McCall Municipal Airport
DRAFT 2006 Master Plan Update

Working Document
This document contains:
Table of Contents
1. Introduction
2. Draft Chapter 2
3. Draft Chapter 3
4. Draft Chapter 4
5. Draft Chapter 5

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September 2006
Table of contents

Chapter 1 Introduction ......................................................................................................................... I-1

Chapter 2 Background ......................................................................................................................... 1
  2.1 Community Profile ....................................................................................................................... 1
  2.2 McCall Municipal Airport ............................................................................................................. 7

Chapter 3 Aviation Demand Projections ............................................................................................ 16
  3.0 Aviation Demand Projections ....................................................................................................... 16
  3.1 National, State and Local Context ............................................................................................... 16
  3.2 Aircraft Operations Activity ......................................................................................................... 19
  3.3 Based Aircraft ............................................................................................................................... 27
  3.4 Critical Aircraft Analysis ................................................................................................................. 30

Chapter 4 Commercial Air Service Demand ....................................................................................... 35
  4.1 Role of the Airport ......................................................................................................................... 35
  4.2 Industry Trends ............................................................................................................................... 37
  4.3 Demand for Air Service .................................................................................................................. 38
  4.4 Comparative Analysis .................................................................................................................... 43
  4.5 Estimated Demand ......................................................................................................................... 45
  4.6 Air Service Feasibility .................................................................................................................... 46

Chapter 5 Facility Requirements and Design Standards ......................................................................... 48
  5.1 Introduction ................................................................................................................................. 48
  5.2 Runway 16/34 and Taxiways ......................................................................................................... 49
  5.3 Aircraft Storage Hangars .............................................................................................................. 60
  5.4 Automobile Parking and Circulation ............................................................................................ 62
  5.5 Ramp Tie-Down Area .................................................................................................................... 64
  5.6 Lighting and NAVAIDs ................................................................................................................. 66
  5.7 General Aviation Terminal Area ................................................................................................... 68
  5.8 Aircraft Rescue and Firefighting (ARFF) ...................................................................................... 69
  5.9 Snow Removal Equipment and Maintenance Building ................................................................. 69
  5.10 Highway 55 ................................................................................................................................ 71
  5.11 Airport Utilities .......................................................................................................................... 72
  5.12 Accommodating Commercial Air Service .................................................................................. 73

List of Tables

Table 2-1 Valley County Net Assessed Taxable Property Value ................................................................. 4
Table 2-2 Airports Near McCall ............................................................................................................... 8
Table 3-1 McCall Municipal Airport Historic TAF .................................................................................. 20
Table 3-2 Monthly Jet and Turbo Prop Operations (Itinerant and Local) by Aircraft Design Group ....... 21
Table 3-3 United Stated Forest Service Operations ............................................................................. 22
Table 3-4 McCall Family Fly-In Operations Estimates ....................................................................... 22
Table 3-5 State of Idaho, Statewide Aviation System Plan .................................................................... 23
Table 3-6 TAF ...................................................................................................................................... 23
Table 3-7 Regression Methodology ..................................................................................................... 24
Table 3-8 Peer Airports Analysis 2015-2025 ...................................................................................... 25
Table 3-9 Peer Analysis/Regression Hybrid ......................................................................................... 26
Table 3-10 McCall Municipal Airport Based Aircraft .......................................................................... 27
Table 3-11 TAF Based Aircraft Forecast ............................................................................................. 28
Table 3-12 Based Aircraft Forecast ..................................................................................................... 29
Table 3-13 Recorded Turbo Prop and Jet Operations .......................................................................... 31
Table 3-14 Recorded United States Forest Service Operations ............................................................. 31
Table 3-15 C-II Operations Projections ............................................................................................... 33
Table 4-1 Top Industries in Valley County .......................................................................................... 41
Table 4-2 Major Employers in Valley County ................................................................. 42
Table 4-3 Comparative Analysis Indicators .................................................................. 44
Table 4-4 Current Air Service at Comparable Airports ............................................... 44
Table 4-5 Estimated Air Travel—Trips Per Person (Local and Visitor) ......................... 45
Table 4-6 Ability to Support Air Service ....................................................................... 46
Table 5-1 Aircraft Currently at MYL ........................................................................... 50
Table 5-2 AC 150/5325-4B Method ............................................................................. 51
Table 5-3 Runway Length Calculations for MYL ......................................................... 51
Table 5-4 Winter and Spring Average Runway Landing Length Estimates ................ 52
Table 5-5 Commercial Aircraft Runway Length Requirements ................................. 53
Table 5-6 Runway Length for Full Passenger Capability ............................................. 54
Table 5-7 Summary of Airport Design Standards for Select Airport Reference Codes (ARC) ................................................. 59
Table 5-8 Hangar Building and Space Demands ............................................................ 61
Table 5-9 Automobile Parking Requirements ............................................................... 63
Table 5-10 General Aviation Ramp Tie-Down Area Demand .................................... 65
Table 5-11 NAVAIDs and Lighting ............................................................................. 67
Table 5-12 MYL Approach Visibility Minimums ......................................................... 68
Table 5-13 Maintenance Building Space Estimates ....................................................... 71

List of Graphs

Graph Preferred Forecast .......................................................................................... 26
Graph 5-1 Total hangars to be constructed to meet forecasted demand ..................... 61
Graph 5-2 General Aviation Ramp Tie-Down Demand ............................................. 66

List of Figures

Figure 5-1 Highway 55 Location Map ........................................................................ 72

List of Exhibits

Exhibit 2-1 Location Map ........................................................................................... 2
Exhibit 2-2 Resort and Residential Development ....................................................... 6
Exhibit 2-3 Existing Facilities .................................................................................... 10
Exhibit 2-4 Airport Data Sheet .................................................................................. 11
Exhibit 4-1 Airport Catchment Area ....................................................................... 36
Exhibit 4-2 Proximity of Boise Airport to McCall .................................................... 40
Introduction

Included in this document are Draft Chapters 2, 3, and 4 of the McCall Municipal Airport Master Plan Update. Chapter 1 is not included as it is a working document that will change as additional information and chapters are finished. Additional chapters will be added as planning work continues. This Master Plan is scheduled to be finished by late spring of 2007.

This master plan update approached core master plan elements by revising sections in the 1998 Master Plan needing amending and performing new analyses where necessary. McCall Municipal Airport’s (MYL) current master plan document is serving as the basis for the 2006 Master Plan Update as certain elements of the 1998 Master Plan Update are still very relevant. It is the intent of the 2006 Master Plan Update to resolve the current planning and engineering issues that confront the Airport and that are important to its overall development in the region.

The City of McCall and the Airport are at a decision point in the future of aviation service in the region. They can continue to serve only the general aviation community or they can prepare for commercial air service, assuming it is viable at MYL. In order to make an informed decision, it is necessary to understand the type and level of aviation demand in the region. It is also necessary to determine the maximum amount of aviation activity that can be accommodated at the existing airport site to accommodate future demands.
Chapter 2
Background

2.1 Community Profile

McCall is located in the forested mountains of central Idaho on the shore of Payette Lake in Valley County (see Exhibit 2-1). Valley County contains the cities of McCall (the largest in the county), Cascade, Donnelly and Yellow Pine. Valley County covers a huge area in central Idaho, from Long Valley and McCall east to the Middle Fork of the Salmon River. The South Fork of the Salmon divides the county in two and flows north toward the Salmon River. The Payette River drains southward in the western part of Valley County through McCall.

McCall is located in the Mountain West region of the US, one of the fastest growing areas in the country. People come to this region for jobs, recreation, and to retire among other reasons. Baby Boomers\(^1\) are a portion of the immigrating population and importantly to this plan are concentrating in many small to mid-size cities in Idaho, Montana, Wyoming and Colorado. They are attracted to natural beauty, a basic level of services, relatively cheap land and housing, and often lower tax rates than the urban areas from where they came. Working professionals who can work from home most days are also attracted to the area. This demographic also values rapid air service to urban centers like Boise.

This relocation trend has profound impacts on small communities because a relatively small increase in the number of immigrants can equate to a huge percentage increase in population. This can both benefit and strain local communities. Housing construction, land sales and estate values can soar. High incomes that often are associated with relocating professionals and retirees boost local retail and service sectors. However, infrastructure like transportation, sewer systems and the natural environment are put under strain. Airports are no exception. The profile of the immigrants to the Mountain West matches the profile of people who generally use air service (people with moderate to high disposable incomes, free time and a desire or business need to travel).

Denying the existence and reality of this demand, and controlling the magnitude of these new demands on cities and regions is very difficult. However, guiding them, while challenging, is not impossible. Determining the best way to accommodate growth in air travelers and aircraft is the major challenge of this Master Plan. In order to address this challenge, it is imperative to first understand the underlying local context and trends that are and will drive planning decisions.

2.1.1 Demographics

Valley County’s population grew by 4,138 from 1970 to 2003, a 114 percent increase. This represents an annual growth rate of 2.3 percent. In 2006, the population is estimated to be 8,200 people. The population in Valley County has generally been increasing, though the county’s population dipped slightly in the 1980s. Nevertheless, Valley County population growth rates outpaced the state and the nation for the last 30 years.

\(^1\) People born between the years 1946 and 1964
Historically, population growth in the City of McCall has been slow. However, McCall’s population has been growing rapidly in the last few years. Between 2000 and 2005, the population increased 21 percent, growing from 2,084 to 2,524 people.

Not only are there more people coming to Valley County and McCall, they are generally older than existing residents. The age of residents of Valley County has been increasing since 1975. Consistent with regional trends, the 45-49 age category is the largest and fastest growing population in McCall and Valley County. People under the age of 20 have grown just slightly and have decreased as a percentage of Valley County’s population.

The full-time resident population reflected in the above figures is only part of the population equation in Valley County and McCall. McCall’s population can fluctuate from a low of less than 2,500 in the spring when some of the resident population leave the area because of the seasonally slow economy, to a high of more than 15,000 in the summer during the peak of the tourist season. Because part-time residents make up such a large portion of the total population at certain times of the year, they cannot be ignored in planning.

In 1997 travelers spent an estimated $52 million in Valley County. From 1993 to 2003 annual lodging sales oscillated between $5.1 and $6.8 million. In 2004 lodging sales jumped up to $9.9 million then up again to $11.2 million in 2005. The high season for lodging sales in Valley County is August, September and October.

Physical development in the area has been increasing, dramatically so in recent years. In 1990, 47 percent of the housing units in McCall were occupied year round. In 2000, this was down to 40 percent. Though year-round occupancy rates were very low, from 1990 to 2000, 487 housing units were added (a 28 percent increase). The number of building permits issued annually in McCall was 162 in 2001 and climbed to 377 in 2005. Rents have increased roughly 35 to 50 percent from 2000 to 2005. In Adams and Valley counties, the median prices of homes listed for sale in 2005 were 48 percent to 116 percent higher than the median prices of homes sold in 2004. There is strong demand for housing in the region.

Valley County assessed taxable property value is increasing. Considering growth in the number of taxable property’s in the county and increases in property values, the total net assessed value of property in the county increased from $1.007 billion in 1995 to $2.600 billion in 2005. The biggest increase in property value occurred between 2004 and 2005.
Table 2-1: Valley County Net Assessed Taxable Property Value

<table>
<thead>
<tr>
<th>Year</th>
<th>Property Values (Billions)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1995</td>
<td>1.007</td>
</tr>
<tr>
<td>1996</td>
<td>1.150</td>
</tr>
<tr>
<td>1997</td>
<td>1.280</td>
</tr>
<tr>
<td>1998</td>
<td>1.310</td>
</tr>
<tr>
<td>1999</td>
<td>1.330</td>
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<tr>
<td>2000</td>
<td>1.380</td>
</tr>
<tr>
<td>2001</td>
<td>1.400</td>
</tr>
<tr>
<td>2002</td>
<td>1.401</td>
</tr>
<tr>
<td>2003</td>
<td>1.500</td>
</tr>
<tr>
<td>2004</td>
<td>1.800</td>
</tr>
<tr>
<td>2005</td>
<td>2.600</td>
</tr>
</tbody>
</table>

CAGR 1995-2005 9.95%
Source: Valley County Assessor’s Office
Note: CAGR=Compounded Annual Growth Rate

Incomes are also increasing in Valley County. There are fewer households with annual incomes less than $30k in 2000 than there were in 1990. And in 2000 many more people have incomes greater than $50K than they did in 1990. Non-labor incomes between 1970 and 2003 grew quickly and now make up the highest proportion of total incomes. From 1990 to 2003 per capita income (adjusted for inflation) grew from $21,193 in 1970 to $29,015 in 2003, a 0.96 percent annual growth rate. Households earning $200,000 or more annually are becoming the fastest growing segment of the population.

