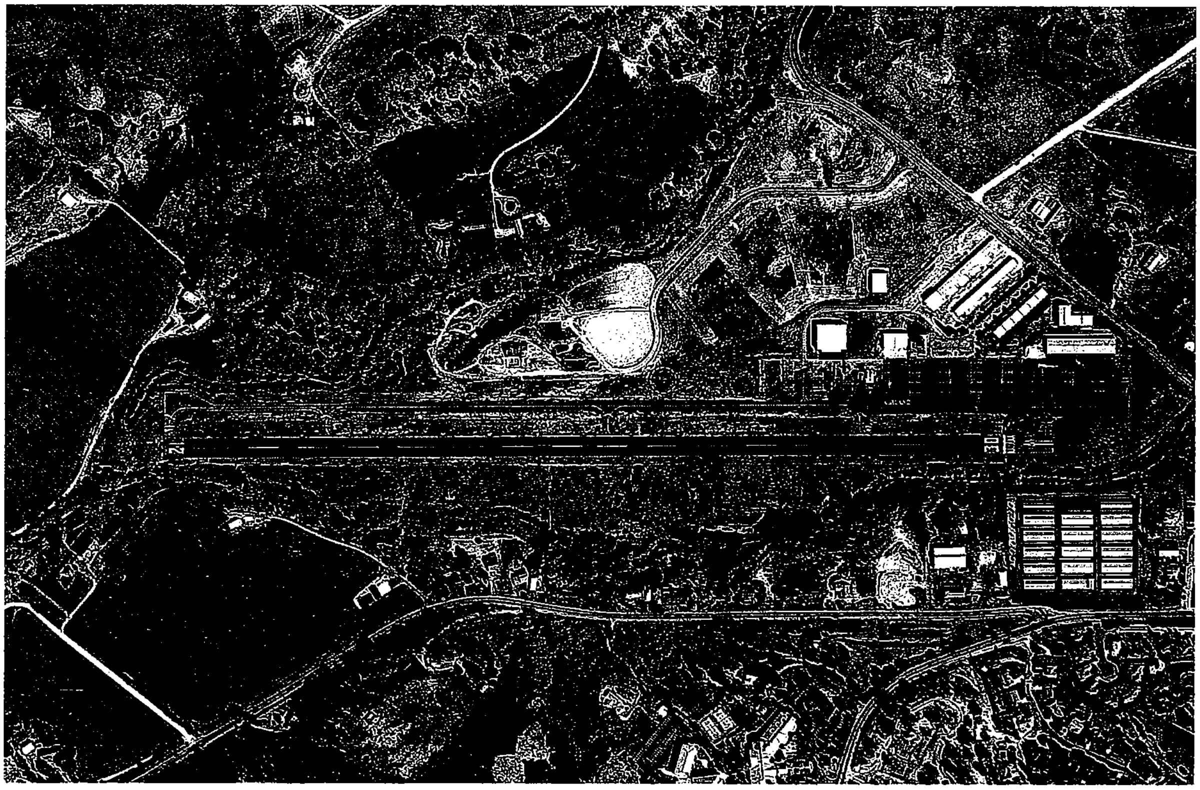
Ashland Municipal Airport

Airport Layout Plan Report



City of Ashland
Ashland, Oregon

Century West
Engineering Corporation

Aron Faegre & Associates ◊ Gazeley & Associates

Ashland Municipal Airport

Airport Layout Plan Update

2004-2025

Prepared for

City of Ashland

CITY OF
ASHLAND

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Introduction

CHAPTER ONE
INTRODUCTION

The City of Ashland, in cooperation with the Oregon Department of Aviation (ODA), is updating the Airport Layout Plan (ALP) Report for Ashland Municipal Airport – Sumner Parker Field (S03). The purpose of the study is to define the current, short-term and long-term needs of the airport. The 2004-2025 Airport Layout Plan Report will replace the Ashland Municipal Airport Master Plan completed in 1993.[1] Prior master plan recommendations 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.

Funding for the ALP project was provided through a Federal Aviation Administration (FAA) Airport Improvement Program grant (90 %) with a local match (10 %) provided by the City of Ashland. Overall project coordination was provided by the Oregon Department of Aviation through administration of an FAA multiple airport layout plan grant.

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.

[1] Ashland Municipal Airport Master Plan 1990-2010, SFC Engineering (1993).

OVERVIEW

Ashland Municipal Airport is located in southern Jackson County and 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 aviation system." The Airport is included in the "Community General Aviation Airport" category (Category 4) based on its current functional role. Community airports typically accommodate a wide range of general aviation users and local business activities. Local airport activity includes business and general aviation users and visitors to Ashland and the surrounding area.

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.

The Airport is included in the National Plan of Integrated Airport Systems (NPIAS), administered by the FAA. NPIAS airports are eligible for federal funding of improvements through FAA programs such as the current Airport Improvement Program (AIP). The FAA requires that all NPIAS airports periodically update their airport plans to maintain effective long-term planning. This project will enable the Airport to meet the FAA's requirement to maintain an up-to-date plan.

The Airport provides convenient general aviation and business aviation access to this area, with the nearest commercial air service about 20 minutes away in Medford. It is noted that Ashland is often fog-free when other airports in the Rogue Valley are fogged in. As a result, Ashland provides a reliable weather alternate for a variety of business and general aviation aircraft, including the numerous small package and express carrier (FedEx, UPS, etc.) flights that operate at Rogue Valley International-Medford Airport daily with single and twin-engine turboprop aircraft.

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

The primary objective of the Airport Layout Plan Report 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 Layout Plan Report will:

- *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.*

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 layout plan update. The JPC provided valuable information used in formulating the plan.

The City's Airport Commission served in the role of Planning Advisory Committee (PAC) to assist the Consultant and City staff in developing the updated plan. The Commission reviewed and commented on draft work products and provided local knowledge and expertise to the planning process. PAC meetings and additional coordination meetings were held at key points during the study in conjunction with public informational meetings.

Following completion of preliminary work products, the Draft ALP Report was prepared to present the culmination of the entire work effort, reflecting the input provided by all participants in the planning process. Following a period of review, all public and agency comments received were integrated into the Final Airport Layout Plan Report and drawing set.

SUMMARY OF ALP REPORT FINDINGS/CURRENT CONDITIONS

1. Ashland Municipal Airport – Sumner Parker Field is owned and operated by the City of Ashland, Oregon.

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

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 has a single paved and lighted runway (3,603 feet by 75 feet) with a full-length parallel taxiway on its east side. The Runway 30 threshold is displaced 190 feet.

5. The airfield facilities are generally designed to meet FAA Airport Design Group (ADG) I standards associated with small fixed wing aircraft. However, some facilities (runway width, pavement strength, etc.) are designed to accommodate larger aircraft.

6. Runway 12/30 has a pavement strength rating of 15,000 pounds for aircraft with single wheel landing gear configurations.

7. Airfield lighting currently includes medium intensity runway edge lights (MIRL) and runway threshold lights, visual approach slope indicators (VASI) on Runways 12 and 30, runway end identifier lights (REIL) on Runway 30, and the airport beacon.

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

9. The most recent air traffic data provided by ODA (Acoustical Counting Program) is for 2003, which estimated 20,878 annual operations at the airport. The airport had 83 based aircraft listed on the most recent FAA TAF Based Aircraft Data (2001).

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

11. 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 12/30 are based on FAA airport reference code (ARC) B-I (small aircraft).

3. Runway 12/30 is recommended for pavement rehabilitation early in the current planning period. The north section of the main apron and other hangar taxiways and taxilanes will also require pavement rehabilitation during the current twenty year planning period.

4. The existing north hangar area should be expanded, as needed, to accommodate future demand for T-hangars and conventional hangars. Additional taxilane connections and site preparation will be required to accommodate new hangars as they are developed.

5. Expansion of the main apron is recommended to provide additional aircraft storage capacity for locally-based and itinerant aircraft. The landside area adjacent to north end of the main apron is recommended to be reserved for development of larger conventional hangars for business related use.

6. A new access taxiway is recommended to be extended through the north hangar area; additional hangar taxilanes are recommended to serve new hangar rows.

7. Additional vehicle access and parking is recommended to serve future aviation and related development to be located at the north end of the main apron. The access road will extend from the existing north airport access road.

8. Fencing should be added along the airport boundary to limit unauthorized human, animal and vehicle access to the airfield. In addition, fencing and electronic (keypad

combination) gates should be provided to limit access to existing and new apron and hangar areas.

9. Installation of a SuperUnicom™ system or similar system, which combines weather conditions and pilot advisories (favored runway, etc.), is recommended to improve safety for pilots operating at the airport.

10. The City of Ashland and Jackson 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.

11. The City of Ashland and Jackson 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 Manufacturing 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 as an important transportation facility within the region.

12. The City of Ashland 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.

13. 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.

14. 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.

15. The City of Ashland should adopt the Airport Layout Plan Report and drawings in a timely manner to guide airport activities. The City of Ashland and Jackson County should also adopt the Airport Layout Plan Report and drawings for incorporation into local/county comprehensive and transportation planning.

16. The City of Ashland should continue coordination with FAA to evaluate proposed uses for approximately 9 acres of airport property located near the northeast corner of the airport, on the north side of the north airport access road. If aviation-related development does not prove feasible, the City may wish to request that FAA release the restrictions on the property, which could permit selling the land with proceeds invested in the airport.

17. An updated obstruction survey should be performed to verify location and heights of obstructions in the vicinity of the runway, particularly within the FAR Part 77 primary, approach and transitional surfaces.

18. The City of Ashland 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.

Ashland Municipal Airport
Airport Layout Plan Report

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. Updated socioeconomic data will be included in Chapter Three (Forecasts of Aviation Activity). As noted earlier, this Airport Layout Plan Report updates the 1992 Airport Master Plan. As an update of the master plan, this document uses previous information when still relevant, to the greatest extent possible. Both documents were authored primarily by David Miller, AICP. In addition, data from a variety of sources are used in this evaluation:

- **Ashland Municipal Airport Master Plan** (SFC Engineering, October 1992)
- **Ashland Municipal Airport - Master Plan 1980/2000** (Wadell Engineering, Dec. 1982)
- **Ashland Municipal Airport Pavement Evaluation Maintenance-Management Program** (Pavement Consultants, Inc., 2003)
- **Ashland Municipal Airport – Economic Impact Study** (SOSC, 1997)
- **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)
- Local land use planning documents, zoning ordinances and mapping.

AIRPORT LOCALE

Ashland is located in Southwestern Oregon, approximately 250 miles south of Portland and 12 miles north of the Oregon-California border. Ashland Municipal Airport is located on approximately 94 acres, 3 miles northeast of downtown Ashland. Access to the airport is provided by Dead Indian Memorial Road, which connects to East Main Street. U.S. Interstate 5 is located one-half mile west of the airport, with access provided via Greensprings Highway.

CLIMATE

Weather conditions play an important role in the planning and development of the airport. Temperature and wind direction directly affect runway length and alignment; cloud coverage and precipitation affect visibility and are primary determinants for navigational aids and lighting. Weather conditions in the Rogue River Valley, because of the protection it receives from its mountainous surroundings, are generally characterized by warm, dry summers and cool, moist winters. Annual precipitation averages roughly 20 inches; however, the mountains protect Ashland from much of the maritime influence of the coastal regions. Occasionally, ground fog will occur in the area, particularly during morning hours in the winter and spring.

The average temperature during the winter months is in the mid-40-degree Fahrenheit range, with occasional snows. The summer weather in the area is typically warm with average temperatures in the mid-70- to mid-80-degree range, although temperatures in the 90- to 100-degree range are not uncommon. Most summer rainfall in the area is generally related to thunderstorm activity.

GEOGRAPHY/GEOLOGY

Terrain in the vicinity of the airport is characterized by sloping valley lands surrounded by rising mountainous terrain. Ashland is situated in the Klamath Mountains on the west side of Bear Creek, a tributary of the Rogue River. Ashland is located at the southern end of the Rogue River Valley, which is an irregularly shaped basin extending south from Sam's Valley to the Klamath Falls Junction area, about five miles southeast of Ashland. The valley extends to the north approximately 15 miles. Emigrant Creek borders the airport near the northeast corner; Neil Creek runs along the western edge of the airport.

Ashland Municipal Airport is surrounded by mountainous terrain (west, east and south) rising up to approximately 2,600 feet above mean sea level (MSL) within two miles, and up to 7,600 feet MSL within five miles of the airport. Airport elevation is 1,885 feet MSL.

Bodies of granite rock are relatively common in Southwestern Oregon (a large deposit lies southeast of Ashland). The Jackson County Comprehensive Plan indicates that, to varying degrees, the following metallic minerals are present in the county: gold, silver, uranium, chromite, copper, lead, zinc, tungsten, molybdenum, nickel, platinum, mercury, manganese, and cobalt. Likewise, the Comprehensive Plan identifies coal, oil shale, asbestos, clay, peat, pumice, silica, limestone, and aggregate as nonmetallic minerals present in the county. The soils in the Rogue River Valley area belong to the Xerult family – freely drained Ultisols in areas of Mediterranean-type climate, as is the case in the valley. Many of the valley soils are well-suited to agriculture, and the agricultural acres support the production of fruits, hay, grains, and dairy crops.

AIRPORT HISTORY

The history of aviation in Ashland is well established, dating back to the early 1920s. Several airfields were utilized in the Ashland area during the early years of aviation. In the late 1940s, an airstrip developed by Sumner Parker, a local pilot, was leased to the City of Ashland for use as a public airport. The Sumner Parker site was located approximately three miles from downtown Ashland and was found to be well suited for aircraft operations. The City continued to lease the property and make improvements to the airfield into the 1960s.

In 1963, based on growing community support, the City began to evaluate future development needs of the airport. After establishing an airport committee, a feasibility study was conducted to determine the best location for the local airport. The Sumner Parker Field site was found to be the most feasible, and the City Council authorized negotiations for purchase of the property surrounding the airstrip. Federal approval of the site was received in 1964, and acquisition of the property was completed shortly thereafter.

The airport was renamed Ashland Municipal Airport – Sumner Parker Field. A number of major airport improvements have occurred at Ashland Municipal Airport since it became a publicly owned facility. In 1968, the runway was paved and lighted; an aircraft parking apron was constructed, and an airport administrative building was constructed. Since the initial development, the runway has been widened to 75 feet, a 190-foot displaced threshold was added to Runway 30, and the parallel taxiway was extended 660 feet to the end of Runway 12. Other improvements include extension of the Runway 12 overrun (safety area); expanded apron and tie-down areas; improvements to vehicle parking and access roadways; construction of maintenance facility; and various landscaping projects.

Improvements made at the airport since the 1992 master plan include:

- Replacement of the aviation fuel storage tanks and dispensing system to meet DEQ/EPA regulations.
- Construction of new hangars
- Hangar taxilane & taxiway construction (1995)
- Apron construction (north extension - 1995)
- Construction of Airport Road
- Sky Research Hangar site development, vehicle access road, etc. (2003)
- Hangar site preparation (excavation & retaining wall for one new 14-unit T-hangar)
- T-Hangar Construction (2004) – 14 unit enclosed T-hangar
- North Hangar Taxilane (approximately 480 x 25 feet)
- Pavement maintenance and rehabilitation projects
- Projects completed in 2004 or 2005 using a 2004 FAA AIP grant:
    1. Replacement of existing low-intensity runway edge lighting (LIRL) with medium-intensity (MIRL)
    2. Main Apron (center section) reconstruction and new aircraft wash rack
    3. Main Apron (southern sections) overlay
    4. Parallel taxiway reflectors
    5. New airport electrical building
    6. New airport rotating beacon

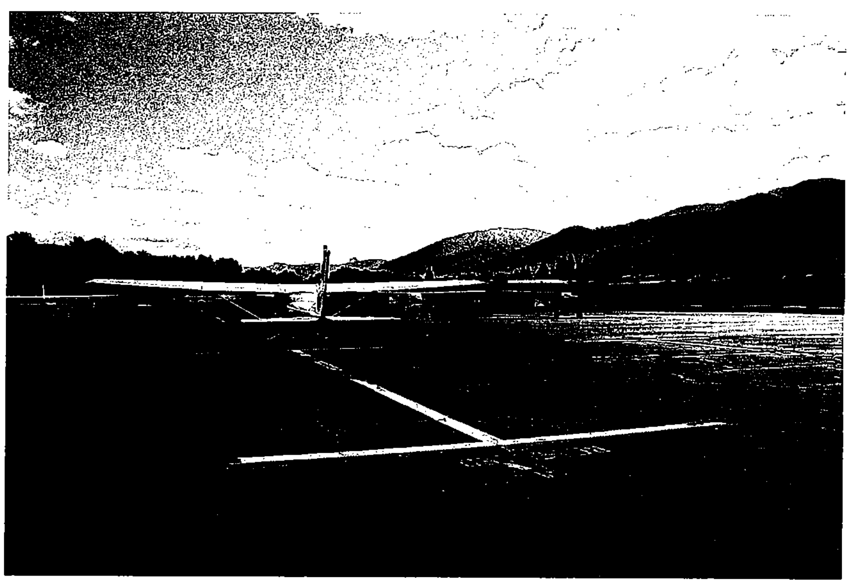
Ashland Municipal Airport is managed by the City of Ashland's Department of Public Works. A nine-member appointed airport commission oversees the operation of the airport. Robert Skinner, Skinner Aviation, the airport's Fixed Base Operator (FBO), is responsible for administering tie-down and hangar rents, fuel flowage fees, freight operations, etc., through an operating agreement with the City. The operating agreement is subject to periodic review and competitive bidding. The City also provides community police and fire protection, planning and zoning, parks and recreation programs, hospital services, and utilities.

AIRFIELD FACILITIES

Historically, Ashland Municipal Airport has served a variety of general aviation users, including business, commercial, government and recreational aviation. **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 2-1** summarizes airport data.

TABLE 2-1: AIRPORT DATA

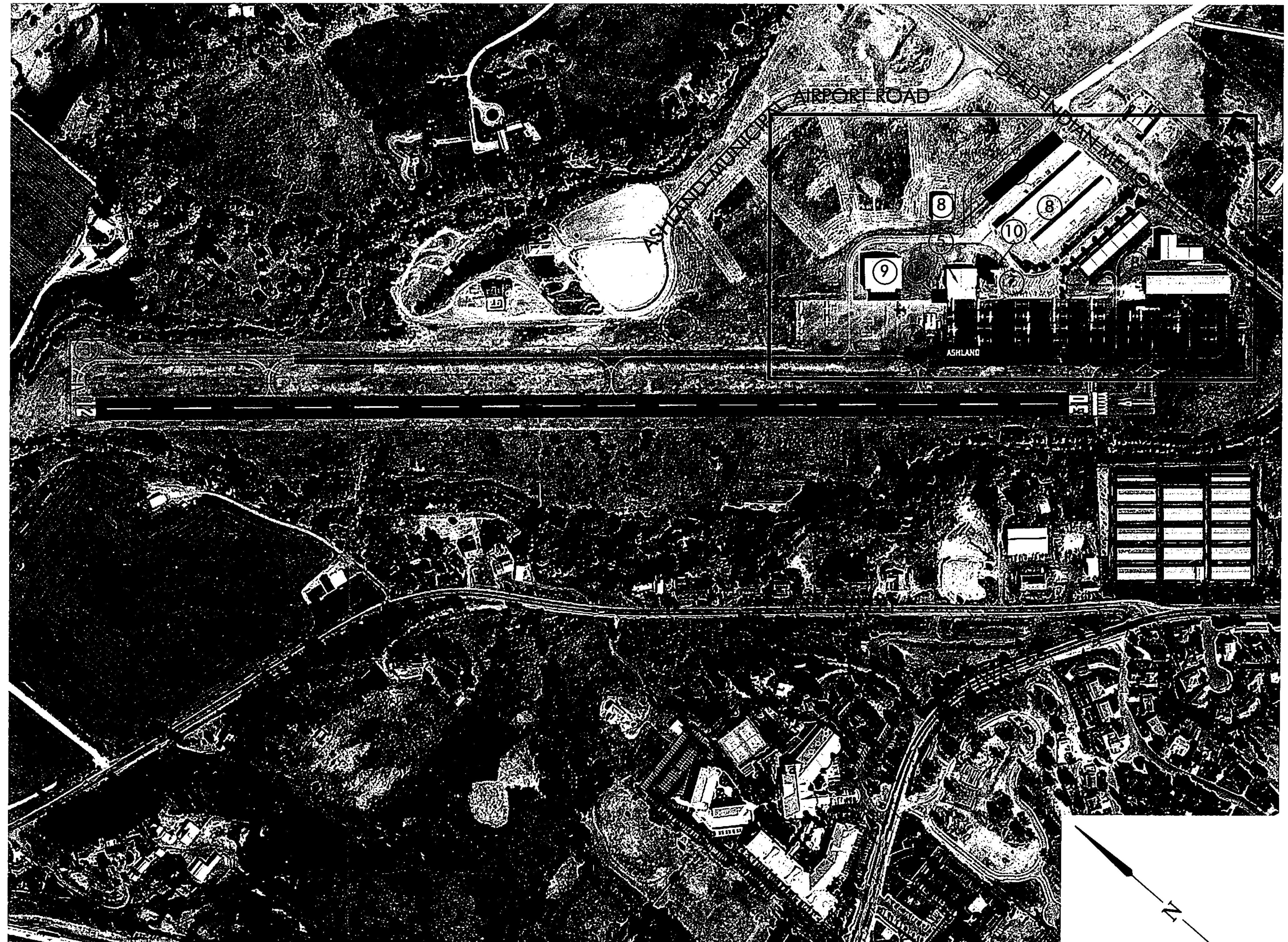
Airport Name/Designation	Ashland Municipal Airport (S03)
Airport Owner	City of Ashland
Date Established	1940's
Airport Category	National Plan of Integrated Airport Systems (NPIAS) General Aviation FAA Airport Reference Code: B-I (small aircraft) Oregon Aviation System Designation: Community General Aviation Airport (Category 4)
Airport Acreage	Approximately 94 Acres (held in fee)
Airport Coordinates	N 42°11.42' W 122° 39.64'
Airport Elevation	1885 feet Mean Sea Level (MSL)
Airport Traffic Pattern Configuration/Altitude	Left Traffic - 2,900 feet above mean sea level (MSL)

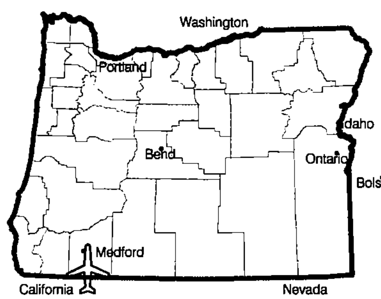


LEGEND

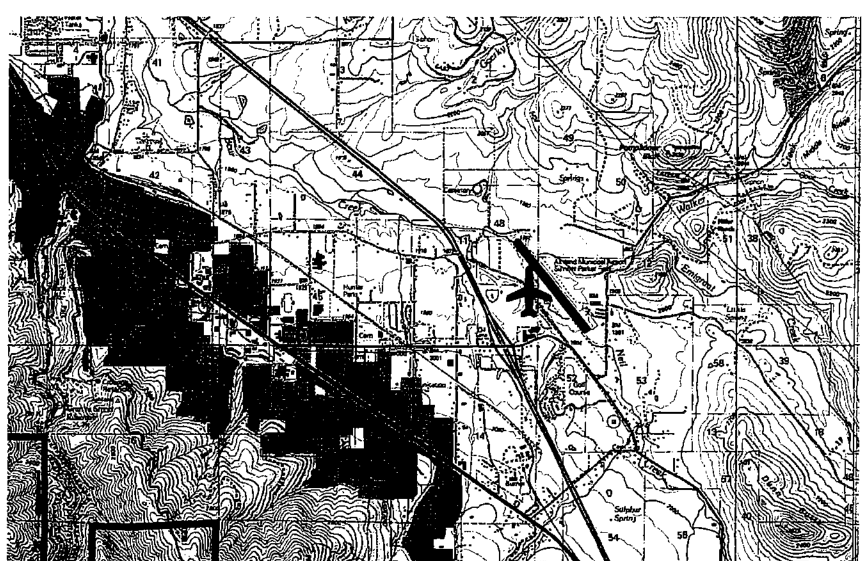
1. RUNWAY 12-30: 3603'x75'
2. PARALLEL TAXIWAY
3. AIRCRAFT HOLD/RUN-UP AREA
4. AIRCRAFT APRON
5. FIXED BASE OPERATOR
6. FUELING AREA
7. VEHICLE PARKING
8. HANGAR
9. SKY RESEARCH HANGAR & OFFICE
10. AIRPORT BEACON
11. SEGMETED CIRCLE
12. AIRCRAFT WASH PAD

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





Ashland Municipal Airport-Sumner Parker Field



Not to Scale

SOURCE: BERGMAN PHOTOGRAPHIC SERVICES, INC. (10-03-01)

SCALE: 1" = 200'

CENTURY WEST ENGINEERING CORPORATION

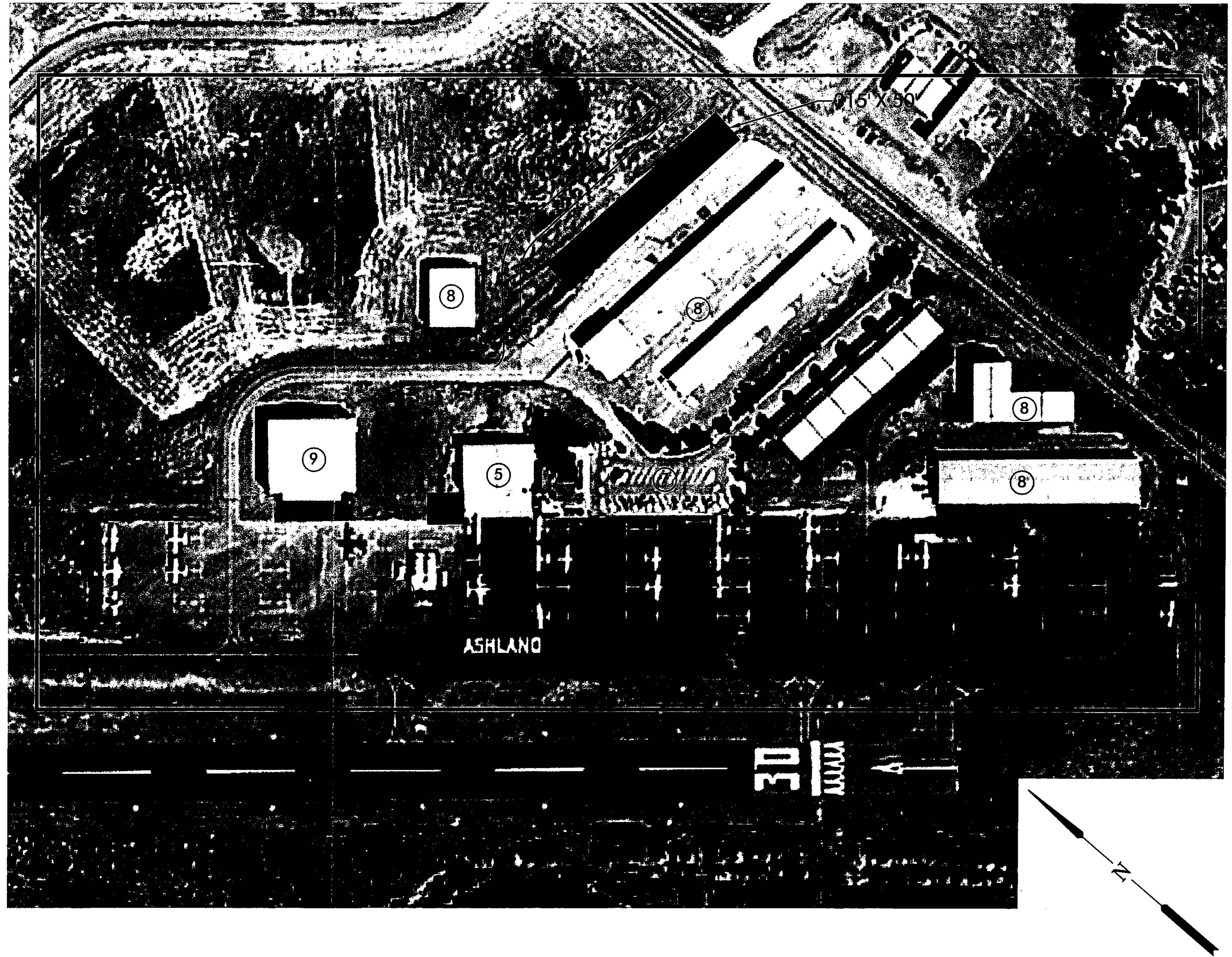
ASHLAND MUNICIPAL AIRPORT - SUMNER PARKER FIELD EXISTING CONDITIONS AND SITE MAP

FIGURE 2-1

LEGEND

1. RUNWAY 12-30: 3603'x75'
2. PARALLEL TAXIWAY
3. AIRCRAFT HOLD/RUN-UP AREA (SEE FIG. 2-1)
4. AIRCRAFT APRON
5. FIXED BASE OPERATOR
6. FUELING AREA
7. VEHICLE PARKING
8. HANGAR
9. SKY RESEARCH HANGAR & OFFICE
10. AIRPORT BEACON
11. SEGMETED CIRCLE (SEE FIG. 2-1)
12. AIRCRAFT WASH PAD

▭ TERMINAL AREA FACILITIES



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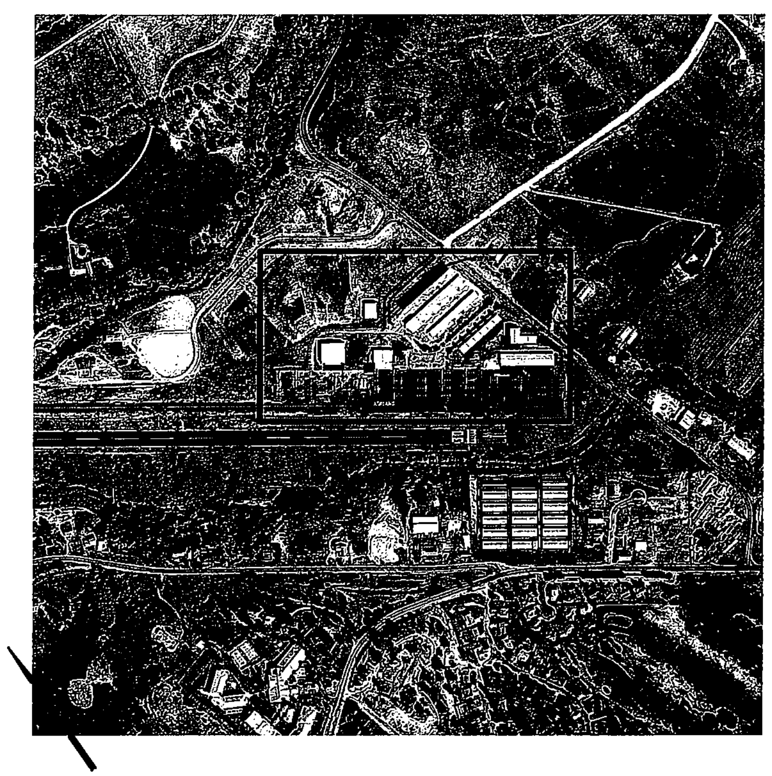


Not to Scale

SOURCE: BERGMAN PHOTOGRAPHIC SERVICES, INC. (10-03-01)

CENTURY WEST ENGINEERING CORPORATION

ASHLAND MUNICIPAL AIRPORT - SUMNER PARKER FIELD TERMINAL AREA FACILITIES

FIGURE 2-2

Runway & Taxiways

Ashland Municipal has a single 3,603-foot by 75-foot paved and lighted runway. Runway 12/30 is oriented on a 120/300 degree (magnetic) alignment. The threshold of Runway 30 is displaced 190 feet to provide increased obstruction clearance for landing aircraft over trees, structures and vehicles traveling on Dead Indian Memorial Road. The runway has a published weight bearing capacity of 15,000 pounds for aircraft with single wheel land gear configurations. The effective gradient of Runway 12/30 is 1.1 percent.

