75.00	$79,200	$75,240	$3,960
8-unit T-Hangar	1	ea	$195,000	$195,000	$185,250	$9,750
Overlay Parallel Taxiway (see note 4)	14,200	SY	$30.00	$426,000	$302,460	$123,540
Main Apron Reconfiguration (reloc tiedowns; mkgs)	1	LS	$24,000	$24,000	$22,800	$1,200
Terminal Area/Airfield Drainage	1	LS	$150,000	$150,000	$142,500	$7,500
Terminal Area Roadway & Parking Reconfig. (Paved)	570	LF	$75.00	$42,750	$40,613	$2,138
Terminal Area Vehicle Parking (Phase 1) (Gravel)	2,000	SY	$15.00	$65,000	$61,750	$3,250
Terminal Area Vehicle Parking (Phase 2) (Gravel)	3,000	SY	$15.00	$80,000	$76,000	$4,000
North Hangar Area (New E-W Taxilane & Stubs)	1,690	SY	$75.00	$161,750	$153,663	$8,088
Overlay Runway; NPI Mkgs. (Rwy 33 end)	20,700	SY	$30.00	$631,000	$599,450	$31,550
8-unit T-Hangar	1	ea	$195,000	$195,000	$185,250	$9,750
Slurry Seal Hangar Taxilanes (2017-2026)	18,000	SY	$4.00	$72,000	$68,400	$3,600
Airport Beacon (replacement)	1	ea	$15,000	$15,000	$14,250	$750
North Hangar Area (New N-S Taxilane)	2,040	SY	$75.00	$188,000	$178,600	$9,400
Vehicle Parking (North Hangar Area) (Gravel)	3,000	SY	$15.00	$80,000	$76,000	$4,000
Parallel Taxiway Edge Reflectors	3,600	LF	$3.00	$10,800	$10,260	$540
Slurry Seal Hangar Taxilanes (2017-2026)	18,000	SY	$4.00	$72,000	$68,400	$3,600
Slurry Seal Runway; NPI Mkgs. (Rwy 33 end)	24,000	SY	$4.00	$106,000	$100,700	$5,300
Slurry Seal Parallel Taxiway	16,800	SY	$4.00	$67,200	$63,840	$3,360
Slurry Seal Apron	19,200	SY	$4.00	$76,800	$72,960	$3,840
Subtotal Phase III Projects				**$3,457,780**	**$3,182,651**	**$275,129**
Engineering & Contingency (30%)				**$1,037,334**	**$954,795**	**$82,539**
Total Phase III Projects				**$4,495,114**	**$4,137,446**	**$357,668**
TOTAL PROJECTS (All Phases)				**$8,933,145**	**$8,353,576**	**$579,569**

notes:

1. Pavement maintenance projects may be partially funded through ODA PMMP. Projects are listed in CIP, since ODA funding availability is not guaranteed.

2. Specific years identified for pavement related projects are intended only as a guideline based on typical pavement maintenance requirements.

3. T-hangar construction projects are shown as AIP-eligible based on current program guidelines. Hangars are low funding priorities with FAA and would generally be considered only when no higher facility needs exist.

4. Existing parallel taxiway is 35 feet wide, which exceeds ADG I standard (25 feet). A cost benefit evaluation will be done before the next major pavement rehabilitation project to evaluate costs for maintaining current dimension or reconfiguring taxiway to 25-foot width. For long-term planning purposes, it is assumed that FAA participation will be limited to 25-foot width and the City would fund the remaining 10 feet of taxiway width (or reconfigure taxiway to 25 feet wide)

Creswell Airport Projects

New Construction

1. Runway Extension (60' x 500')
2. Parallel Txy Extension (25' x 500')
3. MIRL (Rwy Extension - 500 LF)
4. PAPI (Rwy 15 replacement)
5. PAPI (Rwy 33) (in conjunction with IAP)
6. REILS (Rwy 15&33 in conj, w/ IAP)
7. Main Apron Hangar Taxilanes (3)
8. Main Apron Tiedown Reconfiguration
9. Demo Existing T-hangar (east end apron) & new pavement
10. Demo Existing T-hangar (south of Fuel)
11. Light AC Tiedowns (south of fuel)
12. South T-hangar Taxilane
13. Mid-Field Taxilane Reconfig
14. E-W North Hangar Taxilane Connector & Stubs
15. North Hangar Area North Taxilane Extension
16. East Airport Service Road
17. Mid-Field Hangar Access Road & Parking Improvements
18. West Airport Access Road Extension (north connection)
19. Terminal Area Access Road Reconfiguration
20. Terminal Area Vehicle Parking Reconfiguration
21. Vehicle Parking Areas (Gravel) - north hangar; south hangar, main apron.
22. Property Acquistion (SW primary sfc, ofz)
23. Taxiway Edge Reflectors
24. Replace Airport Beacon
25. Airfield Drainage Improvements
26.

Pavement Maintenace/Rehab

Runway	Slurry Seals	2006-07; 2017; 2022	
	Overlay	2012	
P Txy	Slurry Seals	2006-07; 2015; 2020; 2025	
	Overlay	2010	
Apron	Slurry Seals	2006-07; 2015; 2020; 2025	
	Overlay	2009	
S Hng Txl	Slurry Seals	2006-07	south stubs (4); north stubs (2)
	Overlay/Reconstruct	2006-07	center txl; north stubs (3)
	Overlay	2008-2025	south stubs (4); north stubs (2)
	Slurry Seals	2008-2025	center txl; north stubs (3)
N Hng Txl	Slurry Seals	2006-07	all
	Overlay	2012-17	all

Short-Term Projects

The majority of short-term projects at Hobby Field are pavement-related items. The pavement surface courses on Runway 15/33, the parallel taxiway, the main apron and most taxilanes are now approaching 20 years old and will require rehabilitation in the current planning period. These surfaces will require slurry or fog seals early in the planning period. An area of south hangar taxilanes is recommended for overlay and partial reconstruction in the current airport pavement management program (listed as a 2006-2007 project). It is noted that any of the 2006-2007 projects not completed by the end of 2007 have been deferred and should be among the highest priorities beginning in 2008.

New markings will be required on all pavements when they are sealcoated. The planned upgrade from visual to nonprecision instrument approach capabilities will require a future upgrade in runway markings, which should be conducted in conjunction with other pavement maintenance.

Recommended new construction items include the development of a taxiway to serve the south hangar area. The new taxiway will be located on the south side of the hangar development and will connect the parallel taxiway to the north-south hangar stub taxilanes. This project will require acquisition of approximately .5 acres of property. An updated Exhibit “A” property plan is recommended to accurately depict airport property boundaries and acreages.

A section of new hangar taxilane will also be added to serve the southwest-most hangar rows (currently unoccupied). The construction of T-hangar taxilanes extending from the north edge of the tiedown apron is also included as a short term project. The timing of development for new hangars on the airport will be dependent on market demand and the timing of other necessary improvements (surface access, site preparation, taxiway access, etc.). Minor site preparation (grading, etc.) will be required for the north hangar area. Construction of a 12-unit T-hangar (locally funded) is included among the short term projects. The City will further evaluate hangar construction options to address the financial feasibility of airport-funded versus privately-funded construction.

Other short term improvements include adding a Precision Approach Path Indicator (PAPI) to the Runway 33 end. Adding Runway End Identifier Lights (REIL) is included in the short term program to provide upgraded runway end recognition in conjunction with a new instrument approach procedure. The airport security fencing and vehicle gate project will also be completed.

Construction of an internal airport access road around the north end of the runway is included in a short-term project to provide access to the east side of the airport. This roadway was originally proposed to eliminate the practice of crossing the runway and parallel taxiway to access a

parachute drop area beyond the east side of the airport. This drop area has recently been closed, although the long-term use of the airport for skydiving operations is uncertain at this time. However, the internal access road will be used to provide access for airport maintenance and emergency vehicles.

Long-Term Projects

The recommended long-term projects at Hobby Field include the following:

- Airfield pavement preservation, resurfacing and reconstruction. This includes periodic slurry seals for all airfield pavements on a six-year cycle. Asphalt overlays will be required for any existing pavements not rehabilitated in the short-term period. These include the existing north and south hangar taxilanes/taxiways, main apron, parallel taxiway and the runway.
- Demo two existing T-hangars as part of landside redevelopment.
- Construct new light aircraft parking south of fuel area.
- Extend west airport access road to serve the northwest landside area; connect to Dale Kuni Road.
- Add new access taxilanes and hangar taxilanes to serve new development areas.
- Construct hangars based on market demand in developed areas; expand development areas based on demand.
- Conduct environmental review for northwest landside area development based on FAA requirements (NEPA Environmental Assessment (EA), Categorical Exclusion Report, cultural survey, etc.).
- Site preparation of north hangar area, extend utilities and surface access in phases based on demand.
- 500-foot extension of the runway and parallel taxiway (north end)
- Redevelop septic drain field in conjunction with sanitary sewer service to airport; reconfigure terminal area access road and vehicle parking; commercial hangar site preparation.

Pavement related projects listed in the CIP are listed in relative priority based on a general timeline. The actual timing for these projects may need to be periodically adjusted based on the City's need to accelerate or defer projects based on a variety of considerations. The specific years listed are intended to provide a general guide for project planning and illustrate the repetitive nature and substantial investment required in maintaining airfield pavements.

FINANCING OF DEVELOPMENT PROGRAM

Federal Grants

A primary source of potential funding identified in this plan is the Federal Airport Improvement Program (AIP). AIP funds are distributed through grants administered by the Federal Aviation Administration (FAA). Funds from the AIP program are derived from the Aviation Trust Fund, which is the depository for all federal aviation taxes collected on such items as airline tickets, aviation fuel, lubricants, tires, aircraft registrations, and other aviation-related fees. These funds are distributed under appropriations set by Congress to all airports in the United States that have certified eligibility.

Under current FAA guidelines, the City receives 95 percent participation on eligible projects. Hobby Field is eligible under the AIP to receive discretionary grants and general aviation entitlement grants. Under the current authorization, the airport may receive up to $150,000 per year in the GA entitlement grants. The future availability of the GA non-primary entitlement funding is dependent on congressional reauthorization and may change during the planning period. However, based on current legislation, these grants have become a very significant source of FAA funding for general aviation airports. Airports may combine up to four years of GA entitlement funding for projects. FAA Discretionary grants are also available to fund larger projects that require additional funding.

The constraints of AIP funding availability will dictate in large part, the actual schedule for completing airport improvement projects through the planning period. As a result, some projects included in the twenty-year CIP may be deferred beyond the twenty-year time frame.

As currently defined, approximately 94 percent of the airport's twenty-year CIP will be eligible for AIP funding, although the overall cost exceeds current FAA annual funding levels by a considerable margin. It should be noted that T-hangar construction, not historically funded through the use of FAA grants, accounts for approximately 10 percent of the total twenty-year CIP. Future FAA funding levels are subject to change, and it is anticipated that annual levels may increase in future legislation.

Regardless of the precise federal funding levels in future years, FAA grants will clearly be a significant source of capital project funding at Hobby Field during the current planning period. As such, it is necessary for the City to develop a reliable financial strategy, capable of generating sufficient revenues to match available FAA grants in order to effectively implement all or a significant portion of the twenty-year CIP.

Based on the current AIP funding formula, the City needs to generate a minimum of $7,500 per year to match (5%) and effectively leverage the current $150,000 GA entitlement grants. This annual capital expenditure is over and above the maintenance and operation (M&O) costs associated with the airport. A significant increase in AIP funding levels has been proposed in the legislation being negotiated in 2007. A potential increase in overall funding levels and a potential increase in local matching requirements (10% was proposed) could significantly increase the annual financial burden on the airport. However, such an increase in FAA funding levels would be in line with the projected facility needs at Hobby Field during the current planning period.

State Funding

The Oregon Department of Aviation (ODA) manages a pavement maintenance funding program to enable regularly-scheduled investment in airfield pavements. The program funds pavement maintenance and associated improvements (crack filling, repair, sealcoats, etc.), which have not traditionally been eligible for FAA funding. The PMP may also be expanded to include pavement overlays. ODA also provides limited funding assistance through its Financial Assistance to Municipalities (FAM) grant program. FAM grants are available for amounts up to $25,000 per year, with varying levels of local match required.

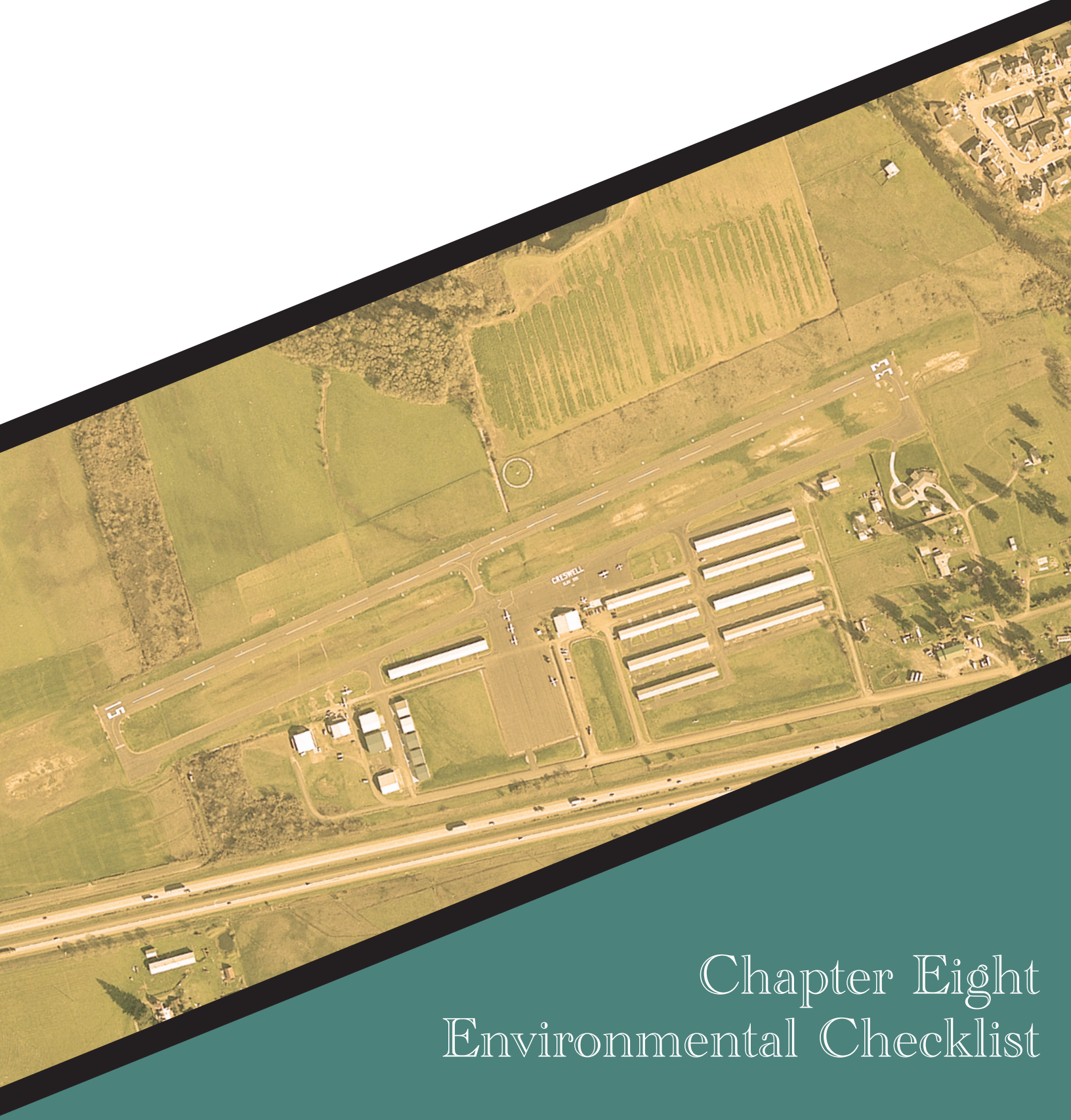
Financing the Local Share of Capital Improvements

As currently defined, the locally-funded portion of the CIP is approximately 6 percent. For local airport sponsors, one of the most challenging aspects of financial planning is generating enough revenue to match available state or federal grants for large projects. FAA AIP grants usually represent the single largest source of funding for major capital projects. As currently defined, the local share (match) for projects included in the twenty year planning period is estimated to be just under $580,000, which includes the local match for AIP-funded projects and non-eligible vehicle parking areas.