From 1970 to 2003, 3,773 jobs were created in the county, an annual growth rate of 3.3 percent. This rate outpaced the state and the nation.

These data indicate that relatively wealthy individuals are moving to the area in and around McCall and buying or renting homes for full- or part-time residency. These individuals in large part are coming from Treasure Valley, Idaho, which encompasses Boise. A very large percentage of the residents of McCall live in the McCall area part of the year. Immigration is creating new retail, service and construction employment and higher revenues for these industries.

Given this historical data, where is McCall and Valley County heading? Moderate projections indicate that population will increase in McCall at an annual rate of 3.5 percent. The number of housing units will increase at a similar rate. The median age of the population in Valley County will peak in 2015 and then begin to fall as the number of Baby Boomers coming to the area (as a percentage of total population) decreases. Total employment will continue to rise in the county to 2025 at rate of 1.70 percent annually. Per capita income (adjusted for inflation) is expected to rise at a modest rate of 1.15 percent annually to 2025. According to Woods & Poole economic forecast data for Valley County, the number of households in the county earning more than $45,000 each year is expected to increase rapidly and those earning less will decrease slightly.
2.1.2 Resort and Residential Development

Changing demographics is not the only local factor driving growth and change. It is working in tandem with economic development which is both responding to and encouraging growth. This dynamic is most prevalent in regards to resort development. Several resort communities in Valley County are currently expanding or being constructed. Their location can be seen on Exhibit 2-2. The most significant of these is Tamarack Resort.

- **Tamarack Resort** is approximately 30 minutes south of McCall. Guests fly into Boise or McCall and are shuttled or drive from either airport. Tamarack, while currently under construction, opened in the winter of 2004-2005 on a limited basis. Tamarack hosts a ski resort and snow activities, golf course, outdoor recreation and lake activities amongst a constellation of residential and commercial nodes and vast open spaces. Demand for Tamarack real estate is high. The resort has had five real estate sales and sold out each one. To date the resort has sold 478 properties.

  The resort promises to be a major physical and economic presence in the valley that attracts people from across the U.S. Long-term plans for Tamarack call for a $1.5 billion all-season destination resort that will feature a ski area projected to grow to about the size of Aspen, Colorado. Some 2,043 hotel rooms, condos, town homes and lots will be developed on the site (about 4,000 beds) in a predicted ten to fifteen year timeframe. The vision for Tamarack is one of “boutique” tailored to high-end guests and families who will be both vacationers and real estate buyers.

- **Brundage Mountain Resort** opened in the early 1960s offering a regional ski resort to area residents. Brundage has been expanding ever since and now offers catering and special events at its facilities. In the summer, Brundage offers whitewater rafting, mountain biking, concerts and hosts family events. The Resort currently does not have lodging but construction plans are being developed. Brundage and Tamarack resort are promoting cooperation to make the McCall area a first class ski and outdoor recreation destination.

- **Jug Mountain Ranch** is a 1,410-acre private residential community located seven miles south of McCall. Jug Mountain golf course opened in the summer of 2004 and residence’s are under construction. Upon completion, Jug Mountain Ranch will be comprised of four main components: 325 home sites, an 18-hole public golf course, a community village with specialty shops and restaurants and a network of private trails through the Ranch’s eastern portion.

- **Whitetail Club Community**, located in McCall, contains 221 lots for development, 18-hole golf course, lodge and marina on Payette Lake, Fish and Swim Club, pristine beaches, two swimming pools, three tennis courts, sand volleyball courts, tour boat, ski boats, wave runners, workout facility, four fully-stocked fishing ponds, racquetball court, indoor and outdoor basketball, game rooms, virtual golf and entertainment theater, cross country skiing, snowmobile and mountain bike trails and areas for equestrian enthusiasts. This resort is under construction. Whitetail also runs a 77-room hotel on the shore of Payette Lake.
• River Ranch located just west of the airport is a private, gatehouse community with 64 home sites on 458 acres. The community offers a club house, swimming pool, trails and access to the Payette River. This community is also under construction.

The collective development of high end resorts and housing in and in the vicinity of McCall represent a major physical change for the area. Resorts are expected to attract greater numbers of full- and part-time residents, tourists and more investment. Relatively substantial growth is on the horizon for Valley County. What McCall will become is yet to be seen, but it is clear there will be changes to McCall. The changes ahead will undoubtedly require an expansion of public facilities and infrastructure, including the McCall Municipal Airport.

2.1.3 Outdoor Recreation

Resorts are not the only draw to the area. For decades, outdoor enthusiasts have come to the area to enjoy the backcountry, namely the Payette National Forest and Hells Canyon National Wilderness Area. The Payette National Forest spans over 2.3 million acres of some of west-central Idaho's most beautiful and diverse country. In 2002 approximately 620,000 people visited the Payette National Forest. Hells Canyon National Wilderness has 219,006 acres of trails and rivers.

River rafting also attracts people from all around the nation. The Snake River winds its way through Hells Canyon, the deepest river-carved gorge in North America and the Salmon River is popular with river rafters. Boaters and rafters come from far and wide to ride the rapids. Though winter activities abound, most of the tourist activity in Valley County occurs in the summer. The popularity of these areas and activities is substantiated by the fact the tourists visit the area in much higher numbers in the summer months than at any other time of the year.

The McCall Municipal Airport has historically provided a mode of access to many remote recreational sites and areas.

2.2 McCall Municipal Airport

McCall Municipal Airport is owned and operated by the City of McCall. Responsibility for the management of the airport has historically been vested with the City Manager. In 1995 a part-time airport manager was hired to act at the direction of the City Manager in conjunction with an Airport Advisory Committee. The first full-time airport manager was hired in 2000. In 2005 the present full-time airport manager was hired and in early 2006 a second full-time employee was hired to help maintain the airport. For the winter season additional maintenance staff is hired to assist with snow removal. In 1987 an Airport Advisory Committee (AAC) was established. The AAC was formed to advise and make recommendations to the City Council on airport matters. It consists of five members: four members appointed by the City Council and one United States Forest Service (USFS) representative. The addition of the USFS representative is a result of the significant presence of the air tanker and smoke jumper programs at the airport.

The airport encompasses just under 200 acres of land immediately west of Highway 55 and approximately one mile from downtown McCall. McCall Municipal Airport is classified as a general aviation airport in the National Plan of Integrated Airport Systems (NPIAS). MYL is a multi-function airport.
It includes private flying, business aviation, charter service, and a US Forest Service facility that deploys fire suppression air tanker aircraft and smoke jumpers to fight forest fires. The smoke jumper base was established at MYL just after World War II. Charters at McCall work with USFS in fire reconnaissance flights and bringing in personnel and supplies to the base.

McCall is the largest and most active airport in the region serving the backcountry and is considered “The Gateway to the Backcountry”. This airport plays an important role for the region and the State of Idaho. It helps provide mail delivery, access to trails for backpackers and assists with reconnaissance for the forest service during the fire season. In addition to mail delivery, communities in the backcountry, such as Warren, rely on flights out of McCall in the winter months for most if not all of their supplies. Tourists also use the airport to access the backcountry. They most often drive to McCall from cities in Idaho or bordering states and then charter flights into the backcountry for backpacking, rafting and big game hunting. They fly out of McCall to the backcountry because it is simply the closest city to the backcountry and they cannot drive any further. McCall is also one of many take-out points for river rafters on the Salmon River, one of the most popular rivers in the U.S. amongst rafters. Rafters charter planes from McCall back to their put-in point near the City of Salmon, or fly on to another destination from McCall.

The McCall Airport users are varied. Some users live in McCall or the surrounding area and are aircraft enthusiasts. They use aircraft to access cities across the west. Other airport users are part-time residents of the McCall area and have airplanes to conveniently fly from one home to the next. MYL plays a major role in the general aviation market between Boise, Lewiston and Salmon. McCall Aviation and Salmon Air charter flights between these cities and McCall. As indicated above most of this business is generated by tourism and takes place during the summer months.

### Table 2-2: Airports near McCall

<table>
<thead>
<tr>
<th>Airport, Location</th>
<th>Nautical Miles from McCall</th>
<th>Based Aircraft</th>
<th>Operations</th>
<th>Runway Length &amp; Width</th>
</tr>
</thead>
<tbody>
<tr>
<td>New Meadows Airport, New Meadows, ID</td>
<td>9.4 nm NW</td>
<td>100 percent</td>
<td>transient</td>
<td>avg 23/week 2,400 x 150 ft</td>
</tr>
<tr>
<td>Donald D. Coski Memorial Airport, Donnelly, ID</td>
<td>9.6 nm S</td>
<td>1</td>
<td>avg 22/week</td>
<td>2,500 x 125 ft</td>
</tr>
<tr>
<td>Council Municipal Airport, Council, ID</td>
<td>16.9 nm WSW</td>
<td>7</td>
<td>avg 20/day</td>
<td>3,600 x 50 ft</td>
</tr>
<tr>
<td>Cascade Airport, Cascade, ID</td>
<td>24.0 nm S</td>
<td>13</td>
<td>avg 37/day</td>
<td>4,300 x 60 ft</td>
</tr>
<tr>
<td>Johnson Creek Airport, Yellow Pine, ID</td>
<td>26.2 nm E</td>
<td>unknown</td>
<td>110/week</td>
<td>3,400 x 150 ft</td>
</tr>
<tr>
<td>Landmark USFS Airport, Landmark, ID</td>
<td>28.4 nm ESE</td>
<td>unknown</td>
<td>avg 83/month</td>
<td>4,000 x 100 ft</td>
</tr>
<tr>
<td>Warren/USFS/ Airport, Warren, ID</td>
<td>28.8 nm NE</td>
<td>unknown</td>
<td>avg 27/week</td>
<td>2,765 x 50 ft</td>
</tr>
</tbody>
</table>

Sources: www.airnav.com, Mead & Hunt, 2006

Land use around MYL is changing quickly from predominantly rural agriculture to residential, commercial and industrial uses. The airport is now surrounded on three sides (west, north, and east) by existing or imminent urban development. The airport forms a boundary to the south between urban uses and rural
areas. Open space south of the airport is privately owned. A school facility is located one-half mile directly north of the airport and directly under the centerline of the runway. With a growing airport, and expanding residential development toward and around the airport, land use conflicts are inevitable. To some degree they exist already. Land use issues are discussed in greater detail in later chapters.

Operations at the airport have been increasing in recent years. While the mix of aircraft using MYL has been slowly evolving to more sophisticated turbo prop aircraft, the airport is far and away used primarily by single engine propeller aircraft. Based aircraft have also been increasing; however, growth is currently constrained by limited space at the airport for additional hangar construction. The waiting list for new hangars stands at 50 and is growing.

2.2.1 Airport Facilities

MYL is served by a single Runway 16/34 (compass heading 160°/340°) that is 6,107 feet long and 75 feet wide paved with asphalt concrete. The pavement is in good condition. Due in part to USFS tankers and based jet aircraft such as the Falcon 20, the runway was extended south in 1990 by an additional 1,050 feet to its current length. Runway 16/34 is utilized by various USFS aircraft (e.g. P3 Orions, P2V Neptunes, and Air Tractors) as well as a wide variety of GA aircraft (e.g. King Air 90s, Cessna Caravans, Citations, Falcons, and Gulfstreams). The runway is equipped with Medium Intensity Runway Lights (MIRLs) and Runway End Identifier Lights (REILs). The airport has an Non-Directional Beacon (NDB) non-precision approach and a stand alone Geographical Positioning System (GPS) approach with lower visibility minimums. Aiding the approach to Runway 34 are FAA owned Visual Approach Slope Indicators (VASIs), and a Precision Approach Path Indicator (PAPI) on Runway 16. Lighting is pilot-controlled. There is also an Automated Surface Observing System (ASOS) located at the airport. Existing facilities and locations are shown and pertinent airport data is listed on the following respective exhibits (see Exhibit 2-3 and 2-4).