Runway 12/30 has an asphaltic concrete (AC) surface, basic markings, and medium-intensity runway edge lighting (MIRL). The runway is served by a full-length east side parallel taxiway/taxilane with six connecting exit taxiways. A 2,850-foot section of parallel taxiway extends from the north end of the aircraft apron to the end of Runway 12. The parallel taxiway is 30 feet wide with a 162.5-foot runway separation. An aircraft holding area is located at the north end of the parallel taxiway, adjacent to the Runway 12 threshold. The southern end of the runway is served by a taxilane located along the outer edge of the aircraft apron. This section of taxilane has a slightly reduced runway separation of 150 feet.

None of the taxiways are equipped with edge lighting, but reflective edge markers were recently added to the parallel taxiway. Aircraft hold lines are painted on all taxiway connections to Runway 12/30 and are located 125 feet from the runway centerline. This distance corresponds to the outer edges of a 250-foot wide runway obstacle free zone (OFZ) and object free area (OFA) for small aircraft. The parallel taxiway and exit taxiways have yellow centerline striping. **Table 2-2** summarizes existing runway and taxiway facilities.

During a recent site inventory, Runway 12/30 was observed to be generally in good condition, having recently been sealcoated and repainted. According to available data, the most recent asphalt overlay on the runway was applied in 1984.

TABLE 2-2: RUNWAY & TAXIWAY DATA

Runway	
Dimensions	3,603 x 75 feet; 190-foot displaced threshold (Rwy 30)
Effective Gradient	1.11%
Runway Bearing	N 38° 42' 50" W
Surface/Condition	Asphalt/Good* *(*Based on 2002 inspection, prior to most recent sealcoat)*
Weight Bearing Capacity	15,000 pounds – Single Wheel Landing Gear
Marking	Basic (visual)
Lighting	Medium Intensity Runway Edge Lighting (MIRL) (dusk-dawn automatic switch); VASI (Rwy 12 & 30) - Variable approach angles (Rwy 12: 3.5-degrees; Rwy 30: 4.0-degrees) (dusk-dawn automatic switch); REIL (Rwy 30) (pilot activated)
Signage	Location & Directional Signs
Wind Coverage	All Weather: Estimated 95% at 12 mph; 99.5% at 15 mph. Rogue Valley Int'l-Medford Airport data. Source: NOAA ; 101,163 observations (1948 - 1978)
Taxiways	
Parallel Taxiway	Approximately 2,850 x 30 feet with (3) 90-degree exit/connecting taxiways (162.5-foot runway separation). Asphalt surface; centerline stripes; aircraft hold lines at each runway connection.
Parallel Taxilane	Approximately 1,100 feet (width varies) with (3) 90-degree exit/connecting taxiways (150-foot runway separation). Asphalt surface; centerline stripes; aircraft hold lines at each runway connection.
Hangar Taxiway (north)	Approximately 570 x 25 feet. Extends from north (east) end of aircraft apron to T-hangars.
Hangar Taxiway (south)	Approximately 595 x 25 feet (width varies). Extends from aircraft apron to hangars.

Aircraft Apron

Ashland Municipal has a single large aircraft apron located near the end of Runway 30, which supports aircraft fueling, tiedowns, hangars and occasional cargo/express aircraft parking and ground operations. The apron is approximately 1,500 feet long and varies between 150 and 230 feet deep. The majority of the apron is configured with light aircraft tiedowns. There are currently 72 light aircraft tie-down positions on the apron; 2 parking positions for larger aircraft are located adjacent to north side of the aircraft fuel area.

The aircraft fuel area is located just north of the fixed base operator (FBO) maintenance hangar. Several hangars and related buildings are located along the rear (east) edge of the main apron including the FBO office and maintenance hangar, the Sky Research hangar, and an older T-hangar located at the south end of the apron. Itinerant aircraft parking is located on the apron adjacent to the FBO office and the vehicle parking lot.

During a site inventory conducted prior to the summer 2004 rehabilitation project, the aprons were observed to range from very good (north end) to very poor condition (center section), which generally corresponds to the age of the four sections. The southern and center sections of the main apron were rehabilitated in 2004 and are now in excellent condition. The pavements in the poorest condition were reconstructed while others had asphalt overlays applied. An aircraft wash facility was also added adjacent to the aircraft apron and FBO maintenance hangar. The wash facility is designed to capture wash water and pipe it to an existing sanitary sewer line. **Table 2-3** summarizes existing aircraft apron facilities.

TABLE 2-3: AIRCRAFT APRON DATA

Area	Dimensions and Use
Main Apron (south section)	Approximately 365 x 270' (10,950 square yards) Aircraft parking; hangar frontage. Asphalt Concrete
Main Apron (south-center section)	Approximately 370 x 230' (9,455 square yards) Aircraft parking. Asphalt Concrete
Main Apron (north-center section)	Approximately 360 x 230' (9,200 square yards) Light aircraft tiedowns, aircraft fueling. Asphalt Concrete
Main Apron (north section)	Approximately 325 x 140' (5,055 square yards) Light aircraft tiedowns. Asphalt Concrete
Aircraft Wash Area	Approximately 50 x 40' (222 square yards) Aircraft washing. Asphalt Concrete

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 2-4 summarizes airfield pavement conditions for Ashland based on the most recent inspection conducted in November, 2002.[3] The branch report contained in the pavement study indicates that Ashland currently has more 748,000 square feet (SF) of airfield pavement, which equals approximately 11 acres of surface area.

TABLE 2-4: SUMMARY OF AIRFIELD PAVEMENT CONDITION (NOVEMBER 2002)

Pavement	Section Design/Age	PCI Rating[1]	Condition
Runway 12/30 *(north 650-foot section)*	1" AC (1984); 2" AC (1983); 8" Aggregate Base (1983)	65	Good
Runway 12/30	1" AC (1984); 2" AC (1977); BST (1967); 4.5" Aggregate Base (1967); 3" Aggregate Subbase (1967)	63 38* (south 190')	Good Poor
Parallel Taxiway *(north section)*	2" AC (1984); 8" Aggregate Base (1984)	64	Good
Parallel Taxiway *(center section)*	2" AC w/ Fabric (1989); 2" AC (1974); 4" Aggregate Base (1974); 4" Aggregate Subbase (1974)	86	Excellent
Exit Taxiways	2" AC (age varies); 8-9" Aggregate Base (typ.)	36-59	Poor to Good
T-Hangar Access Taxiway *(north)*	4" AC (1995); 7" Crushed Aggregate Base (1995)	72	Very Good
Hangar Taxilanes *(south)*	3" AC (1995); 6" Crushed Aggregate Base (1995)	64	Good
T-Hangar Taxilanes	4.5" AC (1988); no base	64	Good
Main Apron *(southern section)*	2" AC (2004); 2" AC (1983); 8" Aggregate Base (1983)	59*	Good*
Main Apron *(south-center section)*	2" AC (2004); 2" AC (1983); BST (1968); 9" Aggregate Base (1968)	49*	Fair*
Main Apron *(north-center section)*	2" AC (2004); 2" AC (1983); BST (1967); 4.5" Aggregate Base (1967); 3" Aggregate Subbase (1967)	10*	Failed*
Main Apron *(north section)*	3" AC (1995); 3" Crushed Aggregate Base (1995)	95	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 Ashland Municipal Airport*

* *PCI ratings made prior to 2004 pavement rehabilitation projects; current (2005) ratings for these pavements would be expected to range from 95 to 100 (Excellent).*

[3] Pavement Evaluation/Maintenance Management Program, Ashland Municipal Airport (2003)

In the 2002 inspection, Ashland's airfield pavements ranged from "failed" to "excellent," although the average rating of all airfield pavements was 58, which corresponds to "good" condition. Among the airfield pavements rated "poor" or worse include the north-center section of the main apron (failed) and the south end of Runway 30 (poor), both of which have since been fully rehabilitated.

The following excerpt from 2002 pavement study summarizes the findings:

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

The condition of the airfield pavements observed during site visits performed as part of the Airport Layout Plan Update (Winter 2004) were generally consistent with the most recent formal pavement evaluation conducted in November 2002. Updated PCI inspections are normally conducted on three-year intervals; the next inspection for Ashland would likely be conducted in 2005 or 2006 and will reflect significant improvements in overall pavement condition made since the 2002 inspection.

LANDSIDE FACILITIES

Hangars and Airport Buildings

Aircraft hangars on the airport consist of standard T-hangars and conventional hangars. Conventional hangars include the FBO maintenance hangar, the Sky Research hangar/office, the Civil Air Patrol hangar, and an Oregon State Police hangar, and a single conventional hangar adjacent to the north T-hangar. Construction on a new 14-unit T-hangar was completed in late 2004 in the north hangar area, following extensive site preparation (excavation and retaining wall construction).

The FBO building houses office space, a pilot waiting area, a small meeting room and restrooms. The Sky Research building, constructed in 2003, combines hangar and office space for the airport-based business. Existing airport buildings are summarized in **Table 2-5.**

TABLE 2-5: AIRPORT BUILDINGS

Building	Existing Use
T-Hangar (14-units) (north hangars)	Aircraft Storage
Conventional Hangar (11-units) (south end of apron)	Aircraft Storage
T-Hangar (10-units) (north hangars)	Aircraft Storage
T-Hangar (10-units) (north hangars)	Aircraft Storage
Multiple Conventional Hangar (6-units)	Aircraft Storage
"CAP" Conventional Hangar	Aircraft Storage, Civil Air Patrol Operations
Conventional Hangar (near south end of apron)	Aircraft Storage
Conventional Hangar (near south end of apron)	Aircraft Storage
Conventional Hangar (near south end of apron)	Aircraft Storage
FBO Building	FBO, Restrooms, Office, Pilot/Passenger Areas
Conventional Hangar (FBO Maintenance Hangar)	Aircraft Maintenance
Sky Research Conventional Hangar/Office	Commercial Use; Aircraft Storage
OSP Conventional Hangar	Aircraft Storage
Airport Electrical Building	Airport Lighting Systems

Airport Lighting

Ashland Municipal accommodates day and night operations in visual flight rules (VFR) conditions. The airport beacon, lighted wind sock, runway lights, and visual guidance indicators (VGI) on Runway 12/30 operate on dusk-dawn automatic switches. A new airport beacon was installed in 2005, northeast of the FBO building on the east side of the runway. The segmented circle and wind cone are located near the mid-point of the runway on its east side.

Runway 12/30 has medium intensity runway lighting (MIRL) with visual approach slope indicators (VASI) on both ends. The MIRL system was installed in 2005 to replace the previous low intensity edge lighting system. Threshold lighting is located at both runway ends and on the displaced threshold for Runway 30.

Runway 30 is equipped with runway end identifier lights (REIL), which are two sequenced strobe lights that mark the end of the runway. Overhead lighting is available in the terminal area, fueling area, and adjacent to most aircraft hangars. **Table 2-6** summarizes existing airport lighting at Ashland Municipal Airport.

TABLE 2-6: AIRPORT LIGHTING

Component	Type	Condition
Runway 12/30	Medium Intensity Runway Edge Lighting (MIRL); Threshold Lights	Excellent
Taxiway Lighting	No Edge Lighting; Edge Reflectors on Parallel Taxiway	Excellent
Lighted Airfield Signage	Location & Directional Signs	Good
Runway Approach Lighting	REIL (Rwy 30)	Good
Visual Guidance Indicators	VASI (Rwy 12 & 30)	Good
Airport Lighting	Airport Rotating Beacon Lighted Wind Cone	Excellent Fair

AIRSPACE AND NAVIGATIONAL AIDS

Ashland Municipal Airport has no electronic navigational aids or published instrument approaches and operates exclusively under visual flight rules (VFR) conditions. As noted above, the runway is equipped with visual landing aids at both runway ends. The airspace surfaces for the runway are based on visual approach capabilities for small aircraft.[4]

Ashland Municipal 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 2 miles west of Ashland. This section of airspace is intended to protect instrument procedures at Rogue Valley International-Medford Airport. The Rogue Valley VORTAC is located approximately 20.7 miles northwest of the airport on the 128-degree radial. Several low- and high-altitude enroute airways connecting to VORTACs in Medford, Klamath Falls, and Fort Jones are located in the vicinity of the airport. However, the minimum enroute altitudes for these airways prevent potential conflicts with local airport flight activity. **Table 2-7** summarizes existing navigational aids and related items.

[4] FAR Part 77. Utility aircraft weighing less than 12,500 pounds.

TABLE 2-7: NAVIGATIONAL AIDS AND RELATED ITEMS

Type	Facilities
Electronic Navigational Aids	None on Site Nearby Facilities: Rogue Valley (OED) VORTAC (20.7 nm NW) 113.6 MHz Medford (MEF) Nondirectional Beacon (15 nm NW) 356 LHz
Instrument Approaches	None
Weather Observation	None
Communication	Unicom/Common Traffic Advisory Frequency (CTAF)(122.8 MHz)

The 1994 airspace plan identified large areas of terrain penetration within the horizontal and conical surfaces, particularly to the north, east, and south of the airport. A city survey identified 36 trees as obstructions, primarily along the northwest corner of the airport. Updated survey data will be incorporated into the airspace plan, if available.

Local airport traffic pattern altitude is 1,100 feet above ground level (AGL) with standard left traffic. Ashland is located in an area of Class E airspace with floor 700 feet above ground level, although there are no mandatory radio communication requirements during visual flight rules (VFR) conditions.

Table 2-8 summarizes notable obstructions, special airspace designations and IFR routes in the vicinity of Ashland Municipal, 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 2-8: AIRSPACE/INSTRUMENT ROUTES/ LOCAL OBSTRUCTIONS

Airspace Item	Description	Location
Low Altitude Enroute Airway	Victor 287– 8,000 feet mean sea level minimum enroute altitude (MEA)	4 nautical miles west. Extends from Rogue Valley VORTAC on a 138-degree course to GRENA intersection (with Fort Jones VORTAC 022-degree radial).
Low Altitude Enroute Airway	Victor 122 – 9,000 feet mean sea level minimum enroute altitude (MEA)	12 nautical miles north. Connects Rogue Valley and Klamath Falls VORTAC on a 098-278 degree course.
Class E Airspace	Associated with low altitude federal airways (700 feet above ground level)	Directly over airport, extends northward to Medford.
Class E Airspace (SFC)	Associated with Rogue Valley International-Medford Airport at surface.	Southern section begins 2 nautical miles west of Ashland.
Tower	2430' MSL (310 feet AGL) Radio Tower	1.5 miles southeast
Tower	2015' MSL Radio Tower (under construction; AGL elevation unknown)	4 miles northwest
Tower	4685' MSL (265 feet AGL - under construction)	8 miles southeast
Overhead Power Line	Major Transmission Lines	Within 2 miles (east & west)

AIRPORT SUPPORT FACILITIES/SERVICES

Aircraft Fuel

Ashland Municipal Airport has both aviation gasoline (AVGAS) and jet fuel available for sale. The airport has two aboveground fuel storage tanks (10,000 and 12,000 gallons) that meet all current Oregon DEQ and EPA regulations for spill detection and containment. The aboveground storage tanks were installed to replace older underground tanks. The tanks and fueling facilities are located in the north-center section of the main apron.

The 10,000-gallon tank is divided into two 5,000-gallon sections for jet fuel (Jet A) and 80/87 aviation gasoline (AVGAS). 80/87 fuel service is no longer maintained. The FBO indicates that the tank may be modified in the future to expand jet fuel capacity, if demand increases; it would also be possible to use that section of the tank to increase 100LL AVGAS capacity. The second tank has a capacity of 12,000-gallons of 100LL AVGAS. The tanks are owned by the City of Ashland. The airport FBO, Skinner Aviation also maintains two mobile fuel trucks (one jet fuel, one 100LL) with a capacity of approximately 1,200-gallons each.

Surface Access and Vehicle Parking

Vehicle access to the airport is provided via Dead Indian Memorial Road, which connects directly to East Main Street/Greensprings Highway. The primary airport access road serves the terminal area and landside facilities on the east side of the runway. A narrow access road extends from the northeast corner of the vehicle parking lot to serve the Sky Research hangar and other development located adjacent to the main apron. Airport Road, located north of the terminal area, also connects to Dead Indian Memorial Road and provides access to aviation development areas and an adjacent residence. No other public access exists elsewhere on the airport.

Designated vehicle parking areas are located adjacent to the FBO building and individual hangars on the airport. The recently constructed Sky Research building contains both aircraft hangar space and office space. As a commercial business, vehicle parking and access requirements differ from hangars used primarily for aircraft storage. In 2002, the City of Ashland adopted the Oregon Department of Aviation's (ODA) minimum standards for commercial aeronautical activities established for state-owned category IV airports. The minimum standards provide consistency in fees and practices for commercial aviation operations based on the airport's role as a community general aviation airport.

Fencing

Fencing at the airport consists of newer sections of chain link along the airport's eastern boundary (adjacent to Dead Indian Memorial Road) and in the terminal area. Other areas of the airport perimeter are fenced with three or four strand wire fencing.

Utilities

The developed areas of the airport have water, sanitary sewer, electrical and telephone service. Water and sewer service is provided by the City of Ashland; electrical service is provided by Ashland Electric. A 6-inch water line serves the airport, with connection to a line located along Dead Indian Memorial Road. A 600-volt buried electrical line is located adjacent to the airport access road with service extensions provided to individual buildings.

The airport storm drainage system includes an underground collection system located along airfield facilities that is routed to storm drain outfall into the adjacent drainage arm of Neil Creek.

Public telephone and restrooms are located in the airport FBO building.

LAND USE PLANNING AND ZONING

The City of Ashland Comprehensive Plan provides land use guidance for the areas located within the city limits and urban growth boundary. The airport is located within city limits and is subject to city land use and zoning requirements. The lands located west and south of the airport are located within city boundaries, while areas located south and east are located outside city boundaries and are subject to Jackson County regulation. The lands contained within airport boundaries and two adjacent areas (a triangular shaped area located beyond the north end of the runway and the residential property located immediately east of the runway) are designated "Airport" on the City of Ashland Comprehensive Plan Map.

The airport is currently zoned Employment District (E-1). The E-1 district "is designed to provide for a variety of uses such as office, retail, or manufacturing in an aesthetic environment and having a minimal impact on surrounding uses." E-1 zoning has been in place at the airport for many years, although no specific references to airport activities are found in the description of permitted, special permitted or conditional uses (Chapter 18.40.020-040).

Airport overlay zoning is maintained by both the City of Ashland and Jackson County. (City of Ashland A-1; Jackson County (AA) Airport Approach (AA) and (AC) Airport Concern. As part of the airport layout plan update, the City and Jackson County should ensure that overlay zoning is updated to be consistent with both current airport planning and Oregon state land use requirements.

The airport is surrounded by county zoned rural residential and exclusive farm use zones (north, west and east); city commercial zoning (west) and a large area of city residential zoning (R-1-10) immediately south. Chapter Seven (Environmental Checklist & Land Use) provides a more detailed discussion of surrounding land uses and zoning, including Oregon and FAA land use compatibility guidelines.

AIRPORT SERVICE AREA

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. **Table 2-9** lists the public airports within a 30 nautical mile radius of Ashland. Despite their relatively close proximity to Ashland, the surface travel times to these airports varies greatly depending on the surface route available. Rogue Valley International-Medford Airport, located approximately 15 miles from Ashland accommodates a full range of commercial and business aviation users. Ashland Municipal Airport is categorized as a Community General Aviation (GA) airport in the Oregon Aviation System, which means the airport accommodates a variety of general aviation and local business activities.

TABLE 2-9: PUBLIC USE AIRPORTS IN VICINITY (WITHIN 30 NAUTICAL MILES)

Airport	Location	Runway Dimension (feet)	Surface	Lighted Runway?	Fuel Available?
Rogue Valley International-Medford Airport	15 NM northwest	8,800 x 150 (primary rwy)	Asphalt	Yes	Yes
Klamath Falls International	30 NM east	10,301 x 150 (primary rwy)	Asphalt	Yes	Yes
Pinehurst State	13 NM southeast	2,800 x 30	Asphalt	No	No
Siskiyou County	26 NM southeast	7,484 x 150	Asphalt	Yes	Yes
Montague-Yreka	28 NM southeast	3,350 x 60	Asphalt	Yes	Yes

Ashland Municipal Airport
Airport Layout Plan Report

Chapter Three

Aviation Activity Forecasts

CHAPTER THREE
AVIATION ACTIVITY FORECASTS

INTRODUCTION

The purpose of this chapter is to prepare updated forecasts of aviation activity for the twenty-year planning period addressed in the Airport Layout Plan Update (2004-2024). The updated forecasts will provide the basis for estimating future facility needs at Ashland Municipal Airport. The scope of work for this project suggests use of the most recent Oregon Aviation System Plan (OASP)[5] forecasts (1994-2018), with revision as required, to reflect current conditions. Airport master plan[6] forecasts (1992-2012) are also available that reflect more airport-specific detail than is provided in statewide aviation forecasts. These forecasts, combined with the Federal Aviation Administration (FAA) Terminal Area Forecasts (TAF) will be compared with actual activity data to determine their applicability for use in this planning update. Once the relevance of existing forecasts is determined, a judgment can then be made regarding their use in developing updated projections for the current twenty-year planning period.

Economy

The economy of Ashland and Jackson County is relatively diversified, with elements such as tourism, manufacturing, agriculture, and government providing a unique balance in Southern Oregon. In recent years, unemployment rates within the Medford-Ashland area have been slightly lower than the statewide average. The Oregon Shakespeare Festival is a major component in the local and regional economy, attracting more than 100,000 visitors to Ashland each year. It has been estimated that the festival contributes roughly $50 million to the local economy in the form of direct and indirect employment, food, lodging, and other consumer spending. Southern Oregon University, a four-year public college, is located in Ashland with approximately 5,300 full-time and part-time students. Agriculture in the Rogue Valley consists

[5] Oregon Continuous Aviation System Plan, Volume I Inventory and Forecasts (1997, AirTech).

[6] Ashland Municipal Airport Master Plan 1999-2010 (SFC Engineering, 1992)

of a variety of crops, fruit orchards and vineyards. The economic outlook for Jackson County is strong, with future employment growth expected to outpace Oregon's employment growth rate through 2012.[7]

The use of private aircraft for personal and business transportation is a key element in Ashland's economy. With commercial air service available nearby in Medford, Ashland Municipal Airport accommodates general aviation aircraft used by local residents, businesses and visitors. In its role as a community general aviation airport, Ashland Municipal is an important component in the local, regional and statewide transportation system.

Population

Population growth within Ashland and Jackson County has been moderate in recent years and that trend is expected to continue in the future. Ashland's population in 2004 was estimated at 20,590, while Jackson County's population was estimated at 191,200.[8]

Between the 1990 and 2000 census, the population of Ashland increased by 20 percent, which equals an average annual increase of 1.85 percent. During the same period, Jackson County population increased by nearly 24 percent, which equals an average annual increase of 2.2 percent. The population estimates for 2004 indicate continued growth, although at a slower annual rate (approximately 1.34 percent) for both Ashland and Jackson County since 2000.

Long-term population forecasts for Jackson County continue to reflect modest-to-moderate growth. The Oregon Office of Economic Analysis projects Jackson County population will increase 39 percent by 2025 and 63 percent by 2040. These long-term forecasts equate to average annual growth rates of approximately 1.23 percent.

The expectation of continued population growth for the community suggests that demand for aviation services at Ashland Municipal Airport will also increase during the current planning period at rates roughly comparable to other socioeconomic indicators.

[7] Oregon Employment Department Region 8 Economic Profile

[8] Portland State University Center for Population Studies (July 1, 2004)

Recent Historic Activity

Based Aircraft

The current number of based aircraft at Ashland Municipal Airport is estimated at 89.[9] This total appears to be consistent with hangar and aircraft parking capacity added at the airport since the last master plan was completed. **Table 3-1** summarizes based aircraft at Ashland Municipal Airport in 2004.

TABLE 3-1: 2004 BASED AIRCRAFT ASHLAND MUNICIPAL AIRPORT

Aircraft Type	2004 (Estimate)
Single Engine Piston	79
Multi-Engine Piston/Turbine	5
Ultralights	3
Helicopters	2
Total	**89**

Source: FAA 5010/TAF Data

Several hangar construction projects have occurred at the airport in recent years that have increased hangar capacity and appear to be closely tied to the increase in based aircraft. The 1990 airport master plan projected a sharp increase in based aircraft early in the planning period (in response to planned hangar construction) followed by moderate growth through the remainder of the planning period. It appears that the initial surge occurred as expected, although subsequent growth has tapered off. The current estimate of 89 based aircraft falls between the 1995 and 2000 forecasts and equates to an annual average growth rate of 1.86 percent versus the 3.2 percent annual forecast rate between 1990 and 2000.

It is also recognized that Ashland Municipal Airport has a limited land base and site development constraints (terrain, adjacent creeks, etc.) that limit expansion potential. Since the airport has a relatively limited amount of developable land available for landside facilities (aircraft parking and hangars), the desired mix of hangar types (business use, aircraft storage, etc.) is expected to

[9] FAA 5010 Airport Record Form.

affect activity levels. However, any number of changes in local conditions could stimulate based aircraft numbers well beyond historic trends. For this reason, it is important that the airport plan include a facility development program that can quickly respond to market demand.

Aviation activity forecasts created in the early 1990s commonly projected annual growth in excess of 2 to 3 percent. However, within Oregon and nationally, annual growth in the range of 0.5 to 1.5 percent are now common. The FAA's long-term forecasts project a very conservative increase the number of aircraft in the U.S. general aviation fleet. The FAA 2001-2015 TAF projects that total airport operations within the Northwest Mountain Region will increase 17.5 percent by 2015, which is an annual average increase of approximately 1.08 percent.

Aircraft Operations

Aircraft operations estimates for Ashland Municipal Airport 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. 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.

Table 3-2 summarizes the RENS activity counts conducted for Ashland Municipal since 1981. In the period since the last master plan was completed, five separate RENS counts have been conducted. Three of the five counts (1992, 1997 and 1998) were significantly lower (22 to 33 percent) than the 1990 base year air traffic estimate of 19,400 operations. Two counts (1995 and 2003) were slightly higher (4.4 and 7.6 percent) than the 1990 estimate.

TABLE 3-2: SUMMARY OF ODA ACTIVITY COUNTS ASHLAND MUNICIPAL AIRPORT

	1981	1986	1992	1995	1997	1998	2003
Annual Operations	16,460	15,436	13,110	20,208	15,195	14,753	20,878
Net Increase or Decrease Over Prior Count	--	-6.2%	-15.1%	+54.1%	-24.8%	-2.9%	+41.5%

Source: Oregon Department of Aviation, RENS acoustical counts.

Figure 3-1 depicts the range of RENS counts at Ashland Municipal Airport since 1981. Although there is considerable fluctuation between individual counts, a modest upward trend is visible within the range of counts. **Figure 3-2** depicts the RENS counts in relation to historic operations estimates from FAA TAF. The older TAF data is difficult to verify, although the recent TAF data appears to be comparable to the periodic RENS counts, particularly the most recent count completed in October 2003.

Table 3-3 compares based aircraft and operations data, which yields an activity ratio which is useful in gauging trends. For the purposes of estimating current air traffic activity, the 2003 RENS count of 20,878 operations is considered to provide a reasonable indicator of current activity. As indicated by the data, aircraft utilization levels reflect fluctuations similar to operations levels. By comparison, based aircraft levels have remained relatively stable, with a modest upward trend over the last 10 to 15 years.