As noted earlier, recent changes in AIP legislation allow some FAA funding to be used for hangar construction, however, this type of development is considered to be a much lower priority than airfield improvement projects. The FAA has indicated that they would consider a funding request only in cases where there were no other higher priority project needs outstanding. However, based on current FAA funding criteria, new T-hangar construction projects are listed in the CIP with 95 percent FAA funding. In the event that the City cannot access FAA funds for hangar construction, the local share of the CIP could increase by more than $1 million through the twenty-year planning period (assuming all hangars are constructed).

The ability of the City of Creswell to fund hangar construction is unknown at this time, although airport management has expressed an interest in owning T-hangars on the airport as a source of additional airport revenue. As with any development project, airport management must evaluate the cost and revenue potential, and the associated risks of investment (variable vacancy rates, etc.) when making its decision.

In the event that hangar construction is not funded by the City or through use of FAA grants, the local share of the CIP would be reduced significantly. It is recognized that hangar rental provides the most significant revenue-generation potential to most small airports, however, the risks associated with property ownership and management fall squarely on the airport sponsor.



Chapter Eight
Environmental Checklist

CHAPTER EIGHT
ENVIRONMENTAL CHECKLIST
INTRODUCTION

The purpose of the Environmental Checklist is to identify any physical, social and environmental conditions of record which may affect the ability to undertake future improvements at Hobby Field. Compared to an Environmental Assessment (EA) or Environmental Impact Statement (EIS), the project scope for this review is limited, and focuses on gathering and summarizing information of record from the applicable local, state and federal sources pertaining to the existing conditions of the subject site and its environs. The research does not involve extensive professional interpretation of the information, in-depth analyses, or the more comprehensive follow-up correspondence and inquiries with affected agencies and persons that is normally associated with an EA or EIS.

All research activities, including correspondence, data collection and documentation, proceeded under the provisions of FAA Order 5050.4A, The Airport Environmental Handbook, which is intended to implement the requirements of Sections 1505.1 and 1507.3 of the National Environmental Policy Act (NEPA). This report briefly addresses each potential impact category identified by Order 5050.4A as to be investigated under the EIS or EA processes, and is comprised of a narrative and table summarizing the consultant's findings under each investigation heading or potential impact category. In instances where a particular potential environmental impact type does not appear to exist or apply to the subject project, the table is noted accordingly, and little or no discussion appears in the narrative section of the report.

Included below is a brief summary of the impact categories in which potentially significant impacts were identified, or appear to be possible, and where notable ecological or social conditions appear pertinent to the future development of this facility.

LAND USE

As discussed in Chapter Two of this report, the airport is located at the northeast corner of Creswell, within the Creswell Urban Growth Boundary (UGB) and city limits, in Lane County, Oregon. The eastern edge of the airport coincides with the Creswell UGB and city limits that follows Dale Kuni Road. The areas located beyond the north end of the airport, and east and west

of the airport's north end are outside the UGB, within Lane County jurisdiction. An island of county-zoned land is located within the UGB, immediately south-southwest of the runway end. Land uses and zoning abutting the airport are described in **Table 8-1**. An updated Airport Land Use Plan drawing, depicting current zoning, is provided in Chapter Six.

City of Creswell

Land Use

The **Creswell Plan Designations** map illustrates comprehensive plan land use designations within the UGB. The airport has a **Public Facilities/Government** land use designation; areas immediately southeast of the airport have **Commercial** land use designations and a **Resort Commercial Subzone**. Other areas southeast of the airport (at the southeast corner of the UGB) have **Residential** land use designations. The western side of the airport abuts U.S. Interstate 5 (I-5), which effectively divides Creswell into two sections (west and east of the interstate). Recent development of commercial and residential property has been heavily concentrated southeast of the airport, near the Emerald Valley Golf Course, which has increased land use densities in the area. The land use designations located near the west side of the airport, abutting the west side of I-5, are **Industrial** and **Residential**. To the south and southwest of the airport, the land uses are mixed and include residential, commercial, industrial, and open space/parks, much of which is within the Creswell UGB.

The southeast corner of the airport is located within the boundaries of a **Flood Hazard Subzone** associated with Hill Creek and the Coast Fork of the Willamette River. A short section of Hill Creek defines the boundary between the airport and a nearby residential development on the north side of St. Andrews Loop. It appears that the developed portions of the airfield (runway and parallel taxiway, etc.) are located beyond the floodplain boundary.

An **Airport Noise Impact Area** is depicted on current mapping, extending from the south end of the airport in a semi-circle, east to Dale Kuni Road and west beyond I-5. This zone appears to correspond to the standard left airport traffic patterns for the runway (for those portions located within the UGB).

Zoning

The **Creswell Zoning Map** illustrates zoning designations within the city limits. Areas located outside the city limits, but within the UGB are subject to Lane County zoning regulations. The zoning designations for Creswell are very similar to the comprehensive plan land use designations.

Hobby Field is zoned **Public Facilities/Government District** (City of Creswell Development Code (Chapter 2.6), with the exception of a small area located outside the city limits and UGB. Airports and related activities are included among the outright permitted uses in the zone. The portion of the airport located in Lane County jurisdiction has airport related zoning (A-O).

The City of Creswell Development Code (Chapter 2.8) defines the **Airport (A) Overlay Zone** that includes an Approach Safety Zone; Substantial Noise Zone; Moderate Noise Zone; and Obstruction Zone. The overlay zones outline permitted uses and conditional uses by zone and guidance on obstruction control, removal and marking. This zone generally corresponds to the Lane County **Airport Safety Combining Zone (AS-RCP)** defined in the Rural Comprehensive Plan (Lane Code 16.246) based on the airport's FAR Part 77 airspace surfaces.

The areas immediately southeast of the airport are zoned **General Commercial** with areas of **Residential** zoning located near the southeast corner of the city limits/UGB. It is noted that the residential area located nearest to the airport (beginning 600 feet from the end of Runway 33) is within the General Commercial zone; it appears that the residential development was approved prior to current zoning being applied or through conditional use permit. The area located immediately beyond the south end of the airport is not included in the Creswell city limits or UGB and is zoned by Lane County (rural residential and manufacturing). Further south, is an area of **Parks, Recreation, and Open Space** zoning (Garden Lake Park). Zoning for adjacent areas located on the west side of I-5 include **Industrial**, **Residential** and **General Commercial**.

The **Flood Hazard Subzone** depicted on the zoning map is defined as a **Flood Plain (FP) Overlay** in the City of Creswell Development Code (Chapter 2.7). As noted earlier, a small section of the flood plain overlay is located on the southeast corner of the airport.

Lane County

Land uses surrounding the northern half of Hobby Field and along its entire eastern edge, are predominantly rural and agricultural related (Lane County Exclusive Farm Use and Rural Residential land use designations). The majority of EFU designated land is zoned **E-25**, which has a minimum lot size of 25 acres. The most common rural residential designated land is zoned **RR-5**, a low density zone which has a minimum of 5 acre lots.

Current mapping shows two large islands of land not included in the UGB, including an area immediately south-southwest of the airport and an area near the southeast corner of the UGB. The area abutting the airport has **Rural Residential (RR-5)** and **Manufacturing (M2)** county zoning.

The Lane Code (Chapter 16.246) establishes **Airport Safety Combining Zone (/AS-RCP)** within the framework of the Rural Comprehensive Plan (RCP) for Hobby Field and the four other public-use general aviation airports in Lane County. As noted in the code, "*[the zone] is intended to safeguard land uses adjacent to these airports from noise and hazards associated with aircraft operations and to protect existing use and potential expansion of the airport itself from incompatible development.*" Based upon dimensions of the Runway 15/33 FAR Part 77 imaginary surfaces, the Airport Safety Combining Zone would extend approximately 1.7 miles beyond the airport over Lane County zoned lands in all directions from each runway end.

TABLE 8-1: SUMMARY OF LAND USE AND ZONING IN VICINITY OF AIRPORT

Land Use	Zoning
Airport Site:	City of Creswell – Public Facilities /Government
North: Agriculture (NW/N/NE) Rural Residential (NW/NE) Dale Kuni Road	 Lane County Rural Residential - 5 Acre Minimum (RR-5), Lane County Exclusive Farm Use - 25 Acre Minimum (E-25)
South: Rural Residential (S) Limited Industrial Uses (SW) Residential (SE) Commercial, Golf Resort (SE) Agriculture (SE) Garden Lake Park (S) Cloverdale Road	 Lane County Rural Residential - 5 Acre Minimum (RR-5) Lane County Manufacturing (M2) City of Creswell - General Commercial (GC) City of Creswell - General Commercial (GC) Lane County Exclusive Farm Use - 25 Acre Minimum (E-25) City of Creswell – Park/Open Space
East: Agriculture Rural Residential (NE) Commercial, Residential, Golf Resort (SE) Dale Kuni Road	 Lane County Exclusive Farm Use - 25 Acre Minimum (E-25) Lane County Rural Residential - 5 Acre Minimum (RR-5) City of Creswell - General Commercial (GC)
West: Interstate 5 Agriculture (NW) Industrial (W/SW) Residential (SW) Mixed Commercial, Industrial (W) Commercial (SW)	 Lane County Exclusive Farm Use - 25 Acre Minimum (E-25) City of Creswell –Industrial City of Creswell – Residential Lane County Manufacturing (M2, M3), Commercial (C3) City of Creswell - General Commercial (GC)

Oregon Revised Statutes (ORS) Chapter 836.600 through 836.630 addresses the appropriate zoning and protection of Oregon's airports and their surroundings. Under the statute, height restrictive zoning and, to some extent, use-restrictive zoning, are indicated as necessary components affecting land uses in the immediate vicinity of a public airport. An Airport Overlay Zone, which protects necessary airspaces and limits incompatible uses in proximity to an airfield, is the primary means of ensuring the compatibility of surrounding land uses with operations of a general aviation runway. It appears that the existing overlay zones created by the Creswell and Lane County meet the state guidelines.

Following completion of the airport master plan and airport layout plan update, the City and Lane County should ensure that overlay zoning mapping is updated, as needed, to be consistent with current airport planning.

NOISE EVALUATION

Noise is sometimes defined as unwanted sound. However, sound is measurable, whereas noise is subjective. The relationship between measurable sound and human irritation is the key to understanding aircraft noise impact. A rating scale has been devised to relate sound to the sensitivity of the human ear. The A-weighted decibel scale (dBA) is measured on a "log" scale, by which is meant that for each increase in sound energy level by a factor of 10, there is a designated increase of 1 dBA. This system of measurement is used because the human ear functions over such an enormous range of sound energy impacts. At a psychological level, there is a rule of thumb that the human ear often "hears" an increase of 10 decibels as equivalent to a "doubling" of sound.

The challenge to evaluating noise impact lies in determining what amount and what kind of sound constitutes noise. The vast majority of people exposed to aircraft noise are not in danger of direct physical harm. However, much research on the effects of noise has led to several generally accepted conclusions:

- The effects of sound are cumulative; therefore, the duration of exposure must be included in any evaluation of noise.
- Noise can interfere with outdoor activities and other communication.
- Noise can disturb sleep, TV/radio listening, and relaxation.
- When community noise levels have reached sufficient intensity, community wide objection to the noise will likely occur.

Research has also found that individual responses to noise are difficult to predict[31]. Some people are annoyed by perceptible noise events, while others show little concern over the most disruptive events. However, it is possible to predict the responses of large groups of people – i.e. communities. Consequently, community response, not individual response, has emerged as the prime index of aircraft noise measurement.

On the basis of the findings described above, a methodology has been devised to relate measurable sound from a variety of sources to community response. It has been termed "Day-Night Average Sound Level" (DNL) and has been adopted by the U. S. Environmental Protection Agency (EPA), the Department of Housing and Urban Development (HUD), and the Federal Aviation Administration (FAA) for use in evaluating noise impacts. In a general sense, it is the yearly average of aircraft-created noise for a specific location (i.e., runway), but includes a calculation penalty for each night flight.

[31] Beranek, Leo, *Noise and Vibration Control*, McGraw-Hill, 1971, pages ix-x.

The basic unit in the computation of DNL is the sound exposure level (SEL). An SEL is computed by mathematically summing the dBA level for each second during which a noise event occurs. For example, the noise level of an aircraft might be recorded as it approaches, passes overhead, and then departs. The recorded noise level of each second of the noise event is then added logarithmically to compute the SEL. To provide a penalty for nighttime flights (considered to be between 10 PM and 7 AM), 10 dBA is added to each nighttime dBA measurement, second by second. Due to the mathematics of logarithms, this calculation penalty is equivalent to 10-day flights for each night flight[32].

A DNL level is approximately equal to the average dBA level during a 24-hour period with a weighing for nighttime noise events. The main advantage of DNL is that it provides a common measure for a variety of different noise environments. The same DNL level can describe an area with very few high noise events as well as an area with many low level events.

Noise Modeling and Contour Criteria

DNL levels are typically depicted as contours. Contours are an interpolation of noise levels drawn to connect all points of a constant level, which are derived from information processed by the FAA-approved computer noise model. They appear similar to topographical contours and are superimposed on a map of the airport and its surrounding area. It is this map of noise levels drawn about an airport, which is used to predict community response to the noise from aircraft using that airport. DNL mapping is best used for comparative purposes, rather than for providing absolute values. That is, valid comparisons can be made between scenarios as long as consistent assumptions and basic data are used for all calculations. It should be noted that a line drawn on a map by a computer does not imply that a particular noise condition exists on one side of the line and not on the other. These calculations can only be used for comparing average noise impacts, not precisely defining them relative to a specific location at a specific time.

Figure 8-1 illustrates the 2005 and 2010 noise contours that were generated from data contained in the FAA-approved airport activity forecasts contained in Chapter Three. The noise contours are plotted in 5 DNL increments starting at 55 DNL. The size and shape of the contours is consistent with the airport's runway utilization and overall volume of aircraft traffic. Runway 33

[32] Where Leq ("Equivalent Sound Level") is the same measure as DNL without the night penalty incorporated, this can be shown through the mathematical relationship of:

$$Leq_d = 10 \log \left(\frac{N_d \times 10^{(SEL/10)}}{86{,}400} \right) \quad Leq_n = 10 \log \left(\frac{N_n \times 10^{((SEL+10)/10)}}{86{,}400} \right)$$

If SEL equals the same measured sound exposure level for each computation, and if N_d = 10 daytime flights, and N_n = 1 night-time flight, then use of a calculator shows that for any SEL value inserted, $Leq_d = Leq_n$.

is the primary landing and departure runway, which results in contours extending beyond the end of Runway 15 over a longer distance, reflecting the flatter climb profiles of aircraft takeoff. Under federal guidelines, all land uses, including residential, are considered compatible with noise exposure levels of 65 DNL and lower.

2005 Airport Noise Contours

The 2005 55 DNL noise contour extends approximately 8,800 feet beyond the end of Runway 15 and approximately 4,000 feet beyond the end of Runway 33. Portions of the 2005 60 DNL contour extends beyond airport property beyond both runway ends and along the sides of the runway and the relatively narrow airport property area. At the Runway 15 end, the 60 DNL contour extends approximately 3,900 feet beyond the runway end over an unpopulated agricultural area. At the Runway 33 end, the 60 DNL extends approximately 700 feet beyond the runway.

The 65 DNL contour ends approximately 400 feet beyond the north end of the runway; the 65 DNL contour extends approximately 100 to 150 feet beyond the south end of the runway, although areas of the contour appears to extend over adjacent rural residential properties located in close proximity to the sides of Runway 33. The 2005 70 and 75 DNL noise contours are largely contained within airport property, although a small portion of the 70 DNL contour appears to extend laterally off airport property, west of the aircraft holding area located at the end of Runway 33.