There is a full-length parallel taxiway on the east side of the runway that is 50 feet wide with a runway centerline to taxiway centerline separation of 200 feet. This taxiway was previously used as a temporary runway while Runway 16/34 was reconstructed and is still occasionally used during the winter months for aircraft equipped with snow skis. The full parallel taxiway is not lighted. There is also a partial parallel taxiway on the west side of the airfield that serves the USFS with a centerline to centerline separation of 306 feet. It is unlighted. This taxiway was constructed by the USFS to connect to their air tanker base in the 1980s. The airfield also has five exit taxiways connecting to the full parallel runway and two exit taxiways connecting to the partial parallel runway.

A total of 104 tie downs and 49 free standing hangars are available at the airport. Three of these hangars are condominium-style T-hangars. As this Master Plan is being written a new hangar development is being designed that will add approximately 33 new hangars to the airport. This will provide a total of 112 hangars at the airport by the end of 2006. In order to quickly respond to people’s desire for more hangars at the airport, this development is being completed before the master plan is finished and is not being coordinated with this planning effort. An awkward “triangle area” of open space exists between the runway, hangars and ramp space which is utilized for snow storage in the winter and water retention during other times of the year. Discussions of better space utilization for this area have focused on various hangar configurations but have been inconclusive.
### Exhibit 2-4 Airport Data Sheet

#### MAJOR FEATURES

**PROPERTY**
- 200 acres owned in fee and operated by the City of McCall

**AIRFIELD**
- Runway 16/34: 6,107 feet long, 75 feet wide; asphalt concrete
- Full Parallel Taxiway, 50 feet wide and partial parallel on west side that serves USFS
- Two public helipads and a USFS helipad

**AIR TRAFFIC PROCEDURES**
- Control Tower (seasonal/not permanent)
- Local Control: (CTAF) 122.8 MHz
- WX ASOS: 119.925 MHz

**COMMUNICATIONS**
- Salt Lake ARTCC App/Dep Control – 128.05/387.15
- Boise Flight Service Station

**MANAGEMENT AND SERVICES**

**Management**
- On-site management by the Airport Director
- Fixed Base Operations Services
- FBO offer various aircraft and general aviation services
  - Fuel: 100LL and Jet A. Fuel service 24-hours

**EMERGENCY AND SECURITY**
- U.S. Forest Service: McCall Aviation Tanker Base and Smoke Jumpers provide fire service to the region
- McCall Fire Protection District
- McCall Police Department
- Valley County Sheriff Department.

**INSTRUMENT APPROACHES**
- RWY 34: GPS and NDB approaches

**WEATHER**
- ASOS

**ENVIRONS**

**TOPOGRAPHY**
- Airport Elevation: 5,021 feet MSL

**ACCESS**
- Access via Deinhard Lane on the north end west of Hwy 55
- Access via HYW 55 just south of McCall
- Access to USFS facilities via Mission St on west side

**JURISDICTION**
- City of McCall

**PRINCIPAL LAND USES**
- Agriculture to the south and southwest, commercial and residential to the east, industrial and residential to the west and business and residential uses to the north

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Source: Data compiled by Mead & Hunt, Inc. (March 2004)
MYL is outfitted with public and government use helipads. The public use heliport consists of two paved landing/parking pads located along the north side of the diagonal taxiway. It is lighted with amber colored stake mounted lighting along the perimeter. The USFS has a single landing pad situated near the southeast corner of their apron and four unpaved parking position aligned along a north-south axis. The location of these unpaved parking locations 225 feet west of the centerline do not meet FAA design criteria as cited in the 1998 master plan.

The airport has several major tenants. McCall Aviation is the Fixed Based Operator (FBO) offering repair and maintenance, fueling services offering both 100 LL and Jet A, catering, car rental, lounge, Type I deicing, weather information, aircraft tug services, and charters into the backcountry or to Boise. McCall Air Taxi and Pioneer Air Service predate McCall Aviation. McCall Air Taxi purchased Pioneer Air Service and McCall Aviation purchased McCall Air Taxi, leaving one FBO on the field.

Fuel sales, a major revenue source for FBOs, is highly dependent upon the fire season and tanker activity. The climatic variability of conditions that determine the number of forest fires and their respective intensity and duration make fuel sales unpredictable. Conversations with the FBO indicate that the charter business is still at pre-9/11 levels while other aspects of the FBO business is busier than before, but hasn’t experienced the exponential growth other areas of the economy have seen. There were years in the mid-1990s when more gallons of fuel were sold than are currently being purchased. Since the construction of Tamarack the charter business has not perceptively increased; however, it might once the construction of hotels is complete. Other resorts in the area may help boost charter activity too.

This paragraph identifies other commercial tenants at the airport and their aviation related business. DEW Aviation offers aircraft maintenance. McCall Mountain / Canyon Flying Seminars offers backcountry flight training. Salmon Air is a commuter air carrier offering service to McCall. The USFS operates a smoke jumper and air tanker program from several buildings on the west side of the airport. Life Flight offers helicopter air ambulance and transfer services and is located on the North end of the Airport. These facilities are accessed from Mission Street. The airport management and maintenance facilities are located on the north end of the airfield, east of the runway and are accessed from Deinhard Lane. Parking for McCall Aviation is accessed off of Deinhard Lane, just east of the airport management offices. Parking for other charters and tenants is accessed from Highway 55. Auto parking areas are broken into separate areas and are largely unregulated. No street signage for parking or entrances exists. The entrances are generally controlled by gates.

Since the mid-1990s there has been an interest in the initiation of limited scheduled commercial air service. This topic is explored in this Master Plan Update.

Many aircraft enter or exit the McCall area via a number of low altitude federal airways. The airways are used to assist in cross-country flight planning and navigation. Other aircraft operate in the high altitude jet route system. MYL has no air traffic control tower. The Salt Lake City Air Traffic Control Center maintains air traffic control responsibility for aircraft flying under instrument flight rules en route to and from MYL. In the vicinity of the airport under IFR conditions, pilots operate using aircraft instrumentation and air traffic control instructions, while under visual flight rules pilots operate under visual reference to the ground and other aircraft. A GPS approach has also been developed to Runway 34.
South of the airport is a ridge line that rises 74 feet above the elevation of the runway. This ridge line runs from the northeast to the southwest with the high point of the ridge situated 1,200 feet south of the end of the Runway. This ridgeline is a significant impediment to improving approaches from the south. The slope of the approach is a non-standard 20:1. Improving to a standard 34:1 for a non-precissions runway would require extensive earthwork to remove the ridge from the approach surface. The ridge also presents an obstacle to runway lengthening. This situation was discussed in some detail in the previous master plan. The ridge presents a significant impediment to long-term development as this location.

Past Plan Documents

1980 McCall Airport Master Plan
In recognition of many factors that would significantly impact the transportation systems serving McCall an Airport Master Plan was initiated in 1980. Some of the factors leading to this included: the Union Pacific Railroad was considering vacating the trackage on the west side of the airport; the Idaho Transportation Department was studying the best alignment for State Highway 55; the sawmill in McCall had closed; Large recreational developments were being proposed; and numerous facilities at the airport needed upgrading or repairs.

Major recommendations from that Master Plan included: Proposal for establishing aircraft tie-down fees; encouragement of T-hangar construction by private parties with land leases to be paid directly to the City; fuel flowage taxes proposed for all deliveries to the airport; development of an Airport Industrial Park should be encouraged; the United States Forest Service (USFS) relocation to the designated 15-acre site as soon as their existing lease expired; land acquisition for a runway extension and clear zone along with establishing an airport zoning ordinance was encouraged; and improved operations and maintenance of the airport and its facilities was recommended.

1985 McCall Airport Environmental Assessment
The 1985 Environmental Assessment (EA) looked at the environmental impacts that would result from the implementation of the intended development plans for the McCall Municipal Airport as set out in the 1980 Airport Master Plan. This EA establishes that “the existing airport constitutes the only prudent choice for the proposed facility expansion due to the financial commitment already invested in the existing site”.

1986 McCall Airport Master Plan
The 1986 McCall Airport Master Plan Update addressed a major change to some of the basic assumptions put forth in the original 1980 Master Plan. This assumption revolved around the 15 acres of land on the east side of the runway in the hangar building area that was set aside for the USFS. With the abandonment of Union Pacific Railroad trackage on the west side of the airport and traded lands between the railroad, the state, the federal government and the airport, the USFS ended up with land available on the west side of the airport to house their facility. These developments rendered the then existing Master Plan as substantially out of date.

1988-1989 Airport Layout Plan Update
This ALP defined the current airport configuration.
1998 McCall Municipal Airport Master Plan
An update to the McCall Municipal Airport Master Plan was completed in 1998. The Master Plan includes forecasts of aviation activity, facility requirements, airport layout plans, financial analysis and a land use compatibility analysis. Several improvements necessary to accommodate aviation growth were identified, including realignment of Deinhard Lane, extension of the runway to the south, removal of the hill south of the runway, construction of additional hangers, construction of a terminal, and property acquisition. The Deinhard Lane realignment has been completed. Several other improvements were identified in the Master Plan. This document applied airport reference code B-III airfield requirements to the west side of the airport near USFS Operations and airport reference code B-II requirements to all other areas. Operations forecasts are tracking well through 2005.

1998 Economic Impacts of Airport in Idaho
The report concludes that McCall Municipal Airport directly and indirectly supports 192 jobs, contributes $4,200,000 to payroll and generates $8,900,000 in economic output.

2003 State of Idaho Air Service Demand Study
Recognizing the importance of commercial airline service, the Idaho Transportation Department, Division of Aeronautics, undertook a study to assess current demand in each commercial airport's market area. For McCall Municipal Airport this report concludes:

The level of originating passengers from [the area of McCall] is relatively small. The counties within McCall's theoretical market area (60-minute drive-time), Adams, Idaho, and Valley, combine for about 31,500 originations annually. As noted, the 31,500 originating passengers associated with the McCall market area are now served by the commercial airports serving either Boise or Lewiston. The 120-minute theoretical market area for Boise Air Terminal encompasses much of McCall's theoretical market area. Should commercial airline service be initiated at McCall, the reduction in enplanements at Boise Air Terminal would not reflect a significant reduction. The same is not true, however, for the airport serving Lewiston. It is estimated that approximately 13 percent of Lewiston's current originating passengers are drawn from the McCall market area described in this section. Should commercial airline service be initiated in McCall, the reduction in passenger demand at Lewiston could put at risk that airport's current level of scheduled airline service.

As with the Coeur d'Alene market, the feasibility of a carrier being able to successfully compete in the McCall market, given the proximity of nearby service at Boise, is very limited. Over 87 percent of the passengers from the McCall market area now drive to Boise to begin their airline trips. As noted, Boise Air Terminal offers a high level of airline service and very competitive fares. Lower demand levels in the McCall market area and the proximity of several existing competing commercial service airports limit the attractiveness of this market from a potential carrier's vantage point. Boise's enplanements would drop by a fraction of a percent, but lost enplanements at Lewiston would account for almost 13 percent of that airport's annual demand. The town of McCall is within Boise Air Terminal's theoretical market area, and the magnitude of Boise's air
service offerings would make it nearly impossible for an air carrier at McCall to attract a significant portion of the demand in this market.

The viability of air service is discussed in Chapter 4.

2000 McCall Comprehensive Plan
The comprehensive plan reports the following findings about the airport: “The McCall Municipal Airport Master Plan, adopted in 1998, proposed improvements and updates to the airport in order to accommodate expanded use of the facilities. Additional hangar sites, taxiway, and other support facilities have been proposed. These improvements, along with future expansion, are important to support growth in McCall and surrounding areas. Monitoring of development throughout the valley should occur to ensure adequate planning for the facility and surrounding lands.”

The plan recognizes as a problem:
- The potential large-scale development impact on the McCall Municipal Airport;

Has as an objective of:
- Supporting adequate airport service for McCall area; and

Recommends taking action on the following items:
- Coordinate and support transportation planning with the Airport including development of an aviation easement with Valley County;
- Anticipate and plan for possible transportation issues at airport, or on roadways, arising from a potential large-scale resort development or expansion;
- Monitor need for further development of airport as necessary;
- Monitor need for new regional airport facility that might serve the McCall area; and
- Consider shuttle and other transit linkages to the airport.
3.0 Aviation Demand Projections

The analyses below do not include projections for possible commercial air service. Though air service is conditionally viable as is discussed in Chapter 4, precisely when air service would be viable and more importantly if the city of McCall would like to accommodate commercial aircraft such as a Dash-8 Q400 or similarly sized aircraft and become a Part 139 airport are questions yet to be answered. These questions would need to be answered in order to be meaningfully folded into this chapter.