FIGURE 3-1: SUMMARY OF ODA ACTIVITY COUNTS ASHLAND MUNICIPAL AIRPORT

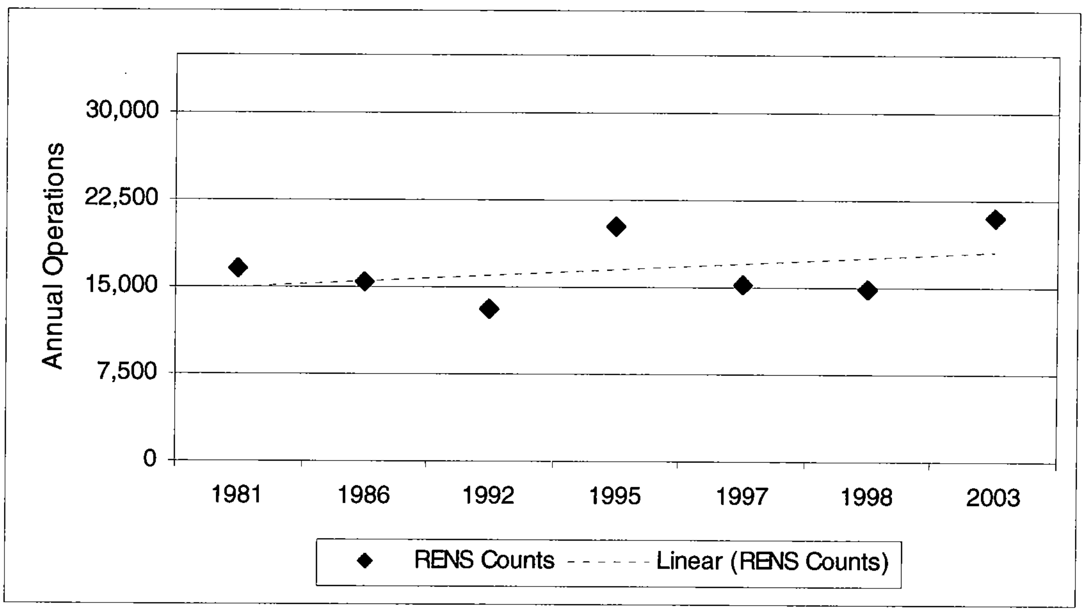


FIGURE 3-2: SUMMARY OF ODA ACTIVITY COUNTS & TAF DATA ASHLAND MUNICIPAL AIRPORT

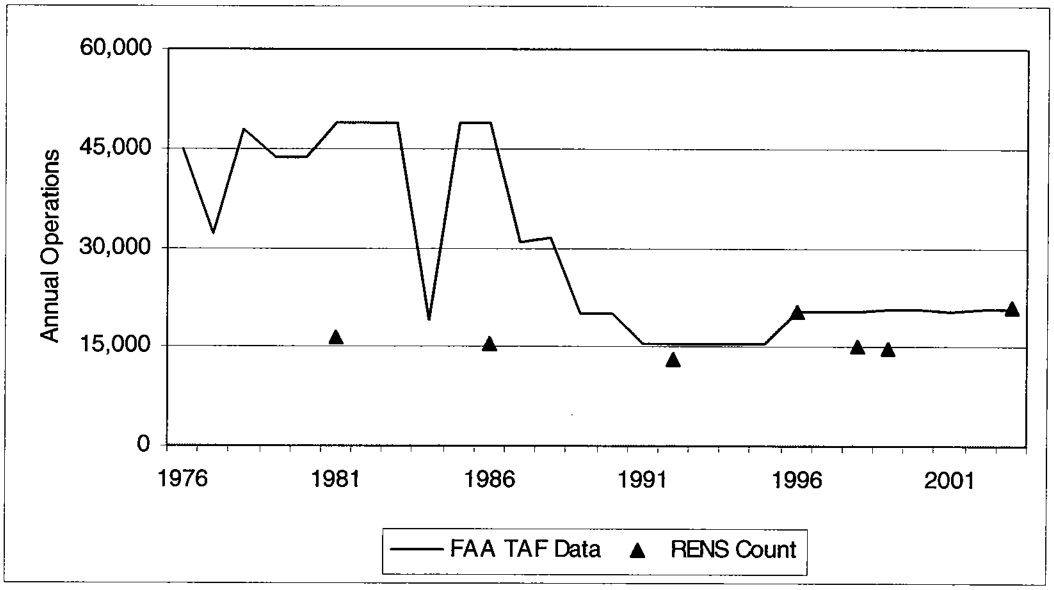


TABLE 3-3: SUMMARY OF HISTORICAL AVIATION ACTIVITY ASHLAND MUNICIPAL AIRPORT

Year	Aircraft Operations	Based Aircraft	Operations Per Based Aircraft	Data Source
1981	16,460	71	232	1,2
1986	15,436	53	291	1,2
1992	13,100	82	160	1,2
1995	20,208	83	244	1,2
1997	15,195	83	183	1,2
1998	14,753	83	178	1,2
2003	20,878	89	234	1,2
7-Period Mean	*16,576*	*78*	*213*	-

Data Sources/Notes:

1. ODA RENS Aircraft Activity Counter Program
2. FAA TAF Data (BASED AIRCRAFT)

REVIEW OF EXISTING FORECASTS

The existing aviation forecasts for Ashland Municipal Airport are summarized below and in **Table 3-4**.

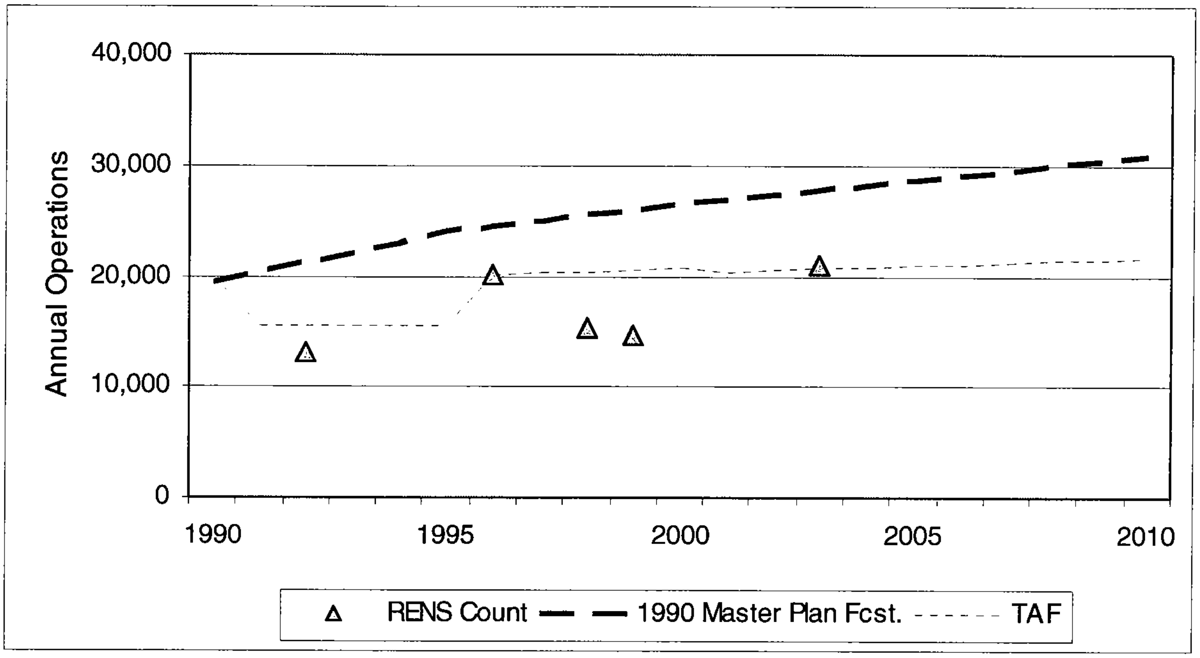
1990 Airport Master Plan (AMP)

The 1990 master plan forecasts projected based aircraft to increase from 70 to 112 (+60%) by 2010, which equals an annual average growth of 2.38 percent. As noted earlier, the master plan forecasts projected faster growth in based aircraft early in planning period (4.2% AAR: 1990-1995), followed by moderate growth of (1.78 % AAR: 1995-2010). The current estimate of 89 based aircraft is 15 aircraft below the master plan forecast for 2005. This reflects actual growth of approximately 1.86 percent per year over the 13-year period.

Aircraft operations were projected to increase by 59 percent, from 19,400 in 1990 to 30,800 in 2010. This equals an annual average growth of **2.34 percent**. The most recent activity count (20,878) conducted in 2002-2003 is approximately 21 to 27 percent lower than the master plan forecasts for 2000 and 2005. As indicated in **Figure 3-3**, the recent RENS activity counts have consistently fallen below the 1990 master plan operations forecasts, although a modest upward trend is evident.

The 1990 master plan forecasts assumed annual population growth to be approximately 1 to 2 percent within the airport's service area. Current population forecasts also reflect modest growth, which indicates that the underlying assumptions related to population growth used in the 1990 forecasts have not changed significantly in recent years.

FIGURE 3-3: ODA RENS COUNTS, TAF, 1990 MASTER PLAN FORECAST ASHLAND MUNICIPAL AIRPORT



Oregon Aviation System Plan (OASP)

The 1997 OASP forecasts reflect growth in based aircraft and aircraft operations that are relatively consistent with the 1990 master plan forecasts. Overall, based aircraft and operations at Ashland Municipal Airport were both forecast to increase by 35 percent between 1994 and 2014, which equals an annual average growth of **1.5 percent**. Between 1994 and 2014, based aircraft were projected to increase from 72 to 97 and aircraft operations were projected to increase from 20,000 to 26,940. The 2000 Oregon Aviation Plan updated the 1997 forecasts by extrapolating previously defined growth rates out to 2018. For 2018, based aircraft were projected to increase to 103, with aircraft operations increasing to 28,537.

The 2004 OASP forecasts of based aircraft (84) and operations (23,330) are within 11 percent of current activity estimates (2003-2004). However, it is interesting to note that the current based aircraft levels are running ahead of forecast, while operations are below forecast levels. The OASP forecasts reflected an aircraft utilization level (277-280 operations per based aircraft) well above historic levels at Ashland. Lower levels of aircraft utilization are evident in the historic activity counts conducted at the airport in recent years. It appears reasonable that this sustained shift should be reflected in updated forecasts.

FAA Terminal Area Forecasts (TAF)

The Federal Aviation Administration (FAA) maintains forecasts for Ashland Municipal Airport in the TAF. The TAF projects an increase in based aircraft from 89 (2003 base year estimate) to 106 in 2020. This reflects an increase of 19 percent, which translates into an average annual growth rate of 1.03 percent. The TAF projects aircraft operations to increase from 20,683 (2003) to 23,002 in 2020. The increase of about 11 percent translates into an average annual growth rate of 0.63 percent over the twenty-year period. The slower growth projected for aircraft operations compared is also reflected in a gradually declining utilization ratio. It appears that the TAF accurately reflects current activity levels; based on the low rates of growth used in the forecasts, the TAF provides a reasonable baseline projection of future activity.

TABLE 3-4: EXISTING AVIATION FORECASTS

Source	1994/95	1999/00	2004/05	2009/10	2014/15	2018	2020
Based Aircraft ***2003 Estimate: 89***							
1990 Airport Master Plan *(2.38% AAR)*	86	96	104	112	--	--	--
1997 / 2000 OASP *(1.5% AAR)*	72	78	84	90	97	103	--
TAF *(1.03% AAR: 2003-2020)*		83	91	95	100	103	106
Aircraft Operations ***2003 Estimate: 20,878***							
1990 Airport Master Plan *(2.34% AAR)*	24,000	26,500	28,569	30,800	--	--	--
1997 / 2000 OASP *(1.5% AAR)*	20,000	21,670	23,330	25,070	26,940	28,537	--
TAF *(0.63 AAR: 2003-2020)*	15,436	22,689	20,956	21,638	22,320	22,729	23,002

- Note: Adjacent forecast years (i.e., 1994 OASP and 1995 airport master plan) have combined in this table for convenient comparison.

Updated Forecasts

Based on the review of existing forecasts, an updated forecast of based aircraft and aircraft operations was developed to reflect airport development potential and the long-term growth expectations for the community and region. The updated forecasts are summarized in **Table 3-5**. The FAA TAF forecast is also provided for comparison. The updated forecasts are depicted in **Figures 3-4 and 3-5**.

The updated (ALP 2004) forecast of based aircraft ranges from the current 89 aircraft to 125 in 2024. The net increase of 36 aircraft (+40.5%) equates to an average annual growth rate of **1.71 percent**. A significant factor in the based aircraft forecasts is the current construction of a new 14-unit T-hangar. The city estimates that approximately 6 to 8 aircraft will be coming to Ashland from other airports; the balance of new hangar spaces are expected to be filled by existing based aircraft that will relocate from other hangars or the aircraft parking apron. Based on the historic waiting list for hangar space, it is expected that any vacancies created in older hangars will be quickly filled. As a result, the 5-year forecast (2009) reflects a sharp increase (15.7%; 3.0% annual average rate: 2004-2009) in based aircraft, with subsequent growth averaging about 1.3 percent annually through the twenty-year planning period. The current composition of the based aircraft fleet is expected to remain relatively consistent, with growth in all aircraft types anticipated.

The 2003 estimate of 20,878 operations and 89 based aircraft results in a ratio of 235 operations per based aircraft. An updated forecast of aircraft operations was developed by applying this level of aircraft utilization to the updated based aircraft forecast. For this projection, aircraft utilization is maintained at 235 operations per based aircraft. As indicated in the historic data, aircraft utilization ratios at Ashland have fluctuated widely in recent years. However, for the purposes of projecting future demand, this ratio appears to represent a level of activity that can be sustained through the current planning period as the airport develops its limited land base.

The stable ratio reflects a balance between current and recent utilization levels and also reflects the airport's ability to maintain a strong user base through the planning period. Aircraft operations are forecast to increase from 20,878 to 29,375 operations by 2024, which equals an average annual increase of **1.72 percent**. However, as with the based aircraft forecast, aircraft operations are expected to respond to the current hangar construction, with subsequent growth averaging about 1.3 percent annually through the twenty-year planning period.

Air Traffic Distribution/Design Aircraft

The 1990 master plan forecasts assumed local operations accounted for 15 percent of total airport activity and itinerant operations (GA, air taxi, etc.) accounted for 85 percent during the planning period. Local operations include flights that begin and end at the airport (i.e., aircraft within the traffic pattern (touch and go), aircraft operating near the airport, etc.). Other available forecasts for Ashland Municipal Airport reflect similar levels of local aircraft operations (OASP 17%; FAA TAF 10%). In the absence of significant volumes of flight training activity, local operations typically account for relatively low percentage of overall activity. For the purposes of updating the forecasts, the 15% local/itinerant split used in the previous master plan will be maintained for the current planning period.

The 1992 airport master plan identified a turboprop aircraft, such as the Beechcraft 90 and 100 series King Air, as the critical aircraft for Ashland Municipal Airport. These aircraft are included in Airplane Design Group I and Approach Category B (B-I). The B-I category also includes many light twin-engine piston aircraft. By FAA definition, the "design aircraft" must have a minimum of 500 itinerant annual operations, which at Ashland, is met by a combination of locally based and itinerant aircraft.

The airport accommodates larger aircraft (ADG II) on an occasional basis, but at a level well below the FAA's threshold for use as design aircraft. Available runway (length) limits operations by larger turboprops and business jets on warmer days and would generally require significant reductions in operating weights (reduced passenger or fuel loads). The physical site limitations associated with Ashland Municipal Airport are the primary factors that limit activity by larger aircraft. Occasional use of the airport by package carrier aircraft, many of which are included in ADG II, is expected to continue during the planning period. These carriers typically operate single and multi-engine turboprop aircraft (i.e., Beech 99, Cessna Caravan, etc.).

Based on historic aircraft activity distributions reported through the RENS program, design aircraft operations at Ashland generally account for about 6 percent of total airport operations. For planning purposes, it is assumed that this level of activity will continue during the current planning period.

TABLE 3-5: UPDATED FORECASTS ASHLAND MUNICIPAL AIRPORT

	Base Year 2004	2009	2014	2019	2024
2004 ALP Forecast (Preferred)					
Based Aircraft					
Single Engine	79	91	96	103	110
Multi Engine Piston/Turbine	5	6	6	7	8
Helicopter	2	3	3	4	4
Other (ultralights, etc.)	3	3	4	3	3
Total	**89**	**103**	**109**	**117**	**125**
Aircraft Operations					
Local (15%)	3,130	3,630	3,840	4,125	4,400
Itinerant (85%)	17,748	20,575	21,775	23,370	24,975
Total	**20,878**	**24,205**	**25,615**	**27,495**	**29,375**
Average Operations per Based Aircraft	*235*	*235*	*235*	*235*	*235*
Operations by Critical Aircraft B-I (piston/turbine twin)	*1,250*	*1,450*	*1,540*	*1,650*	*1,760*
FAA TAF					
Based Aircraft					
Single Engine	79	84	87	91	92
Multi Engine	5	6	7	8	9
Jet	0	0	0	0	0
Helicopter	2	2	2	2	2
Other	3	3	3	3	3
Total	89	95	99	104	106*
Aircraft Operations					
Local	2,156	2,156	2,156	2,156	2,156
Itinerant	18,527	19,345	20,027	20,709	20,846
Total	20,683	21,501	22,183	22,865	23,002
Average Operations per Based Aircraft	*232*	*226*	*224*	*220*	*217*

*2020 TAF

FIGURE 3-4: UPDATED BASED AIRCRAFT FORECAST ASHLAND MUNICIPAL AIRPORT

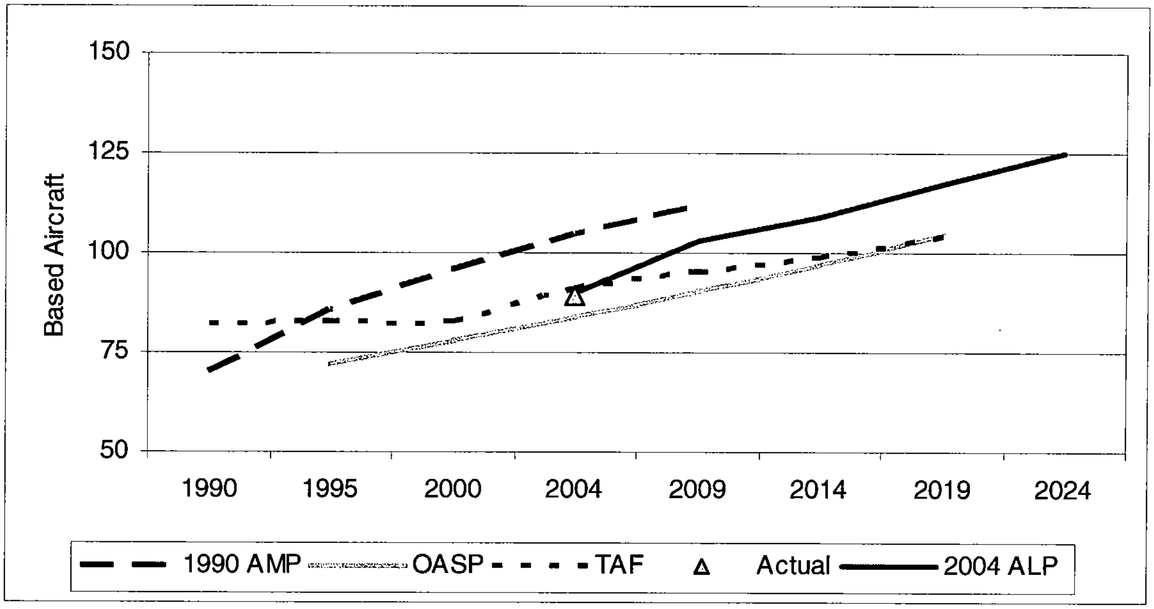
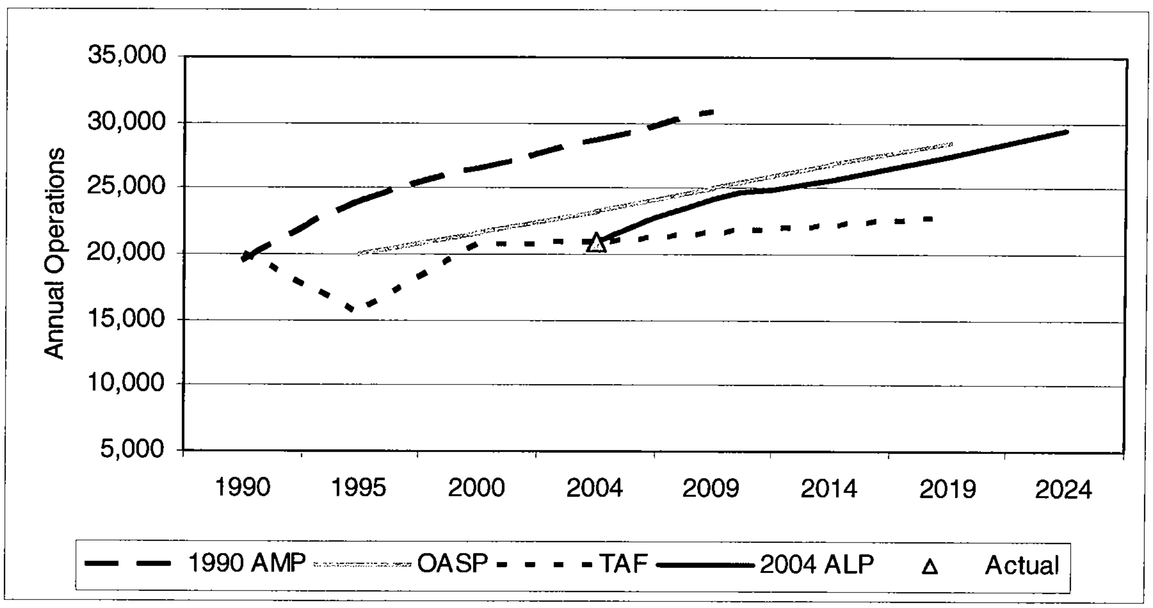


FIGURE 3-5: UPDATED AIRCRAFT OPERATIONS FORECAST ASHLAND MUNICIPAL AIRPORT



Ashland Municipal Airport
Airport Layout Plan Report

Chapter Four

Airport Facility Requirements

CHAPTER FOUR
AIRPORT FACILITY REQUIREMENTS

INTRODUCTION

This chapter uses the results of the inventory and forecast 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.

1990-2010 Airport Master Plan Overview

The previous Airport Master Plan[10] recommended a variety of facility improvements at Ashland Municipal Airport which are summarized in **Table 4-1**. The previously recommended facility improvements which have not been implemented will be revalidated, modified or eliminated based on the updated facility needs assessment and FAA guidelines. The majority of facility improvements completed during the last ten years have closely followed the recommendations of the 1992 master plan; the implementation of projects has been adjusted to respond to market demand and funding availability. In addition to the projects previously recommended, a new aircraft wash pad was constructed as part of the 2004 apron rehabilitation project.

[10] Ashland Municipal Airport Master Plan (SFC Engineering, October 1992)

TABLE 4-1: SUMMARY OF 1990-2010 AIRPORT MASTER PLAN RECOMMENDED PROJECTS AND CURRENT STATUS

Completed Yes/No	Projects
Yes *	Develop new hangar and apron NW of main apron *(*Phase I apron expansion)*
Yes	Relocate residential access road
Yes	Realign north hangar access taxiway
Yes *	Construct new hangars *(* new hangars constructed in north & south areas)*
Yes	Provide lease areas to accommodate aircraft storage and business-oriented activity
Yes *	Airport security fencing *(*east and south boundary)*
Yes	Remove underground fuel tanks (replace with aboveground tanks)
No	Develop west tiedown area; provide pedestrian access (footbridge) over Neil Creek to adjacent areas
No	Locate designated helicopter landing area on new apron
No	Provide nonprecision instrument approach
Yes *	Upgrade LIRL runway edge lighting to MIRL *(*2004 project)*
Yes	Maintain FBO development/expansion reserve
Yes *	Improve airport circulation roadways *(*access to Sky Research hangar)*
Yes *	North T-Hangar Taxilanes *(*one T-hangar taxilane constructed)*
No	Acquire avigation easements for Enlarged Rwy 12 & 30 RPZ
No	Realign roadway located within Rwy 12 RPZ to provide obstruction clearance
No	Land Acquisition (Runway 12 approach surface)
Yes	Maintain airfield pavements
Yes	Lower/Remove trees within Rwy 30 approach
No *	Taxiway edge lighting (MITL) *(*edge reflectors installed on parallel taxiway in 2004)*
No	PAPI Rwy. 12 & 30
No	Terminal/FBO Building Expansion
No*	Runway Overlay *(* small section at Rwy 30 end was rehabilitated as part of 2004 apron project)*
No	Parallel Taxiway Overlay
Yes *	Main Apron Overlay *(* 2004 project – south and center sections)*
Yes *	Utility Extension to hangars *(* water, electrical extended to new hangar areas)*

AIRPORT PLANNING OVERVIEW

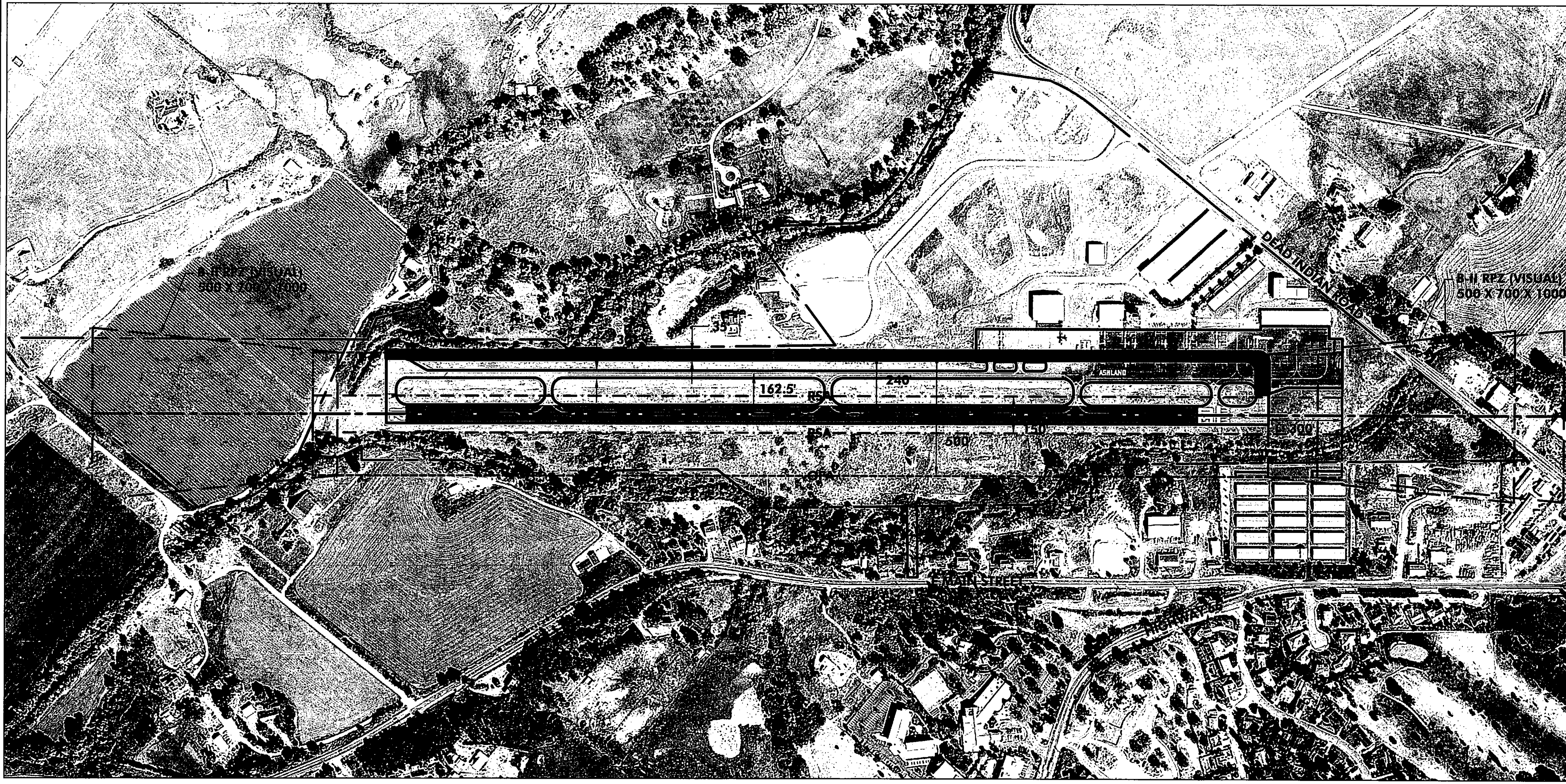
A review of the 1992 Airport Layout Plan (ALP) recommendations and current FAA design standards identifies some minor changes affecting the planning criteria previously used at Ashland Municipal Airport. The 1992 ALP recommended design standards based on Airplane Design Group (ADG) I and Aircraft Approach Category B (**Airport Reference Code: B-I**). The design aircraft was identified as King Air BE100 turboprop (existing and future) aircraft, which represented a typical smaller business turboprop weighing less than 12,500 pounds. Runway 12/30 was planned as a utility (visual) runway, which would also support development of a nonprecision instrument approach with visual final approach segments. The existing and future runway protection zone dimensions were 250 x 450 x 1000 feet.

According to FAA planning guidelines "the RPZ dimension for a particular runway end is a function of the type of aircraft and approach visibility minimum associated with that runway end." Based on current FAA standards, the previously recommended RPZ dimensions are recommended for "Facilities Expected to Serve Small Aircraft Exclusively." Under the FAA's airport planning guidelines a "small airplane" is defined as "an airplane of 12,500 pounds or less maximum certificated takeoff weight." Under Part 77, utility runways are "constructed for and intended to be used by propeller driven aircraft of 12,500 pounds maximum gross weight and less."

At a length of 3,603 feet, Runway 12/30 is able to accommodate a relatively large percentage of the small aircraft fleet, as defined by the FAA's runway length model (see Airside Requirements section for detailed discussion regarding runway length requirements). Considering the airport's physical site limitations and the anticipated use of the runway use of ADG I (small) design standards appears to be appropriate. ADG I (small) differs from ADG I in a few areas including object free area, aircraft parking line, and parallel taxiway separation dimensions.

The option of upgrading facilities to accommodate a wider range of business aircraft is something that most small airports consider during the master planning process. Many turboprops and business jet aircraft are included in ADG II. The dimensional standards associated with ADG II are generally larger than the corresponding ADG I standards.

For purposes of evaluating the feasibility of expansion, several of the more demanding ADG II design standards were applied to the existing runway-taxiway system (depicted in **Figure 4-1**). In particular, accommodating a B-II runway-parallel taxiway separation (240 feet) would require that nearly the entire main apron be relocated to provide adequate clearances.



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SOURCE: BERGMAN PHOTOGRAPHIC SERVICES, INC. (10-03-01)

CENTURY WEST ENGINEERING CORPORATION

ASHLAND MUNICIPAL AIRPORT - SUMNER PARKER FIELD BII SEPARATION CLEARANCE

FIGURE 4-1

In the case of Ashland Municipal Airport, the potential feasibility of major facility expansion is limited by physical site characteristics including adjacent creeks, public and private roadways, terrain (slope), and developable acreage. The limited land area available to accommodate landside facilities (hangar and apron) would be largely consumed by the relocation of existing facilities, which would significantly limit space to accommodate new tenants. This option would also impact adjacent private properties and drainages. A comparison of the airport's ability to meet specific ADG I and II design standards is also provided in Table 4-5, later in the chapter.

In addition to the lateral expansion constraints, the length of the runway cannot be significantly increased without property acquisition. The feasibility of upgrading to ADG II standards would also consider the ability to provide adequate runway length to accommodate a wide range of business aircraft. At Ashland, a runway length between 4,300 and 5,000 feet would be required to accommodate most small/medium business jets during warmer months. An option to extend the north end of Runway 12/30 by 600 feet (recommended in the 1982 master plan) was dropped from consideration in the 1992 master plan update.

The availability of Rogue Valley International-Medford Airport to accommodate larger business aircraft allows Ashland Municipal Airport to focus on its primary role as a community general aviation airport that can accommodate a wide range of general aviation and limited business aviation activity.

Land Utilization

The total airport land area consists of approximately 94 acres, which includes the airside area (runway-taxiway system protected areas, etc.), the east landside area (aircraft storage and support facilities), an elevated area (northeast section) of the airport located opposite the north airport access road, and an undeveloped area located on the west side of the airport between the runway and Neil Creek. **Table 4-2** summarizes existing airport land uses based on current and previously planned airfield configurations.