The area located beyond the north end of the runway consists of predominantly agricultural and sparsely populated lands. The area south of the runway is developed in mixed uses including rural residential, medium density residential, commercial, industrial, and park/open space. The northern-most homes in a recently-developed residential neighborhood appear to be located within the 2005 55 DNL noise contour, approximately 600 to 800 feet (southwest) from the end of Runway 33. Several residences located nearest the runway and aircraft holding/run-up area at the end of Runway 33 (west side) appear to be within the 60 or 65 DNL contour.

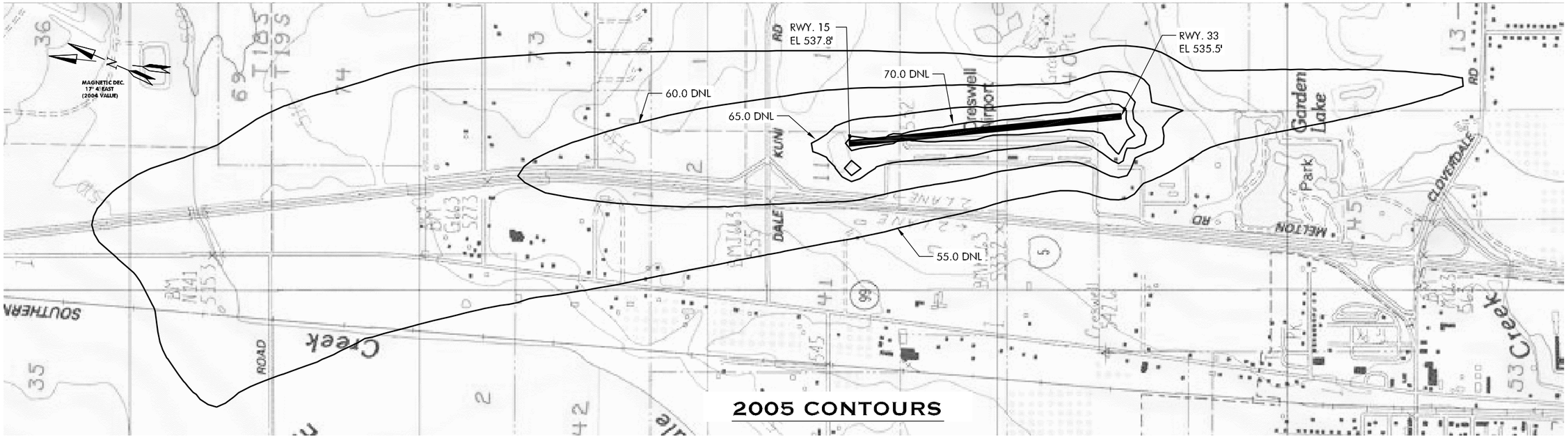
Aside from the close-in residential development near the south end of the runway, no other areas of significant noise exposure and land use incompatibility appear to exist within the areas defined by the noise contours based on federal land use compatibility standards. Although limited areas of residential development exist, the sparse development patterns in the vicinity of the airport appear to have prevented significant levels of aircraft noise exposure to densely populated areas. Local planning authorities should discourage land use patterns that would increase population densities in the vicinity of the airport, particularly beneath the runway approach surfaces or in close proximity to the runway. As noted later in the chapter, all land uses, including residential, are considered to be compatible with a DNL of 65 and below. Residential development within

the 65 DNL and higher noise contour is not recommended. The large areas of 55 and 60 DNL contours that extend north of the airport should be used to guide future land use; based on State of Oregon noise guidelines, residential development is discouraged but not prohibited, in areas of 55 or 60 DNL.

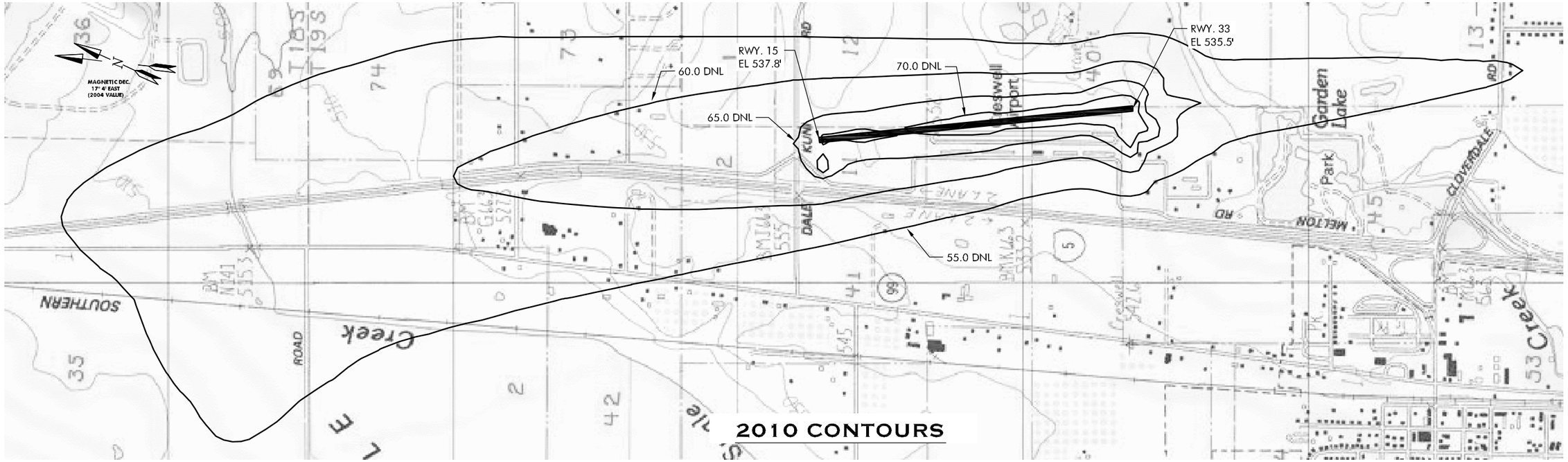
The sparsely developed land uses in the vicinity of the airport suggest that noise compatibility will not be a significant issue during the planning period. However, since perceived noise impacts are not limited to areas with significant levels of noise, care should be taken by local land use authorities to avoid creating potential long-term land use incompatibilities in the vicinity of the airport by permitting development of incompatible land uses such as residential subdivisions within areas of moderate or higher noise exposure, particularly beneath the runway approach surfaces. An area of particular concern is the currently un-annexed property located immediately south of the airport. Increasing the density of residential development in this area is not recommended and any future annexation into the City of Creswell should ensure that its development is compatible with airport operations.

2010 Airport Noise Contours

The 2010 noise contours are similar in size and shape to the 2005 contours and reflect the modest increase in forecast air traffic and change in runway length. The runway configuration assumed for the 2010 noise contour modeling is 3,600 feet, based on a planned 500-foot extension at the north end of the runway. As a result of the runway extension, all noise contours are shifted approximately 500 feet further north based on new location of the runway end, in addition to slight increases based on increased traffic volumes. The 2010 55 DNL contour extends approximately 8,900 feet north of the future runway end and 4,600 feet south of the runway. The 2010 60 DNL contour extends approximately 4300 feet north of the future runway end and 800 feet south of the runway. The 2010 65 DNL noise contour extends just north of Dale Kuni Road, off airport property. The 70 DNL and 75 DNL contours are largely unchanged from the 2005 contours, although the areas increase slightly due to modest increases in air traffic.



2005 CONTOURS



2010 CONTOURS

0 600 1200
SCALE OF FEET
SCALE: 1"=600'

CENTURY WEST
ENGINEERING CORPORATION

CRESWELL-HOBBY FIELD AIRPORT MASTER PLAN

NOISE CONTOURS

FIGURE NO.

8-1

Noise and Land-Use Compatibility Criteria

Federal regulatory agencies of government have adopted standards and suggested guidelines relating DNL to compatible land uses. Most of the noise and land-use compatibility guidelines strongly support the concept that significant annoyance from aircraft noise levels does not occur outside a 65 DNL noise contour. Federal agencies supporting this concept include the Environmental Protection Agency, Department of Housing and Urban Development, and the Federal Aviation Administration.

Part 150, Airport Noise Compatibility Planning, of the Federal Aviation Regulations, provides guidance for land-use compatibility around airports. **Table 8-2** presents these guidelines. Compatibility or non-compatibility of land use is determined by comparing the noise contours with existing and potential land uses. All types of land uses are compatible in areas below 65 DNL. Generally, residential and some public uses are not compatible within the 65-70 DNL, and above. As noted in **Table 8-2**, some degree of noise level reduction (NLR) from outdoor to indoor environments may be required for specific land uses located within higher-level noise contours. Land uses such as commercial, manufacturing, some recreational uses, and agriculture are compatible within 65-70 DNL contours.

TABLE 8-2: LAND-USE COMPATIBILITY WITH DNL

Land Use	Yearly Day-Night Average Sound Level (DNL) In Decibels					
	Below 65	65-70	70-75	75-80	80-85	Over 85
Residential						
Residential, other than mobile homes & transient lodgings	Y	N(1)	N(1)	N	N	N
Mobile Home Parks	Y	N	N	N	N	N
Transient Lodgings	Y	N(1)	N(1)	N(1)	N	N
Public Use						
Schools	Y	N(1)	N(1)	N	N	N
Hospitals and Nursing Homes.	Y	25	30	N	N	N
Churches, Auditoriums, and Concert Halls	Y	25	30	N	N	N
Governmental Services	Y	Y	25	30	N	N
Transportation	Y	Y	Y(2)	Y(3)	Y(4)	Y(4)
Parking	Y	Y	Y(2)	Y(3)	Y(4)	N
Commercial Use						
Offices, Business and Professional.	Y	Y	25	30	N	N
Wholesale and Retail—Building Materials, Hardware and Farm Equipment	Y	Y	Y(2)	Y(3)	Y(4)	N
Retail Trade--General	Y	Y	25	30	N	N
Utilities	Y	Y	Y(2)	Y(3)	Y(4)	N
Communication	Y	Y	25	30	N	N
Manufacturing and Production						
Manufacturing General	Y	Y	Y(2)	Y(3)	Y(4)	N
Photographic and Optical	Y	Y	25	30	N	N
Agriculture (except livestock) and Forestry	Y	Y(6)	Y(7)	Y(8)	Y(8)	Y(8)
Livestock Farming and Breeding	Y	Y(6)	Y(7)	N	N	N
Mining and Fishing, Resource Production and Extraction	Y	Y	Y	Y	Y	Y
Recreational						
Outdoor Sports Arenas, Spectator Sports	Y	Y(5)	Y(5)	N	N	N
Outdoor Music Shells, Amphitheaters	Y	N	N	N	N	N
Nature Exhibits and Zoos	Y	Y	N	N	N	N
Amusements, Parks, Resorts and Camps	Y	Y	Y	N	N	N
Golf Courses, Riding Stables and Water Recreation	Y	Y	25	30	N	N

Y (Yes)	Land-use and related structures compatible without restrictions.
N (No)	Land-use and related structures are not compatible and should be prohibited.
NLR	Noise Level Reduction (outdoor to indoor) to be achieved through incorporation of noise attenuation into design and construction of the structure.
25, 30 or 35	Land uses and structures generally compatible; measures to achieve NLR or 25, 30, or 35 dB must be incorporated into design and construction of the structure.

NOTES:

1. Where the community determines that residential uses must be allowed, measures to achieve outdoor to indoor Noise Levels Reduction (NLR) of at least 25dB and 30dB should be incorporated into building codes and be considered in individual approvals. Normal residential construction can be expected to provide a NLR of 20 dB; thus, the reduction requirements are often stated as 5, 10, or 15 dB over standard construction and normally assume mechanical ventilation and closed windows year-round. However, the use of NLR criteria will not eliminate outdoor noise problems.
2. Measures to achieve NLR of 25 dB must be incorporated into the design and construction of portions of these buildings where the public is received, office areas, noise sensitive areas, or where the normal noise level is low.
3. Measures to achieve NLR of 30 dB must be incorporated into the design and construction of portions of these buildings where the public is received, office areas, noise sensitive areas, or where the normal noise level is low.
4. Measures to achieve NLR of 35 dB must be incorporated into the design and construction of portions of these buildings where the public is received office areas, noise sensitive areas, or where the normal noise level is low.
5. Land-use compatible, provided special sound reinforcement systems are installed.
6. Residential buildings require an NLR of 25.
7. Residential buildings require an NLR of 30.
8. Residential buildings not permitted.

SOURCE: Federal Aviation Regulations, Part 150, Airport Noise Compatibility Planning, dated January 18, 1985.

OTHER ENVIRONMENTAL CONSIDERATIONS

A summary of the environmental checklist items and preliminary findings is presented in **Table 8-3**, at the end of the chapter. A brief description of areas of interest is provided below.

Air Quality

Information from the Lane Regional Air Protection Agency (LRAPA) web page indicates that air quality in the area is officially rated as "good." No significant increase over existing levels of air and/or surface traffic is anticipated under the Preferred Alternative. No adverse impact is anticipated in regard to air quality.

Water Quality

Water quality impacts are always a concern with any construction project, and especially when considering uses and sites where potentially hazardous materials, such as aviation fuel, fire retardants, de-icing agents, and/or agricultural chemicals are involved. The Oregon Department of Environmental Quality (DEQ) routinely recommends for airport projects that, at a minimum, investigations be performed which document past agricultural spraying practices, aviation fuel storage facilities, and other potential sources for adverse water quality impacts associated with past, present and potential future activities at the site. Agricultural and/or forestry-related chemical operators and airport sponsors must ensure that wash down, collection, treatment and storage areas and devices comply with Oregon Administrative Rule (OAR) 340-109 and all applicable environmental standards.

If any wastewater is currently being distributed to a septic drain field, OAR 340-044 may apply, and may require an Underground Injection Control (UIC) permit from DEQ. In addition to the requirement for securing wastewater permits for washing, maintenance, or deicing areas, the sponsor must secure a National Discharge Elimination System (NPDES) Permit for any project affecting one acre or more of land, and keep current NPDES permits on hand for discharging any storm water runoff.

The airport's existing storm water drainage system consists of open ditches and culverts that collect and dispense storm water to low-lying areas that drain into Hill Creek and Garden Lake. Upgrades in the storm water drainage system to include replacing open ditches with underground pipe and culverts are expected to improve stormwater management on the site. During construction, adherence to the applicable local, state, and federal regulations and standards; observance of DEQ's "Best Management Practices for Storm Water Discharges Associated with Construction Activities" (2000); and compliance with the guidelines of FAA Advisory Circular 150/5370-10, are all advised to further protect against adverse water quality impacts.

Cultural Resources

In response to a request for information related this project, the Oregon Parks and Recreation Department (State Historic Preservation Office – SHPO) indicates that there is no record of previous cultural surveys being completed within the proposed project area. However, SHPO indicates that cultural sites are known to exist in the surrounding area, stating *"the project area is located on a landform generally perceived to have a high probability for possessing archaeological sites and buried human remains."* SHPO also indicates that portions the north end of the airport identified for future hangar construction on the preferred alternative *"…appear to have a very high likelihood of significant sites being present."* The agency recommends that a qualified archaeologist conduct a cultural resource survey of these areas. Ancestral lands for the Confederated Tribes of the Siletz and the Confederated Tribes of the Grand Rhone, extend from Northern California throughout western Oregon, which includes portions of the Willamette Valley. Tribal coordination is conducted by FAA as part of formal environmental reviews required for all FAA-funded airport development projects, consistent with the requirements of the National Historic Preservation Act of 2000 (as amended).

If historic or cultural resources are discovered during construction anywhere on the airport, the sponsor is responsible for immediately notifying SHPO, the Tribes, and the other appropriate authorities. Work would be required to be halted until the physical extent and relative cultural significance of the resource(s) could be identified, and a protection plan developed and implemented, if warranted.

Flora and Fauna

No response to mailings concerning this project was received by Oregon Department of Fish and Wildlife (ODFW). Protection of surface waters from adverse impacts of development, including but not limited to silting and sedimentation, and obtaining a comprehensive inventory of the storage of hazardous waste materials on-site, to protect against surface water contamination, typically list as the primary concerns discussed by ODFW in a setting such as the subject.