3.1 National, State and Local Context

In order to determine future aviation demands at McCall Municipal Airport, it is important to understand the general status of the aviation industry. The next three sections discuss the status at three scales.

3.1.1 National Conditions

Nationally, the airline industry has been nothing if not volatile over the last decade. Ten years ago major U.S. carriers experienced record profits and in 2005 they experienced a record number of bankruptcies—seven. This instability is due to the highly cyclical demand for air travel, high fixed costs, and the heavy debt burden airlines carry today. Additionally, there is risk due to terrorist attack, travel restrictions from a pandemic and a sudden surge in fuel prices. Looking forward the commercial airline industry may continue to be unstable.

However, the airline industry is also resilient. Given the hurdles to profitability, there are signs that the U.S. airline industry is on the verge of a recovery from the latest industry recession. This is due to declining labor costs and shrinking domestic seat capacity. Also, passengers are flying in record numbers, filling aircraft.

US Airways emerged from bankruptcy in September 2005. United Airlines emerged from Chapter 11 in early 2006 and expects to be profitable in 2006 as long as crude oil prices are low. Continental Airlines, Alaska Air Group, Inc. and US Airways are expected to be in the black for all of 2006. Southwest Airlines expects a 15 percent jump in profits in 2006. Jet Blue Airways, which lost money in 2005, is expected to return to profitability in 2006. For Delta and Northwest much work lies ahead obtaining labor concessions and revamping route networks.

Fuel prices are a major determinant for airline profitability and have been increasing in recent years. According to the ATA (Air Transport Association of America), during the 10-year period from 1992-2001, the median price per barrel of crude oil was just under $20. The median price subsequently climbed to $41.44 per barrel in 2004. Oil prices rose to $52.65 a barrel by the end of 2005 and are expected to average between $64 and $65 per barrel in 2006. The future of oil prices is relatively uncertain, but it is

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2 Energy Information Administration (EIA), a statistical agency of the U.S. Department of Energy. http://www.eia.doe.gov/
clear all air carriers will likely be exposed to the high price of fuel in 2006 and beyond. With high fuel prices, the likelihood of profitability for many airlines is small without an increase in ticket prices.

The general aviation (GA) sector also looks to be recovering from their recent slump. GA aircraft sales were down for a period of time, but have recently bounced back. GA operations have lagged in recent years but FAA projections indicate increasing flying hours. High fuel costs will impact this GA activity as well.

From record high sales point in late 1999, the business jet market plummeted 38 percent in less than four years. By the third quarter of 2003, more than 2,000 business jets, one in six aircraft in the active fleet had “for sale” signs taped to its nose. In 2004, there was a recovery in new and used general aviation aircraft sales, new aircraft billings increased nearly 20 percent and shipments jumped more than 10 percent. In 2004, shipments of business jets increased to 591 units, a 14 percent increase. Turboprops, the workhorses of the business aviation fleet, were especially popular in 2004 with new deliveries increasing to 321 units, a 19 percent boost. Piston aircraft were up 10.6 percent in 2004 over 2003. More than 2,000 light piston-engine aircraft were shipped and billings reached a two-decade high. The fractional ownership market also grew by more than 5 percent. Part of the reason for this growth is due to overcrowding at terminals and new security requirements, making commercial air travel more stressful, time consuming and expensive for travelers, especially business travelers. U.S. manufacturers of general aviation aircraft shipped a total of 2,355 aircraft during 2004, an increase of 10.2 percent over 2003 essentially ending three consecutive years of declines. In 2005 the number of GA jet flights was 2.6 higher than in 2004.

However, the trends of late have not been entirely positive. By the end of 2004, operations at combined FAA and contract towers had not seen a commensurate increase. Operations declined 1.6 percent (down 12.4 percent since 2000) with itinerant and local operations down 1.2 and 2.1 percent respectively. This trend is expected to reverse in the near future as long as fuel prices do not continue to rise.

Aircraft hours flown are expected to increase to catch up with new aircraft sales. According to the FAA Aerospace Forecast Fiscal Years 2006-2017, the number of general aviation hours flown is projected to increase 3.2 percent yearly over the 12-year forecast period. Much of the increase reflects increased flying by business and corporate aircraft as well as increase utilization rates of piston aircraft. Hours flown by turbine aircraft are forecast to increase 6.4 percent yearly over the forecast period compared to 1.8 percent for piston-powered aircraft. Jet aircraft are forecast to account for most of the increase, expanding at an average annual rate of 10.2 percent over the next 12 years.

The FAA Aerospace Forecast Fiscal Years 2006-2017 predicts that the active general aviation fleet will increase at an average annual rate of 1.4 percent. The more expensive and sophisticated turbine-powered fleet is projected to grow at an average of 4.0 percent a year for the forecast period with the turbine fleet doubling in size. The number of piston-powered aircraft is projected to increase at an average of 1.0 percent annually. Single-engine and multi-engine piston aircraft will grow slowly at 0.3 percent and 0.1 percent respectively. This is offset by a projected 6.7 percent average annual growth in

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3 General Aviation Manufacturers Association
4 FAA. 2005-2016 Aerospace Forecasts. Executive Summary. p.13
5 FAA Aerospace Forecast Fiscal Years 2006-2017 p. 20
piston rotorcraft. In addition the FAA expects that the relatively inexpensive Microjets, which are expected to enter the active GA fleet nationally; soon, could dilute or weaken the replacement market for piston aircraft.

Airports can expect more jet operations as new private jet users enter this market segment. Forecast International predicts that long-range business jets and very light jets will help drive a market for 10,900 business jets in the next ten years and that jet production is heading into a period of growth that will last until the year 2014. In conjunction with A.T. Kearney, Embraer estimates that the total business aviation market will increase by more that 40 percent over the next ten years (2015)¹ to 9,680 aircraft (not including very light jets)². Honeywell predicts 9,900 new aircraft by 2015 and that corporations and individuals will buy another 4,500 to 5,500 ultra light and personal jets. These growth projections are four to five times the historic average³. However, given these optimistic projections, high fuel prices or the potential for new taxes shifted from commercial air carriers could stall growth in the general aviation market.

3.1.2 State Conditions

As the scale of analysis changes so do the variables that impact McCall Municipal Airport. Taking into consideration other important variables also gives a different perspective on the forces in play affecting the McCall Municipal Airport.

The State of Idaho contains 74 public-use airports, seven of which have scheduled air service. From 1990 to 2005, of those that have air service their enplanements have been increasing annually at a rate of 2.7 percent. Itinerant general aviation operations are growing at an annual rate of 0.7 percent. Local general aviation operations are growing at an annual rate of 1.7 percent. Total operations are increasing at a rate of less than 1.0 percent annually. Based aircraft are increasing at a rate of 0.7 percent. Taken as a whole, growth statewide in aircraft operations and based aircraft is moderate. Using enplanements as an indicator, scheduled air service is seeing the most growth.

Since 2000, the population of the state has grown by 135,140 people or 10.4 percent. This made Idaho the sixth fastest-growing state, after only Nevada, Arizona, Florida, Georgia, and Utah. In 2005, Idaho had an estimated population of 1,429,096, which was an increase of 33,956, or 2.4 percent from 2004. From 2004 to 2005, Idaho was the third fastest-growing state, surpassed only by Nevada and Arizona. Median household income in the state has grown every year since 1999. It is expected that rapid population growth will put greater demands on airports.

3.1.3 Local Conditions

There is little doubt the population of McCall is and has been growing at unprecedented rates and the local economy is growing quickly in some sectors. Recent and significant increases in tourism, resident population, housing units and the development of Tamarack Resort, the further development of Brundage

and Whitetail resorts together with River Ranch and Jug Mountain give reason to believe that McCall will be growing rapidly in the next ten years approximately.

This estimated timeline is due to several factors that relate to the driving forces behind the current boom period. It is expected that the acute impacts of significant resort community expansion will have passed within that ten year period. Tamarack expects to be built out in ten to fifteen years. Baby boomer populations (who are now between the ages of 60 and 42) that are driving population growth in McCall will have by in large finished relocating because they will have reached an age where relocation is not as attractive and those that want to relocate will have done so. Tourism should remain strong into the future.

Given the justification for optimism, the very recent trends in growth that signify the current and expected boom period cannot continue without some retraction. Economies are cyclical in nature and expansions never continue unabated. The history of many mountain west communities could be used as examples of this fact. McCall, being a small city, has a somewhat diversified economy and is seasonal in nature. If baby boomers cease to relocate to McCall and/or tourism was to wane, the economy would slow. There then is a risk airport activity would slow. It should also be noted that a large component of the recreational and second home market is due to people from Boise, Nampa, Caldwell driving to Valley County, not flying in from out-of-state. Given these facets that relate to the area, an aviation demand projection methodology that models quickly growing aviation demand in the short-term (ten years approximately) followed by a moderate level of growth in the long-term, is prudent.

Three aviation activity variables are projected for this Master Plan Update, general aviation aircraft operations, based aircraft, and critical aircraft. Several methodologies are employed. The first is to take projections directly from the FAA Terminal Area Forecast (TAF). The second is a multiple regression analysis of population and income. The third is a hybrid approach that attempts to model what is believed to be the most likely scenario for the airport. The hybrid approach uses trends at eleven peer airports that have characteristics that are similar to those at McCall, either in terms of function (resort communities) or location (in the vicinity of McCall) or both.

3.2 Aircraft Operations Activity

3.2.1 Aircraft Operations History

An aircraft operation is defined as one takeoff or one landing; therefore, a flight departing and arriving from McCall has two operations. There is no tower at MYL so accurate historic numbers are not available. However, several alternative sources were available and analyzed in this Master Plan in order to determine what data source or combination of data sources is most reliable and should be used as a basis for forecasting aviation demand. The Federal Aviation Administration, TAF, records are a common source for historic information. They are the government-accepted historic record and future forecast for MYL. Table 3-1 lists the historic TAF for MYL.
### Table 3-1: McCall Municipal Airport Historic TAF

<table>
<thead>
<tr>
<th>Year</th>
<th>AT &amp; Comm.</th>
<th>GA</th>
<th>Mil</th>
<th>Total</th>
<th>Local Operations</th>
<th>Total OPS</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>AC</td>
<td>Comm.</td>
<td>GA</td>
<td>Mil</td>
<td>Total</td>
<td>GA</td>
</tr>
<tr>
<td>1995</td>
<td>0</td>
<td>5,000</td>
<td>20,000</td>
<td>100</td>
<td>25,100</td>
<td>9,000</td>
</tr>
<tr>
<td>1996</td>
<td>10</td>
<td>7,000</td>
<td>22,000</td>
<td>100</td>
<td>29,110</td>
<td>10,500</td>
</tr>
<tr>
<td>1997</td>
<td>0</td>
<td>7,074</td>
<td>22,364</td>
<td>100</td>
<td>29,538</td>
<td>10,673</td>
</tr>
<tr>
<td>1998</td>
<td>0</td>
<td>7,151</td>
<td>22,745</td>
<td>100</td>
<td>29,996</td>
<td>10,855</td>
</tr>
<tr>
<td>1999</td>
<td>0</td>
<td>7,230</td>
<td>23,289</td>
<td>100</td>
<td>30,619</td>
<td>11,187</td>
</tr>
<tr>
<td>2000</td>
<td>0</td>
<td>7,307</td>
<td>23,833</td>
<td>100</td>
<td>31,240</td>
<td>11,519</td>
</tr>
<tr>
<td>2001</td>
<td>0</td>
<td>7,385</td>
<td>23,907</td>
<td>100</td>
<td>31,392</td>
<td>11,626</td>
</tr>
<tr>
<td>2002</td>
<td>0</td>
<td>7,465</td>
<td>24,483</td>
<td>100</td>
<td>32,048</td>
<td>11,984</td>
</tr>
<tr>
<td>2003</td>
<td>0</td>
<td>7,546</td>
<td>25,060</td>
<td>100</td>
<td>32,706</td>
<td>12,343</td>
</tr>
<tr>
<td>2004</td>
<td>0</td>
<td>7,626</td>
<td>25,629</td>
<td>100</td>
<td>33,355</td>
<td>12,696</td>
</tr>
<tr>
<td>2005</td>
<td>0</td>
<td>16,205</td>
<td>26,206</td>
<td>100</td>
<td>42,511</td>
<td>13,055</td>
</tr>
</tbody>
</table>

**CAGR 1995-2005**

<table>
<thead>
<tr>
<th>Year</th>
<th>N/A</th>
<th>12.48%</th>
<th>2.74%</th>
<th>0.00%</th>
<th>5.41%</th>
<th>3.79%</th>
<th>N/A</th>
<th>3.79%</th>
<th>5.00%</th>
</tr>
</thead>
</table>

Source: FAA TAF, 2006

Notes:<sup>1</sup> Military

According to the TAF, total operations at the airport have been increasing at a very quick rate of 5.00 percent annually. If these rates were to be sustained, operations at MYL would double in 14 years. Air taxi and commuter operations grew steadily until 2005 where the TAF more than doubles the annual operations. The 1998 McCall Municipal Airport Master Plan used this source of data to make aviation demand projections. The year 2000 and 2005 projections from this master plan are tracking well.