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 and have roads located within their boundaries. The airside areas of the airport account for nearly half of the airport's total land base.

TABLE 4-2: AIRPORT LAND USE CONFIGURATION ASHLAND MUNICIPAL AIRPORT

Existing Land Use	Acreage	Percentage of Total Airport Property
Airside *(Developed or Reserved)* Runway, Parallel Taxiway, Runway 30 Protection Zone, Object Free Area, Runway Safety Area, Obstacle Free Zone, Primary Surface.	45	48%
East Landside *(Developed or Reserved)* Aircraft Apron, Hangars, Vehicle Parking, Access Roads, Undeveloped Land.	33	35%
West *(Reserved)* Open Space adjacent to Neil Creek.	7	7%
Northeast *(area bordered by airport access road and airport boundary)* Open Space; future aviation-related or non-aviation development.	9	10%
Total	**94[1]**	**100%**

1. Rounded from 94 acres, ALP drawing.

The western side of the airport and the northeastern section (outside the airport access road) are not considered to be well suited for aviation development. The narrow west side area does not have surface access and it directly borders Neil Creek, which may require development setbacks and mitigation measures to avoid surface runoff. In addition, with aircraft services such as fuel, telephone, and restrooms located on the east side of the runway, developing west side facilities could create the potential for runway crossings (vehicles, pedestrians, etc.).

The landside area suitable for supporting aircraft-related development totals approximately 33 acres, of which approximately 60 percent is currently developed. The remaining developable areas are located beyond the north end of the main apron, and east of the main apron on the land bordered by Dead Indian Memorial Road and the north airport access road. As proposed in previous planning efforts, the development of these areas will require a combination of excavation, grading and leveling with some gradient incorporated into the pavement designs. The steepest terrain located north of the new 14-unit T-hangar could accommodate additional hangar development, although the amount of excavation and reinforcement on the uphill slope makes that increasingly costly. The small area of land located adjacent to Dead Indian Road, between the north access road and the new T-hangar, may be more readily developable to accommodate non-aviation uses not required aircraft access.

Although the undeveloped landside areas are limited at Ashland Municipal Airport, the airport has adequate land to accommodate forecast demand for hangars, aircraft parking and associated facilities. However, if construction of hangars accelerates significantly beyond historic trends and 20-year forecast demand, the landside area will soon begin to approach capacity. It may be appropriate to consider options to future property acquisition, or the feasibility of developing facilities on the west side of the runway once the east side reaches full development.

Airspace

The airspace surfaces depicted on the 1992 Airspace Plan[11] were based on utility runways and visual approaches. The FAR Part 77 airspace surfaces reflect the ultimate runway dimension. The airport is located in a valley with rising terrain in all directions. Several areas of terrain penetration to the airspace surfaces were depicted on the 1992 plan including large areas located in the horizontal and conical surfaces from the southwest to north sides of the runway.

The 1992 Airspace Plan identified 40 specific airspace obstructions in the vicinity of the existing runway. Of the listed obstructions, all but four were trees. Obstruction survey data was provided by the City for the numerous trees located to the sides of the runway. Most of the trees were located along the western (adjacent to Neil Creek) and eastern (adjacent to Emigrant Creek) sides of the runway. The plan recommended trimming about half of the trees, with the action on the remaining obstructions "undecided." The City has removed most trees on airport property in this area, although periodic inspection is required to remove new growth.

The utility visual approach surfaces (5,000 feet long; 20:1 slope) for both runway ends appear to be free of terrain penetrations, although roadways are located near each runway end, which create close-in obstructions. The 1992 Airspace Plan indicates that Runway 12 had a "clear 10:1" approach surface (road) and Runway 12 had a "clear 14:1" approach surface (based on the 190-foot displaced threshold to improve obstruction clearance over trees, a building and vehicles traveling on the roadway).

The airspace features described in Chapter Two (IFR airways, military training routes, etc.) do not affect local airport operation. The airspace structure surrounding Ashland Municipal Airport is uncomplicated and is not expected to constrain future airport development or operation.

Instrument Approach Capabilities

Ashland Municipal Airport does not currently have a published instrument approach procedure (IAP). As noted earlier, previous airfield/airspace planning for Ashland Municipal has been

[11] Ashland Municipal Airport – Airport Airspace Plan, SFC Engineering (10/94)

based on visual approach surfaces, as defined by FAR Part 77, which historically has been compatible with development of non-precision instrument approaches with circle-to-land (visual) procedures.

Recent changes in FAA standards for establishing instrument approaches at small (utility) airports now require that straight-in approach procedures be developed in order to obtain authorization for nighttime use. With the existing "utility-visual" airspace surfaces, a daytime-only non-precision instrument approach could be developed at Ashland.

The option of upgrading the airspace to accommodate a straight-in approach to Runway 12/30 would require significant changes in the airfield development configuration and airspace. Chief among these changes would be a requirement to double the width of the runway primary surface (clear area surrounding the runway) to 500 feet. The primary surface must be kept free of obstructions (including parked aircraft). At Ashland, a portion of the aircraft parking area is located within 200 feet of runway centerline. In order to accommodate a wider primary surface, no aircraft parking would be permitted within at least 250 feet of the runway centerline. In addition to the wider primary surface, the need to maintain an unobstructed 7:1 transitional surface slope that extends from the (relocated) outer edge of the primary surface would also affect potential locations for building heights and aircraft parking.

Similar to the earlier discussion evaluating the feasibility of upgrading to ADG II design standards, an upgrade to non-precision instrument capabilities would significantly impact existing facilities on the airfield. The existing (north/east) building restriction line (BRL) is located approximately 360 feet from runway centerline. Based on the existing utility-visual airspace surface dimensions, a building height up to 33.5 feet (above runway elevation) can be accommodated *at the BRL* without penetrating the transitional surface. If the airspace surfaces were upgraded to non-precision instrument, building height clearance at the BRL would be reduced to 15.7 feet. Existing structures would be required to install obstruction lighting, although future hangars would need to be configured to avoid penetrating the transitional surface Aircraft parking positions would also need to be relocated to avoid penetrating the expanded airspace surfaces. With an average tail height of 10 feet, the aircraft parking line (APL) would be located approximately 320 feet from runway centerline. However, the majority of the main apron is located too close to the runway to meet that setback. It would be necessary to develop new apron areas with increased runway separation in order to comply with a 320-foot APL.

In addition to the airport site development issues described above, it appears that the high terrain located in the vicinity of the airport may significantly affect instrument approach development options and approach minimums.

Based on the potential impacts on existing landside development areas and overall airport land utilization, it is recommended that Runway 12/30 and the associated airspace surfaces continue to be planned based on visual approaches. Development of a daytime-only non-precision instrument approach can be accommodated with in the existing airfield development and airspace configuration. A detailed airspace (TERPS) assessment would need to be conducted by the FAA to determine the overall feasibility of establishing an approach and the approach and visibility minimums that could be obtained.

Local interest in providing on-airport weather data and pilot advisories has led the City to consider acquiring a "SuperUnicom™" at the airport, which is designed to combine basic weather data and automated advisory information to pilots operating at uncontrolled airports. According to manufacturer data, the small SuperUnicom™ unit is installed next to the airport's wind sock. The system is programmed based on the specific runway configuration of the airport. Weather information is gathered through sensors on the wind sock pole. The information is automatically updated and alerts pilots to significant conditions such as ground fog, crosswinds, wind shear and high density altitude. It also continuously measures current weather data and balances the relative importance of each bit of information against the level of congestion on the Unicom frequency.

Airport Design Standards

Federal Aviation Administration (FAA) **Advisory Circular (AC) 150/5300-13, Airport Design**, serves as the primary reference in planning airfield facilities. **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 aircraft design groups, based on the physical size (wingspan) of the aircraft. The categories range from Airplane Design Group (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 4-3.**

TABLE 4-3: 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
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
Beechcraft Baron 55	A	I	5,300
Socata/Aerospatiale TBM 700	A	I	6,579
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 99 Airliner	B	I	11,300
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 III	C	II	69,700

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

Design Aircraft

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).

The 1992 Airport Layout Plan Report[12] recommended that facilities at Ashland be planned based on Aircraft Approach Category B and Airplane Design Group I (B-I). The airport currently accommodates predominately Approach Category A or B and Airplane Design Group I aircraft. Most locally based aircraft and itinerant aircraft using the airport on a regular basis are classified as small aircraft, weighing less than 12,500 pounds.

Although the airport currently accommodates a limited amount of ADG II activity (weather-diverted cargo/express aircraft and Sky Research Jetstream 31, Caravan aircraft), the volume of activity is thought to be well below the FAA activity threshold of 500 annual itinerant operations. As indicated earlier, upgrading the airport to meet FAA ADG II design standards is not considered highly feasible due to numerous site characteristics.

Based on a review of air traffic, site considerations and prior planning recommendations, it is recommended that airport reference code (ARC) B-I (small aircraft exclusively) be selected as the appropriate planning criteria for Ashland Municipal Airport. Airfield design standards for ADG I (small) are summarized in **Table 4-4**, with ADG I and ADG II design standards (both including larger aircraft 12,500 pounds and above) provided for comparison. A summary of the airport's conformance with the various levels of design standards is presented in **Table 4-5**. As indicated in the table, Runway 12/30 meets most ADG I (small) design standards, but does not meet most ADG I or ADG II standards for Approach Category A and B aircraft.

Based on the existing airfield configuration, past master plan recommendations, current airport activity, and current 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 12/30** (***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. A detailed description of the applicable airport design standards is presented later in this chapter.

[12] Airport Layout Plan Report for Ashland Municipal Airport (SFC Engineering, October 1992).

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

Standard	Runway 12/30 *Existing Conditions*	ADG I[1] (small aircraft exclusively)	ADG I[2] A&B Aircraft	ADG II[3] A&B Aircraft
Runway Length	3,603	3,700/4,320[4]	3,700/4,320[4]	5,500/7,000[5]
Runway Width	75	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)	varies	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)	varies	240	240	300
Primary Surface Width	250	250	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	150/162.5	150	225	240
Aircraft Parking Area	Apprx. 185'	125/195[6]	200/320[6]	250/320[6]
Building Restriction Line	360	251[7]	376[7]	376[7]
Taxiway Width	30	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. 50'	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 (visual) 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 based on visual and not lower than 1-mile approach visibility minimums.
2. 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 based on visual and not lower than 1-mile approach visibility minimums.
3. 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.
4. Runway length required to accommodate 95 and 100 percent of General Aviation Fleet 12,500 pounds or less. 85 degrees F, 38-foot change in runway centerline elevation.
5. Runway length required to accommodate 75 percent large airplane fleet (60,000 pounds or less) at 60 and 90 percent useful load. 85 degrees F, 10-foot change in runway centerline elevation.
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.
7. Distance to protect standard parallel taxiway object free area and accommodate an 18-foot structure (at the BRL) without penetrating the 7:1 Transitional Surface.

TABLE 4-5: RUNWAY 12/30 CONFORMANCE WITH FAA DESIGN STANDARDS

Item	*Airplane Design Group I (Small Aircraft Exclusively)*	*Airplane Design Group I A & B Aircraft*	*Airplane Design Group II A & B Aircraft*
Runway Safety Area	Yes	Yes	No[1]
Runway Object Free Area	No[1]	No[2]	No[3]
Runway Obstacle Free Zone	Yes	No[4]	No[4]
Taxiway Safety Area	Yes	No[5]	No[5]
Taxiway Object Free Area	Yes	No[5]	No[5]
Building Restriction Line – East	Yes[6]	Yes[6]	Yes[6]
Aircraft Parking Line – East	Yes	No[7]	No[7]
Runway Protection Zones	No[8]	No[8]	No[8]
Runway-Parallel Taxiway Separation	Yes	No	No
Runway Width	Yes	Yes	Yes
Runway Length	No[9]	No[10]	No[11]
Taxiway Width (Parallel)	Yes	Yes	No

1. Road/Trees (Rwy 12)
2. Trees (west side); Aircraft parking positions located within ADG I OFA (east side).
3. Trees; mini storage buildings (west); Aircraft parking positions located within ADG II OFA (east side).
4. Parallel Taxiway within OFZ for runways serving large airplanes.
5. Existing Taxiway OFA/SA clearances meet ADG I (small) standards—runway-taxiway separation does not meet higher standards.
6. BRL depicted on 1992 ALP is 187.5 feet (west side) and 277.5 & 360 feet (varies on east side) from runway centerline.
7. Aircraft parking areas penetrate nonprecision instrument airspace (primary or transitional surfaces) and may conflict with FAA-recommended ADG I or ADG II parallel taxiway separations. Parallel Taxiway would also require relocation to meet ADG I or ADG II runway separation standard; relocation of some aircraft tiedowns also required.
8. Roads located in Runway 12 and 30 protection zones; structures within Rwy 30 departure and arrival RPZs.
9. Per FAA Runway Length Model: Existing runway length is approximately **97 percent** of the FAA-recommended length required to accommodate 95% of small aircraft fleet.
10. 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.
11. Per FAA Runway Length Model: Existing runway length is approximately **66 percent** of the FAA-recommended length required to accommodate 75% of large aircraft weighing less than 60,000# at 60% useful load.

<u>Airport Design Standards Note:</u>

The airport planning criteria recommended for Runway 12/30 at Ashland Municipal Airport are based on the following assumptions:

Visual runways and runways with not lower than ¾ statute mile 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 7). 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 visual 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 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 12/30 appears to be cleared, graded and free of physical obstructions, within the ADG I (small) dimensions. The new runway edge lights and threshold lights being installed in 2004 (located within the RSA) will be mounted on frangible supports (breakable coupling and disconnect plug). Any future lighting (such as PAPI) located within the RSA will also need to meet the FAA frangibility 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."

All aircraft parking positions are located outside the OFA. A short section of private road located beyond the end of Runway 12 is located in the outer (north) corner of the OFA. In addition, two obstructions located within the runway primary surface are also located within the OFA. The airspace plan will recommend removal of the primary surface penetrations (trees) and relocation of the road to address the obstructions, which will also clear the OFA. The City should periodically inspect the OFA and remove any objects that protrude into the OFA, particularly brush or trees.

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 Ashland Municipal Airport, 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 accommodate non-precision instrument approaches (not lower than ¾ mile approach visibility minimums).

The OFZ for Runway 12/30 appears to be free of physical obstructions and meets the small aircraft dimensional standards. 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 12 has adequate space to allow aircraft to remain clear of the OFZ.

Taxiway/Taxilane Safety Area

The taxiways at Ashland Municipal Airport include a full-length parallel taxiway/taxilane and several access taxiways. The taxiways and taxilanes vary in width (20 to 30 feet) but appear to meet the dimensional standard for ADG I safety areas. The taxiway/taxilane safety areas should be regularly cleared of brush or other debris and periodically graded and compacted to maintain FAA standards.

Taxiway/Taxilane Object Free Area

The ADG I taxiway OFA width is 89 feet. All future buildings and parked aircraft located along existing/planned taxiways should have a minimum setback (building restriction line and/or aircraft parking line) of at least 45.5 feet, which corresponds to the outer edge of the ADG I taxiway OFA (39.5 feet for the taxilane OFA). The taxiways/taxilanes on the airport appear to meet the dimensional standard for ADG I. A parallel taxilane is located on the southern 1,000 feet of the main apron. The ADG I taxilane object free area is 79 feet; the nearest tiedown positions are located to meet this clearance standard.

It has been reported by local pilots that the visual line of sight on the T-hangar access taxiway (located immediately north of the Sky Research hangar) is limited by both the taxiway configuration (90-degree turn) and the Sky hangar. Aircraft taxiing in opposite directions along this taxiway have minimal visual clearance around the hangar when they approach the curve. Options should be considered to add an aircraft holding/bypass area near this corner to allow aircraft to pass without leaving the paved surface.

Building Restriction Line (BRL)

The 1992 Airport Layout Plan (ALP) depicts a 277.5-foot and 360-foot building restriction line (BRL) on the east side of Runway 12/30. The 360-foot east BRL is located along the entire length of the existing apron and future apron expansion; the 277.5-foot BRL extends along the northeast edge of the airport, which generally coincides with the airport property line. The 1992 ALP did not identify any existing or future airport buildings on the west side of the runway.

The east 360-foot BRL will accommodate a 33-foot high building without penetrating the utility/visual runway transitional surface and is clear of the ADG I (small) taxiway object free area. The nearest buildings to Runway 12/30 are located along the rear edge of the main apron, approximately 360 feet from runway centerline.

Runway Protection Zones (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 recommended for Runways 12 and 30 are based on "small aircraft exclusively" with approach visibility minimums "visual and not lower than 1-mile." The 1992 ALP depicted RPZs that are consistent with this facility classification and use. As noted above, RPZs with buildings, roadways, or other items do not fully comply with FAA standards.

A review of recent aerial photography for Ashland Municipal Airport identified roadways within both RPZs for Runway 12/30. Runway 30 has a 190-foot displaced threshold to improve obstruction clearance for landing aircraft over trees, structures and vehicles traveling on Dead Indian Memorial Road. A runway end with a displaced threshold has both an arrival RPZ (corresponding to the displaced threshold) and a departure RPZ (beginning 200 feet beyond the runway end). Several off-airport structures are located within the Runway 30 arrival and departure RPZ.

The 1992 ALP recommended relocating the private roadway located immediately beyond Runway 12 to improve obstruction clearance. In the event that the road realignment is not pursued, a displacement of the Runway 12 threshold or use of an obstacle clearance approach (OCA) should be defined. If the runway threshold is displaced, an arrival RPZ will also be required. Additional information about the potential use of an OCA on Runway 12 will be provided in the evaluation of facility development alternatives.

It is recognized that realigning major surface roads routes located within the RPZs may not be highly feasible. However, where possible, the City/County should discourage development within the RPZs (particularly structures) that is inconsistent with FAA standards.

Aircraft Parking Line (APL)

The existing aircraft parking areas at the airport are located adjacent to the parallel taxiway/taxilane, approximately 190 to 200 feet from the runway centerline. The 1992 Airport Layout Plan depicts a "future" aircraft parking line (APL) that is 210 feet from runway centerline. If the existing taxiway/taxilane configuration is maintained, the APL should be revised on the ALP to reflect the corresponding taxiway/taxilane OFA clearances. The 210-foot section of APL is appropriate to protect the parallel taxiway, however, the APL along the southern portion of the apron would need to be adjusted (inward) to preserve the outer parking positions and to protect the taxilane OFA.

Tail heights of 10 feet or less are typical of most light aircraft, although business aircraft often have tail heights ranging from 10 to 25 feet. The section of the APL located adjacent to the south end of the apron (190 feet) would accommodate an aircraft with a 9-foot tail height without penetrating the visual transitional surface. A 210-foot APL would accommodate an aircraft with a 12-foot tail height without penetrating the visual transitional surface.

The distances also accommodate standard ADG I (small) parallel taxiway or taxilane separations. 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 would need to be parked approximately 230 feet from the runway centerline to avoid penetrating the transitional surface.

Runway-Parallel Taxiway Separation

Runway 12/30 is served by a full-length parallel taxiway/taxilane with a separation of 150 feet (southern taxilane section) and 162.5 feet (taxiway section), which meets the ADG I (small aircraft exclusively) design standard of 150 feet.

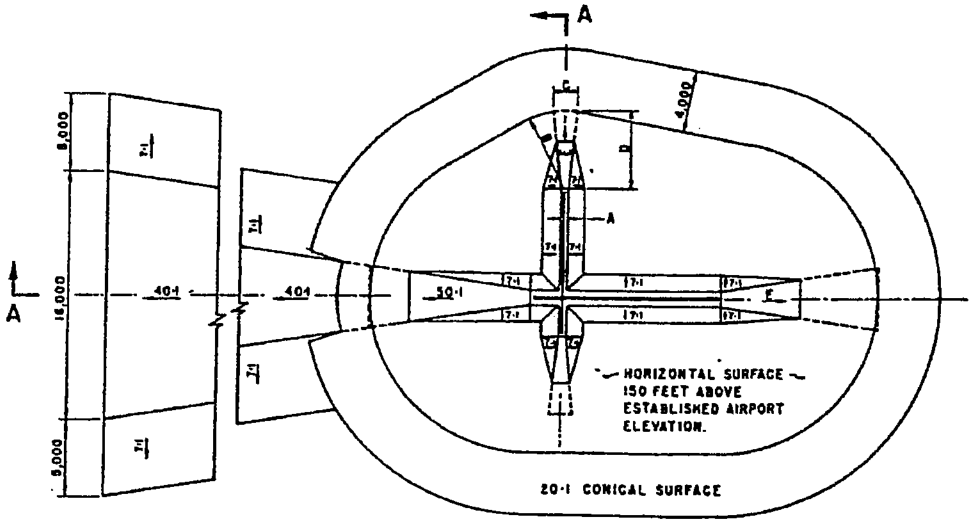
FAR PART 77 SURFACES

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. **Figure 4-2** on the following page illustrates plan and isometric views of the Part 77 surfaces.

The 1992 Airport Airspace Plan[13] depicted airspace surfaces that were consistent with visual approach capabilities and utility runways based on an existing/ultimate runway length. For Runway 12/30, the use of "utility" standards based on future visual approach capabilities (per FAR Part 77) is appropriate for defining long-term airspace planning for Ashland Municipal Airport. As noted earlier, this airspace structure is also compatible with development of non-precision instrument approaches with circling procedures (daytime only use). Large areas of terrain penetration were identified within the airspace surfaces, southwest, south, east and north of the runway. **Table 4-6** summarizes FAR Part 77 standards with the corresponding runway type and approach capability.

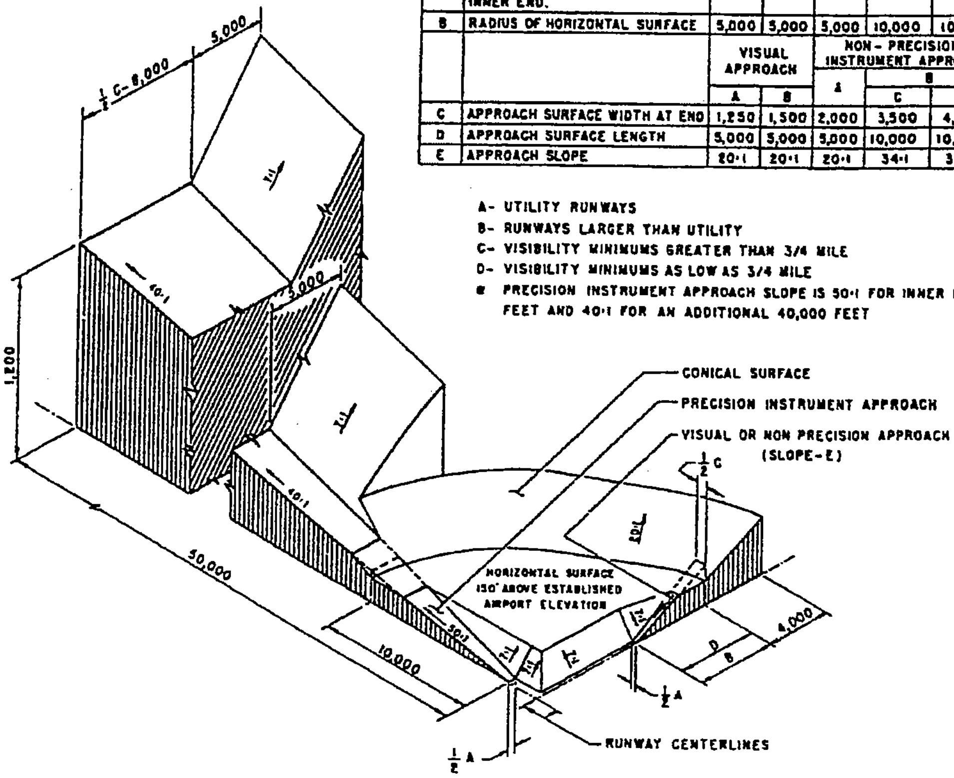
[13] Ashland Municipal Airport Master Plan; Airport Airspace Plan (Drawing 2), SFC Engineering (May, 1994)

OBJECTS AFFECTING NAVIGABLE AIRSPACE



DIM	ITEM	DIMENSIONAL STANDARDS (FEET)					
		VISUAL RUNWAY		NON-PRECISION INSTRUMENT RUNWAY			PRECISION INSTRUMENT RUNWAY
		A	B	A	B		
					C	D	
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
		A	B	A	B		
					C	D	
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	*

A- UTILITY RUNWAYS
B- RUNWAYS LARGER THAN UTILITY
C- VISIBILITY MINIMUMS GREATER THAN 3/4 MILE
D- 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



ISOMETRIC VIEW OF SECTION A-A

§ 77.25 CIVIL AIRPORT IMAGINARY SURFACES

DESIGNED BY: DM	FAR PART 77 DIAGRAM	CENTURY WEST ENGINEERING CORPORATION 6650 S.W. Redwood Lane, Suite 300 Portland, Oregon 97224 503-419-2130 phone • 503-639-2710 fax www.centurywest.com	FIGURE 4-2
DRAWN BY: JLM			
SCALE: NTS			

TABLE 4-6: FAR PART 77 AIRSPACE SURFACES ASHLAND MUNICIPAL AIRPORT

Item	Utility (visual)[1]
Width of Primary Surface	250 feet
Radius of Horizontal Surface	5,000 feet
Approach Surface Width at End	1,250 feet
Approach Surface Length	5,000 feet
Approach Slope	20:1

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

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 1992 Airspace Plan depicted future utility (visual) runway approach surfaces with slopes of 20:1. Three obstructions were identified within the 20:1 approach surfaces for Runway 30 and one obstruction was identified in the Runway 12 approach. Dead Indian Memorial Road passes under the Runway 30 approach surface, approximately 630 feet from the runway end; vehicles traveling on the roadway penetrate the 20:1 approach surface by approximately 15 feet. Trees located approximately 1,141 feet from the runway end were identified as the controlling obstruction for Runway 30. The airspace plan recommended trimming/removing the trees to eliminate the obstruction. A building located approximately 900 feet from the end of Runway 30 was also identified as an obstruction. Any structures penetrating FAR Part 77 airspace surfaces should be marked with obstruction lighting. A private road crosses the Runway 12 approach surface approximately 230 feet from the runway end; vehicles traveling on the roadway penetrate the 20:1 approach surface by 10 feet. The 1994 ALP recommended realigning the private road to improve obstruction clearance in the Runway 12 approach.

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 should be free of any penetrations, except items with locations fixed by function (i.e., VASI, runway or taxiway edge lights, etc.). The primary surface end connects to the inner portion of the runway approach surface.

The recommended primary surface for Runway 12/30 is based on utility/visual runway standards (250 feet wide). It appears that the primary surface is generally free of obstructions, with the exception of small areas near the end of Runway 30 (both sides) and a small area on the west side of Runway 12 (the southern 700 feet +-). The runway's close proximity to the adjacent creeks may prevent a full-width primary surface that is free of obstructions (stream embankments, trees, brush, etc.); however the primary surface should be maintained to best clearance standard possible.

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 1992 Airspace Plan depicted numerous transitional surface penetrations--mostly trees located along the two creeks that border both sides of the runway. City staff indicates that most trees located within airport property have been removed or lowered; however, many of the trees located off airport property remain in place. During a recent visual inspection of the airport several large trees were observed to penetrate the transitional surfaces. The residence located nearest the runway on the east side was identified as a transitional surface obstruction on the 1992 airspace plan. Any structures penetrating FAR Part 77 airspace surfaces should be marked with obstruction lighting.

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 12/30 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 1992 Airspace Plan depicted areas of terrain penetration within the horizontal surface, southwest, south, east and north of the runway. The elevation of the horizontal surface is based on the published elevation of the airport (1,885 feet MSL), plus 150 feet (2,035 feet).

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. Large areas of terrain penetration were identified within the conical surface on the 1992 Airspace Plan southwest, south, east and north of the runway. A radio tower is also identified as an obstruction near the outer edge of the conical surface, southwest of the runway, at an elevation of 2,423 feet

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 Ashland Municipal Airport 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.

The 1992 ALP included a wind rose that was based on observations recorded at Medford-Jackson County Airport between 1948 and 1978. The 1992 master plan states *"...detailed wind data for Ashland is not currently available. The previous master plan (1983) utilized Medford wind data to approximate coverage at Ashland."* Wind coverage on Runway 12/30 is considered to be adequate (estimated at approximately 95 percent at 12 miles per hour and 99.5 percent at 15 miles per hour).

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. A summary of FAA-recommended runway lengths for a variety of aircraft types and load configurations are described in **Table 4-7**.

Runway 12/30 accommodates predominantly small aircraft (less than 12,500 pounds) operations. Since the airport accommodates limited activity from aircraft weighing more than 12,500 pounds, the current evaluation of runway length requirements should be based on the FAA's model for "small airplanes." A summary of the typical runway length requirements for large aircraft weighing less than 60,000 pounds and some specific smaller business jets is also provided for comparison.

Based on local conditions and the methodology outlined in AC 150/5325-4A, Runway 12/30 can currently accommodate approximately **92 percent** of the small airplane fleet under the conditions common during a typical summer day in Ashland.

A runway length of 3,700 feet is required to accommodate 95 percent of small airplanes (12,500 pounds or less maximum gross takeoff weight) with 10 or less passenger seats; a length of 4,320 feet would be required to accommodate 100 percent of small airplanes, which would include most business class twin-engine piston, turboprop and light jets weighing less than 12,500 pounds.

TABLE 4-7: FAA-RECOMMENDED RUNWAY LENGTHS

(From FAA Computer Model)

Runway Length Parameters for Ashland Municipal Airport

- *Airport Elevation: 1,885 feet MSL*
- *Mean Max Temperature in Hottest Month: 85 F*
- *Maximum Difference in Runway Centerline Elevation: 38 feet*
- *Existing Runway Length: 3,603 feet*

Small Airplanes with less than 10 seats	
75 percent of these airplanes	*3,090 feet*
95 percent of these airplanes	*3,700 feet*
100 percent of these airplanes	*4,320 feet*
Small airplanes with 10 or more seats	*4,550 feet*
Large Airplanes of 60,000 pounds or less	
75 percent of these airplanes at 60 percent useful load	*5,500 feet*
75 percent of these airplanes at 90 percent useful load	*7,000 feet*
100 percent of these airplanes at 60 percent useful load	*6,150 feet*
100 percent of these airplanes at 90 percent useful load	*8,960 feet*
Selected Aircraft Types:	
Cessna Citation CJI (6-7 passengers / 1 crew 10,600# MGW)	*5,030 feet***
Cessna Citation CJ2 (6-7 passengers / 1 crew 12,375# MGW)	*4,350 feet***
Cessna Citation Bravo (7-11 passengers / 2 crew 14,800# MGW)	*4,730 feet***
*** Takeoff distances based on maximum gross weight and conditions listed above; passenger and/or fuel loads may be reduced based on aircraft operating weight limits.*	

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, 86 degrees F, MGTW, distance to 35 feet above the runway; data provided by manufacturer (Cessna Citation Flight Planning Guides).