Threatened & Endangered Species

A search of the database of the Oregon Natural Heritage Information Center (ONHIC) revealed 14 records within a two-mile radius of the project site (airport). It appears that the majority of these items are not located on the actual airport site, although biological site assessments will be required to evaluate proposed development areas. As indicated in the ONHIC documentation, *"…the lack of rare element information for a given area does not mean that there are no significant elements there, only that there is no information known to us from the site. To assure that there are no important elements present, you* [the airport] *should inventory the site, at the appropriate season."*

The database lists several species of flora and fauna which are species of concern, listed threatened or endangered, by the State of Oregon or federal government, and which may occur in the project vicinity. The ONHIC database identifies the following items within a 2-mile radius of Hobby Field:

- Bald Eagle, *Haliaeetus leucocephalus;* (federal and state status "Listed Threatened")
- Chinook salmon, (upper Willamette River ESU, spring run), *Oncorhynchus tshawytscha pop. 23;* (federal status "Listed Threatened")
- Oregon chub (2 records), *Oregonichthys crameri;* (federal status "Listed Endangered" state status "Sensitive-Critical")
- Townsend's big-eared bat, *Corynorhinus townsendii;* (federal status "Species of Concern" state status "Sensitive-Critical")
- Northern Pacific pond turtle (4 records); *Actinemys marmorata marmorata;* (federal status "Species of Concern" state status "Sensitive-Critical")
- Bradshaw's lomatium (3 records), *Lomatium bradshawii*; (federal and state status "Listed Endangered")
- Willamette Valley daisy, *Erigeron decumbens var. decumbens*; (federal and state status "Listed Endangered")
- White-topped aster, *Aster curtus*; (federal status "Species of Concern" state status "Listed Threatened")

The ONHIC database report provides additional detail concerning these plants and animals; copies of the report will be provided to the airport sponsor and FAA, but at the request of ONHIC, the data is considered confidential and is not to be distributed.

A Biological Assessment is required for "construction projects (or other undertakings having similar physical impacts) which are major federal actions significantly affecting the quality of the human environment as defined in the National Environmental Policy Act (NEPA) (42 U.S.C. 4332 (2) (c))." For projects other than major construction activities, the USFWS suggests that biological evaluations similar to a Biological Assessment be prepared to determine whether they may affect listed and proposed species. As noted above, a biological evaluation should be conducted for the airport site to protect the sponsor against liability associated with potential impacts upon these and / or other sensitive species.

Wetlands

According to a review of the US Fish and Wildlife Service's National Wetlands Inventory (NWI), a small area of wetlands is mapped near the northwest corner of Hobby Field. The

wetlands are Palustrine ("fresh open water") and are associated with the low-lying forested area located immediately north of northern-most hangars and adjacent to east side of I-5. The NWI map identifies the following code for the wetland: **PFO1W**: (P) Palustrine; (FO1) Forested, Broad-Leaved Deciduous; (W) Intermittently Flooded/Temporary. This area is proposed for long-term development of hangars and an extension of the west airport access road. Formal wetland delineation will be required to define the actual boundaries of the wetland and confirm the general information provided on the NWI mapping.

Riverine wetlands (related to rivers, creeks, or streams) are mapped near the southeast corner of the airport where Hill Creek feeds into Garden Lake: **R2OWZ**: (R) Riverine; (2) Lower Perennial; (OW) Open Water; (Z) Intermittently Exposed/Permanent. This area coincides with flood plain overlay zone identified on City of Creswell mapping. No development is planned in this portion of the airport.

Additional areas of Palustrine wetlands are identified on the NWI maps associated with the ponds located east of the airport and west of Dale Kuni Road. These adjacent parcels have been identified for potential airport acquisition for long term development reserves. It appears that development within defined wetlands could be avoided or minimized.

As a safe harbor approach, it is generally recommended that development maintain a minimum of thirty to fifty foot setback from wetlands of these types, if feasible. Development activities which would impact a wetland resource by filling or removing greater than fifty cubic yards of materials must be preceded by any necessary permit(s) from the Oregon Division of State Lands (DSL) and/or US Army Corps of Engineers (ACOE), as applicable.

Floodplain

The 100-year floodplain associated with Hill Creek and the Coast Fork of the Willamette River affect the extreme southeastern corner of the airport property; this area is located within the mapped City of Creswell Flood Plain (FP) overlay. No development is planned within the floodplain.

Soils

Soil survey information for Lane County indicates that the soils found in the vicinity of the airport are predominantly silty loams, consistent with the general characteristics of the broad flood plains of the valley floor.[33] These areas are characterized by "nearly level, excessively drained to very poorly drained soils on flood plains." The most common soil types mapped in the immediate vicinity of the airport include: Noti loam; Linslaw loam; Holcomb silty clay loam; Salem gravely silt loam; and Salkum silt loam, 2 to 6 percent slopes.

Farmland

No conversion of farmland is contemplated under the preferred alternative. Because no farmlands are proposed to be committed or otherwise involved in the Preferred Alternative, the Farmland Protection Policy Act (FPPA) does not apply.

Construction Management

Silt fences, runoff diversion tactics, and storm water detention are commonly implemented in similar construction projects, and should be utilized for any project on the airport in order to minimize adverse impacts of development related activities. FAA Advisory Circular 150/5370-10 provides additional measures which are advised to be implemented to minimize adverse impacts of airport construction activities. In addition, DEQ's 2000 publication "Best Management Practices for Storm Water Discharges Associated with Construction Activities" should be followed during all phases of the project. Please see the above-related discussion regarding water quality impacts.

Social/Socioeconomic Impacts

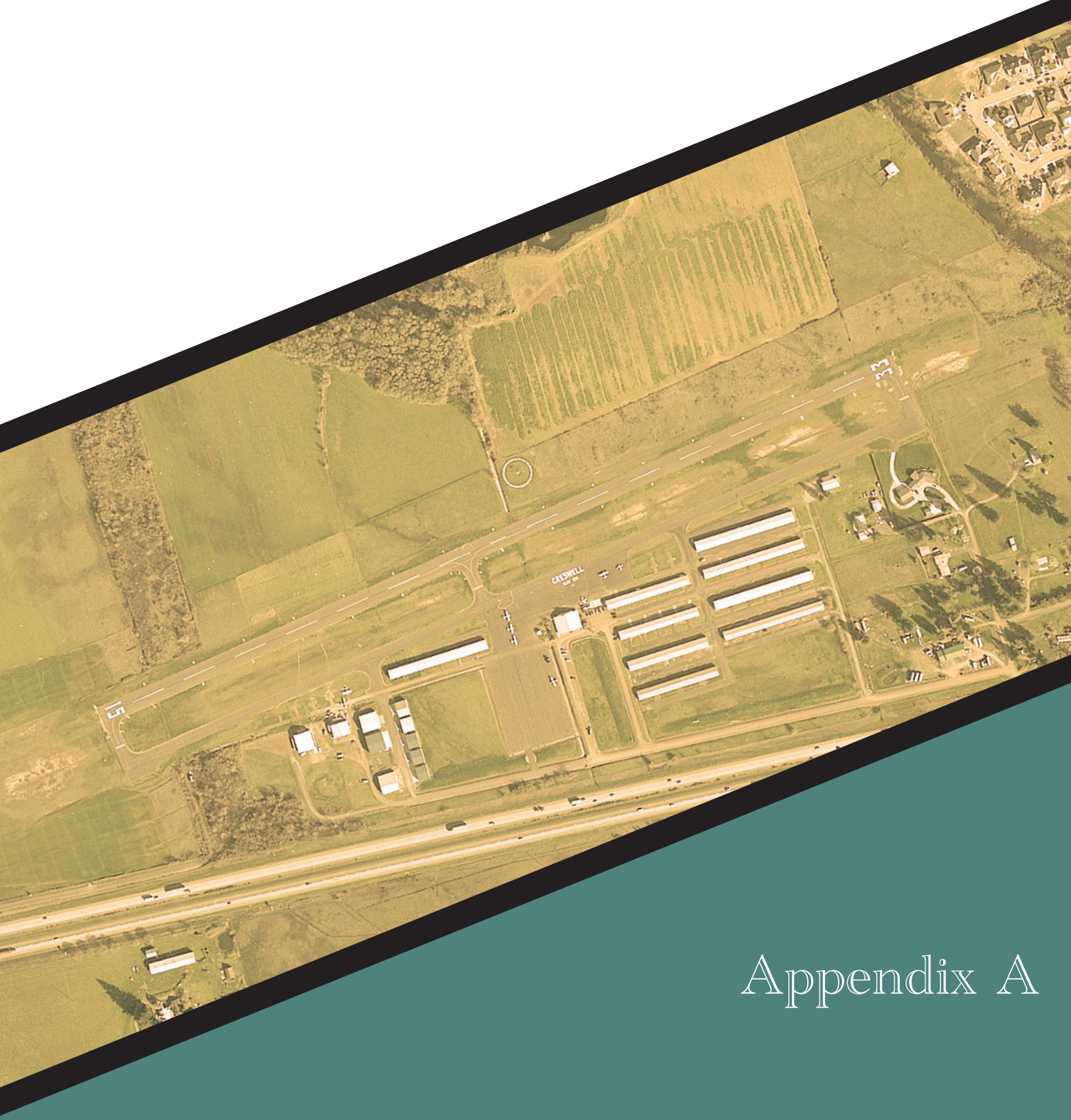
Hobby Field has historically been utilized for business, commercial, government, and recreation purposes. Improvements will accrue positive social and socio-economic impacts through the creation of jobs and enhancement of the performance of the facility.

[33] Lane County Soil Survey. Natural Resources Conservation Service (September 1987)

Potential Impact Category	TABLE 8-3: HOBBY FIELD ENVIRONMENTAL CHECKLIST Existing Conditions / Comments	Further Action Needed?
Noise	No significant areas of population within 65 DNL and higher noise contours. Local land use authorities should control residential development in the vicinity of the airport (within the noise impact area: 55DNL +) to minimize future incompatible land uses (see below).	YES
Compatible Land Use	Local governments have adopted Airport Overlay Zoning to protect Hobby Field from incompatible land uses. Future uses in the vicinity should have the burden of demonstrating compatibility with aviation and compliance with ORS Ch. 836.600-630.	YES
Social / Socio-Economic	Expected to be positive, as is typical with airport projects.	NO
Air Quality	Area is in attainment for air quality; no change in current conditions is anticipated.	NO
Water Quality	Any wastewater distributed to a septic drain field may require Underground Injection Control (UIC) permit from DEQ. DEQ requires surface storm water runoff be contained, treated, prior to discharge to any natural drainage system, water body. NPDES Permit; maintaining maximum physical separation between construction and sensitive waterways, adherence to FAA Advisory Circular 150/5370-10 required. Document to DEQ, ODWF any chemicals stored on site. For fuel or agricultural chemical storage and handling, see Water Quality section of this Environmental Checklist, observe compliance with DEQ requirements. Surface water quality is of concern.	YES
Special Land Uses, DOT Act Section 4(f)	No parks, recreation areas, or refuge areas per this section affected.	NO
Historic, Architectural, Archaeological, and Cultural Resources	Known cultural sites located in close proximity to airport. Agency recommends cultural survey be completed for north end of airport, prior to development.	YES

Potential Impact Category	TABLE 8-3: HOBBY FIELD ENVIRONMENTAL CHECKLIST Existing Conditions / Comments	Further Action Needed?
Biotic Communities	ODFW concerned primarily with water quality impacts as they relate to nearby creeks. See Construction Impacts, Water Quality sections of Environmental Checklist narrative.	YES
Endangered and Threatened Species	Several Threatened, Endangered, and Species of Concern were identified as occurring in vicinity. A Biological Evaluation is recommended. Please see narrative.	YES
Wetlands	According to National Wetlands Inventory Maps produced by the USFWS, jurisdictional wetlands likely to be located on airport site; wetland delineation is recommended.	YES
Floodplain	Avoidance, where feasible, of development activities in flood plain is advised. Where unavoidable, comply with local and federal permitting and construction requirements.	YES
Shoreline Management	Not Applicable to this facility.	NO
Coastal Barriers	Not Applicable to this facility.	NO
Wild and Scenic Rivers	Not Applicable to this facility.	NO
Farmland	Public airport improvement projects on private lands are exempt from Farmland Protection Policy Act (FPPA).	NO
Energy Supply and Natural Resources	No adverse impacts anticipated.	NO
Light Emissions and Glare	No hazards reported by local planners or operators, upon inquiry. No analysis of existing light emissions which might pose potential hazards to aviation performed. Ongoing urban development in vicinity of south end of the runway will require adequate mitigation of glare to avoid hazard to aircraft.	POSSIBLE

Potential Impact Category	TABLE 8-3: HOBBY FIELD ENVIRONMENTAL CHECKLIST Existing Conditions / Comments	Further Action Needed?
Solid Waste Impacts	Creeks, other surface and ground water systems must be considered and protected from contamination during the handling of waste materials. Development under the Preferred Alternative would not considerably increase production of waste at the facility, except during construction phase.	YES
Construction Impacts	Temporary impacts will accrue during construction phase. Of particular concern is any runoff which might make its way to local waterways, surface or groundwater flow, or other means. Adherence to the provisions of FAA Advisory Circular 150/5370-10 should preclude foreseeable adverse impacts.	YES



Appendix A

Template for Summarizing and Documenting Airport Planning Forecasts

Note: Base Yr. is 2004 (estimated actual) +1-, +5-, +10- and +15-year forecasts listed in table below correspond to forecast years 2005, 2010 (+6), 2015 (+11), and 2020 (+16

A. Forecast Levels and Growth Rates

AIRPORT NAME: Creswell Municipal Airport - Hobby Field **Specify base year:** 2004

	Base Yr. Level	Base Yr. + 1yr.	Base Yr. + 5yrs.	Base Yr. + 10yrs.	Base Yr. + 15yrs.	Average Annual Compound Growth Rates: Base yr. to +1	Base yr. to +5	Base yr. to +10	Base yr. to +15
Passenger Enplanements									
Air Carrier	0	0	0	0	0	0.0%	0.0%	0.0%	0.0%
Air Taxi/Commuter	500	525	600	675	720	5.0%	3.1%	2.8%	2.3%
TOTAL	500	525	600	675	720	5.0%	3.1%	2.8%	2.3%
Operations									
Itinerant									
Air carrier	0	0	0	0	0	0.0%	0.0%	0.0%	0.0%
Air Taxi	333	350	400	450	480	5.1%	3.1%	2.8%	2.3%
Air Cargo	0	0	0	0	0	0.0%	0.0%	0.0%	0.0%
Total Commercial Operations	333	350	400	450	480	5.1%	3.1%	2.8%	2.3%
General aviation	19,447	20,410	23,269	26,360	28,049	5.0%	3.0%	2.8%	2.3%
Military	0	0	0	0	0	0.0%	0.0%	0.0%	0.0%
Local									
General aviation	13,187	13,840	15,779	17,874	19,019	5.0%	3.0%	2.8%	2.3%
Military	0	0	0	0	0	0.0%	0.0%	0.0%	0.0%
TOTAL OPERATIONS	32,967	34,600	39,448	44,684	47,548	5.0%	3.0%	2.8%	2.3%
Instrument Operations (see note A)	**0**	0	200	400	500	0.0%	421.0%	162.0%	96.6%
Peak Hour Operations	25	26	29	32	35	4.0%	2.5%	2.3%	2.1%
Cargo/mail (enplaned+deplaned tons)	no data	no data	no data	no data	no data	no data	no data	no data	no data
Based Aircraft (see note B)									
Single Engine (Nonjet)	96	98	114	121	127	2.1%	2.9%	2.1%	1.8%
Multi Engine (Nonjet)	3	3	3	2	2	0.0%	0.0%	-3.6%	-2.5%
Jet Engine (includes all turbine AC)	0	0	0	1	3	0.0%	0.0%	52.0%	42.8%
Helicopter	0	1	1	2	2	9900.0%	115.4%	61.9%	39.3%
Other	0	2	2	2	2	19900.0%	141.8%	61.9%	39.3%
TOTAL	99	104	120	128	136	5.0%	3.3%	2.4%	2.0%

B. Operational Factors

	Base Yr. Level	Base Yr. + 1yr.	Base Yr. + 5yrs.	Base Yr. + 10yrs.	Base Yr. + 15yrs.
Average aircraft size (seats)					
Air carrier	0.0	0.0	0.0	0.0	0.0
Air Taxi	3.5	3.5	3.5	3.5	3.5
Average enplaning load factor					
Air carrier	0.0%	0.0%	0.0%	0.0%	0.0%
Air Taxi	43.0%	43.0%	43.0%	43.0%	43.0%
GA operations per based aircraft	330	329	325	346	346

Note: Show base plus one year if forecast was done. If planning effort did not include all forecast years shown interpolate years as needed, using average annual compound growth rates.