McCall Aviation, the FBO at MYL recorded and provided operations data for this planning effort. These data are summarized on Table 3-2. Jet and Turbo Prop operations have been increasing from 2003 to 2005.
### Table 3-2: Monthly Jet & Turbo Prop Operations (Itinerant and Local) by Aircraft Design Group

<table>
<thead>
<tr>
<th></th>
<th>ADG I &lt;12,500 lbs</th>
<th>ADG II &lt;25,000 lbs</th>
<th>ADG II &gt;25,000 lbs</th>
<th>ADG III</th>
<th>ADG IV</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>2003</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>January</td>
<td>6</td>
<td>6</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>16</td>
</tr>
<tr>
<td>February</td>
<td>6</td>
<td>6</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>14</td>
</tr>
<tr>
<td>March</td>
<td>8</td>
<td>6</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>18</td>
</tr>
<tr>
<td>April</td>
<td>8</td>
<td>4</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>14</td>
</tr>
<tr>
<td>May</td>
<td>26</td>
<td>24</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>68</td>
</tr>
<tr>
<td>June</td>
<td>74</td>
<td>82</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>262</td>
</tr>
<tr>
<td>July</td>
<td>116</td>
<td>78</td>
<td>126</td>
<td>36</td>
<td>12</td>
<td>368</td>
</tr>
<tr>
<td>August</td>
<td>84</td>
<td>80</td>
<td>68</td>
<td>38</td>
<td>238</td>
<td>508</td>
</tr>
<tr>
<td>September</td>
<td>74</td>
<td>20</td>
<td>16</td>
<td>14</td>
<td>96</td>
<td>220</td>
</tr>
<tr>
<td>October</td>
<td>32</td>
<td>60</td>
<td>12</td>
<td>14</td>
<td>36</td>
<td>154</td>
</tr>
<tr>
<td>November</td>
<td>6</td>
<td>8</td>
<td>8</td>
<td>12</td>
<td>0</td>
<td>34</td>
</tr>
<tr>
<td>December</td>
<td>10</td>
<td>10</td>
<td>4</td>
<td>8</td>
<td>0</td>
<td>32</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>450</td>
<td>384</td>
<td>338</td>
<td>154</td>
<td>382</td>
<td>1,708</td>
</tr>
<tr>
<td><strong>2004</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>January</td>
<td>8</td>
<td>10</td>
<td>10</td>
<td>4</td>
<td>0</td>
<td>32</td>
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<tr>
<td>February</td>
<td>12</td>
<td>10</td>
<td>8</td>
<td>4</td>
<td>0</td>
<td>34</td>
</tr>
<tr>
<td>March</td>
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<td>14</td>
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<td>8</td>
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<td>40</td>
</tr>
<tr>
<td>April</td>
<td>16</td>
<td>18</td>
<td>10</td>
<td>8</td>
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<td>52</td>
</tr>
<tr>
<td>May</td>
<td>24</td>
<td>78</td>
<td>20</td>
<td>8</td>
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<td>130</td>
</tr>
<tr>
<td>June</td>
<td>34</td>
<td>58</td>
<td>62</td>
<td>20</td>
<td>0</td>
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<tr>
<td>July</td>
<td>54</td>
<td>150</td>
<td>106</td>
<td>32</td>
<td>32</td>
<td>374</td>
</tr>
<tr>
<td>August</td>
<td>80</td>
<td>166</td>
<td>102</td>
<td>42</td>
<td>120</td>
<td>510</td>
</tr>
<tr>
<td>September</td>
<td>54</td>
<td>90</td>
<td>48</td>
<td>22</td>
<td>0</td>
<td>214</td>
</tr>
<tr>
<td>October</td>
<td>28</td>
<td>40</td>
<td>20</td>
<td>12</td>
<td>0</td>
<td>100</td>
</tr>
<tr>
<td>November</td>
<td>6</td>
<td>6</td>
<td>12</td>
<td>2</td>
<td>0</td>
<td>26</td>
</tr>
<tr>
<td>December</td>
<td>10</td>
<td>22</td>
<td>10</td>
<td>24</td>
<td>0</td>
<td>66</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>336</td>
<td>662</td>
<td>416</td>
<td>186</td>
<td>152</td>
<td>1,752</td>
</tr>
<tr>
<td><strong>2005</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>January</td>
<td>6</td>
<td>36</td>
<td>28</td>
<td>6</td>
<td>0</td>
<td>76</td>
</tr>
<tr>
<td>February</td>
<td>12</td>
<td>24</td>
<td>20</td>
<td>2</td>
<td>0</td>
<td>58</td>
</tr>
<tr>
<td>March</td>
<td>12</td>
<td>10</td>
<td>16</td>
<td>2</td>
<td>0</td>
<td>40</td>
</tr>
<tr>
<td>April</td>
<td>10</td>
<td>26</td>
<td>14</td>
<td>6</td>
<td>0</td>
<td>56</td>
</tr>
<tr>
<td>May</td>
<td>24</td>
<td>60</td>
<td>40</td>
<td>6</td>
<td>0</td>
<td>130</td>
</tr>
<tr>
<td>June</td>
<td>26</td>
<td>74</td>
<td>72</td>
<td>16</td>
<td>0</td>
<td>188</td>
</tr>
<tr>
<td>July</td>
<td>66</td>
<td>156</td>
<td>108</td>
<td>30</td>
<td>30</td>
<td>390</td>
</tr>
<tr>
<td>August</td>
<td>62</td>
<td>216</td>
<td>136</td>
<td>42</td>
<td>150</td>
<td>606</td>
</tr>
<tr>
<td>September</td>
<td>44</td>
<td>106</td>
<td>74</td>
<td>32</td>
<td>66</td>
<td>322</td>
</tr>
<tr>
<td>October</td>
<td>38</td>
<td>58</td>
<td>32</td>
<td>4</td>
<td>0</td>
<td>132</td>
</tr>
<tr>
<td>November</td>
<td>18</td>
<td>24</td>
<td>12</td>
<td>6</td>
<td>0</td>
<td>60</td>
</tr>
<tr>
<td>December</td>
<td>16</td>
<td>20</td>
<td>22</td>
<td>2</td>
<td>0</td>
<td>60</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>334</td>
<td>810</td>
<td>574</td>
<td>154</td>
<td>246</td>
<td>2,118</td>
</tr>
</tbody>
</table>

Sources: McCall Aviation and Mead & Hunt, 2006

---

Aircraft Design Group is a designation of aircraft based upon wingspan; the higher the number the longer the wingspan.

9
It is clear from this seasonal data that a large percentage of operations occur in July, August, and September. This includes forest service air tanker activity in the ADG III column. Also, most operations are from small aircraft.

The USFS is a major operator at the airport, especially during years where there are large fires on public forest land. USFS operations and aircraft are listed below. The number of operations and aircraft used varies considerably from year-to-year depending upon the severity of fires in the region and the availability of USFS aircraft in their fleet. It is expected that USFS will continue to operate Tanker and Smoke Jumper programs from MYL. The 1998 Master Plan reports that from 1976 to 1994 aircraft operations ranged from as little as 26 to as many as 1,400. Data from 2003 to 2005 show variability as well (see Table 3-3). The 2003 to 2005 average of operations is about 900.

### Table 3-3: United States Forest Service Operations

<table>
<thead>
<tr>
<th>Aircraft Type</th>
<th>2003</th>
<th>2004</th>
<th>2005</th>
</tr>
</thead>
<tbody>
<tr>
<td>P3 Orion</td>
<td>224</td>
<td>86</td>
<td>260</td>
</tr>
<tr>
<td>P2V 5/7 Neptune</td>
<td>226</td>
<td>32</td>
<td></td>
</tr>
<tr>
<td>Douglas C-54G (DC-4)</td>
<td>222</td>
<td></td>
<td></td>
</tr>
<tr>
<td>DC-7</td>
<td>2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Air Tractor AT-802 F</td>
<td>38</td>
<td>318</td>
<td>386</td>
</tr>
<tr>
<td>Turbine DC3</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>deHavilland DHC6</td>
<td>10-Year Average: 300+ annual operations</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Total Operations**

<table>
<thead>
<tr>
<th>Year</th>
<th>Operations</th>
</tr>
</thead>
<tbody>
<tr>
<td>2003</td>
<td>1,012</td>
</tr>
<tr>
<td>2004</td>
<td>704</td>
</tr>
<tr>
<td>2005</td>
<td>978</td>
</tr>
</tbody>
</table>

Sources: US Forest Service; Mead & Hunt, 2006

Another source of data investigated for historic operations levels is traffic counts from the McCall Family Fly-In (see Table 3-4). This annual August event which lasts for several days is very popular and increases operations at the airport. A temporary tower is erected to control aircraft traffic. The available data from this tower does not add to historic data and does not bring into question other sources.

### Table 3-4: McCall Family Fly-In Operations Estimates

<table>
<thead>
<tr>
<th>Year</th>
<th>Operations</th>
</tr>
</thead>
<tbody>
<tr>
<td>2002</td>
<td>1,800</td>
</tr>
<tr>
<td>2003</td>
<td>1,450</td>
</tr>
<tr>
<td>2004</td>
<td>1,250</td>
</tr>
<tr>
<td>2005</td>
<td>1,460</td>
</tr>
</tbody>
</table>

Source: Idaho Department of Transportation

The State of Idaho produced a forecast for McCall in the late 1990s as a part of an incomplete Statewide Aviation System Plan. The results of the forecast are shown in Table 3-5.
### Table 3-5: State of Idaho, Statewide Aviation System Plan

<table>
<thead>
<tr>
<th>Year</th>
<th>General Aviation Operations</th>
<th>Total Operations</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Local</td>
<td>Itinerant</td>
</tr>
<tr>
<td>1997</td>
<td>11,500</td>
<td>27,500</td>
</tr>
<tr>
<td>2002</td>
<td>12,760</td>
<td>30,510</td>
</tr>
<tr>
<td>2007</td>
<td>14,160</td>
<td>33,850</td>
</tr>
<tr>
<td>2017</td>
<td>17,430</td>
<td>41,670</td>
</tr>
</tbody>
</table>

Source: State of Idaho

This data roughly corresponds with TAF data.

The TAF data in this case is considered the most reliable source of data—it does not conflict with other sources of information gathered so there is no clear reason not to rely on it. It is used as the basis for historic operations.

#### 3.2.2 Aircraft Activity Projections

**Terminal Area Forecast**

In this methodology, the TAF forecast is used as a projection for future airport activity. The trends resulting from this forecast method show slow and stable annual growth to 2025 as seen in **Table 3.6**.