The most recent (1992) Airport Layout Plan does not recommend an increase in runway length. This represented a significant change from the previous (1982) ALP that recommended a runway length of 4,300 feet. The issues associated with runway extension were extensively discussed by staff, the planning advisory committee and other members of the community during the last master plan update. Based on concerns over property acquisition, noise, and the potential for attracting larger aircraft, the issue was ultimately dropped from consideration and was not maintained as a recommendation on the 1992 ALP. The practical limitations of the airfield site also limit runway expansion beyond its current length. Barring a change in development priorities, it is recommended that the existing runway length (3,603) be maintained.

The existing width of Runway 12/30 is 75 feet, which exceeds the ADG I standard (60 feet) and meets the ADG II standard (75 feet), although no change in width is recommended. The existing runway width will accommodate both existing and forecast air traffic through the twenty year planning period.

Airfield Pavement

According to the data contained in the 2002 pavement condition report,[14] Ashland Municipal Airport pavements ranged from "failed" to "excellent." **Table 4-8** summarizes the five-year maintenance program recommended for Ashland Municipal Airport 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, weather conditions and design of the pavement and underlying base course. Vegetation removal and crackfilling should be performed annually; sealcoats should be applied on 5- or 6-year intervals.

It was noted in the inventory chapter that some of the pavement plan's recommended 5-year projects have been completed (or are now underway) since the 2002 inspection including a slurry seal on the runway and overlay/reconstruction on the main apron.

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

TABLE 4-8: SUMMARY OF RECOMMENDED AIRFIELD PAVEMENT MAINTENANCE

Pavement Section	5-Year Recommended Maintenance	Other Recommended Maintenance During 20-Year Planning Period[1]
Runway 12/30	Mill & Overlay (2005) *(slurry seal applied in 2003; mill/overlay deferred)* Reconstruct (2003): Southern 190' *(overlay of this section completed in 2004)*	Slurry Seal (2011) Slurry Seal (2017) Slurry Seal (2023)
Parallel Taxiway	Slurry Seal (2003) *(deferred)*	Overlay (2006) Slurry Seal (2010) Slurry Seal (2015) Slurry Seal (2020)
Main Apron (South Section)	Slurry Seal (2007) *(Overlay completed in 2004)*	Slurry Seal (2010) Slurry Seal (2016) Slurry Seal (2022)
Main Apron (Center Section)	Overlay (2004) *(Overlay completed in 2004)*	Slurry Seal (2010) Slurry Seal (2016) Slurry Seal (2022)
Main Apron (North-Center Section)	Reconstruct (2004) *(Reconstruct completed in 2004)*	Slurry Seal (2010) Slurry Seal (2016) Slurry Seal (2022)
Main Apron (North Section)	Slurry Seal (2003) *(deferred)*	Slurry Seal (2013) Slurry Seal (2018) Overlay (2015)
South T-Hangar Apron/Taxilanes	Slurry Seal (2003) *(deferred)*	Slurry Seal (2010) Overlay (2015) Slurry Seal (2021)
North Hangar Taxiways/Taxilanes	Slurry Seal (2003) *(deferred)*	Slurry Seal (2010) Overlay (2015) Slurry Seal (2021)

1. The dates identified for long-term pavement maintenance assume that all deferred 5-year maintenance recommended in Years 1 and 2 (2003-2004), 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 12/30

The 2002 PCI report rates the runway "very good," with the exception of the southern 190-foot displaced threshold section, which was rated "poor." The report indicates that without the recommended maintenance, the runway rating will decline to "fair" and the southern section would be in "very poor" condition by 2012. The PCI report recommended a milling and overlay for the main section of the runway in Year 3 (2005). A reconstruct of southern 190-foot (displaced threshold) was recommended in Year 1 (2003). As noted earlier, the runway was sealcoated in 2003, which will allow the previously recommended milling and overlay project to be deferred for a limited time. The 2004 pavement rehabilitation project included an asphalt overlay on the south end of the runway (eastern half only - approximately 350 feet).

The existing published pavement strength of 15,000 pounds (single wheel) is adequate to accommodate regular operations with all small aircraft. The FAA standard pavement strength of runways designed to accommodate small aircraft exclusively is 12,500 pounds for aircraft with single wheel landing gear configurations.

Parallel Taxiway

The 2002 PCI report rates the parallel taxiway as "excellent" (center section) and "good" (north section). The report indicates that without the recommended maintenance, the taxiway rating will decline to "good" by 2012. The PCI report recommended a slurry seal for the entire parallel taxiway in Year 1 (2004). According to historic pavement data, the existing parallel taxiway surface was applied in 1984 (north section) and 1989 (center section); based on normal useful life, it is anticipated that the entire parallel taxiway will require an asphalt overlay within the next five years.

Aircraft Aprons

The 2002 PCI report rates the four sections of main apron pavement ranging from "failed" to "excellent." The PCI report recommended slurry seals for the southern (Year 5) and northern (Year 1) apron sections, with reconstruction or overlay recommended for the center sections of the main apron (Year 2). The 2004 pavement rehabilitation project included work on the southern and south-center sections of the apron (asphalt overlay) and the north-center section (reconstructed).

Hangar Taxiway/Taxilanes

In the 2002 PCI report, the hangar taxiway/taxilane pavements ranged from "very good" to "excellent." The PCI report recommended slurry seals for all of the hangar taxiway/taxilanes in year 1 (2003).

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 existing runway-taxiway configuration provides efficient movement for aircraft and is expected to remain well below capacity during the twenty-year planning period based on forecast demand.

Taxiways

Runway 12/30 is served by a full-length parallel taxiway/taxilane on the east side. As noted earlier, the existing runway-taxiway separation meets ADG I (small) standards. The width of the parallel taxiway is 30 feet, which exceeds the ADG I standard of 25 feet.

The aircraft holding area located at the Runway 12 end on the east parallel taxiway allows pre-departure aircraft checks and run-ups to be conducted without blocking taxiway access to the runway for other aircraft. The taxilane located adjacent to the Runway 30 threshold also allows pre-takeoff checks, although the clearance between the adjacent aircraft parking positions is minimal.

Airfield Instrumentation, Lighting and Marking

Runway 12/30 has medium-intensity runway edge lighting (MIRL), standard for general aviation runways. Runways 12 and 30 are equipped with visual approach slope indicators (VASI). Precision Approach Path Indicators (PAPI) is the primary visual guidance system currently used at general aviation airports. Replacement of the VASI units should be expected during the current twenty-year planning period as the VASI units reach the end of their useful life or replacement parts become more difficult to obtain.

Runway 30 is 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. A REIL would also be recommended for Runway 12 to improve safety for landing in conjunction with development of an instrument approach, particularly if a circle-to-land procedure is developed.

The parallel taxiway has edge reflectors. Based on the relatively low level of nighttime operations, it is anticipated that edge lighting will not be required.

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 12/30 has basic runway markings (white runway numbers, centerline stripe, displaced threshold), which are appropriate for current and anticipated use. Recommended taxiway markings consist of yellow centerline stripes and aircraft hold lines located at each taxilane connection to the parallel taxiway and at each exit taxiway connection between the runway and parallel taxiway.

On-Field Weather Data

The airport does not have automated weather observation system (AWOS/ASOS) or 24-hour human observation. An AWOS would provide pilots with on-site weather information and would also enable the airport to accommodate aircraft licensed under FAR Part 135 (air taxi/charter) for future instrument approaches, if developed for the airport.

Even as a VFR airport, Ashland's location on north edge of the Siskiyou Mountains combined with the localized ground fog that is common in Medford creates a need for reliable local weather data for a potentially wide range of users. If supported, an AWOS/ASOS site should be identified on the airport that meets the system installation criteria (required clearances, etc.).

As noted earlier, the City is currently considering acquiring a SuperUnicom™, or similar system that provides basic weather data and pilot advisory information. Although this type of system does not normally provide certified weather data, the acquisition costs are significantly lower and installation is relatively simple.

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:

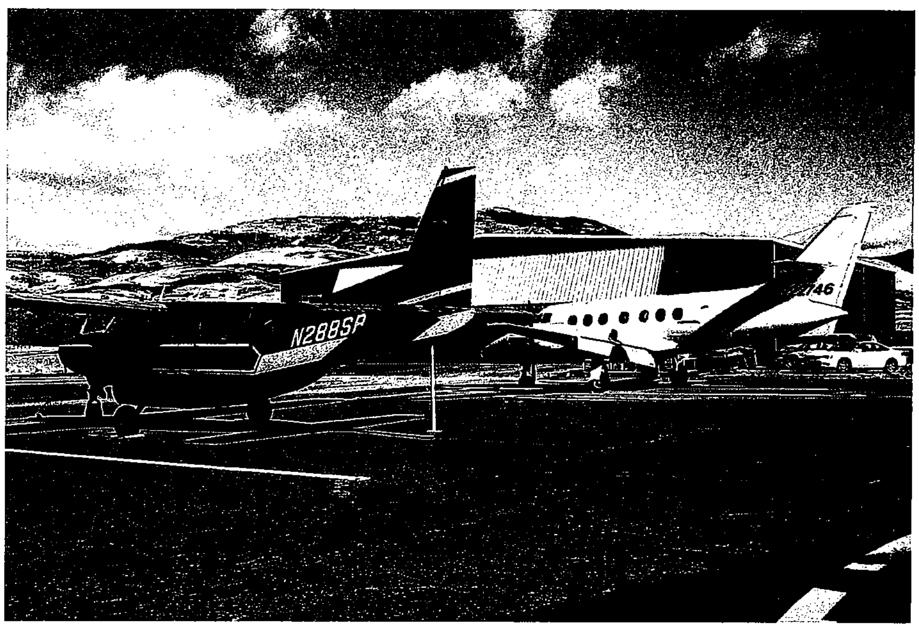
- *Hangars*
- *Aircraft Parking and Tiedown Apron*
- *Fixed Base Operator (FBO) Facilities*

Hangars

In Spring 2005, Ashland Municipal Airport had 18 hangars including 4 T-hangars (42 spaces); 12 small/medium conventional hangars; and 2 large commercial hangars (Skinner Aviation and Sky Research). It is estimated that the 17 hangars have capacity of approximately 72 aircraft, which represents about 80 percent of the estimated 89 based aircraft. Based on the interest in developing additional hangar space at the airport, it is anticipated that the percentage of based aircraft stored in hangars will increase during the current planning period. The recently constructed 14-unit T-hangar is expected to attract new aircraft from other airports and accommodate locally based aircraft stored in tiedowns.

For planning purposes, it is estimated that the percentage of the airport's locally based aircraft stored in hangars will be maintained at approximately 80 percent during the current planning period. It is anticipated that the level of hangar utilization will reflect both newly arriving aircraft and aircraft currently located at the airport (parked on tiedown aprons). The rate of hangar utilization assumed in this facility requirements evaluation is based on the level of interest expressed by local pilots in having new hangar space constructed at the airport. It is also assumed that all existing hangar space is committed and future demand will need to be met through new construction.

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 Ashland Municipal Airport is projected to increase by 36 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 hangar space hangars is estimated to be 42 spaces, or approximately 63,000 square feet. The projected hangar needs are presented in **Table 4-9**.



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 an additional hangar development reserve be identified to accommodate any unanticipated demand. Reserves should be established to accommodate a combination of conventional hangars and T-hangars.

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. The existing aircraft apron has approximately 77 light aircraft tiedowns and 3 larger aircraft parking positions.

During recent airport visits, 25 to 40 aircraft have typically been observed parked on the aprons. The estimated 40 percent of locally based aircraft currently parked on an apron would account for approximately 35 aircraft, with the remaining aircraft believed to be transient. As noted earlier, it is anticipated that as the percentage of based aircraft stored in hangars at the airport increases the percentage of aircraft parked on the apron will decrease. Based on the assumption that locally based aircraft apron parking demand will gradually decline from 40 percent to 20 percent during the planning period, the long-term forecast of 125 based aircraft will require 25 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 Ashland Municipal Airport, 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 16 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. Initially, two parking (drive through) spaces capable of accommodating a typical business aircraft would be adequate to accommodate periodic demand. The business aircraft parking should be located near the FBO to enable convenient passenger loading/unloading and access to fueling and other services.

The aircraft parking area requirements are summarized in **Table 4-9.** As noted in Table 4-9, the existing parking capacity of the apron exceeds projected demand. However, the narrow configuration of the existing apron and the potential development of additional hangars along the back edge may eliminate several existing tiedowns. In addition, any reconfigurations on the existing apron to accommodate designated air cargo or helicopter parking areas may reduce the number of light aircraft tiedowns available.

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.

Air Cargo Aircraft Parking

As noted earlier, Ashland occasionally accommodates air cargo/express activity when aircraft are unable to land in Medford fog conditions. Although the demand is intermittent, when conditions prevent landing at Rogue Valley International-Medford Airport, several single-engine and multi-engine turboprop aircraft typically divert to Ashland during the normal morning or afternoon delivery or pick-up schedules for express packages. The parking demand typically varies between one and five aircraft, depending on the amount of time spent on the ground and the individual aircraft flight schedules. To accommodate this demand, the airport should have a designated parking area for these aircraft that provides convenient aircraft and ground support vehicle access. Since the demand is only occasional, these parking positions could also be used by the FBO to accommodate other itinerant aircraft parking; the aircraft could be quickly moved on days when Medford weather conditions were marginal.

Initially, three designated parking positions would be adequate to accommodate most demand, with other space reserved for temporary overflow demand. The parking positions should be configured to allow powered drive-through (taxiing) with adequate clearance between aircraft to allow ground service vehicles to park adjacent to the aircraft for loading/unloading.

TABLE 4-9: APRON AND HANGAR FACILITY REQUIREMENTS SUMMARY

Item	Base Year (2003/04)	2009	2014	2019	2024
Based Aircraft (Forecast)	**89**	**103**	**109**	**117**	**125**
Aircraft Parking Apron *(Existing Facilities)*					
Light Aircraft Tiedowns	72				
Larger Aircraft Parking	2				
Total Apron Area	34,880 sy				
Projected Needs *(Demand)* [1]					
Itinerant Aircraft Parking (@ 360 SY each)		22 spaces / 7,920 sy	24 spaces / 8,640 sy	25 spaces / 9,000 sy	27 spaces / 9,720 sy
Locally-Based Tiedowns (@ 300 SY each)		31 spaces / 9,300 sy	27 spaces / 8,100 sy	23 spaces / 6,900 sy	25 spaces / 7,500 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
Cargo Aircraft Parking Spaces[2] (@ 700 SY each)		3 spaces / 2,100 sy	3 spaces / 2,100 sy	3 spaces / 2,100 sy	3 spaces / 2,100 sy
Itinerant Helicopter Parking (@ 1,200 SY each)		2 spaces / 2,400 sy	2 spaces / 2,400 sy	2 spaces / 2,400 sy	3 spaces / 3,600 sy
Total Apron Needs		**60 spaces 22,970 SY**	**58 spaces 22,490 SY**	**55 spaces 21,650 SY**	**61 spaces 24,795 SY**
Aircraft Hangars *(Existing Facilities)*					
Existing Hangar Spaces	72 spaces * (estimated)				
Projected Needs *(Demand)* [3]					
(New) Hangar Space Demand (@ 1,500 SF per space) *(Cumulative 20-year projected demand: 42 spaces / 63,000 SF)**		**+14 spaces / 21,000 sf ***	**+10 spaces / 15,000 sf**	**+12 spaces / 18,000 sf**	**+6 spaces / 9,000 sf**

* 14-unit T-hangar constructed in 2004 to accommodate initial forecast hangar demand (noted in 2009) included in projected space requirements.

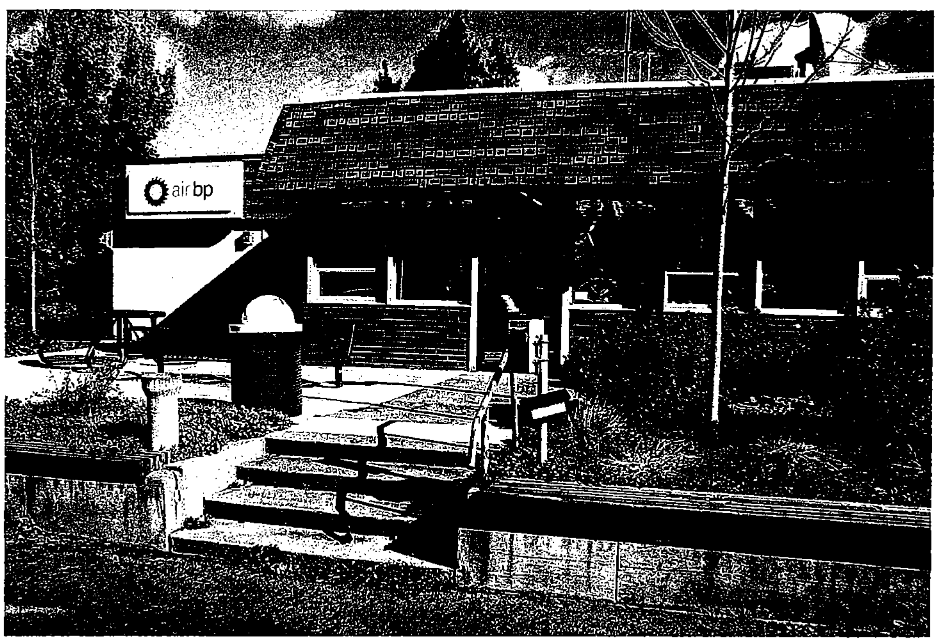
1. Aircraft parking demand levels identified for each forecast year represent forecast gross demand, which may be accommodated through a combination of existing and future parking areas.
2. Cargo aircraft parking demand is occasional (weather diverted flights from Medford); the parking positions would be used by other aircraft when cargo aircraft parking is not required.
3. Hangar demand levels identified for each forecast year represent the net increase above current hangar capacity.

Helicopter Parking

Ashland Municipal Airport 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 two designated parking positions would be adequate to accommodate periodic demand.

FBO Facilities

The FBO building has an office, classroom space, restrooms, and pilot and 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 1992 ALP identifies the area directly adjacent (north) of the current FBO hangar as a development reserve for an expanded FBO hangar. Replacement or renovation 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 Ashland Municipal Airport 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 via Dead Indian Memorial Road appears to be adequate for the planning period. Extensions from the north access road will be required to serve new hangar and apron developments. A driveway serves the Sky Research hangar from the north end of the vehicle parking area. Other hangar areas on the airfield are accessed from internal roadways and taxilanes.

The vehicle parking area adjacent to the aircraft apron has approximately 35 designated spaces, which combined with parking available adjacent to individual hangars, appears to be adequate for most user needs. However, the potential demand for employee and customer parking spaces adjacent to the Sky hangar may exceed the space currently available adjacent on the south side of their hangar. Options to expanding vehicle parking adjacent to the commercial hangar areas on the airport should be addressed in the alternatives analysis.

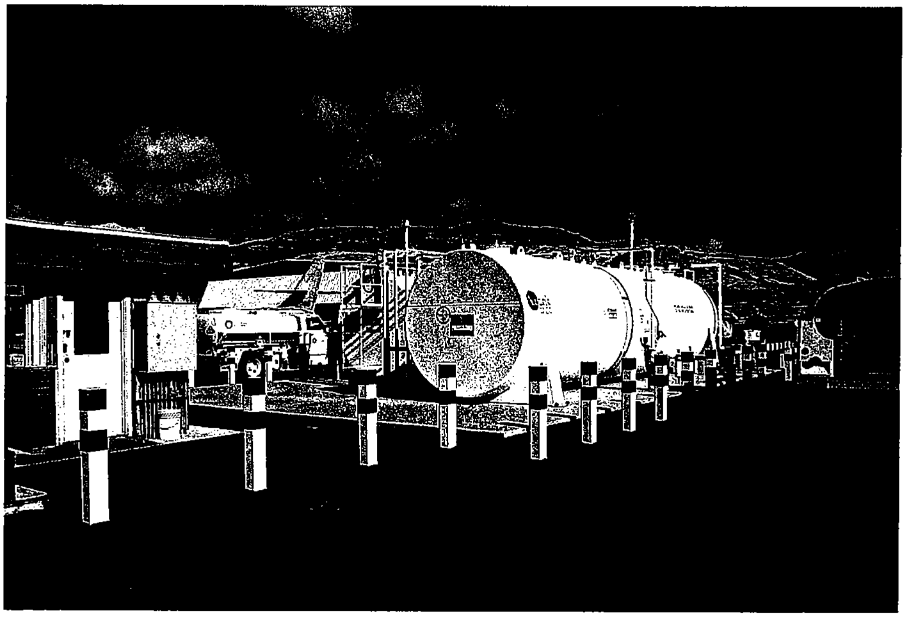
The requirements for providing designated vehicle parking areas adjacent to hangars vary greatly at small airports. A planning standard of 0.5 to 1.0 vehicle parking spaces per based aircraft is often used to estimate parking demand levels for non-commercial hangars. Future commercial hangar developments should be planned to meet the City of Ashland's parking requirements for commercial businesses within the E-1 zone. 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.

SUPPORT FACILITIES

Aviation Fuel Storage

As noted previously in the inventory chapter, the airport has two aboveground fuel storage tanks (10,000 and 12,000 gallons) that meet all current Oregon DEQ and EPA regulations for spill detection and containment. The 10,000-gallon tank is divided into two 5,000-gallon sections for jet fuel (Jet A) and 80/87 aviation gasoline (AVGAS). 80/87 fuel service is no longer maintained. The FBO indicates that the tank may be modified in the future to expand jet fuel capacity, if demand increases; it would also be possible to use that section of the tank to increase 100LL AVGAS capacity. The second tank has a capacity of 12,000-gallons of 100LL AVGAS. The airport FBO, Skinner Aviation also maintains two mobile fuel trucks (one jet fuel, one 100LL) with a capacity of approximately 1,200-gallons each.

The frequency of restocking AVGAS would be expected to increase as aircraft activity increases. The existing capacity appears to be adequate to accommodate future demand; the ability to reconfigure the 10,000-gallon tank to accommodate additional jet fuel or 100LL AVGAS provides additional flexibility.



Airport Utilities and Land Development Needs

The developed areas of the airport have water, sanitary sewer, electrical and telephone service. The existing utilities on the airport appear to be adequate for current and projected needs, although future expansion of hangars facilities and development of additional lease areas will require extensions of electrical and water service; demand for sanitary sewer and telephone service may also occur in the new development areas, particularly for commercial or business tenants.

In addition to aviation use development (hangars, aircraft parking, etc.), portions of the airport have previously been identified for development of aviation-related (non-aircraft access) uses. The 1992 ALP identified the area located near the northeast corner of the airport as future aviation-related development. This area is physically separated from existing and proposed aircraft use areas by the north airport access road, which makes aircraft access difficult. In addition, the rising terrain creates significant development constraints that would require extensive excavation in order to develop the highest areas of terrain. Options for designating this area for future "non-aviation" development could be considered as a way to generate additional airport revenues that could support airport maintenance, operation and development of new aviation facilities. However, since the parcel was acquired with an FAA airport grant, the FAA establishes specific limits on allowable uses. Because of this limitation, the FAA has recently indicated that non-aviation uses would not be allowed, regardless of the acknowledged physical site constraints. The following excerpt is from a recent email communication with FAA regarding the area in question following an inquiry by the Consultant on acceptable land uses:

David Miller, AICP, Century West Engineering: "If converting the airport land to "non-aeronautical" use is not acceptable to FAA, is it possible for the sponsor to sell the land and have the proceeds go into the airport fund or reimburse FAA for some portion of the original grant for the land purchase?"

Don Larson, FAA Seattle ADO: "...it is allowable that the sponsor could sell a portion of grant-acquired land (such as the area in question), if released by FAA, and reinvest the proceeds back into the airport. However, there would have to be a benefit to civil aviation (FAA's call) on such an action. The entire parcel was originally acquired, probably because this portion would have been an uneconomic remnant to the previous owner if it had been excluded from the purchase. For the same reason, it is questionable whether it would be marketable now, given its size, shape and lack of access from the airport (access from the airport road would not be allowed, since it and the land it's on were AIP-funded, but only from Dead Indian Memorial Road). Besides, we encourage an airport to hang on to its property, even that which may not be able to generate revenue. As I said in my comments letter, the airport could still use it for admin or maintenance facilities, and maybe even for aviation-related businesses that don't require direct airfield access."

It is recognized that the market potential of these areas will be determined largely by the services that are available on site. Extending electrical, water and sanitary sewer service may be possible from existing airport service lines, which could also serve new aviation tenants. However, the economic feasibility of extending utilities to new airport development sites should be evaluated in relation to the overall revenue generation and/or cost recovery potential.

Security

The airport has standard chain-link fencing located along its eastern boundary (adjacent to Dead Indian Memorial Road) with wire fencing in other areas. Additional chain link fencing with vehicle gates is located adjacent to the aircraft apron and vehicle parking lot.

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. A vehicle control issue has been identified near northwest corner of the terminal area vehicle parking lot where access roads extend to the Sky Research hangar and the north T-hangar area. The aircraft taxiway that serves the upper hangar area is also located near this point and runs immediately adjacent to the driveway serving the Sky hangar. Vehicles reportedly use the taxiway (occasionally) to access the main apron; the absence of aircraft or vehicle pullouts along the taxiway creates the potential for conflicts between aircraft and vehicles.

The separation between the hangar taxiway and the driveway serving the Sky hangar is not adequate to locate fencing along its entire length without creating an obstruction to the taxiway object free area (44.5 feet from taxiway centerline). However, installing an electronic vehicle gate at the entrance to the upper hangar area may reduce use of the taxiway by vehicles such as express cargo delivery vans or other traffic that is not compatible with taxiing aircraft. The airport sponsor also identified the need to upgrade overhead lighting in this area.

Additional overhead 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 Ashland Municipal Airport are summarized in **Table 4-10**. As noted in the table, the primary facility requirements are largely focused on developing apron and taxiway improvements and new hangar space on the airport. Maintaining and replacing existing pavements represents a significant ongoing facility need.

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 4-10: FACILITY REQUIREMENTS SUMMARY

Item	Short Term	Long Term
Runway 12/30	Runway Overlay/Reconstruct Pavement Maintenance[1] Periodic Obstruction Survey/Tree Removal	Pavement Maintenance[1] Periodic Obstruction Survey/Tree Removal
Parallel Taxiway	Pavement Maintenance[1]	Overlay Parallel Taxiway Taxiways to New Hangar Areas Hangar Taxilanes Pavement Maintenance[1]
Aircraft Aprons	Overlay (North Section of Main Apron) Pavement Maintenance [1] Expand Main Apron based on demand for business aircraft, cargo and helicopter parking	Pavement Maintenance[1] Expand Main Apron Apron Development Reserves
Hangars	Business/Commercial Hangars Develop T-hangar and Conventional Hangar sites (market demand)	Development Areas and Additional Hangar Development Reserves
Navigational Aids and Lighting	PAPI (Rwy 12 & 30) Flood Lighting (a/c parking & hangar areas) AWOS or SUPERUNICOM	REIL (Rwy 12) Additional Flood Lighting As Required
Fuel Storage	None	None
FBO Facilities	FBO Building/Apron Expansion Reserve	Renovation/Replacement of FBO Bldg. Reserve for 2nd FBO
Utilities	Extend Electrical, Water and Sanitary Sewer to new development areas, as needed	Same
Roadways & Vehicle Parking	Extend Internal Access Roads to new facilities; vehicle parking adjacent to commercial hangars	Same
Security	Airport Fencing; Electronic Vehicle Gates Flood Lighting	Same

1. Vegetation control, crackfill, sealcoat (fog seals, slurry seals) to be conducted on regular intervals.

Ashland Municipal Airport
Airport Layout Plan Report

Chapter Five

Airport Development Alternatives

CHAPTER FIVE
AIRPORT DEVELOPMENT ALTERNATIVES

INTRODUCTION

This chapter presents 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 Ashland Municipal Airport 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 master plan. Based on the recommendations of the previous master plan and the site characteristics of the airport, runway extension options will not be considered at this time. 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.

The process of evaluating new development options began by reviewing the recommended facility configurations from the 1992 airport layout plan (ALP) and more recent facility configurations developed by the Airport Commission and city staff. The landside improvements made at Ashland Municipal Airport have generally followed the guidance provided by the 1992 ALP, although minor changes in roadway alignments and hangar configurations were subsequently added through the refinement of concepts that normally occurs as part of design and construction. The evaluation and refinement of updated development options extended over a period of several months, which ultimately resulted in the selection of a preferred alternative that was integrated into the updated ALP.

The second section of this chapter contains the updated airport layout plan drawings.

SITE SPECIFIC DEVELOPMENT ASSUMPTIONS

Two terrain-related issues have been factored into the alternatives evaluation: first, development of aircraft related items (taxiways, hangars, etc.) in the upper portion of the landside area (northeast corner) requires extensive excavation and slope reinforcement. The excavation and reinforcement of the uphill slope required to develop the new 14-unit T-hangar significantly increased the cost of the project for the city. Cutting deeper into the hill will require greater excavation and larger areas of slope reinforcement. Based on the comparatively higher development costs associated with the upper hillside, the most cost-effective approach will be to first develop the lower sections of the landside area. In addition, developing the upper area for aviation uses would require the relocation of the existing airport access road to allow direct aircraft access. However, as readily developable aviation use areas eventually become scarce, it may be possible to recover the higher site preparation costs through a ground lease or hangar space rental rates and consider the road relocation issue. Based on forecast demand for hangar space, it appears that the lower areas have adequate capacity to meet needs well into the twenty-year planning period.

The second terrain consideration is related to the city's preference to align future hangar rows along the slope (parallel to the runway). The 1992 ALP depicted future rows of hangars oriented perpendicular to the runway, with the lower slope being graded to provide a relatively level development area. By orienting the hangar rows and taxilanes along the slope, the development can be more easily terraced, and the grading required on the slope can be determined by the main access taxiway design (FAA gradient limitations). This design preference has been integrated into both of the preliminary development options.

PRELIMINARY ALTERNATIVE CONCEPTS

Note: The preliminary development alternatives narrative text and graphics presented in this section are as originally presented and have not been modified based on the alternatives evaluation process. The evolution from the preliminary alternatives to a preferred alternative is described in the following sections and the results of that evaluation process are depicted on the airport layout plan drawing, also presented later in this chapter. While the preliminary development alternative figures provide an historical record of the development options considered, they do not necessarily reflect the configuration ultimately incorporated into the preferred alternative. The airport layout plan drawing reflects the final recommended configuration for the preferred alternative.