NOTE: Right hand side of worksheet has embedded formulas for average annual compound growth rate calculations.

Note A: Airport had no instrument approach capabilities in 2004-2005; RNAV (GPS) IAP assumed to be in place before 2010

Note B: Higher growth in Based Aircraft projected during initial 5 year period based on elimination of existing hangar construction moratorium in 2006.

Template for Comparing Airport Planning and TAF Forecasts

AIRPORT NAME: Creswell Municipal Airport - Hobby Field (77S)

	Year	Airport Forecast	TAF	AF/TAF (% Difference)
Passenger Enplanements				
Base yr.	2004	0	0	n/a
Base yr. + 1yrs.	2005	0	0	n/a
Base yr. + 5yrs.	2010	0	0	n/a
Base yr. + 10yrs.	2015	0	0	n/a
Base yr. + 15yrs.	2020	0	0	n/a
Base yr. + 20yrs.	2025	0	0	n/a
Commercial Operations (all Air Taxi)				
Base yr.	2004	333	800	-58.4%
Base yr. + 1yrs.	2005	350	800	-56.3%
Base yr. + 5yrs.	2010	400	800	-50.0%
Base yr. + 10yrs.	2015	450	800	-43.8%
Base yr. + 15yrs.	2020	480	800	-40.0%
Base yr. + 20yrs.	2025	510	0	n/a
Total Operations				
Base yr.	2004	32,967	28,894	14.1%
Base yr. + 1yrs.	2005	34,600	29,366	17.8%
Base yr. + 5yrs.	2010	39,448	31,731	24.3%
Base yr. + 10yrs.	2015	44,684	34,096	31.1%
Base yr. + 15yrs.	2020	47,548	36,462	30.4%
Base yr. + 20yrs.	2025	50,595	0	n/a

NOTES: TAF data is on a U.S. Government fiscal year basis (October through September).
AF/TAF (% Difference) column has embedded formulas.

Appendix B

CRESWELL MUNICIPAL AIRPORT – HOBBY FIELD (77S)
RUNWAY 15/33

AIRPORT DESIGN AIRPLANE AND AIRPORT DATA

Aircraft Approach Category B
Airplane Design Group I (Small Airplanes Exclusively)
Airplane wingspan . . . . . 48.99 feet
Primary runway end approach visibility minimums are not lower than 1 mile
Other runway end approach visibility minimums are not lower than 1 mile
Airplane undercarriage width (1.15 x main gear track) . . . 14.95 feet

RUNWAY AND TAXIWAY WIDTH AND CLEARANCE STANDARD DIMENSIONS

	Airplane Group/ARC	
Runway centerline to parallel runway centerline simultaneous operations when wake turbulence is not treated as a factor:		
VFR operations with no intervening taxiway		700 feet
VFR operations with one intervening taxiway		700 feet
VFR operations with two intervening taxiways		700 feet
IFR approach and departure with approach to near threshold		2500 feet less 100 ft for each 500 ft of threshold stagger to a minimum of 1000 feet.
Runway centerline to parallel runway centerline simultaneous operations when wake turbulence is treated as a factor:		
VFR operations		2500 feet
IFR departures		2500 feet
IFR approach and departure with approach to near threshold . .		2500 feet
IFR approach and departure with approach to far threshold		2500 feet plus 100 feet for each 500 feet of threshold stagger.
IFR approaches		3400 feet
Runway centerline to parallel taxiway/taxilane centerline .	149.5	150 feet
Runway centerline to edge of aircraft parking	125.0	125 feet
Runway width		60 feet
Runway shoulder width		10 feet
Runway blast pad width		80 feet
Runway blast pad length		60 feet
Runway safety area width		120 feet
Runway safety area length beyond each runway end or stopway end, whichever is greater		240 feet
Runway object free area width		250 feet
Runway object free area length beyond each runway end or stopway end, whichever is greater		240 feet
Clearway width		500 feet
Stopway width		60 feet
Obstacle free zone (OFZ):		
Runway OFZ width		250 feet
Runway OFZ length beyond each runway end		200 feet
Inner-approach OFZ width		250 feet
Inner-approach OFZ length beyond approach light system		200 feet
Inner-approach OFZ slope from 200 feet beyond threshold . . .		50:1
Inner-transitional OFZ slope		0:1

Runway protection zone at the primary runway end:

Width 200 feet from runway end	250 feet
Width 1200 feet from runway end	450 feet
Length	1000 feet

Runway protection zone at other runway end:

Width 200 feet from runway end	250 feet
Width 1200 feet from runway end	450 feet
Length	1000 feet

Departure runway protection zone:

Width 200 feet from the far end of TORA	250 feet
Width 1200 feet from the far end of TORA	450 feet
Length	1000 feet

Threshold surface at primary runway end:

Distance out from threshold to start of surface	0 feet
Width of surface at start of trapezoidal section	250 feet
Width of surface at end of trapezoidal section	700 feet
Length of trapezoidal section	2250 feet
Length of rectangular section	2750 feet
Slope of surface	20:1

Threshold surface at other runway end:

Distance out from threshold to start of surface	0 feet
Width of surface at start of trapezoidal section	250 feet
Width of surface at end of trapezoidal section	700 feet
Length of trapezoidal section	2250 feet
Length of rectangular section	2750 feet
Slope of surface	20:1

Taxiway centerline to parallel taxiway/taxilane centerline	68.8	69 feet
Taxiway centerline to fixed or movable object	44.3	44.5 feet
Taxilane centerline to parallel taxilane centerline	63.9	64 feet
Taxilane centerline to fixed or movable object	39.4	39.5 feet
Taxiway width	25.0	25 feet
Taxiway shoulder width		10 feet
Taxiway safety area width	49.0	49 feet
Taxiway object free area width	88.6	89 feet
Taxilane object free area width	78.8	79 feet
Taxiway edge safety margin		5 feet
Taxiway wingtip clearance	19.8	20 feet
Taxilane wingtip clearance	14.9	15 feet

REFERENCE: AC 150/5300-13, Airport Design, including Changes 1 through 4.

CRESWELL MUNICIPAL AIRPORT – HOBBY FIELD (77S)
RUNWAY 15/33

AIRPORT AND RUNWAY DATA

Airport elevation	538 feet
Mean daily maximum temperature of the hottest month	82.00 F.
Maximum difference in runway centerline elevation	3 feet
Length of haul for airplanes of more than 60,000 pounds	500 miles
Wet and slippery runways	

RUNWAY LENGTHS RECOMMENDED FOR AIRPORT DESIGN

Small airplanes with approach speeds of less than 30 knots . . .	320 feet
Small airplanes with approach speeds of less than 50 knots . . .	840 feet
Small airplanes with less than 10 passenger seats	
75 percent of these small airplanes	2600 feet
95 percent of these small airplanes	3130 feet
100 percent of these small airplanes	3740 feet
Small airplanes with 10 or more passenger seats	4230 feet
Large airplanes of 60,000 pounds or less	
75 percent of these large airplanes at 60 percent useful load	5370 feet
75 percent of these large airplanes at 90 percent useful load	7000 feet
100 percent of these large airplanes at 60 percent useful load	5500 feet
100 percent of these large airplanes at 90 percent useful load	7870 feet
Airplanes of more than 60,000 pounds . . . . . Approximately	5200 feet

REFERENCE: Chapter 2 of AC 150/5325-4A, Runway Length Requirements for Airport Design, no Changes included.

CRESWELL MUNICIPAL AIRPORT – HOBBY FIELD (77S)
RUNWAY 15/33

DECLARED DISTANCE LENGTHS (feet)

Aircraft Approach Category B
Airplane Design Group I (Small Airplanes Exclusively)
Runway 15 approach visibility minimums are not lower than 1 mile
Runway 33 approach visibility minimums are not lower than 1 mile

	Runway 15 and 33	
Runway length	3101	3101
Stopway length	0	0
Clearway length	0	0
Runway safety area length beyond the stop end of runway	240	240
Runway object free area length beyond the stop end of runway . .	240	240

The following distances are positive in the direction of aircraft operations and negative in the opposite direction:

Distance from:		
the departure end of runway to the beginning of clearway . . .	0	0
the departure end of runway to the beginning of departure RPZ	200	200
the approach end of runway to the start of takeoff	0	0
the approach end of runway to the threshold	0	0
the end of approach RPZ to the approach end of runway	200	200

The following lengths are standard RSA and ROFA lengths:

Runway safety area length to be provided:		
beyond the stop end of ASDA	240	240
beyond the stop end of LDA	240	240
before the approach end of LDA	240	240
Runway object free area length to be provided:		
beyond the stop end of ASDA	240	240
beyond the stop end of LDA	240	240
before the approach end of LDA	240	240

The following declared distances are for Approach Category A and B airplanes of 12,500 pounds or less maximum certificated takeoff weight exclusively.

	Runway 15 (feet)	Runway 33 (feet)
Takeoff run available (TORA)	3101	3101
Takeoff distance available (TODA)	3101	3101
Accelerate-stop distance available (ASDA)	3101	3101
Landing distance available (LDA)	3101	3101
Usable stopway length	0	0
Distance from the stop end of LDA to runway end	0	0
Distance from the departure end of TORA to RPZ	200	200
Distance from the approach RPZ to the threshold	200	200

REFERENCE: Appendix 14 of AC 150/5300-13, Airport Design, including Changes 1 through 4.

AIRPORT LAYOUT PLAN CHECKLIST

Airports Division, Northwest Mountain Region
Federal Aviation Administration
April 1997

This checklist is recommended for use by consultants, airport sponsors, and FAA Airports District Office (ADO) personnel to help insure that all pertinent information is reflected on the airport layout plan (ALP) set of drawings. This checklist can be used for the small airports as well as for the larger, more complex ones and therefore every drawing or item in the checklist may not apply in all airport situations. However, certain drawings in the checklist are normally required in every case. These include (1) the airport layout plan drawing, (2) the airport airspace drawing, and (3) the inner portion of the approach surface drawing. The need for the other drawings should be decided on a case-by-case basis. This decision as well as the determination as to which of the individual checklist items for each drawing apply to a given airport situation should be made at the time the workscope is prepared for the development of the new or updated ALP. This involves the ADO working closely with the airport sponsor and their consultant to evaluate and reach agreement on the use of the checklist in the ALP project. The individual checklist items as well as the case-by-case drawings that apply to a given airport situation depend on the nature and complexity of the facility and the evaluation during the ALP workscope determination process. If during or after this process, the airport sponsor or their consultant disagrees with the ADO regarding the applicability of any element of the checklist to a given ALP project, they should provide the rationale for any such disagreement to the ADO. The ADO shall determine whether or not the rationale is acceptable and make the appropriate determination. In summary, this checklist can be used as part of the ALP workscope process, during the preparation of the ALP, and in the draft and final ALP reviews.

AIRPORT: Creswell Municipal – Hobby Field (77S)

LOCATION: Creswell, Oregon

SPONSOR/CONSULTANT: City of Creswell/Century West Engineering

DATE: March 2007 submittal

FAA PROJECT MGR: Don Larson (fmr.); Suzanne Lee-Pang DATE: _____

THIS CHECKLIST WAS COMPLETED FOR (check one):

( ) ALP Workscope Purposes.
(X) ALP Preparation Purposes.
( ) ALP Review Purposes.

Note: Page 19 of this checklist provides specific instructions on its use in terms of checking **YES** or **NO**, with or without **REMARKS**, for each of these purposes.

I. The ALP Set of Drawings.	**YES**	**NO**	**REMARKS**
1. Normally Required Drawings.			
a. Airport Layout Plan Drawing.	**(X)**	( )	_____
b. Airport Airspace Drawing.	**(X)**	( )	_____
c. Inner Portion of the Approach Surface Drawing.	**( )**	(X)	information consolidated on airspace drawing
2. Case-by-Case Drawings.			
a. Terminal Area Drawing.	**(X)**	( )	_____
b. Land Use Drawing.	**(X)**	( )	_____
c. Airport Property Map Drawing, Exhibit "A".	( )	**(X)**	

Note: Normally, the airport layout plan drawing and the airport airspace drawing should be presented on separate sheets. The Exhibit "A", if done as part of a new or updated ALP set of drawings, should also be depicted on a separate sheet (or sheets for large airports). The other drawings do not necessarily need to be on separate sheets, depending on scale and size of the drawings.

II. The Airport Layout Plan Drawing.	**YES**	**NO**	**REMARKS**
1. Features:			
a. Layout of existing & planned facilities & features.	**(X)**	( )	_____
b. Wind rose & coverage analysis.	**( )**	(X)	**Data N/A**
c. Basic airport & runway data tables.	**(X)**	( )	_____
d. Legend & building tables.	**(X)**	( )	_____
e. Title & revision blocks.	**(X)**	( )	_____
f. Sponsor approval block.	**(X)**	( )	_____
g. List of approved modifications to FAA airport design standards (with dates), including proposed & planned modification to standards expected to be approved as part of the ALP review & approval process.	( )	(X)	**None**
h. List of non-standard conditions & proposed disposition on them.	**( )**	(X)	_____
2. Preparation guidelines:			
a. Sheet size; recommend 22" x 34".	**(X)**	( )	_____

	YES	NO	REMARKS
b. Scale, recommend between 1”=200’ & 1”=600’:			
(1). Show graphic scale.	**(X)**	( )	**1” = 200’**
(2). Metric conversion table, (optional per Appendix 6, AC 150/5300-13, Airport Design).	( )	**(X)**	
c. North arrow.			
(1) True.	**(X)**	( )	
(2) Magnetic & year of mag. declin.	(X)	( )	
(3) North to top or left of drawing.	**(X)**	( )	
d. Wind rose. Explain below in Remarks for Data source if wind data not available for ALP wind rose.			
(1) Data source (weather station) & time period covered.	**( )**	(X)	
(2) Individual & combined coverage, see paragraph 203b of AC 150/5300-13, Airport Design, for info on wind conditions.			
(a). Rwys with 10.5 knots crosswind.	(X)	( )	**Estimated 95% @ 12mph**
(b). Rwys with 13 knots crosswind.	**( )**	(X)	
(c). Rwys with 16 knots crosswind.	**( )**	(X)	
(d). Rwys with 20 knots crosswind.	**( )**	(X)	
(e). IFR windrose.	( )	**(X)**	
e. Airport reference point (ARP).			
(1). Existing (nearest sec/NAD 83).	**(X)**	( )	
(2). Ultimate (nearest sec/NAD 83).	**(X)**	( )	
f. Topo info. Ground contours at intervals of 2’ to 10’, lightly drawn. Show any principle drainage features.	**(X)**	( )	
g. Elevations.			
(1). Runways. Indicate at existing & ultimate ends, displaced thresholds, touchdown zones, rwy intersections, high & low points to nearest 1/10’.	**(X)**	( )	

	YES	NO	REMARKS
(2). Structures on airport. If terminal area plan drawing is not to be included, show top elevations by using building table & numbering system.	**(X)**	**( )**	numbering system
	( )	**(X)**	top elevations (data N/A)
h. Building restriction line (BRL) & runway visibility zone.	**(X)**	( )	_____
I. Runway details (existing/planned).			
(1). Dimensions (width & length).	**(X)**	( )	_____
(2). Orientation:			
(a). True bearing to nearest 0.01 degree.	**(X)**	( )	_____
(b). Show rwy end numbers.	**(X)**	( )	_____
(3). Lighting (threshold lights).	**(X)**	( )	_____
(4). Marking.	**(X)**	( )	_____
(5). Show stage lengths if new rwy or rwy extension will be developed in stages.	**( )**	(X)	_____
(6). Coordinates (to nearest 0.01 second, NAD 83) & elevations (to nearest 1/10‘).	**(X)**	( )	_____
(7). Monuments (show location of all survey monuments & reference markers. Include note on how monuments are protected).	( )	(X)	none on site_____
(8). Declared distances for each runway direction. Identify any clearway/stopway portions in the declared distances & any rwy portions not included in the declared distances. Depict appropriate details in separate drawing, if needed.	**(X)**	( )	_____
(9). Any displaced thresholds.		**( )**	**(X)**
N/A_____			
(10). Any relocated thresholds.	**( )**	(X)	_____
(11). Any clearways.	( )	(X)	_____
(12). Any stopways.	( )	(X)	_____
(13). Separation dimensions from BRL and any parallel rwys.	**(X)**	**( )**	_____