### Table 3-6: TAF

<table>
<thead>
<tr>
<th>Year</th>
<th>Itinerant Operations</th>
<th>Local Operations</th>
<th>Total Operations</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>AT &amp; Comm.</td>
<td>GA</td>
<td>Mil</td>
</tr>
<tr>
<td>2000</td>
<td>7,307</td>
<td>23,833</td>
<td>100</td>
</tr>
<tr>
<td>2001</td>
<td>7,385</td>
<td>23,907</td>
<td>100</td>
</tr>
<tr>
<td>2002</td>
<td>7,465</td>
<td>24,483</td>
<td>100</td>
</tr>
<tr>
<td>2003</td>
<td>7,546</td>
<td>25,060</td>
<td>100</td>
</tr>
<tr>
<td>2004</td>
<td>7,626</td>
<td>25,629</td>
<td>100</td>
</tr>
<tr>
<td>2005*</td>
<td>16,205</td>
<td>26,206</td>
<td>100</td>
</tr>
<tr>
<td>2006*</td>
<td>16,375</td>
<td>26,782</td>
<td>100</td>
</tr>
<tr>
<td>2010*</td>
<td>17,022</td>
<td>28,876</td>
<td>100</td>
</tr>
<tr>
<td>2015*</td>
<td>17,867</td>
<td>31,725</td>
<td>100</td>
</tr>
<tr>
<td>2020*</td>
<td>18,753</td>
<td>34,856</td>
<td>100</td>
</tr>
<tr>
<td>2025*</td>
<td>19,684</td>
<td>38,295</td>
<td>100</td>
</tr>
</tbody>
</table>

| CAGR | 0.97% | 1.90% | 1.57% | 2.30% | 1.76% | 1.76% |

Source: FAA TAF

Note: CAGR=Compounded Annual Growth Rate

An important element of any methodology is how well it meets understood trends at the airport and in the community. This methodology does not effectively model the expectation that MYL is and will be going through rapid growth in the short-term; and due to the drivers involved in this growth and the cyclical nature of economies; it is unlikely to sustain this rapid growth in the long-term.
Regression Methodology Forecast
Population estimates for the years 2006 to 2025 for a wastewater facilities planning area service area were used along with mean household income for Valley County residents to estimate future aircraft operations at MYL (see Table 3-7). It is assumed that as population and income increase, operations at MYL will increase. Population estimates take into consideration full-time, part-time, and tourist populations.

Table 3-7: Regression Methodology

<table>
<thead>
<tr>
<th>Year</th>
<th>Itinerant</th>
<th>Local Operations</th>
<th>Total Ops</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>AT &amp; Comm</td>
<td>GA</td>
<td>Mil</td>
</tr>
<tr>
<td>1995</td>
<td>5,000</td>
<td>20,000</td>
<td>100</td>
</tr>
<tr>
<td>2000</td>
<td>7,307</td>
<td>23,833</td>
<td>100</td>
</tr>
<tr>
<td>2005</td>
<td>16,205</td>
<td>26,206</td>
<td>100</td>
</tr>
<tr>
<td>2006</td>
<td>16,477</td>
<td>26,646</td>
<td>100</td>
</tr>
<tr>
<td>2010</td>
<td>19,472</td>
<td>31,489</td>
<td>100</td>
</tr>
<tr>
<td>2015</td>
<td>23,700</td>
<td>38,327</td>
<td>100</td>
</tr>
<tr>
<td>2020</td>
<td>28,020</td>
<td>45,313</td>
<td>100</td>
</tr>
<tr>
<td>2025</td>
<td>33,491</td>
<td>54,161</td>
<td>100</td>
</tr>
</tbody>
</table>

CAGR 1995-2005: 12.48% 2.74% 0.00% 5.41% 3.79% 5.02% 5.00%
CAGR 2006-2025: 3.80% 3.80% 0.00% 3.80% 3.80% 3.80% 3.80%

Sources: FAA TAF, CH2M Hill Population Forecast, Woods & Poole Household Income Forecast, Mead & Hunt, 2006
Note: CAGR=Compounded Annual Growth Rate

Peer Airport Analysis
The Peer Airport Analysis is a methodology that aims to define the likely growth rate parameters of operations at McCall by using the growth rates of airports that are similarly situated either in function (mountain west resort area) or location (near McCall or in Idaho) or both. It is assumed that similarly situated airports will perform like one another in the long-term (2015-2025). This methodology aims to minimize the fact that a long history or reliable data is not available at MYL and that the historic record that does exist is likely not to be a good predictor of what is in store for the airport because of expected rapid growth, at least in the short-term. It is also an attempt to improve on the TAF given the significant changes now underway in the region.

Because the peer airports in the sample have already experienced their major growth spurt brought on by resorts construction or expansion, they cannot be used to accurately predict what will happen to McCall in the short-term (ten years) when the Valley County economy will likely grow relatively dramatically due to resort construction and expansion. Once McCall goes through this initial growth phase discussed in Chapter 2, it is expected that aviation activity at MYL and the peer airports will likely be similar. Peer community growth rates could therefore predict what will happen at the airport after the initial development phase is over.
In order to estimate the level of aviation growth in the long-term for MYL, the future growth rates of the peer airports from 2015 to 2025 are derived from the TAF (see Table 3-8).

### Table 3-8: Peer Airports Analysis 2015-2025

<table>
<thead>
<tr>
<th>Airports</th>
<th>Scheduled Enplanments</th>
<th>General Aviation Operations</th>
<th>Total Operations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Eagle County Airport (Vail)</td>
<td>2.60%</td>
<td>2.15%</td>
<td>1.87%</td>
</tr>
<tr>
<td>Jackson Hole Airport (Jackson Hole)</td>
<td>3.20%</td>
<td>2.86%</td>
<td>2.75%</td>
</tr>
<tr>
<td>Telluride Regional Airport (Telluride)</td>
<td>2.13%</td>
<td>0.17%</td>
<td>0.17%</td>
</tr>
<tr>
<td>Aspen-Pitkin County Airport (Aspen)</td>
<td>0.83%</td>
<td>1.19%</td>
<td>1.38%</td>
</tr>
<tr>
<td>Friedman Memorial Airport (Sun Valley)</td>
<td>3.87%</td>
<td>1.53%</td>
<td>1.49%</td>
</tr>
<tr>
<td>Glacier Park International Airport (Big Mountain)</td>
<td>3.53%</td>
<td>1.47%</td>
<td>1.52%</td>
</tr>
<tr>
<td>Gallatin Field Airport, Bozeman (Big Sky)</td>
<td>3.09%</td>
<td>1.62%</td>
<td>1.55%</td>
</tr>
<tr>
<td>Spokane International Airport (Schweitzer)</td>
<td>3.57%</td>
<td>2.53%</td>
<td>2.38%</td>
</tr>
<tr>
<td>Boise Air Terminal</td>
<td>3.91%</td>
<td>2.44%</td>
<td>2.19%</td>
</tr>
<tr>
<td>Lewiston-Nez Perce County Airport</td>
<td>4.45%</td>
<td>1.86%</td>
<td>1.84%</td>
</tr>
<tr>
<td>Coeur d'Alene Air Terminal</td>
<td>N/A</td>
<td>3.49%</td>
<td>3.46%</td>
</tr>
<tr>
<td><strong>Average</strong></td>
<td>3.12%</td>
<td>1.94%</td>
<td>1.87%</td>
</tr>
<tr>
<td><strong>Median</strong></td>
<td>3.37%</td>
<td>1.86%</td>
<td>1.84%</td>
</tr>
<tr>
<td><strong>High</strong></td>
<td>4.45%</td>
<td>3.49%</td>
<td>3.46%</td>
</tr>
<tr>
<td><strong>Low</strong></td>
<td>0.83%</td>
<td>0.17%</td>
<td>0.17%</td>
</tr>
</tbody>
</table>

Sources: FAA Terminal Area Forecast, Mead & Hunt, 2006

Using this methodology, it can be expected that from 2015-2025 general aviation operations (which includes air taxi in this analysis) will grow at approximately 1.94 percent annually, using the average as a guide. (The TAF for MYL predicts a rate of 1.76 percent over this time period) Total operations can be expected to grow at a rate of 1.87 percent, again using the average (MYL TAF 1.75 percent). It should be noted that most of the peer airports have scheduled commercial air service. On the whole the TAF relates to the peer communities well, only under-predicting slightly for general aviation operations. The forecasts support one another. This is an important conclusion that gives credence to both data sets in predicting long-term trends.

The peer analysis still leaves the question of how to model the growth in operations at MYL in the short-term during the construction of resorts and residential communities. For this, growth rates are applied from the regression forecast as shown in Table 3-9. This model uses regression analysis in the short-term and then relies on peer airport growth rates to moderate long-term trends.
### Table 3-9: Peer Analysis/Regression Hybrid

<table>
<thead>
<tr>
<th>Year</th>
<th>AT &amp; Comm.</th>
<th>GA</th>
<th>Mil</th>
<th>Total Itinerant</th>
<th>Local Operations</th>
<th>Total Ops</th>
</tr>
</thead>
<tbody>
<tr>
<td>1995</td>
<td>5,000</td>
<td>20,000</td>
<td>100</td>
<td>25,100</td>
<td>9,000</td>
<td>34,100</td>
</tr>
<tr>
<td>2000</td>
<td>7,307</td>
<td>23,833</td>
<td>100</td>
<td>31,240</td>
<td>11,519</td>
<td>42,759</td>
</tr>
<tr>
<td>2005</td>
<td>16,205</td>
<td>26,206</td>
<td>100</td>
<td>42,511</td>
<td>13,055</td>
<td>55,566</td>
</tr>
<tr>
<td>2006</td>
<td>16,477</td>
<td>26,646</td>
<td>100</td>
<td>43,224</td>
<td>13,274</td>
<td>56,498</td>
</tr>
<tr>
<td>2010</td>
<td>19,472</td>
<td>31,489</td>
<td>100</td>
<td>51,061</td>
<td>15,687</td>
<td>66,748</td>
</tr>
<tr>
<td>2015</td>
<td>23,700</td>
<td>38,327</td>
<td>100</td>
<td>62,127</td>
<td>19,093</td>
<td>81,220</td>
</tr>
<tr>
<td>2020</td>
<td>26,090</td>
<td>42,191</td>
<td>100</td>
<td>68,381</td>
<td>21,018</td>
<td>89,400</td>
</tr>
<tr>
<td>2025</td>
<td>28,721</td>
<td>46,446</td>
<td>100</td>
<td>75,267</td>
<td>23,138</td>
<td>98,405</td>
</tr>
<tr>
<td>CAGR 1995-2005</td>
<td>12.48%</td>
<td>2.74%</td>
<td>0.00%</td>
<td>5.41%</td>
<td>3.79%</td>
<td>5.02%</td>
</tr>
<tr>
<td>CAGR 2006-2025</td>
<td>2.97%</td>
<td>2.97%</td>
<td>0.00%</td>
<td>2.96%</td>
<td>2.97%</td>
<td>2.97%</td>
</tr>
</tbody>
</table>

Sources: FAA TAF, CH2M Hill Population Forecast, Woods & Poole Household Income Forecast, Mead & Hunt, 2006

Note: CAGR=Compounded Annual Growth Rate

The result is a faster growth in the short-term and then a relative leveling off in the long-term in line with peer communities.

**Preferred Forecast**

Below is a graph illustrating total operations from the three different methodologies. The TAF forecast is the most conservative, the regression forecast is the most aggressive and the hybrid regression-peer airport methodology is moderate.
The preferred forecast is the hybrid model. It takes into consideration growth trends derived from population and income and relaxes them in the long-term in line with peer communities to better estimate the build-out timelines of Tamarack Resort, other development properties, demographic changes that are likely to occur associated with baby boomer relocation and trends in based aircraft at MYL, which is a component of aircraft operations. Based aircraft is discussed below.

3.3 Based Aircraft

3.3.1 Based Aircraft History

The existing based aircraft and fleet mix in 2006 is summarized in Table 3-10. Due to the seasonal nature of McCall tourism and business, there are additional aircraft, including a couple jet aircraft that are based at the airport in hangars and on ramps during summer months. These aircraft are not reflected in the table below.