The conceptual options 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. 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 are also presented graphically at the end of the chapter.

Two preliminary options are presented to address future facility needs. Both options use the areas located immediately north of the main apron for apron expansion and large hangar site development. T-hangars and smaller conventional hangars are added further back from the lower apron areas. Most of the new hangar development areas will be accessed from an extension of the north airport access road, although the existing access from the terminal area will be maintained. 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.

Alternative 1

Note: Preliminary Development Alternative 1 proposed non-aviation uses for specific portions of the airport. However, through subsequent review, the FAA indicated that non-aviation development within these areas would not be permitted. Accordingly, the proposed non-aviation development in the preliminary alternative was not incorporated into the preferred alternative or depicted on the final airport layout plan. However, the references to proposed non-aviation developments originally contained in this section have not been removed in order to better illustrate the progressive process of evaluation, leading to development of the preferred alternative.

Alternative 1 continues a northern expansion of existing facilities in the airport's landside area. Although some leveling was completed as part of the site preparation for the new 14-unit T-hangar, the middle and upper portions of the sloping terrain will require additional grading to create a moderately level development area.

As proposed, the new hangar development areas would be served by a new taxiway that extends from near the corner of the existing north hangar taxiway (north of the Sky Research hangar). Two small/medium conventional hangars are depicted on the north side of the northern-most existing hangar taxilane. These hangar sites would require moderate excavation; however, the existing taxilane access makes the sites immediately useable.

A new main access taxiway would extend up the slope, with individual taxilanes located between hangar rows. A taxiway section would connect to the north T-hangar area to reduce congestion on the existing single taxiway that serves the area. An aircraft holding area is also proposed near the taxiway curve (northeast of the Sky hangar) to enable taxiing aircraft to avoid congestion at the convergence of several separate taxiways. It has been noted that aircraft taxiing around the

Sky hangar do not have an extended visual line of sight to see other taxiing aircraft (around the 90-degree turn and hangar) which occasionally results in aircraft meeting nose-to-nose. The holding area would allow aircraft to pass without leaving the paved surface.

In this option, the main apron is extended in a linear configuration to accommodate additional light aircraft tiedowns, helicopter parking, and several larger commercial/corporate hangars. Due to the limited depth of development area, the apron would abut the parallel taxiway with aircraft parking positions located outside the taxiway object free area (minimum 44.5 feet from taxiway centerline). The hangar sites are located along the back of the apron with west facing hangar doors; the southern most hangar site could accommodate a south- or west-facing door. The light aircraft tiedowns are oriented along the parallel taxiway in a double row (tail-to-tail). This tiedown configuration provides unobstructed aircraft access to the large hangars from the apron.

A new vehicle access road and vehicle parking areas are proposed immediately east of the large hangar row. Additional vehicle parking is provided adjacent to the hangar areas and existing access road. A portion of the existing north airport access road that serves the adjacent residences would be realigned slightly to accommodate the northern-most hangar site.

This option includes a non-aviation or aviation-related development area on the opposite side of the north airport access road. The steepest area located between the north airport access road and the new T-hangar is identified as a potential non-aviation or aviation-related development area. The site could accommodate a wide variety of uses, although due to the location of the access road and rising terrain, the area is not considered highly suitable to provide direct aircraft access. The development potential of this area may provide additional revenue that could contribute to the cost of operating, maintaining and developing the airport. As depicted, the site could accommodate an airport-compatible commercial or industrial park development that would be consistent with the airport's employment (E-1) zoning. Access to the site would be provided from the north airport access road.

Extending utilities to serve the proposed development areas will be evaluated based on the cost of the providing the services desired. Extension of water (fire protection) and electrical service may be adequate for some tenants, although other tenants may also require sanitary sewer.

This option also includes some minor changes in aircraft parking configurations on the existing apron. Two air cargo parking positions are identified near the southwest corner of the terminal area vehicle parking lot. The existing row of light aircraft tiedowns would be eliminated, although the parking positions would be available when not in use by the cargo aircraft (occasional weather diversions from Medford). Ideally, these positions would be maintained as itinerant parking for business aircraft that would not be used when cargo activity was anticipated. The option includes improvements to the existing access road and the addition of an electronic gate at the southwest corner of the parking lot. Support vehicles would have immediate access to the parking positions and could exit the apron from the same gate or at the gate located adjacent to the fixed base operator (FBO).

Other terminal area improvements include development of a commercial hangar immediately north of the FBO maintenance hangar. The airport FBO, Skinner Aviation has expressed an interest in constructing a new maintenance hangar in this site. An aircraft wash pad will be constructed in this area as part of the 2004 apron rehabilitation project. A small vehicle parking area is identified behind the hangar site, which would be accessed from the existing lane serving the Sky Research hangar.

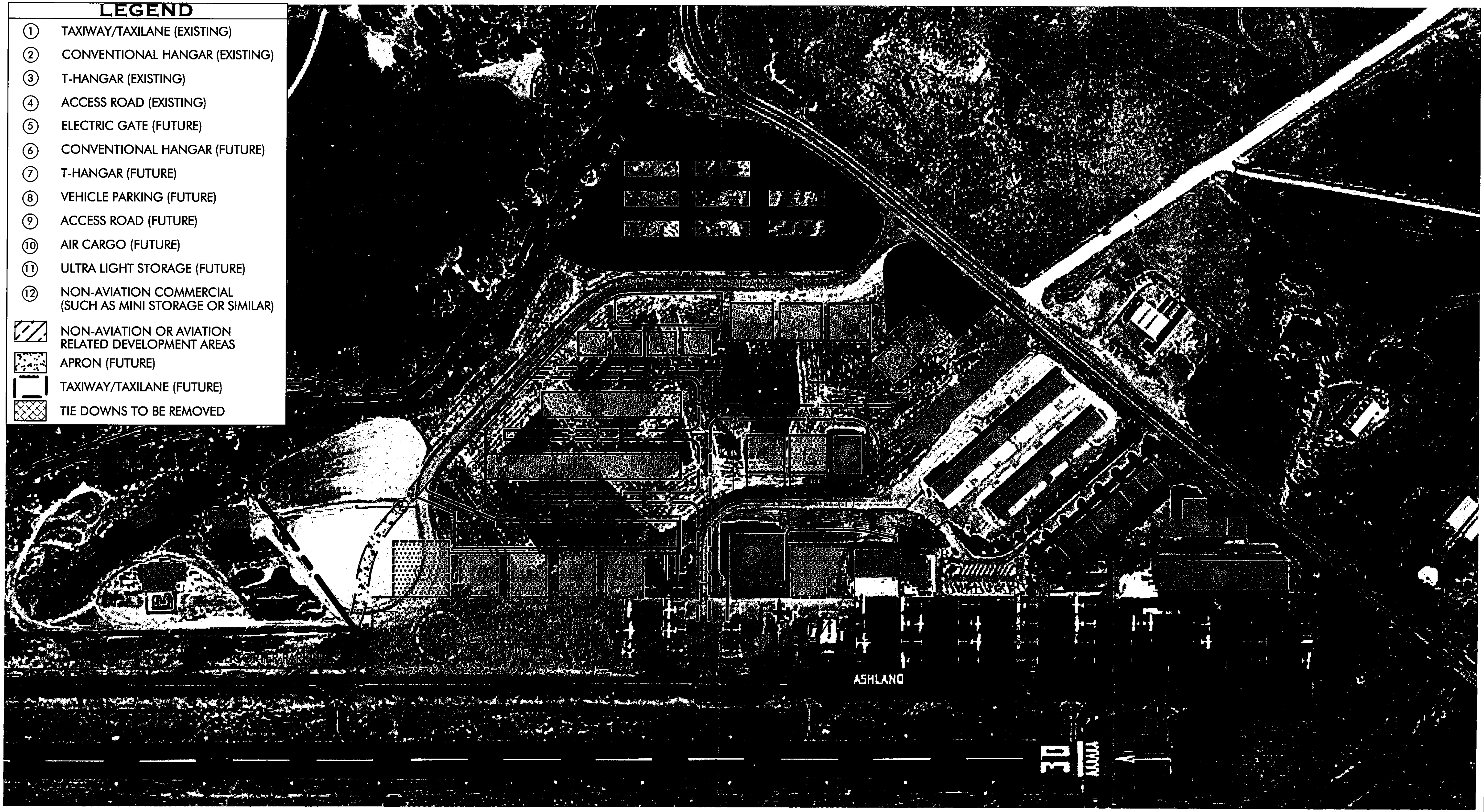
A designated area for ultralight storage is identified at the south end of the main apron. Several small storage units could be accommodated in this area while remain outside the runway protection zones (RPZ) for Runway 30.

Alternative 2

Note: As with the previous alternative, Alternative 2 proposed non-aviation uses for specific portions of the airport, which were subsequently eliminated from consideration. The references to proposed non-aviation developments originally contained in this section have not been removed in order to better illustrate the progressive process of evaluation, leading to development of the preferred alternative.

Alternative 2 provides similar facilities in slightly different configuration. The configuration of the smaller hangars and the taxiway system is very similar to Alternative 1. However, the configuration of the larger commercial hangars and the main apron expansion differs considerably. In this option, the commercial hangar development extends inward behind the main apron, rather than the linear row of hangars proposed in Alternative 1. The "L" shaped expansion of the main apron provides additional flexibility to accommodate air cargo and helicopter parking and light aircraft tiedowns on the outer portion of the main apron and additional tenant parking directly in front of the hangars. Two rows of large hangars face inward toward the extended aircraft apron (approximately 200 feet wide). This configuration requires that the access road extension be located further into the development area, which eliminates the western row of small conventional hangars identified in Alternative 1. Vehicle parking areas are identified adjacent to the commercial hangars. Air cargo support vehicle access is provided via the north airport access road with an electronic gate located at the north end of the apron.

The remaining elements of Alternative 1 have been maintained in Alternative 2.



NOTE: THE HIGHLIGHTED AREAS DEPICTED IN THIS FIGURE WERE ORIGINALLY PROPOSED TO ACCOMMODATE NON-AVIATION DEVELOPMENT. THIS LAND USE OPTION WAS LATER ELIMINATED FROM CONSIDERATION BASED ON FAA REVIEW AND COMMENT (SEE PAGE 4-38). BASED ON FAA REQUIREMENTS, THESE AREAS ARE RESTRICTED TO AVIATION USE AS LONG AS THEY REMAIN IN AIRPORT OWNERSHIP. THE ORIGINAL CONTENT OF THIS FIGURE HAS BEEN PRESERVED TO ILLUSTRATE THE CONCEPT IN THE FORM THAT IT WAS ACTUALLY CONSIDERED IN THE PROCESS OF DEFINING A PREFERRED DEVELOPMENT ALTERNATIVE. THE INFORMATION CONTAINED IN THIS FIGURE DOES NOT NECESSARILY REFLECT THE PREFERRED ALTERNATIVE, WHICH HAS BEEN INCORPORATED INTO THE AIRPORT LAYOUT PLAN DRAWING, PRESENTED LATER IN THIS CHAPTER.

MAGNETIC DEC.
16° 4' EAST
(2005 VALUE)

N

100 0 100

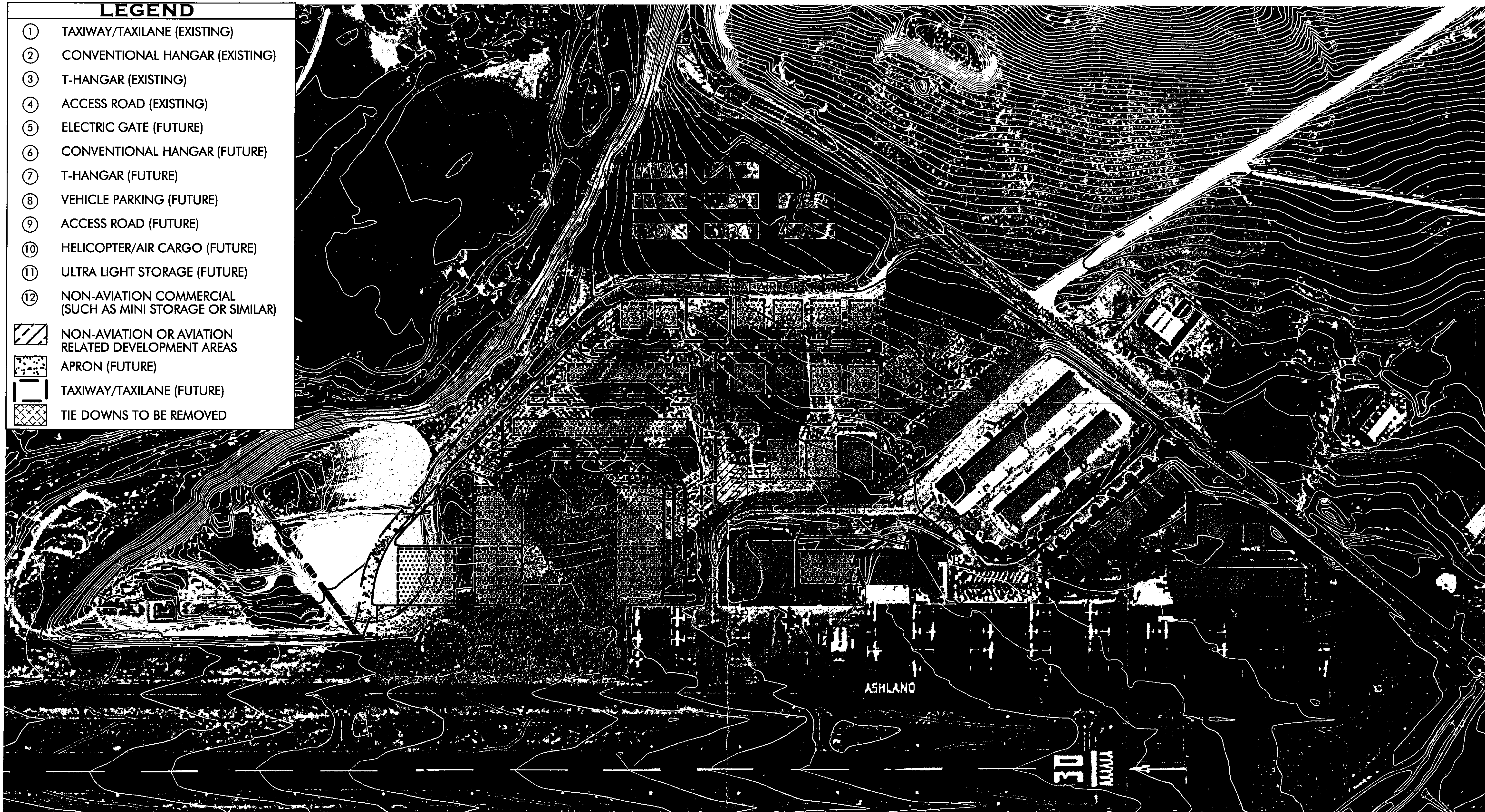
SCALE: 1"=100'

SOURCE: BERGMAN PHOTOGRAPHIC SERVICES, INC. (10-03-01)

CENTURY WEST ENGINEERING CORPORATION

ASHLAND MUNICIPAL AIRPORT-SUMNER PARKER FIELD ALTERNATIVE 1

FIGURE 5-1



NOTE: THE HIGHLIGHTED AREAS DEPICTED IN THIS FIGURE WERE ORIGINALLY PROPOSED TO ACCOMMODATE NON-AVIATION DEVELOPMENT. THIS LAND USE OPTION WAS LATER ELIMINATED FROM CONSIDERATION BASED ON FAA REVIEW AND COMMENT (SEE PAGE 4-38). BASED ON FAA REQUIREMENTS, THESE AREAS ARE RESTRICTED TO AVIATION USE AS LONG AS THEY REMAIN IN AIRPORT OWNERSHIP. THE ORIGINAL CONTENT OF THIS FIGURE HAS BEEN PRESERVED TO ILLUSTRATE THE CONCEPT IN THE FORM THAT IT WAS ACTUALLY CONSIDERED IN THE PROCESS OF DEFINING A PREFERRED DEVELOPMENT ALTERNATIVE. THE INFORMATION CONTAINED IN THIS FIGURE DOES NOT NECESSARILY REFLECT THE PREFERRED ALTERNATIVE, WHICH HAS BEEN INCORPORATED INTO THE AIRPORT LAYOUT PLAN DRAWING, PRESENTED LATER IN THIS CHAPTER.

MAGNETIC DEC. 16° 4' EAST (2005 VALUE)

100 0 100
SCALE: 1"=100'

SOURCE: BERGMAN PHOTOGRAPHIC SERVICES, INC. (10-03-01)

CENTURY WEST ENGINEERING CORPORATION

ASHLAND MUNICIPAL AIRPORT- SUMNER PARKER FIELD ALTERNATIVE 2

FIGURE 5-2

PREFERRED ALTERNATIVE

Based on their review of the options presented, the City of Ashland Airport Commission and staff supported a preferred alternative that contained the following elements:

- The landside (apron and hangar) development depicted in preliminary alternative 1, with specific modifications to accommodate a combination of hangar types and sizes. The rows of hangars will be aligned parallel to the runway to minimize site preparation necessary to accommodate hangars in the lower section of the development area. General grading will be required on the lower sections of the landside area and more extensive excavation will be required in the upper sections of the development area;

- Extend taxiway access into the north hangar area, connecting to the existing taxiway system; taxilanes will be developed to provide access to individual hangar rows; an aircraft holding area would be developed adjacent to the main access taxiway to address potential congestion as the volume of taxiing activity increases within the north hangar area;

- Extend the main apron in phases in its current dimensional (width) configuration based on demand for aircraft parking and large hangar development; development of future air cargo parking positions is recommended for the north end of the apron;

- The hangar lease area located along the future section of the main apron is reserved for large conventional hangars and business-related tenants;

- The hangar row and taxilane configuration reflects the physical limitations of the site; hangar rows are planned for specific types of hangars (i.e., one-sided box hangar, T-hangar, etc.), although specific building dimensions can be determined (with adequate taxiway/taxilane object free area clearance) based on tenant needs.

- Vehicle access and parking for the north hangar area and expanded main apron will be extended from the north airport access road;

- Based on market opportunities, develop the northeast portion of the airport (located on the north side of the north airport access road) in aviation-related use. Due to sloping terrain and the location of a main airport access road, providing aircraft access to this area is not currently considered practical. However, since the airport land base is relatively limited, overcoming these constraints may become more feasible over time as readily-developable areas are exhausted. The FAA has also indicated that if a benefit to civil aviation can be demonstrated, the City could sell the land (if released by FAA) if the proceeds were reinvested in the airport. This issue will be addressed through future coordination between the City and FAA.

- Expand south end of the main apron for ultralight and small aircraft parking, based on demand; and

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

Based on all comments provided, the input was incorporated into the airport layout plan drawing. The preliminary conceptual development options presented 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. Additional detail has been added to the ALP drawing for future aircraft apron, hangar and access road configurations. The draft set of airport layout plan drawings is presented at the end of this chapter.

AIRPORT LAYOUT PLAN DRAWINGS

The options that were considered for the long-term development of Ashland Municipal Airport were described in the Alternatives section of this chapter. 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 section. 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 – FAR Part 77 Airspace Plan*
- *Drawing 4 – Airport Land Use Plan with 2009 Noise Contours*

Airport Layout Plan

The Airport Layout Plan (ALP) presents the existing and ultimate airport layout and depicts the improvements that are recommended to enable the airport to meet forecast aviation demand. Airport vicinity and location maps, and data blocks for the overall airport and the runway are presented on the ALP. 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 existing runway and parallel taxiway are maintained;
- Expansion of the main apron (north section) is divided into three phases to accommodate variable demand for parking and landside lease development;
- Continued development of the north hangar area including new taxiway extension, development of hangar rows, and new hangar taxilanes;
- Development of access road and vehicle parking to serve the new north landside development area;
- Minor expansion of the main apron (south end) to accommodate light aircraft and ultralight parking;
- Infill development of aircraft hangars within existing landside areas with taxiway access or apron frontage;
- An "Aviation-Related Development" area is depicted near the northeast corner of the airport. This area (approximately 9 acres) is physically separated by an existing access road and has several physical site limitations that prevent aircraft access. Note 4 on the drawing indicates that future development of this area will be coordinated with FAA and that sale of the property is one option that may be considered.

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 Six**.

Airspace Plan

The FAR Part 77 Airspace Plan for Ashland Municipal Airport 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 Ashland Municipal Airport reflect the ALP-recommended (ultimate) runway length of 3,603 feet for Runway 12/30. Based on the current and planned use of B-I (small aircraft) design standards, Runway 12/30 will be designed for use by aircraft weighing 12,500 pounds and less, which places it in the "utility" category under FAR Part 77. Both runway ends are planned based on visual approach capabilities. As noted in the facility requirements analysis, this airspace configuration is also compatible with development of a non-precision instrument approach with a circling procedure that is authorized for daytime use only. A 5,000-foot horizontal surface radius is used for each runway end to protect future visual approach capabilities.

Large areas of terrain penetration are identified within the horizontal surface and conical surface north, south and southeast of the runway. No terrain obstructions are identified within the runway approaches, primary surface or transitional surfaces. However, numerous trees are located near the runway, many of which appear to penetrate the primary and transitional surfaces, particularly near the Runway 12 end.

A private road located near the end of Runway 12 creates an obstruction to the standard FAR Part 77 20:1 approach surface. Use of a Type B Obstacle Clearance Approach (OCA) is recommended for the visual runway end, consistent with the guidelines contained in FAA AC 150/5300-13 (appendix 2). The OCA 20:1 slope begins at the runway threshold, rather than 200 feet beyond the runway, which provides adequate obstruction clearance for landing aircraft.

The obstruction table depicted on the drawing lists 41 items, most of which were listed on the 1992 airspace plan. Although some tree removal has been conducted, the consultant was not able to clearly determine which of the listed items were removed or lowered. It is recommended that the City perform an updated obstruction survey to document the location and elevation of all items within the boundaries of the runway approach, primary and transitional surfaces.

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 OCA for Runway 12.

Airport Land Use Plan with 2009 Noise Contours

The Airport Land Use Plan for Ashland Municipal Airport 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 (primarily east, west and south), within one to two miles.

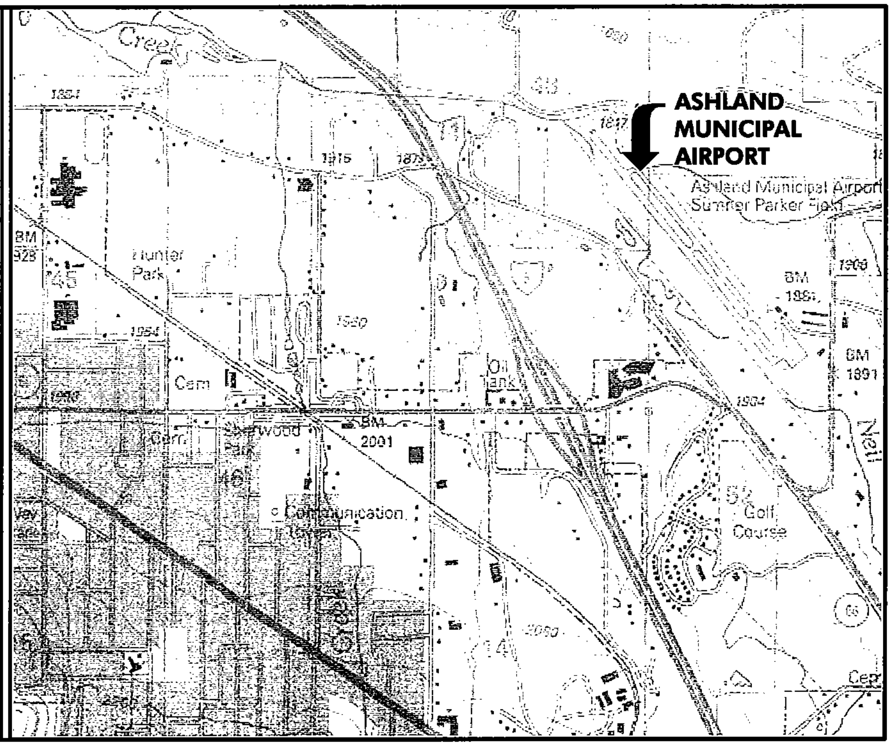
Noise exposure contours based on the 2009 forecasts of aircraft activity are depicted on the Land Use Plan. The noise contours were created using the FAA's Integrated Noise Model (INM). Data from activity forecasts and aircraft fleet mix are combined with common flight tracks and runway use to create 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. 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. See Chapter Seven for a detailed description of the noise analysis.

It is recommended that the City of Ashland and Jackson County update airport overlay zoning to reflect the boundaries of the FAR Part 77 airspace surfaces, consistent with the updated airport layout plan.

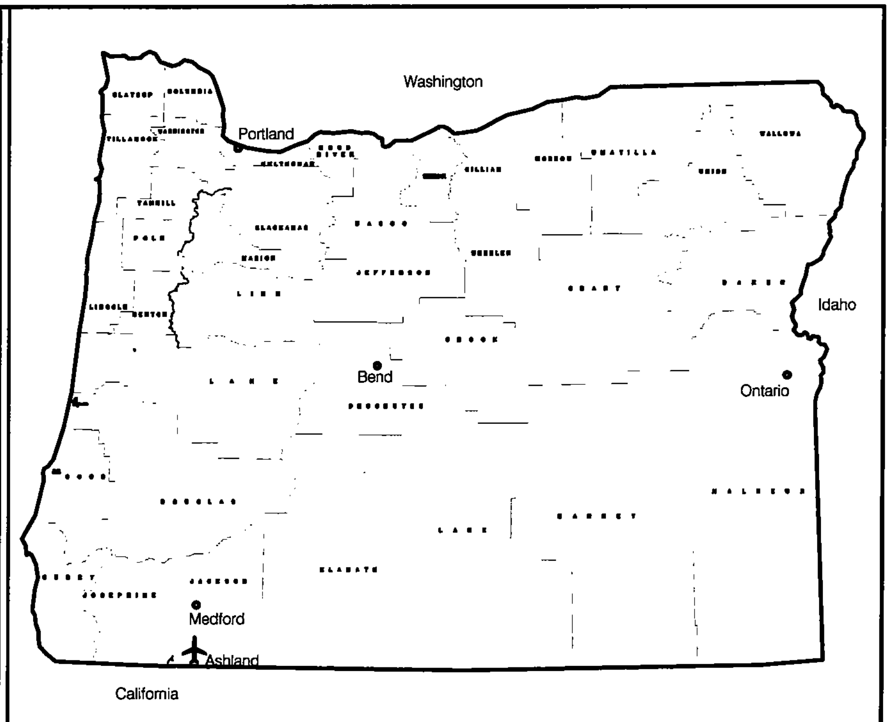
ASHLAND MUNICIPAL AIRPORT
SUMNER PARKER FIELD
AIRPORT LAYOUT PLAN

ASHLAND, OREGON
CWEC PROJECT NO. 40480004.01
AIP NO. 3-41-4100-15
OCTOBER 2005

VICINITY MAP



LOCATION MAP



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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		SAME
AIRPORT REFERENCE POINT (ARP)		
PROPOSED AIRFIELD PAVEMENT	NONE	
VISUAL GUIDANCE INDICATORS	VASI	PAPI
WIND INDICATOR		
AVIGATION EASEMENT		SAME
FENCE	X X	XX XX
PROPOSED ACCESS ROAD	NONE	
BEACON		SAME
THRESHOLD LIGHTS		
SEGMENTED CIRCLE WIND INDICATOR		
REIL		

AIRPORT DATA

	EXISTING	FUTURE
AIRPORT ELEVATION (MSL)	1885'	SAME
DATUM FOR ALL ITEMS	NAD 83/NGVD 29	SAME
AIRPORT REFERENCE POINT	LAT. N 42° 11' 25.02"	SAME
COORDINATES (ARP)	LONG. W 122° 39' 38.26"	SAME
AIRPORT MAGNETIC VARIATION	16° 4' E (2005)	SAME
MEAN MAXIMUM TEMPERATURE	85°	SAME
NPIAS ROLE	GA	GA
AIRPORT REFERENCE CODE (ARC)	B-I (SMALL)	B-I (SMALL)
AIRPORT CODE	S03	SAME
LAND OWNED IN FEE (ACRES)	96 EST.	110 EST.