	YES	NO	REMARKS
j. Object free areas (OFAs).	**(X)**	( )	_____
k. Runway safety areas (RSAs).	**(X)**	( )	_____
l. Obstacle free zones (OFZs).	**(X)**	( )	_____
m. Threshold siting surface may be depicted with dimensions to facilitate identifying object penetrations. Print "No threshold siting surface object penetrations" when no object penetrates the threshold siting surface. Otherwise, identify the object, show the amount of object penetrations, & indicate in a note how they will be eliminated.	( )	(X)	_____
n. Runway protection zone (RPZ) details per paragraph 212, Table 2-4, & Figure 2-3 of AC 150/5300-13, Airport Design.			
(1). Depict size with dimensions.	**(X)**	( )	_____
(2). Airport interest in RPZ (fee, easement, or non-airport). Indicate by note with arrow to each RPZ or with appropriate legend symbol.	**(X)**	( )	_____
(3). For each RPZ, indicate in a note the approach visibility minimums & aircraft served (i.e., small aircraft, aircraft approach Cat A & B, aircraft approach Cat C & D, or all aircraft).	**(X)**	( )	_____
(4). Land uses in RPZ. Show any residences & places of public assembly & indicate by note how they will be removed. Depict any roads, railroads, or waterways.	**(X)**	( )	_____
o. Holding position signs & markings. Show distance from rwy centerline.	**(X)**	( )	_____
p. Taxiway details (existing/planned).			
(1). Dimensions (width & length).	**(X)**	( )	_____

	YES	NO	REMARKS
(2). Separation dimensions from parallel rwys & taxiways.	**(X)**	( )	_____
(3). Clearance dimensions to objects, including aircraft parking areas.	**(X)**	( )	_____
q. Apron details (existing/planned).			
(1). Dimensions (width & length).	( )	(X)	_____
(2). Aircraft parking arrangement.	**(X)**	( )	_____
(3). Any taxilanes.	**(X)**	( )	_____
r. Navaids & landing light systems (existing/planned).			
(1). Location & type.	**(X)**	( )	**REIL** _____
(2). Critical areas outlined with dimensions.	**( )**	(X)	**N/A**_____
s. Terminal area (existing/planned).			
(1). Show & identify all main structures. Also show & identify by using building table & numbering system if no terminal area plan drawing.	**(X)**	( )	**See TAP (Dwg 3 of 5)**
(2). Hangar areas & related taxiways.	**(X)**	( )	_____
(3). Auto parking & entrance roads.	**(X)**	( )	_____
t. Wind cone/tee & segmented circle.	**(X)**	( )	_____
u. Any weather equipment (e.g., ASOS including related critical areas).	( )	(X)	**None**_____
v. Airport service roads.	**(X)**	( )	_____
w. Airport fencing.	**(X)**	( )	_____
x. Airport property lines & easements (existing/planned).	**(X)**	( )	_____
y. Airport data table (existing/ultimate).			
(1). Airport elevation (nearest 1/10’).	**(X)**	( )	_____
(2). Airport reference point, latitude & longitude, nearest sec/NAD 83.	**(X)**	( )	_____
(3). Mean daily max temperature.	**(X)**	( )	_____
(4). Combined wind coverage, VFR/IFR (%).	( )	(X)	_____

	YES	NO	REMARKS
(5). Airport magnetic variation & date.	**(X)**	( )	_____
(6). Airport reference code (ARC) for most demanding aircraft accommodated at the airport.	**(X)**	( )	_____
(7). NPIAS service level (GA, RL, CS, or PCS).	**(X)**	( )	_____
(8). Taxiway lighting.	**(X)**	( )	**Reflectors_____**
(9). Taxiway marking.		**(X)**	( ) **AC Hold Lines_____**
(10). Airport & terminal navaids.	**(X)**	( )	_____
(11). Others (indicate in Remarks).	( )	(X)	_____
z. Runway data table for each runway end (existing/ultimate).			
(1). Approach visibility minimums. (Include designated or planned. Indicate V, 1 mile, 3/4 mile, 1/2 mile, CAT II, or CAT III).	**(X)**	( )	_____
(2). FAR Part 77 approach slope.	**(X)**	( )	_____
(3). Dimensions (width & length).	**(X)**	( )	_____
(4). Pavement type.	**(X)**	( )	_____
(5). Pavement design strength.	**(X)**	( )	_____
(6). Lighting.	**(X)**	( )	_____
(7). Marking.	**(X)**	( )	_____
(8). Percent gradient.	**(X)**	( )	_____
(9). Max grade within rwy length.	**( )**	(X)	_____
(10). Line of sight requirements.	**( )**	(X)	_____
(11). Percent wind coverage.	**(X)**	( )	_____
(12). Visual approach aids (e.g., VASI, REIL, etc.) .	**(X)**	( )	_____
(13). Instrument approach aids (e.g., ILS, localizer, etc.).	**(X)**	( )	_____
(14). Airport reference code (ARC) for the runway.	**(X)**	( )	_____
(15). Identify the critical aircraft. If more than one critical aircraft involved, then identify further as follows:	**(X)**	( )	_____
(a). Critical aircraft by wingspan.	**( )**	( )	_____

	YES	NO	REMARKS
(b). Critical aircraft by approach speed.	**( )**	( )	_____
(c). Critical aircraft by weight.	**( )**	( )	_____
(16). Length of haul if critical aircraft over 60K lbs.	**( )**	(X)	**N/A_____**
(17). RSA dimensions.	**(X)**	( )	_____
(18). OFA dimensions.	**(X)**	( )	_____
(19). OFZ. Specify "No OFZ object penetrations" when no object other than frangible navaids penetrates the OFZ.	**(X)**	( )	_____
(20). Surveyed end coordinates (to nearest 0.01 second), NAD 83.	**(X)**	( )	_____
(21). Runway elevations (to nearest 1/10').			
(a). Existing end.	**(X)**	( )	_____
(b). Ultimate end.	**(X)**	( )	**estimated _____**
(c). Displaced threshold.	**( )**	(X)	_____
(d). Touchdown zone.	( )	(X)	_____
(e). Runway intersections.	( )	**(X)**	_____
(f). High & low points.	**(X)**	( )	_____
(22). Declared distances for each runway direction.			
(a). TORA.	**(X)**	( )	_____
(b). TODA.	**(X)**	( )	_____
(c). ASDA.	**(X)**	( )	_____
(d). LDA.	**(X)**	( )	_____
(23). Others (indicate in Remarks).	( )	( )	_____
aa.. Legend table. Use standard symbols. (existing/ultimate).	**(X)**	( )	_____
bb. Building table, identify by number & description. Show top bldg. elevations if no terminal area drawing (existing/ultimate).	**(X)**	( )	**El. Data not available**
cc. Location & vicinity maps.	**(X)**	( )	**On Cover Sheet ____**
dd. Title & revision blocks.	**(X)**	( )	_____
ee. Approval block.	**(X)**	( )	_____

III. Airport Airspace Drawing.	**YES**	**NO**	**REMARKS**
1. Includes:			
a. Plan view of FAR Part 77 Subpart C surfaces based on ultimate runway lengths.	**(X)**	( )	_____
b. Profile views of FAR Part 77 Subpart C approaches (existing/ultimate).	**(X)**	( )	_____
c. Obstruction data tables, as appropriate.	**(X)**	( )	_____
2. Preparation guidelines:			
a. Sheet size, recommend same as ALP drawing.	**(X)**	( )	_____
b. Scale, recommend 1”=2000’ for plan view. 1”=1000’ (horizontal) & 1”=100’ (vertical) for approach profiles.	**(X)**	( )	_____
c. Title & revision blocks (same format as ALP drawing).	**(X)**	( )	_____
d. Plan view details.			
(1). Use current USGS 7 1/2 minute Quad for base map when available (highlight lat. & long. grid tick marks on map for plotting purposes). Show area under all applicable FAR Part 77 airport imaginary surfaces.	**(X)**	( )	_____
(2). Show rwy end numbers.	**(X)**	( )	_____
(3). 50’ elevation contours on all sloping imaginary surfaces.	**(X)**	( )	_____
(4). When horizontal &/or conical surfaces overlap the approach surface, show the most demanding one with solid lines, the others with dashed lines.	**(X)**	( )	_____
(5). Show objects by number & give top elevations of any of them that are obstructions. Add note referring to inner portion of the			

	YES	NO	REMARKS
approach surface drawing for details on any close-in approach obstructions.	**(X)**	( )	_____
(6). For precision instrument approaches, show entire 50,000' approach surface (may show outer portions on separate sheet).	**( )**	( )	_____
(7). Include a note on any height or slope protected by local zoning ordinance.	**( )**	(X)	_____
(8). Identify land uses in the FAR Part 77 area, especially those incompatible with normal airport operations.	**( )**	(X)	**See LUP (dwg 5 of 5)**
(9). RPZ based on ultimate runway lengths.	**(X)**	( )	_____
(10). Airport property lines & easements (existing/ultimate).	**( )**	(X)	**See LUP (dwg 5 of 5)**
e. Approach profile details.			
(1). Depict ground profile representing the composite profile based on highest terrain across width & along length of the approach surface.	**(X)**	( )	_____
(2). Show all obstructions by number plus any other significant objects within the approach surfaces with their top elevations.	**(X)**	( )	_____
(3). Show existing & ultimate rwy ends & FAR Part 77 approach surfaces.	**(X)**	( )	_____
(4). Depict threshold siting surface slope for threshold siting requirements per Appendix 2 of AC 150/5300-13, Airport Design, if applicable.	( )	(X)	_____
f. Show profile of entire runway if space available on sheet. As minimum, show end elevations & high/low points (to nearest 1/10').	**(X)**	( )	_____

	YES	NO	REMARKS
g. Obstruction data tables details.			
(1). List all obstructions shown in the plan & profile views.	**(X)**	( )	_____
(2). Identify obstructions by numbers used in plan & profile views & provide description, amount of FAR Part 77 Subpart C surface penetrations (indicate which surface involved, such as horizontal, conical, primary, etc.), & proposed disposition of the obstruction, including no action.	**(X)**	( )	_____
(3). If there are any close-in obstructions in the approach areas, include a note referring to the obstruction tables on the inner portion of the approach surface drawing.	( )	**(X)**	_____

<u>IV. Inner Portion of the Approach Surface Drawing.</u>

	YES	NO	REMARKS
<u>Incorporated into Part 77 drawing, per project scope</u>			
1. Includes:			
a. Large scale plan view of the existing & ultimate inner portion of the approach area for each runway end. Usually limited to the area out to where the approach surface reaches 100' height above the rwy end.	**( )**	( )	_____
b. Profile view of the existing & ultimate inner portion of the approach area for each runway end.	**( )**	( )	_____
c. Obstruction tables for the existing & ultimate inner portion of the approach area for each runway end.	( )	**( )**	_____

	YES	NO	REMARKS
2. Preparation Guidelines:			
a. Sheet size, recommend same as ALP drawing.	**( )**	( )	_____
b. Scale, recommend horizontal 1”=200’ & vertical 1”=20’.	( )	**( )**	_____
c. Title & revision blocks (same format as ALP drawing).	**( )**	( )	_____
d. Plan view details.			
(1). Aerial photos for base maps when available.	**( )**	( )	_____
(2). Show obstructions. Also, use numbering system & describe in table.	**( )**	( )	_____
(3). Depict airport property lines in area.	**( )**	( )	_____
(4). Show elevations & clearances for any roads, railroads, & waterways at the approach surface edges & extended rwy centerline. Number these points & key them to profile view & obstruction table, as appropriate.	( )	( )	_____
(5). Depict ends of runways, stop-ways, clearways, safety areas, & object free areas (existing/ ultimate).	**( )**	( )	_____
(6). Show ground contours drawn lightly.	**( )**	( )	_____
(7). Show existing/ultimate approach & any departure RPZs.	**( )**	( )	_____
(8). Indicate existing/ultimate FAR Part 77 approach slopes.	**( )**	( )	_____
e. Profile view details.			
(1). Depict the ground profile representing the <u>composite</u> profile based on the highest terrain across the width & along the length of the inner portion of the approach surface. Also, show significant features			

	YES	NO	REMARKS
regardless of whether they are obstructions (e.g., fences, stream beds, etc.).	**( )**	( )	_____
(2). Identify obstructions with numbers used on plan view & keyed to obstruction table.	( )	**( )**	_____
(3). Depict cross-section of any roads, railroads, & waterways where they intersect outer edges of approach surface.	( )	**( )**	_____
(4). Show existing & ultimate FAR Part 77 approach slope.	**( )**	( )	_____
(5). Depict threshold siting surface slope for threshold siting requirements per Appendix 2 of AC 150/5300-13, Airport Design, if applicable.	( )	( )	_____
f. Obstruction table details.			
(1). Separate table for each existing & ultimate approach surface. Specify type & slope of FAR Part 77 approach surface.	( )	**( )**	_____
(2). Identify obstructions by numbers used in plan & profile views & provide description, amount of approach surface penetration, & proposed disposition of the obstructions, including no action.	**( )**	( )	_____

V. Terminal Area Drawing.	YES	NO	REMARKS
1. Terminal area for larger, more complex airport. Show large scale plan view of the terminal area.	**(X)**	( )	_____
2. Preparation guidelines:			
a. Sheet size, recommend same as ALP drawing.	**(X)**	( )	_____

	YES	NO	REMARKS
b. Scale, recommend between 1”=50’ & 1”=100’.	**(X)**	**( )**	_____
c. Large scale plan view of terminal area (or areas) showing details of aprons, buildings, hangars, parking lots, etc. (existing/planned).	**(X)**	( )	_____
d. Building restriction line.	**(X)**	( )	_____
e. Depict separations between objects & taxiways, taxilanes, & tiedowns.	**(X)**	( )	_____
f. Title and revision blocks (same format as ALP drawing).	**(X)**	( )	_____
g. Building data table.			
(1). Include structure ID No. that correspond to the structure ID No. depicted on plan view of terminal area.	**(X)**	**( )**	_____
(2). Show top elevations of structures.	( )	(X)	**El. Data N/A_____**
(3). Obstruction marking & lighting (existing/planned).	( )	(X)	**See Part 77 (Dwg 4 of 5)**
(4). Indicate if structures meet airport lateral clearance standards (e.g., BRL requirements).	**(X)**	**( )**	_____
h. Legend. Include symbol for showing planned removal, abandonment, etc.	**(X)**	**( )**	_____

VI. Land use drawing.	YES	NO	REMARKS
1. Drawing depicts existing & recommended land uses within and outside the existing & ultimate airport property. Off airport land uses should be shown to at least the outer boundary of the 65 DNL area. Land uses should be depicted by general use categories (e.g., agricultural, recreational, industrial, commercial, etc.).	**(X)**	( )	_____
2. Provides plan for leasing revenue producing areas on the airport, for guidance on			

	YES	NO	REMARKS
compatible land uses in close proximity to runways, for line of sight between rwy ends & within rwy visibility zones, & for guidance to local authorities for establishing appropriate zoning in the airport environs.	( )	**(X)**	_____
3. Preparation guidelines:			
a. Sheet size, recommend same as ALP drawing.	**(X)**	( )	_____
b. Scale, recommend same as ALP drawing.	**( )**	(X)	_____
c. Title and revision blocks (same format as ALP drawing).	**(X)**	( )	_____
d. Base map. Aerial photo when available.	**( )**	(X)	**USGS Topo**
e. Legend. Use standard drafting symbols to show existing & recommended land uses by general category. Use notes to identify the existing and recommended land uses.	**(X)**	( )	_____
f. Public facilities & other uses in the airport environs.			
(1). Indicate all major existing & recommended land uses.	**(X)**	( )	_____
(2). Depict the location of all public facilities (e.g., schools, hospitals, parks, etc.).	(X)	( )	_____
(3). Show governmental jurisdictional boundaries.	**(X)**	( )	_____
(4). Indicate established flight tracks.	( )	**(X)**	_____
(5). Show current noise contours, if available (give date of data used for the contours).	**(X)**	( )	2010 contours depicted
g. Airport drawing details.			
(1). Normally limited to the primary existing and future airport features (rwys, txys, aprons, RPZs, terminal bldgs, & navaids).	(X)	**( )**	_____
(2). Show enough details to determine aeronautical areas			