<table>
<thead>
<tr>
<th>Year</th>
<th>Single Engine</th>
<th>Multi-Engine</th>
<th>Jet</th>
<th>Helicopters</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>1993</td>
<td>59</td>
<td>6</td>
<td>1</td>
<td>1</td>
<td>67</td>
</tr>
<tr>
<td>1994</td>
<td>61</td>
<td>5</td>
<td>3</td>
<td>1</td>
<td>70</td>
</tr>
<tr>
<td>1995</td>
<td>62</td>
<td>6</td>
<td>4</td>
<td>1</td>
<td>73</td>
</tr>
<tr>
<td>1997</td>
<td>65</td>
<td>6</td>
<td>3</td>
<td>1</td>
<td>75</td>
</tr>
<tr>
<td>2006</td>
<td>95</td>
<td>8</td>
<td>0</td>
<td>1</td>
<td>104</td>
</tr>
</tbody>
</table>

CAGR 3.73% 2.24% N/A 0.00% 3.44%

Sources: Form 1050; McCall Aviation, 1997-2001 Idaho State Aviation System Plan, 1998 McCall Municipal Airport Layout Plan

Note: CAGR=Compounded Annual Growth Rate

These growth rates are on the high end when compared to the growth rates of peer airports. Single engine aircraft have increased steadily; multi-engines stagnated in the 1990s but have recently increased. Unexpectedly, based jet aircraft increased and then decreased to below 1993 levels by 2006. It is expected that the number of based jets will eventually climb again. This is based on the fact that they cannot decrease any further and the national trends are moving toward more jet aircraft. Historic based aircraft figures are also influenced by limited facilities, namely hangar space, for large turboprop and jet aircraft at MYL. Operators of aircraft of this size expect these types of facilities for extended stays and for basing aircraft at an airport. Tie-downs are also an option at the airport and aircraft owners may opt for this choice.
3.3.2 Based Aircraft Forecast

FAA Terminal Area Forecast, State of Idaho forecast, and the previous master plan are not tracking well considering the current backlog of hangers and new hangar development and were not used in the forecast of based aircraft. Table 3-11 is the FAA TAF.

Table 3-11: TAF Based Aircraft Forecast

<table>
<thead>
<tr>
<th>Year</th>
<th>Total Based Aircraft</th>
</tr>
</thead>
<tbody>
<tr>
<td>2000</td>
<td>107</td>
</tr>
<tr>
<td>2001</td>
<td>99</td>
</tr>
<tr>
<td>2002</td>
<td>100</td>
</tr>
<tr>
<td>2003</td>
<td>102</td>
</tr>
<tr>
<td>2004</td>
<td>100</td>
</tr>
<tr>
<td>2005</td>
<td>102</td>
</tr>
<tr>
<td>2006</td>
<td>104</td>
</tr>
<tr>
<td>2010</td>
<td>113</td>
</tr>
<tr>
<td>2015</td>
<td>125</td>
</tr>
<tr>
<td>2020</td>
<td>139</td>
</tr>
<tr>
<td>2025</td>
<td>154</td>
</tr>
<tr>
<td><strong>CAGR 2006-2025</strong></td>
<td><strong>2.09%</strong></td>
</tr>
</tbody>
</table>

Note: CAGR=Compounded Annual Growth Rate

The number of based aircraft at McCall is largely influenced by the number of hangars available—it is the limiting factor in growth. Not all based aircraft are hangared, but in the snowy conditions of this airport, a high percentage of based aircraft are hangared. Currently, all hangars are occupied and there is a waiting list of 50 people who would like to hangar their aircraft at the airport. As this plan is being written, hangar development is proceeding that will allow about 30 additional aircraft to hangar at the airport. This development will likely be completed in the summer of 2006 and hangars are expected to be fully occupied by the start of 2007.

After the current hangar development is finished there will remain about 25 people on the hangar waiting list, representing about 30 more based aircraft. In this analysis it is assumed enough hangars will be built and occupied in 2008 to accommodate the remaining 30 aircraft. It is also assumed that between 2006 and 2008 pilots wanting hangars will continue to come forward and be added to the hangar waiting list. It is also assumed that once the backlog is satisfied, the number of hangars at the airport will meet demands and no longer restrict the growth of based aircraft.

The current backlog is not the only demand for hangars. There continues to be an underlying continuous natural growth in the demand for hangars. It can be expected that the number of based aircraft will increase rapidly in the next few years as the backlog is eliminated and then growth in based aircraft will return to more normal levels. The normal level here is defined as the historic growth rate of based aircraft if infrastructure for based aircraft would have kept up with the demand for hangars.
The existing backlog is well documented. The future underlying natural growth rate of based aircraft is not. To estimate the future natural growth of based aircraft to be added to the backlog at the airport, the FAA Terminal Area Forecast was initially analyzed. The TAF shows a historic growth of less than one based aircraft a year and a future growth of about 2.5 aircraft a year. Clearly, the historic and future TAF growth rates for based aircraft underestimate the demand for based aircraft given the rate at which the backlog was accrued.

Population growth projections are used to predict the natural growth of based aircraft. It is assumed that as population increases so will based aircraft; and that the proportion of people living in McCall in relation to based aircraft at the airport will remain constant. The backlog of hangars is added to the natural level of growth. Assuming that airport development keeps up with demand, the net affect is that the airport will see a spike in based aircraft in the short-term as major hangar development occurs and a more moderate growth rate in the long-term.

The potential hangar tenants on the waiting list were surveyed to help determine the future fleet mix of aircraft at MYL. Seventy-six percent responded to the survey. Of those that responded 90 percent reported that they will be hangaring single-engine aircraft, 6 percent multi-engine and 4 percent jet aircraft. Based jet numbers will grow, but are not expected to make up a large portion of the based aircraft fleet (see Table 3-12).

<table>
<thead>
<tr>
<th>Year</th>
<th>Single Engine</th>
<th>Multi-Engine</th>
<th>Jet</th>
<th>Helicopters</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>1993</td>
<td>59</td>
<td>6</td>
<td>1</td>
<td>1</td>
<td>67</td>
</tr>
<tr>
<td>1994</td>
<td>61</td>
<td>5</td>
<td>3</td>
<td>1</td>
<td>70</td>
</tr>
<tr>
<td>1995</td>
<td>62</td>
<td>6</td>
<td>4</td>
<td>1</td>
<td>73</td>
</tr>
<tr>
<td>1997</td>
<td>65</td>
<td>6</td>
<td>3</td>
<td>1</td>
<td>75</td>
</tr>
<tr>
<td>2006</td>
<td>95</td>
<td>8</td>
<td>0</td>
<td>1</td>
<td>104</td>
</tr>
<tr>
<td>2007</td>
<td>122</td>
<td>10</td>
<td>1</td>
<td>1</td>
<td>134</td>
</tr>
<tr>
<td>2010</td>
<td>160</td>
<td>13</td>
<td>3</td>
<td>1</td>
<td>177</td>
</tr>
<tr>
<td>2015</td>
<td>190</td>
<td>15</td>
<td>4</td>
<td>1</td>
<td>210</td>
</tr>
<tr>
<td>2020</td>
<td>210</td>
<td>17</td>
<td>5</td>
<td>1</td>
<td>233</td>
</tr>
<tr>
<td>2025</td>
<td>230</td>
<td>19</td>
<td>6</td>
<td>1</td>
<td>256</td>
</tr>
</tbody>
</table>

CAGR 1993-2006 3.73% 2.24% 3.44%
CAGR 2007-2025 3.59% 3.57% 9.11% 0.00% 3.65%

Note: CAGR=Compounded Annual Growth Rate
3.4 Critical Aircraft Analysis

McCall Municipal Airport is classified in the National Plan of Integrated Airport Systems (NPIAS) as a general aviation facility. This classification along with the type of aircraft using the airport, determines the geometry and design of the airfield and airport safety areas. The largest aircraft or category of aircraft that makes 500 operations in a year is the aircraft generally used to design an airport and is called the critical aircraft. This quantity of operations justifies airfield design changes according to FAA policy. This section presents background information necessary to understand the critical aircraft analysis and the results of the analysis.

3.4.1 Background

The Airport Reference Code (ARC) is a system developed by the FAA to relate airport criteria to the operational and physical characteristics of the aircraft operating at an airport. The ARC has two components relating to the airport design aircraft. The first component, depicted by a letter, is the aircraft approach category and relates to certified aircraft approach speed. Generally, aircraft approach speed applies to runways and runway related facilities. Based on Advisory Circular 5300-13, Change Four, Airport Design, aircraft are grouped into five categories:

Category A: Approach speeds less than 91 knots.
Category B: Approach speed of 91 knots or more, but less than 121 knots.
Category C: Approach speed of 121 knots or more, but less than 141 knots.
Category D: Approach speed of 141 knots or more, but less than 166 knots.
Category E: Approach speed of 166 knots or more.

The second component depicted by a Roman numeral, is the airplane design group and related to aircraft wingspan. Aircraft wingspan primarily relates to separation requirements of taxiways and ramp space area as indicated below:

Group I: Wingspans up to but not including 49 feet (15 meters).
Group II: Wingspans of 49 feet (15 meters) up to but not including 79 feet (24 meters).
Group III: Wingspans of 79 feet (24 meters) up to but not including 118 feet (36 meters).
Group IV: Wingspans of 118 feet (15 meters) up to but not including 171 feet (52 meters).
Group V: Wingspans of 171 feet (52 meters) up to but not including 214 feet (65 meters).
Group VI: Wingspan of 214 feet (65 meters) up to but not including 262 feet (80 meters).

Airports expected to accommodate single-engine aircraft normally fall into ARC B-I. Airports serving larger general aviation and commuter-type aircraft normally are ARC B-II, B-III or C-II. Small- to medium-sized airports serving air carriers are usually ARC C-III, while larger air carrier airports are usually ARC D-VI.

The 1998 Master Plan defined the airport as a B-II/B-III airport. B-II design standards were recommended to be applied on the east side of the airport and B-III standards were to be applied to the west side to accommodate larger USFS aircraft that use that side of the field. The B-III designation is consistent with the design of the USFS complex.
To justify a certain design ARC and therefore a design standard, 500 operations of the design aircraft must occur in a year. There can also be a composite of the most demanding aircraft based on approach speed and wingspan if both are over 500 operations. This threshold of operations to determine the correct geometry/design of the airport could be reached in 2006 or within the time horizon of this Master Plan Update (which is year 2025). The airport reference codes in question in this Master Plan are B-II, C-II, B-III and C-III. Based upon discussions with airport tenants, aircraft of the D-II designation are not a type of aircraft that frequently uses the airport.

This critical aircraft analysis has two parts. The first considers the recorded historic operations at MYL. The second part considers the unconstrained future operations at MYL. The unconstrained operations forecast takes into account that airfield geometry, hangars, NAVAIDS, approach minimums, obstructions, runway conditions etc., which influence the number of operations at airports, especially that of larger and faster aircraft. It assumes operations are constrained by these factors at MYL. A rough estimate of the number of constrained operations is considered in the forecast.

### 3.4.2 Historic Critical Aircraft Operations Levels

Available historic information on aircraft groups and categories is summarized in **Table 3-13**.

**Table 3-13: Recorded Turbo Prop and Jet Operations**

<table>
<thead>
<tr>
<th>Year</th>
<th>B-II</th>
<th>B-III</th>
<th>C-II</th>
<th>C-III</th>
</tr>
</thead>
<tbody>
<tr>
<td>2003</td>
<td>609</td>
<td>448</td>
<td>137</td>
<td>224</td>
</tr>
<tr>
<td>2004</td>
<td>880</td>
<td>0</td>
<td>167</td>
<td>86</td>
</tr>
<tr>
<td>2005</td>
<td>1096</td>
<td>32</td>
<td>184</td>
<td>260</td>
</tr>
</tbody>
</table>

Sources: McCall Aviation and USFS

**Table 3-14** is a break out of USFS operations from Table 3-13 above.

**Table 3-14: Recorded United States Forest Service Operations**

<table>
<thead>
<tr>
<th>Aircraft</th>
<th>Category</th>
<th>Group</th>
<th>2003</th>
<th>2004</th>
<th>2005</th>
</tr>
</thead>
<tbody>
<tr>
<td>P3 Orion</td>
<td>C</td>
<td>III</td>
<td>224</td>
<td>86</td>
<td>260</td>
</tr>
<tr>
<td>P2V 5/7 Neptune</td>
<td>B</td>
<td>III</td>
<td>226</td>
<td></td>
<td>32</td>
</tr>
<tr>
<td>Douglas C-54G (DC-4)</td>
<td>B</td>
<td>III</td>
<td>222</td>
<td></td>
<td></td>
</tr>
<tr>
<td>DC-7</td>
<td>B</td>
<td>IV</td>
<td>2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Air Tractor AT-802 F</td>
<td>A</td>
<td>II</td>
<td>38</td>
<td>318</td>
<td>386</td>
</tr>
</tbody>
</table>

**Tanker Program**

<table>
<thead>
<tr>
<th>Aircraft</th>
<th>Category</th>
<th>Group</th>
<th>Operations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Turbine DC3</td>
<td>A</td>
<td>III</td>
<td>10-Year Average:</td>
</tr>
<tr>
<td>deHavailland DHC 6</td>
<td>A</td>
<td>II</td>
<td>300+ annual operations</td>
</tr>
</tbody>
</table>

Total Operations 1,012 704 978

Sources: US Forest Service; Mead & Hunt, 2006

Looking at historic operations B-II is the only aircraft type that now meets and exceeds the 500 annual operations threshold. Clearly, the B-II standard is justified as previously documented in the past Master Plan.
There are no C-III general aviation aircraft flying at the airport currently. In a busy fire year the airport may see as many as 260 C-III operations from the P3 Orion or as few as 86 using the last three years as a guide. The number of P3 Orion operations is not expected to increase in the years ahead. It is, however, expected that there will be C-III general aviation operations (e.g. Gulfstream V and Global Express Business Jets) at the airport in the future and that this number will grow, but the possible future operations levels are much below the necessary levels to justify a C-III airport.