DECLARED DISTANCES

	RUNWAY 12		RUNWAY 30	
	EXISTING	FUTURE	EXISTING	FUTURE
TAKEOFF RUN AVAILABLE (TORA)	3603'	SAME	3603'	SAME
TAKEOFF DISTANCE AVAILABLE (TODA)	3603'	SAME	3603'	SAME
ACCELERATE-STOP DISTANCE (ASDA)	3603'	SAME	3603'	SAME
LANDING DISTANCE AVAILABLE (LDA)	3603'	SAME	3413'	SAME

RUNWAY DATA 12/30

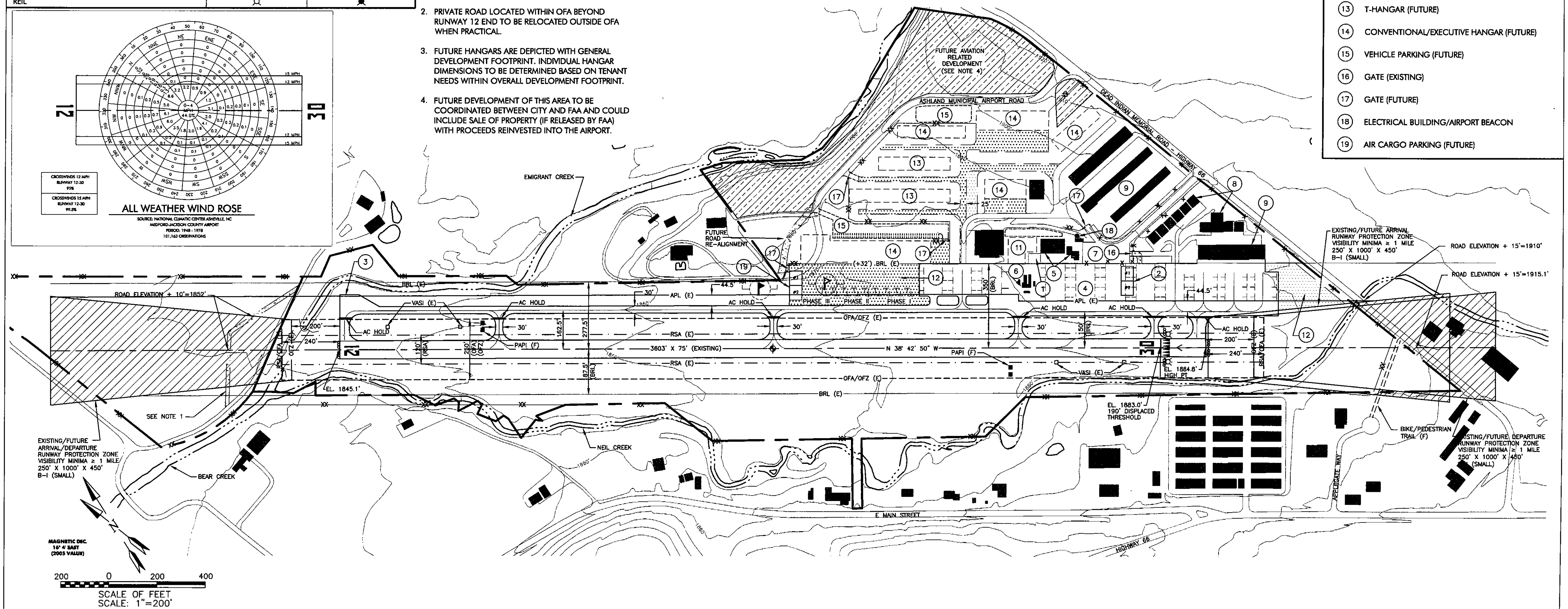
		EXISTING	FUTURE
LENGTH AND WIDTH		3603' X 75'	SAME
PERCENT EFFECTIVE GRADIENT		1.1%	SAME
PERCENT WIND COVERAGE (12 MPH)		95% ALL WEATHER	SAME
PAVEMENT TYPE		ASPHALT CONCRETE	SAME
PAVEMENT STRENGTH		15,500 SINGLE WHEEL	SAME
APPROACH SLOPE/TYPE		20:1/VISUAL	SAME
RUNWAY LIGHTING		MIRL	SAME
RUNWAY MARKING		BASIC	SAME
RUNWAY SAFETY AREA		4083' X 120'	SAME
OBJECT FREE AREA		4083' X 250'	SAME
OBSTACLE FREE ZONE		4003' X 250'	SAME
CRITICAL AIRCRAFT		BE-58	SAME
NAVIGATIONAL AIDS		NONE	NONE
APPROACH AND LANDING AIDS	12	VASI	PAPI, REIL
	30	VASI, REIL	PAPI, REIL
RUNWAY END COORDINATES	12	LAT.N 42° 11' 38.9" LONG.W 122° 39' 53.2"	SAME
	30	LAT.N 42° 11' 11.1" LONG.W 122° 39' 23.3"	SAME
TAXIWAY LIGHTING		REFLECTORS	REFLECTORS

BUILDING KEY

1. AIRCRAFT WASH PAD
2. TEMP. AIR CARGO PARKING POSITIONS (EXISTING)
3. AIRCRAFT HOLD/RUN-UP AREA
4. AIRCRAFT APRON
5. FIXED BASE OPERATOR
6. FUELING AREA
7. VEHICLE PARKING
8. HANGAR (EXISTING)
9. T-HANGAR (EXISTING)
10. SKY RESEARCH HANGAR & OFFICE
11. FBO HANGAR (FUTURE)
12. AIRCRAFT APRON (FUTURE)
13. T-HANGAR (FUTURE)
14. CONVENTIONAL/EXECUTIVE HANGAR (FUTURE)
15. VEHICLE PARKING (FUTURE)
16. GATE (EXISTING)
17. GATE (FUTURE)
18. ELECTRICAL BUILDING/AIRPORT BEACON
19. AIR CARGO PARKING (FUTURE)

NOTES:

1. LANDING THRESHOLDS FOR (RUNWAY 12) WERE SITED USING AC 150/5300-13 AIRPORT DESIGN, APPENDIX 2, THRESHOLD SITING REQUIREMENTS.
2. PRIVATE ROAD LOCATED WITHIN OFA BEYOND RUNWAY 12 END TO BE RELOCATED OUTSIDE OFA WHEN PRACTICAL.
3. FUTURE HANGARS ARE DEPICTED WITH GENERAL DEVELOPMENT FOOTPRINT. INDIVIDUAL HANGAR DIMENSIONS TO BE DETERMINED BASED ON TENANT NEEDS WITHIN OVERALL DEVELOPMENT FOOTPRINT.
4. FUTURE DEVELOPMENT OF THIS AREA TO BE COORDINATED BETWEEN CITY AND FAA AND COULD INCLUDE SALE OF PROPERTY (IF RELEASED BY FAA) WITH PROCEEDS REINVESTED INTO THE AIRPORT.
5. TWO OFZ OBJECT PENETRATIONS IDENTIFIED. SEE SHEET #3-AIRPORT AIRSPACE PLAN (OBSTRUCTION TABLE ITEMS #30 AND #31) FOR DETAILS.



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VERIFY SCALES
BAR IS ONE INCH ON ORIGINAL DRAWING.
0" 1"
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY.

FEDERAL AVIATION ADMINISTRATION APPROVAL
APPROVAL DATE: ____
MANAGER, SEATTLE ADO

CITY OF ASHLAND APPROVAL
APPROVAL DATE: ____
SIGNATURE

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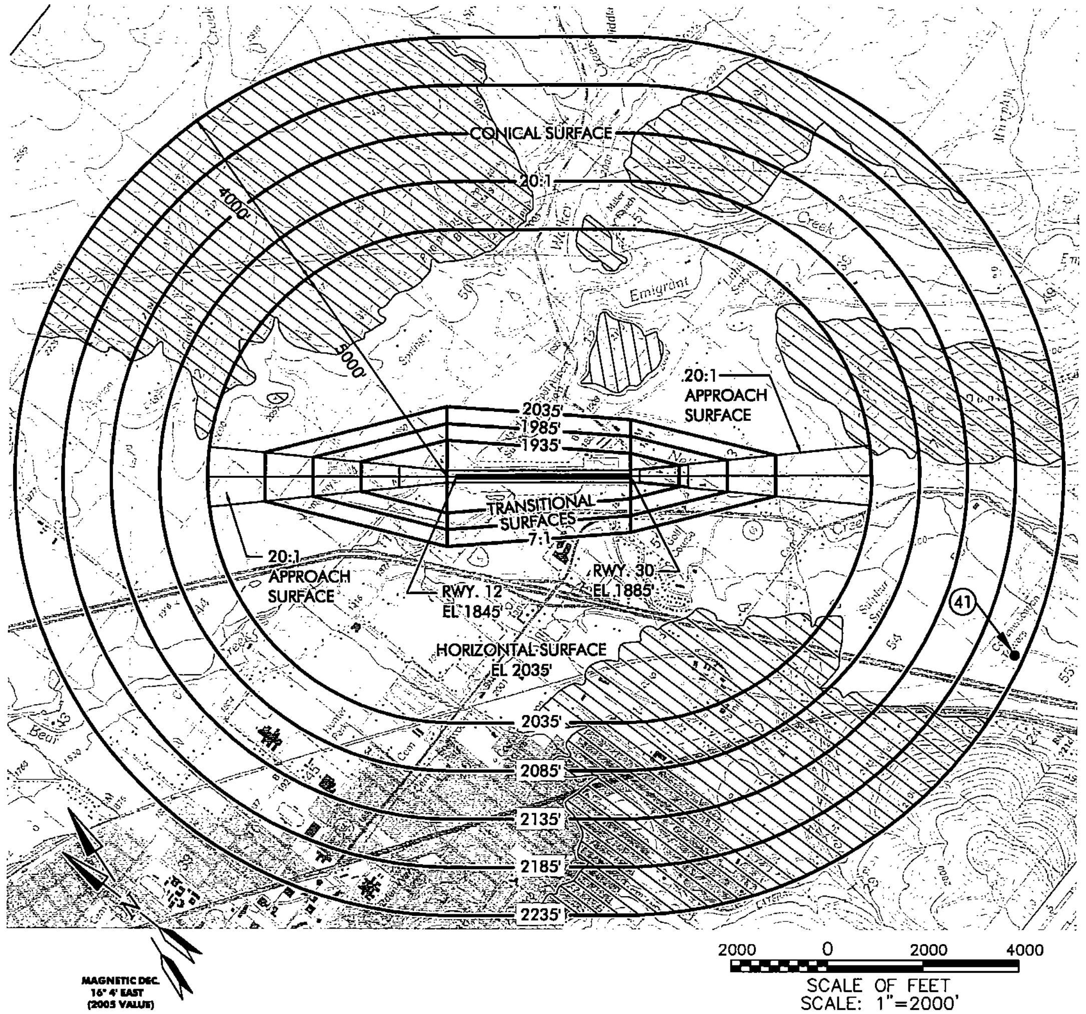
DESIGNED BY:	DRAWN BY:	CHECKED BY:	SCALE:
DM	SLK	DM	AS SHOWN
DATE: OCTOBER 2005		PROJECT NO: 40480004.01	

ASHLAND MUNICIPAL AIRPORT-SUMNER PARKER FIELD

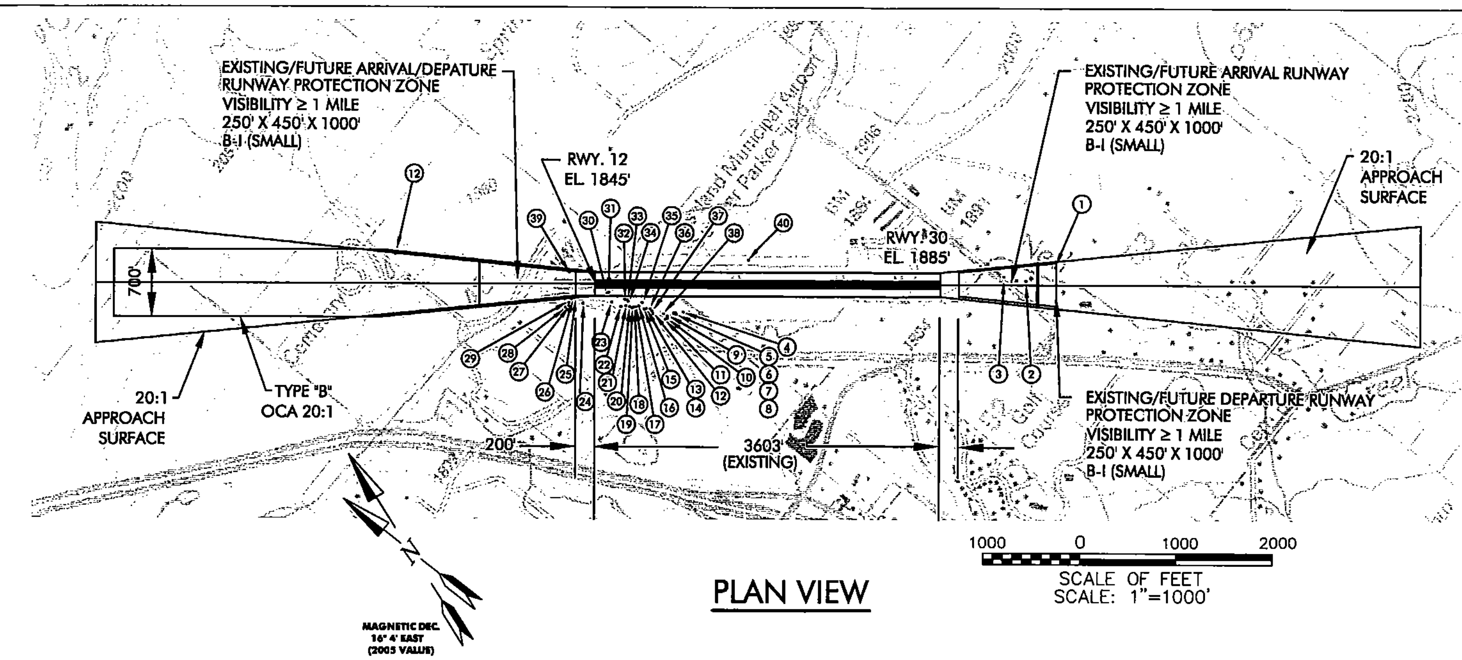
AIRPORT LAYOUT PLAN

DRAWING NO. .

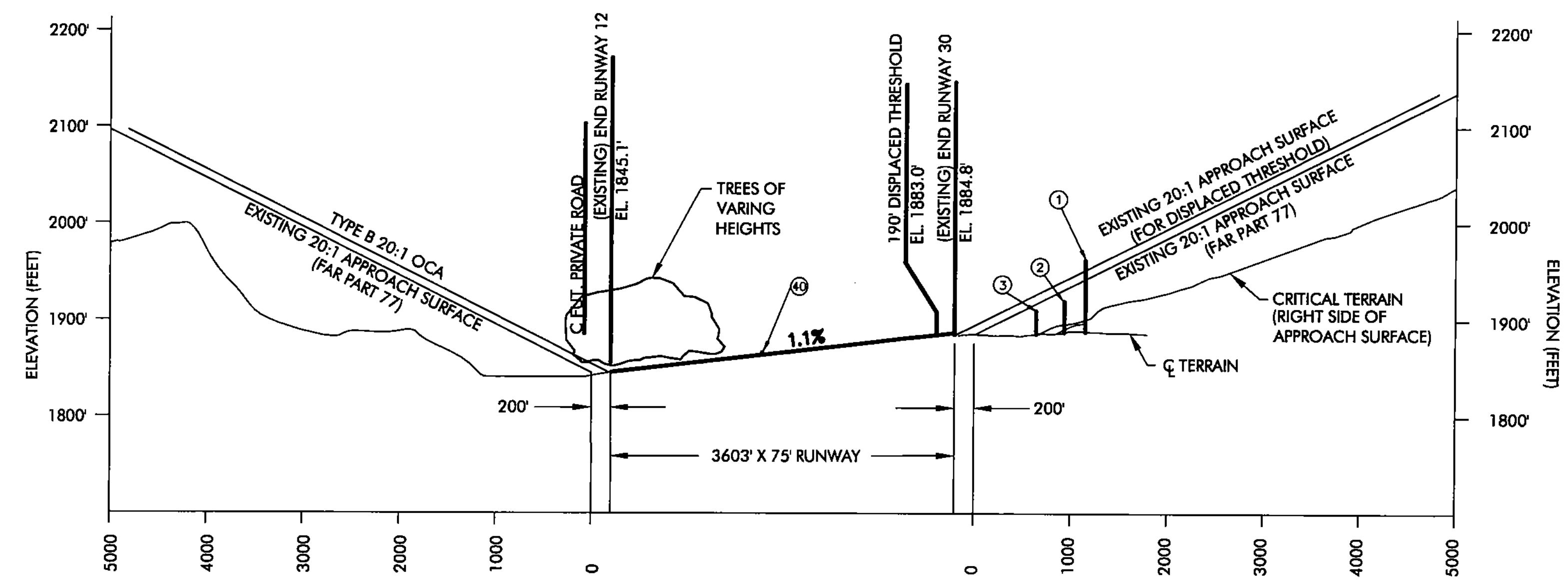
SHEET NO. 2 OF 4



AREAS OF TERRAIN PENETRATION



PLAN VIEW



PROFILE VIEW

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

100 0 100 200
SCALE OF FEET
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	APPROACH (RWY 30)	1964.0'	183' L	1141'	57'	NO	TRIM/REMOVE
2	BUILDING	APPROACH (RWY 30)	1918.0'	25'	960.0'	0'	YES	NO OBSTRUCTION; FOR REFERENCE ONLY
3	ROAD	APPROACH (RWY 30)	1910.0'	180.0' L	650.0'	2.5'	NO	NONE; DISPLACED THRESHOLD IN PLACE
4	TREE	TRANSITIONAL	1855.3'	289.0' R	.	0'	NO	TRIM/REMOVE AS NEEDED ★
5	TREE	TRANSITIONAL	1852.3'	301' R	.	0'	NO	TRIM/REMOVE AS NEEDED ★
6	TREE	TRANSITIONAL	1853.3'	298' R	.	0'	NO	TRIM/REMOVE AS NEEDED ★
7	TREE	TRANSITIONAL	1852.7'	303' R	.	0'	NO	TRIM/REMOVE AS NEEDED ★
8	TREE	TRANSITIONAL	1851.7'	310' R	.	0'	NO	TRIM/REMOVE AS NEEDED ★
9	TREE	TRANSITIONAL	1848.9'	357' R	.	0'	YES	TRIM/REMOVE AS NEEDED ★
10	TREE	TRANSITIONAL	1853.9'	357' R	.	0'	YES	TRIM/REMOVE AS NEEDED ★
11	TREE	TRANSITIONAL	1856.7'	363' R	.	0'	NO	TRIM/REMOVE AS NEEDED ★
12	TREE	TRANSITIONAL	1848.8'	305' R	.	0'	NO	TRIM/REMOVE AS NEEDED ★
13	TREE	TRANSITIONAL	1850.9'	257' R	.	0'	NO	TRIM/REMOVE AS NEEDED ★
14	TREE	TRANSITIONAL	1849.2'	252' R	.	0'	NO	TRIM/REMOVE AS NEEDED ★
15	TREE	TRANSITIONAL	1848.3'	260' R	.	0'	NO	TRIM/REMOVE AS NEEDED ★
16	TREE	TRANSITIONAL	1851.7'	232' R	.	0'	NO	TRIM/REMOVE AS NEEDED ★
17	TREE	TRANSITIONAL	1851.6'	242' R	.	0'	NO	TRIM/REMOVE AS NEEDED ★
18	TREE	TRANSITIONAL	1853.6'	240' R	.	0'	NO	TRIM/REMOVE AS NEEDED ★
19	TREE	TRANSITIONAL	1853.3'	247' R	.	0'	NO	TRIM/REMOVE AS NEEDED ★
20	TREE	TRANSITIONAL	1850.2'	236' R	.	0'	NO	TRIM/REMOVE AS NEEDED ★
21	TREE	TRANSITIONAL	1851.4'	228' R	.	0'	NO	TRIM/REMOVE AS NEEDED ★
22	TREE	TRANSITIONAL	1849.5'	235' R	.	0'	NO	TRIM/REMOVE AS NEEDED ★
23	TREE	TRANSITIONAL	1849.2'	190' R	.	0'	YES	TRIM/REMOVE AS NEEDED ★
24	TREE	TRANSITIONAL	1843.9'	200' R	120'	0'	NO	TRIM/REMOVE AS NEEDED ★
25	TREE	TRANSITIONAL	1833.6'	135' R	210'	0'	YES	TRIM/REMOVE AS NEEDED ★
26	TREE	TRANSITIONAL	1827.0'	145' R	240'	0'	YES	TRIM/REMOVE AS NEEDED ★
27	TREE	TRANSITIONAL	1853.6'	223' R	300'	0'	NO	TRIM/REMOVE AS NEEDED ★
28	TREE	TRANSITIONAL	1837.4'	245' R	250'	0'	NO	TRIM/REMOVE AS NEEDED ★
29	TREE	TRANSITIONAL	1837.5'	195' R	250'	0'	NO	TRIM/REMOVE AS NEEDED ★
30	TREE	PRIMARY	1845.9'	125' R	.	0'	YES	TRIM/REMOVE AS NEEDED ★
31	TREE	PRIMARY	1845.9'	110' R	.	0'	YES	TRIM/REMOVE AS NEEDED ★
32	TREE	TRANSITIONAL	1851.7'	160' R	.	0'	YES	TRIM/REMOVE AS NEEDED ★
33	TREE	TRANSITIONAL	1849.7'	167' R	.	0'	YES	TRIM/REMOVE AS NEEDED ★
34	TREE	TRANSITIONAL	1849.1'	177' R	.	0'	YES	TRIM/REMOVE AS NEEDED ★

NO.	ITEM	PART 77 SURFACE	MSL ELEV	DISTANCE FROM RWY CL	DISTANCE FROM RWY END	AMOUNT OF PENETRATION (ESTIMATED)	AIRPORT PROPERTY	DISPOSITION
35	TREE	TRANSITIONAL	1853.0'	195' R	.	49'	YES	TOP/REMOVE
36	TREE	TRANSITIONAL	1847.7'	255' R	.	63'	NO	TOP/REMOVE
37	TREE	TRANSITIONAL	1848.6'	275' R	.	.	YES	.
38	TREE	TRANSITIONAL	1854.2'	307' R	.	.	YES	.
39	ROAD	APPROACH (12)	1854.2'	121' R	265'	.	NO	RELOCATE
40	BUILDING	TRANSITIONAL	1913.64'	380' R	.	.	NO	OBSTRUCTION; LIGHT
41	RADIO TOWER	CONICAL	2423.0'	3450'	.	.	NO	.

NOTES:

1. OBSTRUCTION DATA OBTAINED FROM AIRPORT LAYOUT PLAN SET FROM SFC ENGINEERING CO. MAY 1994 AND FROM CITY OF ASHLAND SURVEY.

2. ★TREE ITEM ELEVATIONS WHEN SURVEYED DID NOT PENETRATE PART 77 SURFACE; AS GROWTH OCCURS, THE TREES MAY REQUIRE TOPPING OR REMOVAL TO MAINTAIN CLEAR PART 77 SURFACE.

3. UPDATED SURVEY RECOMMENDED TO VERIFY OBSTRUCTION LOCATION/HEIGHTS.

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VERIFY SCALES

BAR IS ONE INCH ON ORIGINAL DRAWING.
0" 1"
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY.

FEDERAL AVIATION ADMINISTRATION APPROVAL

APPROVAL DATE: ____________

MANAGER, SEATTLE ADO

CITY OF ASHLAND APPROVAL

APPROVAL DATE: ____________

SIGNATURE

CENTURY WEST
ENGINEERING CORPORATION
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DESIGNED BY: DM	DRAWN BY: SLK	CHECKED BY: DM	SCALE: AS SHOWN
DATE: OCTOBER 2005		PROJECT NO: 40480004.01	

ASHLAND MUNICIPAL AIRPORT-SUMNER PARKER FIELD

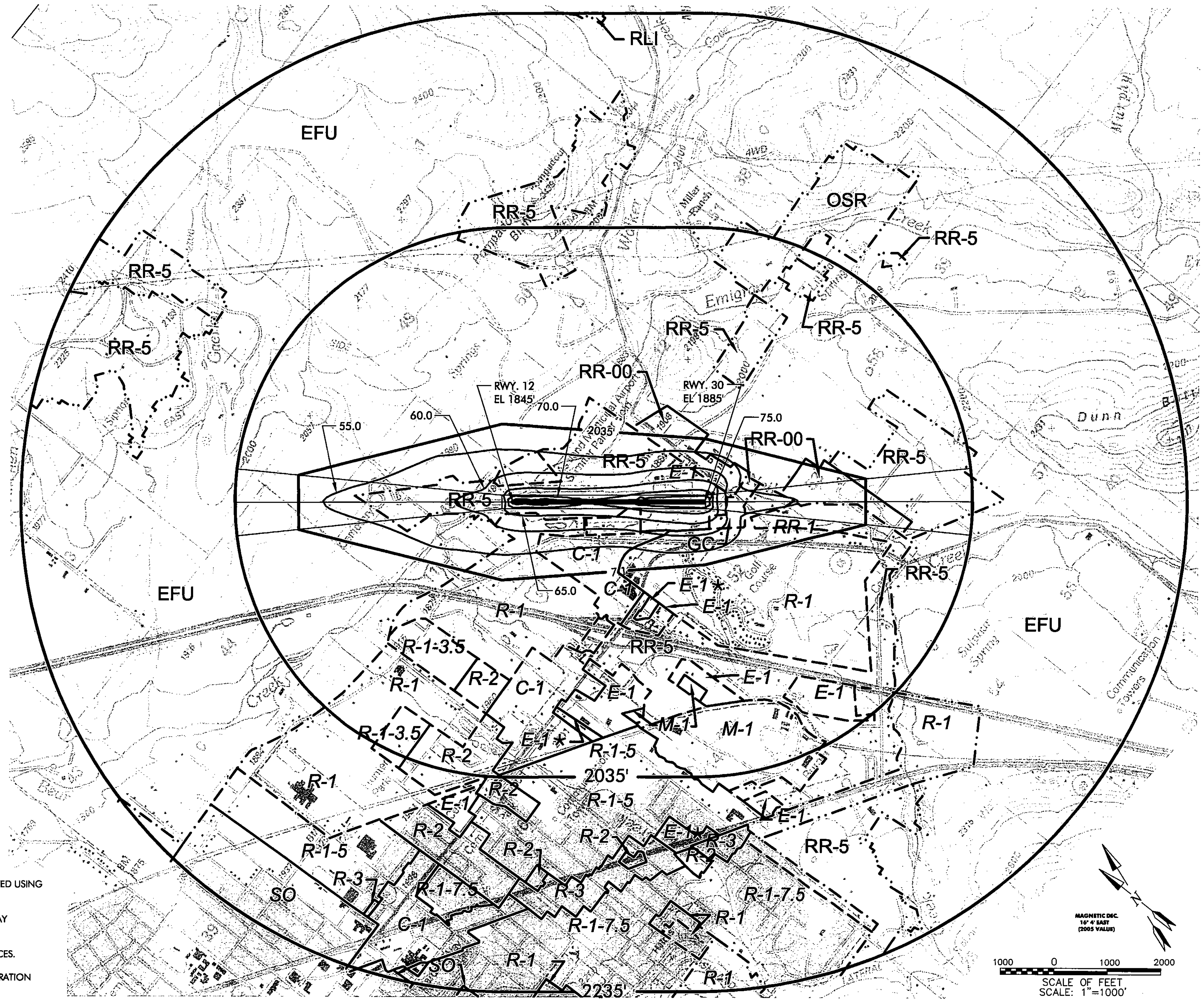
AIRSPACE PLAN

DRAWING NO. .

SHEET NO. 3 OF 4

LEGEND

———	NOISE CONTOUR (DNL)
CITY OF THE ASHLAND ZONING	
— — —	CITY LIMITS
———	ZONING BOUNDARY
— · — ·	URBAN GROWTH BOUNDARY
RR-1	LOW DENSITY RESIDENTIAL 1 ACRE
RR-.5	LOW DENSITY RESIDENTIAL .5 ACRE
R-1	SINGLE FAMILY RESIDENTIAL 10,000 SQ. FT.
R-1-7.5	SINGLE FAMILY RESIDENTIAL 7,500 SQ. FT.
R-1-5	SINGLE FAMILY RESIDENTIAL 5,000 SQ. FT.
R-1-3.5	SUBURBAN RESIDENTIAL
R-2	MULTI-FAMILY RESIDENTIAL
R-3	MULTI-FAMILY RESIDENTIAL HIGH DENSITY
C-1	COMMERCIAL
C-1-D	DOWNTOWN COMMERCIAL
E-1	EMPLOYMENT
M-1	INDUSTRIAL
SO	SOUTHERN OREGON STATE COLLEGE
*	OVERLAY
JACKSON COUNTY ZONING	
— · · — · ·	COUNTY ZONING
RR-5	RURAL RESIDENTIAL
IC	INTERCHANGE COMMERCIAL
GC	GENERAL COMMERCIAL
RLI	RURAL LIMITED INDUSTRIAL
F-5	FARM RESIDENTIAL
EFU	EXCLUSIVE FARM USE
FR-160	FOREST RESOURCE
WR	WOODLAND RESOURCE
OSR	OPEN SPACE RESERVE
AA	AIRPORT APPROACH OVERLAY
AC	AIRPORT CONCERN OVERLAY



NOTES:

1. NOISE ANALYSES CONDUCTED BY CENTURY WEST ENGINEERING. THE NOISE CONTOURS WERE GENERATED USING THE FAA INTEGRATED NOISE MODEL (INM) VERSION 6.1. CONTOURS BASED ON 2009 FORECASTS.
2. THE RUNWAY CONFIGURATION DEPICTED ON THIS DRAWING IS CONSISTENT WITH THE ULTIMATE RUNWAY DEPICTED ON THE 2005 AIRPORT LAYOUT PLAN.
3. CITY OF ASHLAND AND JACKSON COUNTY AIRPORT OVERLAY ZONING IN EFFECT FOR APPROACH SURFACES.
4. CITY AND COUNTY AIRPORT OVERLAY ZONES WILL NEED TO BE UPDATED TO REFLECT AIRSPACE CONFIGURATION DEPICTED IN 2005 FAR PART 77 AIRSPACE PLAN.

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DM	SLK	DM	AS SHOWN
DATE: OCTOBER 2005		PROJECT NO: 40480004.01	

ASHLAND MUNICIPAL AIRPORT-SUMNER PARKER FIELD

LAND USE PLAN WITH 2009 NOISE CONTOURS

DRAWING NO.
.
SHEET NO.
4 OF 4

Chapter Six

Financial Management and Development Program

CHAPTER SIX
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 locally by the City (T-hangars) and private tenants (conventional hangars). Utility improvements at the airport are also not typically eligible for FAA funding and have been locally funded.

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 Ashland Municipal Airport in the current PMP, which will require local matching funds.

AIRPORT DEVELOPMENT SCHEDULE AND COST ESTIMATES

The analyses presented in Chapters Four and Five, described the airport's overall development needs for the next twenty years. Estimates of project costs were developed for each project based on 2005 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 2005-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
193.3
(1982-1984 = 100)
March 2005

Multiplying the change ratio (Y) times any 2005-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 6-1**. 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 have been increased from 90 percent to 95 percent, although the FAA indicates that a return to the previous 90 percent funding level may occur in future bills. Therefore, for planning purposes, FAA-eligible projects beyond 2007 are estimated based on a 90 percent level of FAA funding.

The general aviation entitlement funding level is 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 has been assumed that hangar construction will not rely on FAA funds.

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 Ashland Municipal Airport during the current planning period.

A 2004 AIP project replaced the runway edge lighting system and rehabilitated the majority of the main apron in 2004 and 2005.