	YES	NO	REMARKS
versus non-aeronautical areas & to determine limit lines for areas to be kept in grass or limited to low growing crops.		**(X)**	( ) _____
h. Show in the drawing and/or describe in a note any special land use concerns.			
(1). Flood plain area.	( )	(X)	_____
(2). DOT Section 4f land.	(X)	( )	_____
(3). Area that may require SHPO coordination.	( )	(X)	_____
(4). Landfills in the airport environs (within 5 miles).	( )	(X)	none located within map boundary
(5). Any other land use concerns based on master plan study or community involvement & coordination.	( )	(X)	_____
i. Table of existing land use ordinances by number, date, & land use type.	( )	(X)	_____

VII. Airport property map (Exhibit "A").	YES	NO	REMARKS
Drawing Not Included in Project Scope			
1. Purpose: The primary intent of the airport property map, Exhibit "A" drawing, is to identify all land which is designated airport property and to provide an inventory of all parcels which make up the airport. It is a document that must be on file in the ADO as part of the development project application process. If it is not on file, or needs updating, this drawing can be prepared as part of the ALP set of drawings & this is the case here.	( )	( )	_____
2. Definition: The Exhibit "A" is a document unique to the AIP. It should not be confused with a Property Plan or Plot Plan. As a minimum, the Exhibit "A" must show the current airport boundary compiled from deed research, available			

	YES	NO	REMARKS
mapping/surveys, & field verification, as required. Physical survey of boundaries is generally not required. In those instances where field survey may be considered necessary, the property line & runways should be tied to the State grid system. Requests for participation in field surveys will be considered on a case by case basis. Standards for precision & accuracy would be part of this review. All of above has been considered.	( )	( )	_____
3. General preparation guidelines:			
a. Recommend sheet size same as ALP drawing. This drawing must be on a separate sheet.	( )	( )	_____
b. Title & revision blocks (same format as ALP drawing). Clearly label as Exhibit "A" Airport Property Map.	( )	( )	_____
c. Legend. Use standard drafting symbols.	( )	( )	_____
4. Specific Exhibit "A" required items:			
a. A clear identification of the outside airport property boundary.	( )	( )	_____
b. Each parcel making up the entire airport must be shown & numbered. In addition, parcels which were once airport property must also be shown. Leased areas should not be shown.	( )	( )	_____
c. Both fee & easement interests must be shown & separately designated.	( )	( )	_____
d. Delineate runways, taxiways, RPZs, RSAs, OFAs, aprons, BRLs, terminal buildings, & navaids (existing/planned).	( )	( )	_____
e. Magnetic & true north arrows.	( )	( )	_____
f. Each line type which identifies airport boundary, parcel boundary, RPZs, BRLs, easements, etc. must be			

	YES	NO	REMARKS
clearly shown in the legend.	( )	( )	_____
g. The plan view with related data table and/or notes must show an inventory of all parcels by number, including the grantor, grantee, type of interest, acreage, book & page, & date of recording. They must also show FAA project number if acquired under a grant; PFC application number if acquired with Passenger Facility Charges; Surplus Property Transfer or AP-4 Agreement if applicable; type of easement (clearing, avigation, utility, right of way, etc.); and if released, date of FAA approval.	( )	( )	_____
h. The purpose of acquisition if acquired under a Federal grant (approach protection, aeronautical, noise compatibility, current or future development) based on the grant description must be indicated plus any special conditions.	( )	( )	_____
i. If the Exhibit "A" is being prepared for submittal as part of a land acquisition project, the parcels being acquired must also be shown.	( )	( )	_____
j. The Exhibit "A" must be drawn to scale, all information must be on one sheet if possible, & should be no larger than the ALP drawing sheet size & be legible. There should be an index sheet if the Exhibit "A" involves several sheets for the larger airports.	( )	( )	_____
k. The Exhibit "A" must be dated & amended whenever there is a change to any airport property.	( )	( )	_____
l. There should be sufficient descriptive data (i.e., section, township & range, lot & block, metes & bounds) to enable accurate location			

	YES	NO	REMARKS
of current & future parcels on the drawing.	( )	( )	_____
m. Points of reference for tracing parcels from a deed description by scaling should be shown. As new parcels are acquired, the Exhibit "A" should add their associated bearings & lengths to enable quick confirmation of the parcel's location.	( )	( )	_____
n. Perimeter fencing, only if it does not obscure airport boundary lines.	( )	( )	_____

Specific Instructions:

1. If used for ALP workscope preparation purposes, YES or NO should be checked for each checklist item to indicate whether or not it is required for the ALP drawings for the given airport. Or, to avoid having to check every single item & help facilitate the process, only check NO for items that are not required with the understanding that if an item is not checked YES or NO (i.e., left blank or unchecked), then it is required. This should be done as a joint effort by the airport sponsor (and their consultant) and the ADO in developing the ALP workscope. Any item requiring explanations should be given as remarks.

2. If used for ALP preparation purposes, the preparer (airport sponsor and their consultant) should check YES or NO to indicate whether or not the appropriate checklist items are reflected on the ALP drawings. Any item requiring explanations should be given as remarks. The checklist completed by the preparer should (shall, if so stated in an agreed to ALP workscope) be submitted to the ADO with the draft ALP drawings.

3. If used for ALP review purposes, the ADO reviewer should check YES or NO to indicate whether or not all appropriate checklist items were reflected on the ALP drawings in a satisfactory manner. Any item requiring explanations should be given as remarks. The checklist completed by the ADO should be submitted to the preparer with the marked-up draft ALP drawings.

References:

The ALP checklist above is based primarily on Appendix 7 of AC 150/5300-13, Airport Design, including changes 1 through 5. Change 5 is dated 2/14/97. Appendix 7 covers ALP components and preparation. The Airport Property Map (Exhibit "A") component of the ALP checklist is based primarily on AC 150/5100-17, Land Acquisition and Relocation Assistance for Airport Improvement Program Assisted Projects, dated 3/29/96.

Use the space below for any detailed remarks.

Airport wind data is not available. Reference to previous Environmental Assessment for runway realignment for estimated wind coverage based on conditions at Eugene Airport (sufficient detail for FAA approval of new runway alignment).

Glossary of Aviation Terms

Glossary of Aviation Terms

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The following glossary of aviation terms was compiled and edited by David Miller, AICP for use in aviation planning projects.

Accelerate Stop Distance Available (ASDA) – The length of the takeoff run available plus the length of a stopway, when available.

Agricultural Aviation – The use of fixed-wing or rotor-wing aircraft in the aerial application of agricultural products (i.e., fertilizers, pesticides, etc.).

Air Cargo - All commercial air express and air freight with the exception of airmail and parcel post.

Air Carrier/Airline - All regularly scheduled airline activity performed by airlines certificated in accordance with Federal Aviation Regulations (FAR Part 121).

Air Taxi - Operations of aircraft "for hire" for specific trips, commonly referred to an aircraft available for charter (FAR Part 135).

Aircraft Approach Category - A grouping of aircraft based how fast they come in for landing. As a rule of thumb, slower approach speeds mean smaller airport dimensions and faster speeds mean larger dimensions from runway widths to the separation between runways and taxiways.

The aircraft approach categories are:

Category A - Speed less than 91 knots;
Category B - Speed 91 knots or more but less than 121 knots
Category C - Speed 121 knots or more but less than 141 knots
Category D - Speed 141 knots or more but less than 166 knots
Category E - Speed 166 knots or more

Aircraft Operation - A landing or takeoff is one operation. An aircraft that takes off and then lands creates two aircraft operations.

Aircraft Owners and Pilots Association (AOPA) – International aviation organization.

Aircraft Holding Area – An area typically located adjacent to a taxiway and runway end designed to accommodate aircraft prior to departure (for pre–takeoff engine checks, instrument flight plan clearances, etc.). Per FAA design standards, aircraft holding areas should be located outside the runway safety area (RSA) and obstacle free zone (OFZ) and aircraft located in the holding area should not interfere with normal taxiway use (taxiway object free area). Sometimes referred to as holding bays or “elephant ear.” Smaller areas (aircraft turnarounds) are used to facilitate aircraft movement on runways without exit taxiways where back-taxiing is required.

Airplane Design Group - A grouping of airplanes based on wingspan. As with Approach Category, the wider the wingspan, the bigger the aircraft is, the more room it takes up for operating on an airport. The Airplane Design Groups are:

Group I: Up to, but not including 49 feet

Group II:	49 feet up to, but not including 79 feet
Group III:	79 feet up to, but not including 118 feet
Group IV:	118 feet up to, but not including 171 feet
Group V:	171 feet up to, but not including 214 feet
Group VI:	214 feet up to, but not including 262 feet

Airport - A landing area regularly used by aircraft for receiving or discharging passengers or cargo, including heliports and seaplane bases.

Airport Improvement Program (AIP) - The funding program administered by the Federal Aviation Administration (FAA) with user fees which are dedicated to improvement of the national airport system. This program currently provides 95% of funding for eligible airport improvement projects. The local sponsor of the project (i.e., airport owner) provides the remaining 5% known as the "match."

Airport Layout Plan (ALP) - The FAA approved drawing which shows the existing and anticipated layout of an airport for the next 20 years or so. An ALP is prepared using FAA design standards.

Airport Reference Code (ARC) - An FAA airport coding system. The system looks at the types of aircraft which use an airport most often and then based upon the characteristics of those airplanes (approach speed and wing span), assigns a code. The code is then used to determine how the airport is designed and what design standards are used. An airport designed for a Piper Cub (an aircraft in the A-I approach/design group) would take less room than a Boeing 747 (an aircraft in the D-V approach/design group).

Airport Reference Point (ARP) – The approximate mid-point of an airfield that is designated as the official airport location.

Airports District Office (ADO) - The "local" office of the FAA that coordinates planning and construction projects. Staff in the ADO is typically assigned to a particular state, i.e., Oregon, Idaho, or Washington. The ADO for Oregon, Washington and Idaho is located in Renton, Washington.

Airspace - The area above the ground in which aircraft travel. It is divided into corridors, routes, and restricted zones for the control and safety of traffic.

Alternate Airport – An airport that is available for landing when the intended airport becomes unavailable. Required for instrument flight planning in the event that weather conditions at destination airport fall below approach minimums (cloud ceiling or visibility).

Annual Service Volume (ASV) - An estimate of how many airplanes and airport can handle based upon the number and types of runways, the aircraft mix (large vs. small, etc), and weather conditions with a “reasonable” amount of delay. ASV is a primary planning standard used to determine when a runway (or an airport) is nearing its capacity, and may require new runways or taxiways. As operations levels approach ASV, the amount of delay per operation increases; once ASV is exceeded, “excessive” delay generally exists.

Approach End of Runway - The end of the runway used for landing. Pilots generally land into the wind and choose a runway end that best aligns with the wind.

Approach Surface - Also FAR Part 77 Approach or Obstacle Clearance Approach - An imaginary (invisible) surface which rises off the ends of a runway which must be kept clear to provide airspace for an airplane to land or take off in. The size of the approach surface will vary depending upon how big and

how fast the airplanes are, and whether or not the runway has an instrument approach for landing in bad weather.

Apron - An area on an airport designated for the parking, loading, fueling, or servicing of aircraft (also referred to as tarmac and ramp).

ARFF - Aircraft Rescue and Fire Fighting, i.e., an on airport response required for certificated commercial service airports (see FAR Part 139).

Automated Surface Observation System (ASOS) and Automated Weather Observation System (AWOS) – Automated observation systems providing continuous on-site weather data, designed to support aviation activities and weather forecasting.

AVGAS - Gasoline used in airplanes with piston engines.

Avigation Easement - A form of limited property right purchase that establishes legal land use control prohibiting incompatible development of areas required for airports or airport-related purposes.

Back-Taxiing – The practice of aircraft taxiing on a runway before takeoff or after landing, normally, in the opposite direction of the runway's traffic pattern. Back-taxiing is generally required on runways without taxiway access to both runway ends.

Based Aircraft - Aircraft stationed at an airport on an annual basis. Used as a measure of activity at an airport.

Capacity - A measure of the maximum number of aircraft operations that can be accommodated on the runways of an airport in an hour.

Ceiling – The height above the ground or water to base of the lowest cloud layers covering more than 50 percent of the sky.

Charter - Operations of aircraft "for hire" for specific trips, commonly referred to an aircraft available for charter.

Circle to Land or Circling Approach – An instrument approach procedure that allows pilots to "circle" the airfield to land on any authorized runway once visual contact with the runway environment is established and maintained throughout the procedure.

Common Traffic Advisory Frequency (CTAF) – A frequency used by pilots to communicate and obtain airport advisories at an uncontrolled airport.

Conical Surface - One of the "FAR Part 77 "Imaginary" Surfaces. The conical surface extends outward and upward from the edge of the horizontal surface at a slope of 20:1 to a horizontal distance of 4,000 feet.

Critical Aircraft - Aircraft which controls one or more design items based on wingspan, approach speed and/or maximum certificated take off weight. The same aircraft may not be critical to all design items.

Crosswind - When used concerning wind conditions, the word means a wind not parallel to the runway or the path of an aircraft. Sometimes used in reference to a runway as in "Runway 7/25 is the crosswind

runway" meaning that it is not the runway normally used for the prevailing wind condition. As an aeronautical term, a direct crosswind is exactly 90-degrees opposite the direction of flight; more acute crosswind angles are known as quartering headwinds or tailwinds. From an airport planning perspective, crosswind runways are generally justified when a primary runway accommodates less than 95 percent of documented wind conditions (see wind rose).

Crosswind Runway – A secondary runway that is oriented to allow aircraft to safely take off or land when wind conditions do not favor the primary runway.

Decision Height (DH) – For precision instrument approaches, the height (typically in feet or meters above runway end touchdown zone elevation) at which a decision to land or execute a missed approach must be made by the pilot.

Departure Surface – A surface that extends upward from the departure end of an instrument runway that should be free of any obstacle penetrations. For instrument runways other than air carrier, the slope is 40:1, extending 10,200 feet from the runway end. Air carrier runways have a similar surface designed for one-engine inoperative conditions with a slope of 62.5: 1.

Displaced Threshold – A landing threshold that is located at a point other than the runway end. Usually provided to mitigate close-in obstructions to runway approaches for landing aircraft.

DNL - Day-night sound levels, a method of measuring noise exposure.

Easement – An agreement that provides use or access of land or airspace (see avigation easement) in exchange for compensation.

Enplanements - Domestic, territorial, and international revenue passengers who board an aircraft in the states in scheduled and non-scheduled service of aircraft in intrastate, interstate, and foreign commerce and includes intransit passengers (passengers on board international flights that transit an airport in the US for non-traffic purposes).

Entitlements - Distribution of Airport Improvement Plan (AIP) funds from the Airport & Airways Trust Fund to commercial service airport sponsors based on enplanements or cargo landed weights. Also, Non-Primary General Aviation Entitlements now incorporated in AIP funding for general aviation airports.

Federal Aviation Administration (FAA) - The FAA is the branch of the U.S. Department of Transportation that is responsible for the development of airports and air navigation systems.

FAR Part 77 - Federal Aviation Regulations which establish standards for determining obstructions in navigable airspace. FAR stands for Federal Aviation Regulations, Part 77 refers to the section in the regulations, i.e., #77. FAR Part 77 is commonly used to refer to imaginary surfaces, the primary, transitional, horizontal, conical, and approach surfaces. These surfaces vary with the size and type of airport.

FAR Part 139 - Federal Aviation Regulations which establish standards for airports with scheduled passenger commercial air service. Airports accommodating scheduled passenger service with aircraft more than 9 passenger seats must be certified as a “Part 139” airport. Airports that are not certified under Part 139 may accommodate scheduled commercial passenger service with aircraft having 9 passenger seats or less.

Final Approach Fix (FAF) – The fix (location) from which the final instrument approach to an airport is executed; also identifies beginning of final approach segment.

Final Approach Point (FAP) – For non-precision instrument approaches, the point at which an aircraft is established inbound for the approach and where the final descent may begin.

Fixed Base Operator (FBO) - An individual or company located at an airport providing aviation services. Sometimes further defined as a "full service" FBO or a limited service. Full service FBOs typically provide a broad range of services (flight instruction, aircraft rental, charter, fueling, repair, etc) where a limited service FBO provides only one or two services (such as fueling, flight instruction or repair).

Fixed Wing - A plane with one or more "fixed wings," as opposed to a helicopter that utilizes a rotary wing.

Flexible Pavement – Typically constructed with an asphalt surface course and one or more layers of base and subbase courses that rest on a subgrade layer.

Flight Service Station (**FSS) -** An office where a pilot can call (on the ground or in the air) to get weather and airport information. Flight plans are also filed with the FSS.

General Aviation (GA) - All civil (non-military) aviation operations other than scheduled air services and non-scheduled air transport operations for hire.

Glide Slope (GS) – For precision instrument approaches, such as an instrument landing system (ILS), the component that provides electronic vertical guidance to aircraft. Visual guidance indicators (VGI) define a glide slope (glide path) through a series of colored lights that are visible to pilots when approaching a runway end for landing.

Global Positioning System (GPS) - GPS is a system of navigating which uses satellites (SATNAV) to establish the location and altitude of an aircraft. GPS supports both enroute flight and instrument approach procedures.

Helicopter Landing Pad (Helipad) – A designated landing area for rotor wing aircraft. Requires protected FAR Part 77 imaginary surfaces, as defined for heliports (FAR Part 77.29).

Helicopter Parking Area – A designated area for rotor wing aircraft parking that is typically accessed via hover-taxi or ground taxiing from a designated landing area (e.g., helipad or runway-taxiway system). If not used as a designated landing area, helicopter parking pads do not require dedicated FAR Part 77 imaginary surfaces.

Heliport – A designated helicopter landing facility (as defined by FAR Part 77).

Height Above Airport (HAA) – The height of the published minimum descent altitude (MDA) above the published airport elevation. This is normally published in conjunction with circling minimums.

High Intensity Runway Lights (HIRL) - High intensity (i.e., very bright) lights are used on instrument runways where landings are made in foggy weather. The bright runway lights help pilots to see the runway when visibility is poor.

High Speed (Taxiway) Exit – An acute-angled exit taxiway extending from a runway to an adjacent parallel taxiway which allows landing aircraft to exit the runway at a higher rate of speed than is possible with standard (90-degree) exit taxiways.

Hold/Holding Procedure – A defined maneuver in controlled airspace that allows aircraft to circle above a fixed point (often over a navigational aid or GPS waypoint) and altitude while awaiting further clearance from air traffic control.

Home Built Aircraft - An aircraft built by an amateur; not an FAA Certified factory built aircraft.

Horizontal Surface - One of the FAR Part 77 Imaginary (invisible) Surfaces. The horizontal surface is an imaginary flat surface 150 feet above the established airport elevation. Its perimeter is constructed by swinging arcs (circles) with a radius of 5,000 feet for all runways designated as utility or general; and 10,000 feet for all other runways from the center of each end of the primary surface and connecting the adjacent arc by straight lines. The resulting shape looks like a football stadium. It could also be described as a rectangle with half circles on each end with the runway in the middle.

Initial Approach Point of Fix (IAP/IAF) – For instrument approaches, a designated point where an aircraft may begin the approach procedure.

Instrument Approach Procedure (IAP) – A series of defined maneuvers designed to enable the safe transition between enroute instrument flight and landing under instrument flight conditions at a particular airport or heliport. IAPs define specific requirements for aircraft altitude, course, and missed approach procedures. See precision or nonprecision instrument approach.

Instrument Flight Rules (IFR) - IFR refers to the set of rules pilots must follow when they are flying in bad weather. Pilots are required to follow these rules when operating in controlled airspace with visibility (ability to see in front of themselves) of less than three miles and/or ceiling (a layer of clouds) lower than 1,000 feet.

Instrument Landing System (ILS) - An ILS is a system used to guide a plane in for a landing in bad weather. Sometimes referred to as a precision instrument approach, it is m designed to provide an exact approach path for alignment and descent of aircraft. Generally consists of a localizer, glide slope, outer marker, middle marker, and approach lights. This type of precision instrument system is being replaced by Microwave Landing Systems (MLS).

Instrument Meteorological Conditions (IMC) - Meteorological conditions expressed in terms of visibility, distance from clouds, and ceiling less than minima specified for visual meteorological conditions.

Instrument Runway - A runway equipped with electronic and visual navigational aids that has been designated for a straight-in precision or nonprecision instrument approach.

Itinerant Operation - All aircraft operations at an airport other than local, i.e., flights that come in from another airport.

Jet Fuel – Highly refined grade of kerosene used by turbine engine aircraft. Jet-A is currently the common commercial grade of jet fuel.

Landing Area - That part of the movement area intended for the landing and takeoff of aircraft.

Landing Distance Available (LDA) – The length of runway which is available and suitable for the ground run of an airplane landing.

Left Traffic – A term used to describe which side of a runway the airport traffic pattern is located. Left traffic indicates that the runway will be to the pilot's left when in the traffic pattern. Left traffic is standard unless otherwise noted in facility directories at a particular airport.

Large Aircraft - An aircraft that weighs more than 12,500 lbs.

Local Area Augmentation System (LAAS) – GPS-based instrument approach that utilizes ground-based systems to augment satellite coverage to provide vertical (glideslope) and horizontal (course) guidance. LAAS approaches have the technical capabilities to provide approach minimums comparable to a Category I and II instrument landing system (ILS). The FAA indicates that a LAAS system can support approaches to multiple runways and potentially multiple airports within a range of approximately 30 nautical miles.

Local Operation - Aircraft operation in the traffic pattern or within sight of the tower, or aircraft known to be departing or arriving from flight in local practice areas, or aircraft executing practice instrument approaches at the airport.

Localizer – For precision instrument approaches, such as an instrument landing system (ILS), the component that provides electronic lateral (course) guidance to aircraft.

LORAN C - A navigation system using land based radio signals, which indicates position and ground speed, but not elevation. (See GPS)

Localizer Performance with Vertical Guidance (LPV) – Satellite navigation (SATNAV) based GPS approaches providing "near category I" precisions approach capabilities with course and vertical guidance LPV approaches are expected to eventually replace traditional step- down, VOR and NDB procedures by providing a constant, ILS glideslope-like descent path. LPV approaches use high-accuracy WAAS signals, which allows narrower glideslope and approach centerline obstacle clearance areas, safely providing decision altitudes as low as 250 feet, compared with 200 feet for ILS.

Magnetic Declination – Also called magnetic variation, is the angle between magnetic north and true north. Declination is considered positive east of true north and negative when west. Magnetic declination changes over time and with location. Runway end numbers, which reflect the magnetic heading/alignment (within 5 degrees +/-) occasionally require change due to declination.

MALSR - **M**edium-intensity **A**pproach **L**ighting **S**ystem with **R**unway alignment indicator lights. An airport lighting facility which provides visual guidance to landing aircraft.

Medevac - Fixed wing or rotor-wing aircraft used to transport critical medical patients. These aircraft are equipped to provide life support during transport.

Medium Intensity Runway Lights (MIRL) - Runway lights which are not as intense as HIRLs (high intensity runway lights). Typical at medium and smaller airports which do not have sophisticated instrument landing systems.

Microwave Landing System (MLS) - An instrument landing system operating in the microwave spectrum, which provides lateral and vertical guidance to aircraft with compatible equipment. It was touted as the replacement for the ILS but never achieved this status.

Minimum Descent Altitude (MDA) – The lowest altitude in a nonprecision instrument approach that an aircraft may descend without establishing visual contact with the runway or airport environment.

Minimums - Weather condition requirements established for a particular operation or type of operation.

Missed Approach – A maneuver conducted by a pilot when an instrument approach cannot be completed to a landing.

Missed Approach Point (MAP) – The defined location in a nonprecision instrument approach where the procedure must be terminated if the pilot has not visually established the runway or airport environment.

Movement Area - The runways, taxiways and other areas of the airport used for taxiing, takeoff and landing of aircraft, i.e., for aircraft movement.

MSL - Elevation above Mean Sea Level.

National Plan of Integrated Airport Systems (NPIAS). The NPIAS is the federal airport classification system that includes public use airports that meet specific eligibility and activity criteria. A "NPIAS designation" is required for an airport to be eligible to receive FAA funding for airport projects.

Navigational Aid (Navaid) - Any visual or electronic device that helps a pilot navigate. Can be for use to land at an airport or for traveling from point A to point B.

Noise Contours – Continuous lines of equal noise level usually drawn around a noise source, such as runway, highway or railway. The lines are generally plotted in 5-decibel increments, with higher noise levels located nearer the noise source, and lesser exposure levels extending away from the source.

Non-directional Beacon (NDB) - Non-Directional Beacon which transmits a signal on which a pilot may "home" using equipment installed in the aircraft.

Non-Precision Instrument (NPI) Approach - A non-precision instrument approach provides horizontal (course) guidance to pilots for landing. NPI approaches often involve a series of "step down" sequences where aircraft descend in increments (based on terrain clearance), rather than following a continuous glide path. The pilot is responsible for maintaining altitude control between approach segments since no "vertical" guidance is provided.

Obstacle Clearance Surface (OCS) – As defined by FAA, an approach surface that is used in conjunction with alternative threshold siting/clearing criteria to mitigate obstructions within runway approach surfaces. Dimensions, slope and placement depend on runway type and approach capabilities. Also know as Obstacle Clearance Approach (OCA).

Obstruction - An object (tree, house, road, phone pole, etc) that penetrates an imaginary surface described in FAR Part 77.

Obstruction Chart (OC) - A chart that depicts surveyed obstructions that penetrate an FAR Part 77 imaginary surface surrounding an airport. OC charts are developed by the National Ocean Service (NOS)

based on a comprehensive survey that provides detailed location (latitude/longitude coordinates) and elevation data in addition to critical airfield data.

Parallel Taxiway – A taxiway that is aligned parallel to a runway, with connecting taxiways to allow efficient movement of aircraft between the runway and taxiway. The parallel taxiway effectively separates taxiing aircraft from arriving and departing aircraft located on the runway. Used to increase runway capacity and improve safety.

Passenger Facility Charge (PFC) – A user fee charged by public agencies controlling a commercial service airport can charge enplaning passengers a fee facility charge. Public agencies must apply to the FAA and meet certain requirements in order to impose a PFC.

Precision Approach Path Indicator (PAPI) - A system of lights located by the approach end of a runway that provides visual approach slope guidance to aircraft during approach to landing. The lights typically show green if a pilot is on the correct flight path, and turn red of a pilot is too low.

Precision Instrument Runway (PIR) - A runway served by a "precision" instrument approach landing system. The precision landing systems allows property equipped airplanes and trained pilots to land in bad weather.

Precision Instrument Approach - A precision instrument approach is a system which helps guide pilots in for a landing in thick fog and provides "precise" guidance as opposed to a non-precision approach that is less precise.

Primary Runway - That runway which provides the best wind coverage, etc., and receives the most usage at the airport.

Primary Surface - One of the FAR Part 77 Imaginary Surfaces, the primary surface is centered on top of the runway and extends 200 feet beyond each end. The width is from 250' to 1,000' wide depending upon the type of airplanes using the runway.

Procedure Turn (PT) - A maneuver in which a turn is made away from a designated track followed by a turn in an opposite direction to permit an aircraft to intercept the track in the opposite direction (usually inbound).

Relocated Threshold – A runway threshold (takeoff and landing point) that is located at a point other than the runway end. Usually provided to mitigate nonstandard runway safety area (RSA) dimensions beyond the end of a runway.

Rigid Pavement – Typically constructed of Portland cement concrete (PCC), consisting of a slab placed on a prepared layer of imported materials.

Rotorcraft - A helicopter.

Runway – A defined area intended to accommodate aircraft takeoff and landing. Runways may be paved (asphalt or concrete) or unpaved (gravel, turf, dirt, etc.), depending on use. Water runways are defined takeoff and landing areas for use by seaplanes.

Runway End Identifier Lights (REILs) - These are distinctive flashing lights that help a pilot identify the runway.

Runway Object Free Area (OFA) – A defined area surrounding a runway that should be free of any obstructions that could in interfere with aircraft operations. The dimensions for the OFA increase for runways accommodating larger or faster aircraft.

Runway Protection Zone (RPZ) - An area off the end of the runway that is intended to be clear in case an aircraft lands short of the runway. The size is small for airports serving only small airplanes and gets bigger for airports serving large airplanes. The RPZ used to be known as a clear zone – which was a good descriptive term because you wanted to keep it clear.

Runway Safety Area (RSA) – A prepared ground area surrounding a runway that is intended to accommodate inadvertent aircraft passage without causing damage. The dimensions for the RSA increase for runways accommodating larger or faster aircraft.

Segmented Circle - A system of visual indicators designed to show a pilot in the air the direction of the traffic pattern at that airport.

Small Aircraft - An aircraft that weighs less than 12,500 lbs.

Straight-In Approach – An instrument approach that directs aircraft to a specific runway end.

Stop and Go – An aircraft operation where the aircraft lands and comes to a full stop on the runway before takeoff is initiated.

T-Hangar – A rectangular aircraft storage hangar with several interlocking "T" units that minimizes building per storage unit. Usually two-sided with either bi-fold or sliding doors.

Takeoff Distance Available (TODA) – the length of the takeoff run available plus the length of clearway, if available.

Takeoff Run Available (TORA) – the length of runway available and suitable for the ground run of aircraft when taking off.

Threshold – The beginning of that portion of a runway that is useable for landing.

Tiedown - A place where an aircraft is parked and "tied down." Surface can be grass, gravel or paved.

Touch and Go – An aircraft operation involving a landing followed by a takeoff without the aircraft coming to a full stop or exiting the runway.

Traffic Pattern - The flow of traffic that is prescribed for aircraft landing and taking off from an airport. Traffic patterns are typically rectangular in shape, with upwind, crosswind, base and downwind legs and a final approach surrounding a runway.

Transitional Surfaces - One of the FAR Part 77 Imaginary Surfaces, the transitional surface extend outward and upward at right angles to the runway centerline and the extended runway centerline at a slope of 7:1 from the sides of the primary surface and from the sides of the approach surfaces.

Transport Airport - An airport designed and constructed to serve large commercial airliners. Portland International and SEATAC are good examples of transport airports.

Utility Airport - An airport designed and constructed to serve small planes. Aurora State Airport in Oregon, Nampa Airport in Idaho, or Arlington Airport in Washington are examples of utility airports.

Vertical Navigation (VNAV) – Vertical navigation descent data or descent path, typically associated with published GPS instrument approaches. The use of any VNAV approach technique requires operator approval, certified VNAV-capable avionics, and flight crew training.

Visual Approach Slope Indicator (VASI) - A system of lights located by the approach end of a runway which provides visual approach slope guidance to aircraft during approach to landing. The lights typically show some combination of green and white if a pilot is on the correct flight path, and turn red of a pilot is too low.

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

Visual Guidance Indicator (VGI) – Equipment designed to provide visual guidance for pilots for landing through the use of different color light beams. Visual Approach Slope Indicators (VASI) and Precision Approach Path Indicators (PAPI) defined above are examples.

Waypoint – A specified geographical location used to define an area navigation route or the flight path of an aircraft employing area navigation.

Wide Area Augmentation System (WAAS) – GPS-based instrument approach that can provide both vertical (glideslope) and horizontal (course) guidance. WAAS-GPS approaches have the technical capabilities to provide approach minimums nearly comparable to a Category I instrument landing system (ILS).

Wind Rose - A diagram indicating the prevalence of winds from various directions in relation to existing or proposed runway alignments.