TABLE 6-1: 20-YEAR CAPITAL IMPROVEMENT PROGRAM 2005 TO 2025

Project	Qty.	Unit	Unit $	Total Cost*	FAA Eligible	Local
Short Term Projects (Years 1-5)						
2005-2006						
Runway 12/30 - Mill & Overlay, Visual Mkgs	30,025	SY	$18.00	$540,450	$513,428	$27,023
Slurry Seal Main Apron (existing - north section)	9,400	SY	$3.60	$33,840	$32,148	$1,692
Slurry Seal North Hangar Taxiway/Taxilanes	12,000	SY	$3.60	$43,200	$41,040	$2,160
Subtotal - Year 1-2				**$617,490**	**$586,616**	**$30,875**
2007						
Slurry Seal South Hangar Taxilanes	4,000	SY	$3.60	$14,400	$13,680	$720
Construct North Hangar Area Main Taxiway (700x35')	2,700	SY	$40.00	$108,000	$102,600	$5,400
Construct North Hangar Area Taxilanes (2)	2,400	SY	$40.00	$96,000	$91,200	$4,800
Subtotal - Year 3				**$218,400**	**$207,480**	**$10,920**
2008						
SuperUnicom	1	LS	$45,000	$45,000	$40,500	$4,500
Obstruction Survey & Tree Removal	1	LS	$15,000	$15,000	$13,500	$1,500
Parallel Taxiway - Overlay	15,300	SY	$12.00	$183,600	$165,240	$18,360
Subtotal - Year 4				**$243,600**	**$219,240**	**$24,360**
2009						
Terminal Area Fencing & Electronic Vehicle Gate (T-Hangar access)	200	LF	$18.00	$11,100	$9,990	$1,110
Construct North Apron Access Road & Parking	3,800	SY	$30.00	$114,000	$102,600	$11,400
North Hangar Area Fencing (w/ 2 elect. vehicle gates)	1,900	LF	$18.00	$49,200	$44,280	$4,920
Main Apron Expansion - Phase 1 (north area)	4,400	SY	$40.00	$176,000	$158,400	$17,600
Subtotal - Year 5				**$350,300**	**$315,270**	**$35,030**
Total Short Term Projects				**$1,429,790**	**$1,328,606**	**$101,185**

TABLE 6-1 (CONTINUED): 20-YEAR CAPITAL IMPROVEMENT PROGRAM 2005 TO 2025

Project	Qty.	Unit	Unit $	Total Cost*	FAA Eligible	Local
Long Term Projects (Years 6 - 20)						
Slurry Seal Main Apron (existing - south section) (2010)	15,900	SY	$3.60	$57,240	$51,516	$5,724
Slurry Seal Main Apron (existing - center section) (2010)	7,200	SY	$3.60	$25,920	$23,328	$2,592
Slurry Seal Main Apron (existing - north section) (2011)	9,400	SY	$3.60	$33,840	$30,456	$3,384
Slurry Seal Runway 12/30, Visual Mkgs (2011)	30,025	SY	$3.60	$108,090	$97,281	$10,809
Slurry Seal North (existing) Hangar Taxilanes (2011)	12,000	SY	$3.60	$43,200	$38,880	$4,320
Security Overhead Lighting (pole mounted flood lights)	10	ea	$5,000	$50,000	$45,000	$5,000
North Hangar Area Site Preparation (upper section)	50,000	CY	$8.00	$400,000	$360,000	$40,000
North Non-Aviation Development Area Site Preparation/Excavation	10,000	CY	$8.00	$80,000	$0	$80,000
North Development Area - Water Extensions	1,500	LF	$55.00	$82,500	$0	$82,500
North Development Area - Sanitary Sewer Extensions	1,500	LF	$50.00	$75,000	$0	$75,000
North Hangar Area Taxilane (access upper hangar row)	1,900	SY	$40.00	$76,000	$68,400	$7,600
Terminal Area Access Road and Vehicle Pkg. Overlay	3,200	SY	$12.00	$38,400	$34,560	$3,840
FBO Building Renovation	1,200	SF	$40.00	$48,000	$0	$48,000
PAPI - Rwy 12 & 30	2	ea	$60,000	$120,000	$108,000	$12,000
Main Apron (new - phase 1) Slurry Seal (2012)	4,400	SY	$3.60	$15,840	$14,256	$1,584
North (new) Hangar Taxilanes Slurry Seal (2012)	5,100	SY	$3.60	$18,360	$16,524	$1,836
Slurry Seal South Hangar Taxilanes (2013)	4,000	SY	$3.60	$14,400	$12,960	$1,440
Slurry Seal Parallel Taxiway (2013)	15,300	SY	$3.60	$55,080	$49,572	$5,508
Main Apron Expansion - Phase 2	3,600	SY	$40.00	$144,000	$129,600	$14,400
Airport Fencing (west side of airport)	5,200	LF	$18.00	$93,600	$84,240	$9,360
Main Apron Expansion (south end)	3,000	SY	$40.00	$120,000	$108,000	$12,000
Airport Fencing (northeast side of airport)	2,300	LF	$18.00	$41,400	$37,260	$4,140
Main Apron (new - phase 2) Slurry Seal (2015)	3,600	SY	$3.60	$12,960	$11,664	$1,296
Overlay North (existing) Hangar Taxilanes (2015)	12,000	SY	$12.00	$144,000	$129,600	$14,400
Overlay Main Apron (existing - north section) (2015)	9,400	SY	$12.00	$112,800	$101,520	$11,280
Slurry Seal Main Apron (existing - south section) (2016)	15,900	SY	$3.60	$57,240	$51,516	$5,724
Slurry Seal Main Apron (existing - center section) (2016)	7,200	SY	$3.60	$25,920	$23,328	$2,592
Overlay South Hangar Taxilanes (2017)	4,000	SY	$12.00	$48,000	$43,200	$4,800
Slurry Seal Runway 12/30, Visual Mkgs (2017)	30,025	SY	$3.60	$108,090	$97,281	$10,809
North (new) Hangar Taxilanes Slurry Seal (2018)	7,000	SY	$3.60	$25,200	$22,680	$2,520
Obstruction Survey & Tree Removal	1	LS	$15,000	$15,000	$13,500	$1,500
REIL (Rwy 12)	1	ea	$25,000	$25,000	$22,500	$2,500
North Airport Access Road Overlay	3,300	SY	$12.00	$39,600	$35,640	$3,960
Main Apron (new - phase 1) Slurry Seal (2018)	4,400	SY	$3.60	$15,840	$14,256	$1,584
Slurry Seal Parallel Taxiway (2019)	15,300	SY	$3.60	$55,080	$49,572	$5,508
Slurry Seal Main Apron (existing - north section) (2020)	9,400	SY	$3.60	$33,840	$30,456	$3,384
Main Apron Expansion - Phase 3	3,600	SY	$40.00	$144,000	$129,600	$14,400
Main Apron (new - phase 2) Slurry Seal (2021)	3,600	SY	$3.60	$12,960	$11,664	$1,296

Slurry Seal North (existing) Hangar Taxilanes (2021)	12,000	SY	$3.60	$43,200	$38,880	$4,320
Slurry Seal Main Apron (existing - south section) (2022)	15,900	SY	$3.60	$57,240	$51,516	$5,724
Slurry Seal Main Apron (existing - center section) (2022)	7,200	SY	$3.60	$25,920	$23,328	$2,592
Slurry Seal Runway 12/30, Visual Mkgs (2023)	30,025	SY	$3.60	$108,090	$97,281	$10,809
Slurry Seal South Hangar Taxilanes (2023)	4,000	SY	$3.60	$14,400	$12,960	$1,440
Main Apron (new - phase 1) Slurry Seal (2024)	4,400	SY	$3.60	$15,840	$14,256	$1,584
North (new) Hangar Taxilanes Slurry Seal (2024)	7,000	SY	$3.60	$25,200	$22,680	$2,520
Slurry Seal Main Apron (existing - north section) (2025)	9,400	SY	$3.60	$33,840	$30,456	$3,384
Slurry Seal Parallel Taxiway (2025)	15,300	SY	$3.60	$55,080	$49,572	$5,508
North Residential Access Road Realignment	400	LF	$30.00	$12,000	$10,800	$1,200
Main Apron (new - phase 3) Slurry Seal (2025)	3,600	SY	$3.60	$12,960	$11,664	$1,296
Total Long Term Projects				**$3,020,170**	**$2,461,203**	**$558,967**
TOTAL SHORT & LONG TERM PROJECTS				**$4,449,960**	**$3,789,809**	**$660,152**

** Project costs include 30% engineering and contingency.*

Dates listed for specific projects are general estimates intended to assist in long-term capital planning - actual dates will vary depending on funding and facility needs.

Short-Term Projects

The majority of short-term projects at Ashland Municipal Airport are pavement-related items. The pavement surface courses on both Runway 12/30 and the parallel taxiway are now more than 20 years old and will require rehabilitation early in the planning period. A small section of the runway (at the Runway 30 end) was resurfaced as part of the 2004 apron rehabilitation project. New pavement markings will be required on both the runway and taxiway once they are resurfaced.

Several slurry seal projects are also recommended for existing pavements in the short-term period:

- North section of the main apron;
- North hangar area taxiways/taxilanes;
- South hangar area taxilanes.

Recommended new construction items include the extension of a taxiway to serve the north hangar area. The new taxiway will extend approximately 700 feet from the existing taxiway located near the north corner of the Sky Research hangar, continuing to the northeast before turning southeast and connecting to the taxiway located adjacent to the north T-hangars. Two additional stub taxilanes are recommended initially to serve a new T-hangar site. A third stub taxilane is planned for later in the planning period to serve the upper-most row of hangars in the new development area. The planned hangar configuration accommodates two lower rows of T-hangars and an upper row of conventional hangars or executive hangars built partially into the slope. Based on the steepness of the terrain in the upper portion of the hillside, it is anticipated that some hangars may be designed to provide vehicle parking and public access on the upper level, with the hangar floor designed to access the adjacent taxiway at a lower elevation. These mixed-use hangars would be particularly well suited for small businesses that require both aircraft storage and operational space. Additional sites for small/medium conventional hangars area located adjacent to the existing northern most T-hangar and in the row behind the Sky Research hangar.

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 initial development (lower section) of the north hangar area. More substantial site preparation, including excavation, will be required to develop the upper portions of the hangar area. Due to the anticipated costs of site preparation, the staging of development will utilize the more readily developable areas first, before proceeding with developing the upper hangar areas when market demand is sufficient to justify the investment in site preparation.

The first phase of expansion of the main apron and the associated surface access improvements are included as short-term projects. However, the precise timing of the apron expansion may be affected by actual demand for larger business related conventional hangars. It is anticipated that the lease area located immediately adjacent to the main apron will accommodate 4 to 6 large conventional hangars. An access road extension and new vehicle parking areas will be developed behind the hangar lease lots to provide adequate public access and vehicle parking. All public access to the new landside developments located along the northern end of the main apron and in the north hangar area will be served from the existing north airport access road.

The City has indicated that acquiring a SuperUnicom™, or similar system for the airport is considered a high priority improvement to provide basic local weather conditions and pilot advisories.

Long-Term Projects

The recommended long-term projects at Ashland Municipal Airport 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 and the north section of the main apron.

- Site preparation, including excavation of upper portion of north hangar area (approximately 50,000 cubic yards).
- New pavement construction associated with airside and landside facilities (Main Apron North Expansion Phases 2 and 3; and South End Expansion based on demand; taxiway/taxilane extensions).
- Relocation of the segmented circle in conjunction with north end apron expansion.
- Building construction (hangars, FBO hangar, etc.).
- Airport security fencing (northeast, west property line; terminal area; north hangar area) and electronic vehicle gates.
- Asphalt overlays on north and south airport access roads and vehicle parking areas.
- Precision approach slope indicators (PAPI) to replace existing VASI on Runways 12 and 30; runway end identifier lights (REIL) on Runway 12.
- Realignment of an on-airport section of the existing residential access road to accommodate Phase 3 expansion of main apron.

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). As proposed, approximately 85 percent of the airport's 20-year CIP will be eligible for federal funding. Funds from this 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. The funds are distributed through grants administered by the Federal Aviation Administration (FAA).

Under current FAA guidelines, the City receives 95 percent participation on eligible projects. Ashland Municipal Airport is eligible under the Airport Improvement Program (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. As noted earlier, a return to the previous 90 percent level may occur in the next federal funding bill. For planning purposes, FAA-eligible projects beyond 2007 in the CIP are estimated based on a 90 percent level of FAA funding. 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.

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 15 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. As noted earlier, FAA AIP grants usually represent the single largest source of funding for major capital projects.

As currently defined, the local share for projects included in the twenty year planning period is estimated to be just under $650,000, which includes the local 5% match for AIP-funded projects, utility extensions and some non-aviation related site preparation.

Hangar construction has not been included in the CIP; hangars at the airport have historically been funded both by the City and through private tenants. 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. Since the projected twenty-year cost of improving and maintaining airport facilities exceeds current AIP funding levels, it appears unlikely that the City could justify a request for FAA funding for hangar construction any time in the near future.

Ashland Municipal Airport
Airport Layout Plan Report

Chapter Seven

Environmental Checklist

CHAPTER SEVEN
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 Ashland Municipal Airport - Sumner Parker Field. In comparison 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 scope of the review 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.

As discussed in Chapter Two of this report, the airport is located in southwestern Jackson County, three miles northeast of downtown Ashland, but within the Ashland Urban Growth Boundary and City limits. The Urban Growth Boundary (UGB) encompasses some additional properties adjacent to the airport which are not within the City limits; more specifically, a single-family residence immediately east of the airstrip, zoned Jackson County Rural Residential, 5 acre minimum (RR-5); an extensive area northeast of the end of Runway 12, also zoned Jackson County RR-5; and Jackson County rural residential and commercial lands immediately west and south of the airport (zoning RR-5 and Commercial General, CG). In addition, a small area of RR-5, and an area of Exclusive Farm Use (EFU) Zoning, also occur within the UGB, southwesterly of the end of Runway 30, across Dead Indian Memorial Road, and immediately east of the airfield, northeast of the fore-mentioned dwelling, respectively.

The airport site is zoned City of Ashland Employment District (E-1). The E-1 district "is designed to provide for a variety of uses such as office, retail, or manufacturing in an aesthetic environment and having a minimal impact on surrounding uses." E-1 zoning has been in place at the airport for many years, although no specific references to airport activities are found in the description of permitted, special permitted or conditional uses (Chapter 18.40.020-040).

The consultant recommends that the City develop airport-friendly zoning for the property, consistent with ORS Chapter 836.610 and related requirements of the State of Oregon. This could be accomplished through either amendment of the existing, E-1 Zone description, to permit aviation and related development and activities outright, or through the creation of a new airport zone. Since the State has effectively frozen periodic review requirements through at least 2007, the City should pursue this change through a legislative zoning code and map amendment as soon as possible. Creation of a new airport zone, in particular, would bring the City's zoning map and code into more substantial compliance with the Ashland Comprehensive Plan, which currently provides a distinct "Airport" designation for the subject and select abutting urbanizable lands.

Land uses surrounding the Ashland Municipal Airport - Sumner Parker Field are predominantly riparian corridors; rural and resource related, single family dwellings; commercial, and limited industrial uses. A mini-storage facility is located just southwest of the airport. The airport is bordered on the north by Emigrant Creek, on the south and west by Neil Creek, while the two converge immediately northwest of airport property, about 350 feet off the end of Runway 12, to form Bear Creek. Dead Indian Memorial Road, which connects to Airport Road, also links with Greensprings Highway 66 for accessing Interstate 5, and with East Main Street for downtown access.

Chapter Two notes a tower which encroaches upon critical airspaces as located approximately 1.5 miles southeast of the site, and major overhead power transmission lines within two miles east and west of the airstrip also create hazards to safe aviation operations. The landing threshold for Runway 30 is displaced 190 feet to provide increased clearance over obstructions located within the runway approach. No other land use compatibility issues are of concern.

The nearest solid waste disposal / transfer site is located approximately 5 miles from the airfield. Aside from the riparian corridors associated with the creeks, no known bird attractants are located nearby. Land uses and zoning abutting the airport are described in **Table 7-1.**

TABLE 7-1: SUMMARY OF LAND USE AND ZONING IN VICINITY OF AIRPORT

Land Use	Zoning
Airport Site:	City of Ashland Employment District (E-1)
North: Agriculture, Resource related dwellings	 Jackson County Rural Residential, 5 Acre Minimum (RR-5), Exclusive Farm Use (EFU) EFU
South: Dead Indian Memorial Road, Rural Residential and Resource Related Dwellings, Limited Industrial Uses (SW)	 EFU, Jackson County Rural Residential, 1 Acre Minimum (RR-00) Jackson County Commercial General (CG)
East: Emigrant Creek Agriculture, Resource related dwellings	 EFU, RR-5 " "
West: Bear Creek (NW) Neil Creek Single-family residences Agriculture,	 RR-5, E-1 EFU

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 airstrip.

Both the City of Ashland and Jackson County have airport overlay language in their respective land use documents; however, neither jurisdiction illustrates the overlays on their zoning maps, as provided in the case of the City of Ashland by staff planners, and, in the case of the County, as viewed on the official Jackson County website. Following completion of the airport layout plan update, the City and Jackson County should ensure that overlay zoning mapping is updated to be consistent with both current airport planning and Oregon state land use requirements.

In addition to ensuring quality and cohesive mapping of all of the areas affected by the required Airport Overlay and related safety zones in both the City and County jurisdictions, the existing respective City and County overlay code sections and other applicable zoning and transportation plan languages must also be reviewed and amended to ensure full compliance with ORS Chapter 836. Among the provisions of this statute are the following (Please note: This is not intended to be a comprehensive summation of this legislation. Additional requirements may apply to this site under the cited or related statutes):

OAR 660-13-160(1) Requires jurisdictions to update Plan, land use regulations at Periodic Review to conform with provisions of this statute, or at next update of Transportation System Plan, per OAR 660-12-0015(4) and OAR 660-12-0045(2)(c)&(d). If more than one local government is affected by the Airport Safety Overlay (see below), a Coordinated Work Program for all jurisdictions is required, concurrent with timing of Periodic Review (or TSP update) for the jurisdiction having the most land area devoted to the airport use(s). An Inter-Governmental Agreement is one potential mechanism for complying with the requirement for a "coordinated work program" between concerned jurisdictions under this section. As owners of the facility and the jurisdiction with the most land area devoted to the airport, the City of Ashland should initiate these discussions.

(8) Adopt map delineating Safety Zones, compatibility zones, and existing noise impact boundaries identified by OAR 340-35. See also OAR 660-13-0070(1) and Exhibits 1 & 2 to Division 13. Beyond ensuring applicable mapping depicts required safety zones, etc., consistent with the above, jurisdictions must ensure corresponding code language is also compliant.

This Airport Layout Plan Update Report will provide the information and graphics for incorporating into the City and County zoning data and mapping files in order to establish compliance with the requirement for mapping "noise impact boundaries." Additional analyses, safety and compatibility zone designations and mapping may likely be necessary to establish full conformity with this section.

OAR 660-13-0070(2): Review future development in Airport Safety Overlay for compliance with maximum height limitations. As stated, the consultant recommends that the County and City adopt and enforce height limitations, and other Airport Safety Overlay zoning implementation language, or where already existing, ensure that this is consistent with this and other applicable state laws and federal regulations.

In addition to Airport Hazard Overlay requirements described above, OAR 660-13-0040(1)-(3) also requires that jurisdictions adopt a map of existing and planned airport improvements.

The consultant recommends that a general review be performed of all County and City Ordinance and Comprehensive Plan language and mapping pertaining to the subject airport and its immediate environs, to compare those with the requirements of ORS Chapter 836.600-630 for airport compatibility. Any amendments to the City's and County's codes, Plans and or maps necessary in order to demonstrate compliance should be affected. It is further recommended that this Airport Layout Plan be adopted as part of the Transportation Elements of the respective City of Ashland and Jackson County Comprehensive Plans.

Ashland Municipal Airport - Sumner Parker 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. Increased safety and security are among the key expected benefits of the preferred alternative. It is noted that, although the prior Airport Master Plan recommended perimeter fencing be established, this has not yet been completely achieved. Existing perimeter fencing should be augmented or replaced as necessary to establish airport security fencing for the site's entire perimeter, to protect neighbors, wildlife, and airport operations from undue conflicts.

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[15]. 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.

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[16].

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.

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

[16] 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:

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

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, $Leq_d = Leq_n$.

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.

2009 Airport Noise Contours

The noise contours depicted on the Airport Land Use Plan drawing in Chapter Five are plotted in 5 DNL increments starting at 55 DNL based on the 2009 forecast activity levels. The size and shape of the contours is consistent with the airport's runway utilization and overall volume of aircraft traffic. Runway 30 is the primary landing and departure runway, which results in contours extending beyond the end of Runway 12 over a longer distance, reflecting the flatter climb profiles of aircraft takeoff. In general, it appears that there are no significant land use compatibility conflicts within the areas defined by the noise contours. 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.

The 2009 55 DNL noise contour extends approximately 3,500 feet beyond the end of Runway 12 and approximately 1,800 feet beyond the end of Runway 30. The areas located beyond the runway ends are predominantly agricultural and sparsely populated lands. The area immediately north of the runway is developed in vineyards and other agricultural uses; the area immediately south of the runway contains sparsely developed commercial and residential land uses and agricultural lands. Limited areas of residential development exist along the sides of the runway, within 300 to 600 feet. Portions of these areas appear to be located within the 60 or 65 DNL contours.

Portions of the 2009 60 and 65 DNL contours extend beyond airport property beyond both runway ends and along the sides of the runway and the relatively narrow airport property area.

At the Runway 12 end, the 60 DNL contour extends approximately 1,000 feet beyond the runway end over an unpopulated agricultural area. At the Runway 30 end, the 60 DNL extends approximately 300 feet beyond the runway, mostly within airport property. The 65 DNL contour ends within about 200 feet of each runway end, although areas of 65 DNL appear to extend over adjacent properties, some of which currently accommodate low-density residential use. An off-airport mini storage development located within 200 feet (southwest) of the end of Runway 30 appears to be partially located within the 60 and 65 DNL contours. The 2009 70 and 75 DNL noise contours appear to be contained within airport property

Residential development within the 65 DNL and higher noise contour is not recommended and should be discouraged. 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. Under federal guidelines, all land uses, including residential, are considered compatible with noise exposure levels of 65 DNL and lower. Airport management should actively encourage local and transient pilots to avoid direct overflights of residential areas through wherever possible.

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 7-2** 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 7-2**, 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 7-2: LAND-USE COMPATIBILITY WITH DNL

Yearly Day-Night Average Sound Level (DNL) In Decibels

Land Use	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 7-3**, at the end of the chapter.

Information from the Oregon Department of Environmental Quality web page indicates that air quality in the area is officially rated as "good" (see appendices). 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 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 340-109 and all applicable environmental standards.

In this case, there are the concerns that customarily are associated with petroleum fueling areas and activities, and specific interest in ensuring the quality of any water which is permitted to enter any of the creeks in the area. If any wastewater is currently being distributed to a septic drain field, Oregon Administrative Rule (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 includes an underground collection system which ultimately routes filtered storm water through a branch of Neil Creek. 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.

As of April 15, 2001, the Oregon State Historic Preservation Office, SHPO, requires considerable documentation be provided by any party inquiring about the existence of significant cultural resources in a given location. The new procedure requires such information as architectural classification, window and roof types of all structures within the study area; if they may be considered as a resource; dates of any alterations; and "Significance Statements" for all types of resources. SHPO has provided specific forms, "Section 106 (of the National Historic Preservation Act) Documentation Forms" and "Section 106 Level of Effect Forms", for use in making such a request. This level of investigation surpasses the scope of this ALP Update Report.

During preliminary stages of this study process, the consultant forwarded a letter to the Confederated Tribes of Rogue Indians. No response was received as of this writing.

A City planning official indicated no historic sites were located on the airport property. If any historic or cultural resources are discovered during construction, the sponsor will be 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.

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. The consultant recommends that a comprehensive inventory of hazardous wastes handled, stored or otherwise periodically or otherwise present be provided to ODFW and DEQ for their information.

A search of the database of the Oregon Natural Heritage Information Center revealed salamanders, toads and frogs which are species of concern to either the State of Oregon or Federal government, and which may occur in the project vicinity. Among other notable species which may occur in the area are: the Northern Spotted Owl, *Strix occidentalis caurina*, listed as Threatened; Lewis's Woodpecker, *Melanerpes* lewis, a species of concern to the state and US; Coho and Chinook Salmon, winter and summer run Steelhead Trout; three different species of bats; the Northwestern Pond Turtle, *Emys marmorata marmorata,* which is a species of concern; three snakes; a snail, a thistle, and various other forms of flora which are considered "sensitive-critical" by the State of Oregon. Please see the attached database report for more information concerning these substantial numbers of plants and animals which could potentially be affected by the preferred alternative.

In addition to the above, the US Department of Interior's Fish and Wildlife Service (USFWS) lists one bird and one fish species as "Threatened" Species which may be affected by an airport improvement project at this location. The Bald Eagle, or *Haliaeetus leucocephalus*, and the Coho Salmon, South Oregon / Northern Californian Coast, *Oncorhynchus kisutch*, are reported within proximity to the project site. In addition, one invertebrate, the Vernal Pool Fairy Shrimp, *Branchinecta lynci*, is another Threatened species listed as possibly occurring in the vicinity. An Endangered plant, Gentner Mission Bells, *Fritallaria gentneri*, is also listed by USFWS.

USFWS also brings to the sponsor's attention numerous species of concern suspected of inhabiting the environs around and including this airport site, including seven species of bats; seven additional species of birds; amphibians and reptiles discussed above and inventoried by the Oregon Natural Heritage Database; as well as the Pacific Lamprey, *Lampetra tridentata*, the Coastal Cutthroat Trout, *Oncorhynchus clarki clarki*; a bumblebee, a grasshopper, and three species of plants.

Species of concern are described by the USFWS as "Taxa whose conservation status is of concern to the Service, but for which further information is still needed." The USFWS correspondence states 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' correspondence continues, "the Service suggests that a biological evaluation similar to the Biological Assessment be prepared to determine whether they may affect listed and proposed species."

Consistent with the above, a biological evaluation appears warranted in this instance, to protect the sponsor against liability associated with potential impacts upon these and / or other sensitive species.

According to a review of the US Fish and Wildlife Service's National Wetlands Inventory (NWI), wetlands in the immediate area of the facility which are most likely to warrant protection from adverse impacts of the preferred alternative are limited to Emigrant Creek, Neil Creek, and Bear Creek. These are Riverine (related to rivers, creeks, or streams) wetlands with some Palustrine ("fresh open water") resources associated with them. 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.

100 year floodplains associated with the neighboring creeks affect the extreme northerly and the entire westerly and southwesterly portions of the airport property. Any development in the floodplain must comply with applicable City of Ashland Flood Plain Management ordinance requirements, and finished floors of any structures must be a minimum of one foot above the established base flood elevation. Terminal area development has thus far occurred outside of the mapped floodplain.

Soils on the site are Medford silty clay loam, Central point sandy loam, and Carney clay. Because no federal lands are proposed to be committed or otherwise involved in the Preferred Alternative, the Farmland Protection Policy Act (FPPA) does not apply to this proposal, and no further analysis under this impact category is necessary to demonstrate compliance with NEPA. No conversion of farm land is contemplated under the preferred alternative.

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.

TABLE 7-3: ASHLAND MUNICIPAL AIRPORT - SUMNER PARKER FIELD ENVIRONMENTAL CHECKLIST

Potential Impact Category	Existing Conditions / Comments	Further Action Needed?
Noise	No significant areas of population within 65 or above noise contours.	NO
Compatible Land Use	Local governments must adopt and Map Airport Overlay Zoning, planned improvements, ensure consistency of zoning provisions with State law. Future uses in the vicinity must 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.	YES
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 application for an 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

TABLE 7-3: ASHLAND MUNICIPAL AIRPORT - SUMNER PARKER FIELD ENVIRONMENTAL CHECKLIST

Potential Impact Category	Existing Conditions / Comments	Further Action Needed?
Historic, Architectural, Archaeological, and Cultural Resources	Records no longer provided by SHPO. Halt construction if resources discovered, notify identified tribes, SHPO of all development plans.	POSSIBLE
Biotic Communities	ODFW concerned primarily with water quality impacts as they relate to the three 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, Neil, Emigrant, and Bear Creeks are the only jurisdictional wetlands likely to warrant protection.	POSSIBLE
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	Also Not Applicable.	NO
Wild and Scenic Rivers	Not Applicable.	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

TABLE 7-3: ASHLAND MUNICIPAL AIRPORT - SUMNER PARKER FIELD ENVIRONMENTAL CHECKLIST

Potential Impact Category	Existing Conditions / Comments	Further Action Needed?
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.	POSSIBLE
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 Neil, Emigrant, or Bear Creeks via the Neil Creek tributary, surface or groundwater flow, or other means. Adherence to the provisions of FAA Advisory Circular 150/5370-10 should preclude foreseeable adverse impacts.	YES

Ashland Municipal Airport
Airport Layout Plan Report

GLOSSARY OF AVIATION TERMS

Glossary of Aviation Terms

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.

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 (big vs. small, etc), and the weather conditions. Annual service volume is one of the bench marks used to determine when an airport is getting so busy that a new runway or taxiway are needed.

Approach End of Runway - The end of the runway a pilot tries to land - could be thought of as the "landing end" of the runway. Which end a pilot uses depends upon the winds. Pilots almost always try and land into the wind and will line up on the runway 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.

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.

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.

Displaced Threshold – A runway threshold (landing point) 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.

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 nonprecision 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.

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 to establish the location and altitude of an aircraft. The FAA recently embraced GPS as a system with potential for application in traveling from point A to point B as well as for use in making landing approaches.

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.

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 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 systems to help a pilot land in bad weather.

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.

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 guidance to aircraft.

LORAN C - A navigation system using land based radio signals which allows a person to tell where they are and how fast they are moving, but not how high you are off the ground. (See GPS)

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 - Medium-intensity Approach Lighting System with Runway 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 an 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.

Nondirectional 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

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.

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.

Rotorcraft - A helicopter.

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.

T-Hangar - An aircraft storage hangar that resembles the shape of a "T."

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.

Traffic Pattern - The flow of traffic that is prescribed for aircraft landing, taxiing, or taking off from an airport.

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.

Ashland Municipal Airport
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APPENDIX

FAA Airport Design Printouts

ASHLAND MUNICIPAL AIRPORT
AIRPORT AND RUNWAY DATA

Airport elevation	1885 feet
Mean daily maximum temperature of the hottest month	85.00 F.
Maximum difference in runway centerline elevation	40 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 . . .	360 feet
Small airplanes with approach speeds of less than 50 knots . . .	950 feet
Small airplanes with less than 10 passenger seats	
75 percent of these small airplanes	3090 feet
95 percent of these small airplanes	3700 feet
100 percent of these small airplanes	4320 feet
Small airplanes with 10 or more passenger seats	4550 feet
Large airplanes of 60,000 pounds or less	
75 percent of these large airplanes at 60 percent useful load	5500 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	6170 feet
100 percent of these large airplanes at 90 percent useful load	8980 feet
Airplanes of more than 60,000 pounds . . . . Approximately	5670 feet

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

ASHLAND MUNICIPAL AIRPORT
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 visual exclusively
Other runway end approach visibility minimums are visual exclusively
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.

ASHLAND MUNICIPAL AIRPORT
DECLARED DISTANCE LENGTHS (feet)

Aircraft Approach Category B
Airplane Design Group I (Small Airplanes Exclusively)
Runway 12 approach visibility minimums are visual exclusively
Runway 30 approach visibility minimums are visual exclusively

	Runway 12	and 30
Runway length	3603	3603
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	190
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 12 (feet)	Runway 30 (feet)
Takeoff run available (TORA)	3603	3603
Takeoff distance available (TODA)	3603	3603
Accelerate-stop distance available (ASDA)	3603	3603
Landing distance available (LDA)	3603	3413
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	390

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