Like C-III aircraft, there are no B-III general aviation operations at the airport documented. All B-III operations come from USFS tanker activity (P2V 5/7 Neptune and DC-4). In busy fire years like 2003, as many as 448 B-III operations occurred at the airport. In some years there are no B-III tanker operations (2004). Because there are no B-III general aviation operations at the airport and all growth would need to come from GA, there is not a strong justification to use this type of aircraft as the critical aircraft.

C-II aircraft operations numbered 184 in 2005. It is expected that this category of aircraft will increase quickly in the years ahead as the population and economy grow in the region. C-II general aviation aircraft are using McCall now and include the Canadair CL-600 and Gulfstream III.

3.4.3 Unconstrained Demands

The historic operations above represent constrained operations—the number of aircraft operating at MYL which is built to handle B-II aircraft. If improvements are made to the airport, and undoubtedly improvements will be made in years ahead, the airport will become less constrained and larger, faster aircraft will increase both because of the general economic growth in the area and because there will be fewer infrastructure shortcomings that prevent operations from occurring. Instrument approach issues are one example of a constraint that could be removed.

According to the Fixed Based Operator at the airport, more Gulfstream III (C-II) and Gulfstream IVs, (C-II) Challenger 600 series (C-II), Citation VII (C-II) and X, Galaxy’s (C-II), Hawker 800s (C-II), and Lear 45/60 (C-I) aircraft would operate at the airport now if facilities were improved. It is estimated by the FBO that the total number of general aviation operations for these aircraft types would increase by an estimated 60 percent if facilities were in line with current demands, including those related to approach minimums and the runway was kept free of snow. This number is based upon phone calls from pilots and diversions in route to MYL that the FBO is aware of. This estimate has ramification for C-II aircraft because in 2005 there were 184 C-II general aviation operations. If facilities fully accommodated demand, approximately 370 C-II aircraft would have operated at the airport in 2005. The other categories (C-III and D-II) are still experiencing very little general aviation activity, so even a doubling of operations in those cases has no real significance in defining MYL design standards.

3.4.4 Critical Aircraft Forecast

Forecasting critical aircraft operations is the next step in the analysis. Unlike the other categories in question, C-II operations need further investigation through a forecast to determine if it qualifies as the critical aircraft category for MYL. If it does not, then the B-II aircraft type, as shown, already meets the threshold for justification.
It is assumed in this forecast that airport improvements over the next five years will allow for wider use of the airport by C-II aircraft operators. That increase could approximate 60 percent. It is also assumed that larger C-II general aviation aircraft are used by a wealthy segment of the population, those that can afford fast charter aircraft and those owning larger, faster private aircraft. According to demographic projections, the number of households making more than $200,000 annually in Valley County is expected to increase at an annual rate of 4.54 percent to 2025. This rate of growth is used as a proxy to forecast the rate of growth for C-II operations.

Growth rates from the FAA Aerospace Forecast for Fiscal Years 2006-2017 are also analyzed. The active general aviation fleet of the more expensive and sophisticated turbine-powered fleet (props and jets) is used as another proxy for C-II operations growth. This segment of the GA fleet is projected by the FAA to increase at a rate of 4.0 percent annually. The results are summarized in Table 3-15.

Table 3-15: C-II Operations Projection

<table>
<thead>
<tr>
<th>Year</th>
<th>Income Growth Constrained</th>
<th>Income Growth Unconstrained</th>
<th>FAA Constrained</th>
<th>FAA Unconstrained</th>
</tr>
</thead>
<tbody>
<tr>
<td>2003</td>
<td>137</td>
<td></td>
<td>137</td>
<td></td>
</tr>
<tr>
<td>2004</td>
<td>167</td>
<td></td>
<td>167</td>
<td></td>
</tr>
<tr>
<td>2005</td>
<td>184</td>
<td></td>
<td>184</td>
<td></td>
</tr>
<tr>
<td>2006</td>
<td>192</td>
<td></td>
<td>191</td>
<td></td>
</tr>
<tr>
<td>2007</td>
<td>201</td>
<td>241</td>
<td>199</td>
<td>239</td>
</tr>
<tr>
<td>2008</td>
<td>210</td>
<td>273</td>
<td>207</td>
<td>269</td>
</tr>
<tr>
<td>2009</td>
<td>220</td>
<td>308</td>
<td>215</td>
<td>301</td>
</tr>
<tr>
<td>2010</td>
<td>230</td>
<td>345</td>
<td>224</td>
<td>336</td>
</tr>
<tr>
<td>2011</td>
<td>240</td>
<td>384</td>
<td>233</td>
<td>373</td>
</tr>
<tr>
<td>2012</td>
<td>251</td>
<td>402</td>
<td>242</td>
<td>387</td>
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<tr>
<td>2013</td>
<td>262</td>
<td>420</td>
<td>252</td>
<td>403</td>
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<tr>
<td>2014</td>
<td>274</td>
<td>439</td>
<td>262</td>
<td>419</td>
</tr>
<tr>
<td>2015</td>
<td>287</td>
<td>459</td>
<td>272</td>
<td>436</td>
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<tr>
<td>2016</td>
<td>300</td>
<td>480</td>
<td>283</td>
<td>453</td>
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<tr>
<td>2017</td>
<td>313</td>
<td>502</td>
<td>295</td>
<td>471</td>
</tr>
<tr>
<td>2018</td>
<td>328</td>
<td>524</td>
<td>306</td>
<td>490</td>
</tr>
<tr>
<td>2019</td>
<td>343</td>
<td>548</td>
<td>319</td>
<td>510</td>
</tr>
</tbody>
</table>

CAGR 2007-2016: 4.54% 8.37% 4.00% 7.81%

Source: McCall Aviation, Woods and Poole, FAA, Mead & Hunt, 2006

Note: CAGR=Compounded Annual Growth Rate

In this projection, the constrained growth rate is projected using the rate of growth for the household income group making $200,000 or more and the FAA Aerospace Forecast. A multiplier of 1.2 in 2007, 1.3 in 2008, 1.4 in 2009, 1.5 in 2010 and 1.6 in 2011 and beyond is used to estimate the annual phased improvements in the airport to accommodate larger, faster aircraft, until a point is reached where the facility constraints are minimized to the greatest degree possible and about 60 percent of the latent demand is realized. This assumes that at the current airport site, removing all constraints on demands will not occur and more may be created as the airport expands. This projection estimates that the 500 operations threshold will be reached between the years 2017 and 2019. However, it should be accepted as a reasonable probability that one or more C-II aircraft could be based at the airport in the short-term.
This would increase the number of C-II operations above the forecasted estimate and justify airport upgrades on a shorter timeframe.

### 3.4.5 Recommendation

The recommendation is to design the airport to meet C-II design standards. This recommendation is in line with the 1998 Master Plan. It reports eight years ago, "While the majority of aircraft using the airport are contained in ARC B-II, increasing number of aircraft in ARC C-II and B-III, particularly forest service aircraft, utilize the facility. With increasing jet usage application of C-II criteria may be necessary in future planning efforts while the U.S. Forest Service operation has already established the need to meet B-III criteria on the west side of Runway 13-64."\(^\text{10}\) A Group III designation on the east side of the airfield is not justified at this time. In 2004 there were enough Group III operations (all from USFS tankers) to justify a higher standard, but considering the annual variability of operations, there is not a strong justification for this design standard. The west side taxiway that serves tankers already meets Group III standards. A C-III design standard should be explored as a “what if” scenario for very long-term planning because future demands may make this a possibility in the region in the future.

\(^{10}\) 1998 McCall Municipal Airport Master Plan, p. 6-25.
Chapter 4
Commercial Air Service Demand

This element of the McCall Municipal Airport Master Plan Update provides an estimate of the market demand for scheduled commercial air service at McCall Municipal Airport and an understanding of the market potential in this resort area for such service.

Projections of aviation demand are an important element of the master planning process as they provide the basis for several key analyses, including:

- Determining the role of the Airport with respect to the type of aircraft to be accommodated in the future
- Evaluating the capacity of existing Airport facilities and their ability to accommodate projected aviation demand
- Estimating the extent of airside and landside improvements required in future years to accommodate projected demand

Typically, aviation demand forecasts use recent and historical aircraft and passenger activity to project future levels of aviation demand. However, historical information on air travel demand is limited since the Airport has not had commercial air service. The analysis contained in this chapter includes several sources of information to determine total commercial air service demand including: existing market studies conducted in the area, socioeconomic trends, and a comparison of proxy markets. National trends reported by the Federal Aviation Administration (FAA) were also reviewed within the context of this analysis.

This chapter provides discussions of the methodologies and findings used for estimating commercial air service demand. The methodologies and findings are documented in the following sections:

4.1 Role of the airport
4.2 Industry trends
4.3 Demand for air service
4.4 Comparative analysis
4.5 Estimated demand
4.6 Air service feasibility

4.1 Role of the airport

In order to estimate aviation demand at McCall Municipal Airport, it is important to understand the role of the Airport. This section presents an overview of the current and potential role of the Airport with regard to commercial air service. This section also provides a depiction of the geographical area served by the Airport.

The current role of the Airport is described in detail in Chapter 2. With relation to commercial air service demand, the Airport currently has no scheduled commercial air service and limited capability for
commercial jet operations. The Airport serves as a gateway for charter operations and private aircraft to/from the McCall area.

With the local economy becoming more dependent upon tourism and access to natural amenities for economic growth, what is the future role of McCall Municipal Airport? Commercial air service is part of the economic foundation of most communities and stimulates local commercial activity. By virtue of the “connectivity” that air service provides a community, airports have become the economic drivers that railroad intersections and seaports once were. However, the small town character of McCall is valued and the community impacts of a larger, busier airport in close proximity to the central business district and residential development may not be unanimously accepted as a tradeoff with increased air service and an influx of larger private jet aircraft.

In determining McCall Municipal Airport’s role in the community, it is important to understand the airport’s catchment area (i.e., the geographical area it serves). An airport’s catchment area is defined by several factors, including geographical and access considerations and proximity of alternative aviation facilities. Specifically, the airport’s catchment area is the geographic area from which an airport can reasonably expect to draw commercial air service passengers. The Airport’s primary catchment area is comprised largely of Adams County and Valley County. The catchment area has been defined by zip code to more specifically define the catchment area. Exhibit 4-1 provides McCall Municipal Airport’s catchment area. McCall Municipal Airport's catchment area is comprised of 13 zip codes with a combined population of 13,824. Viewed from another perspective, area ski resorts are often destinations themselves. Accordingly, one could argue that the area’s market is the entire nation.

Exhibit 4-1 Airport catchment area

Source: Microsoft MapPoint 2004
4.2 Industry trends

In order to estimate aviation demand at McCall Municipal Airport it is important to understand changes occurring locally and those within the U.S. aviation industry as a whole. Local trends have an obvious effect on the use of the Airport, especially with regard to air service and the location of competing airports. U.S. trends, particularly with general aviation, also have an effect on aviation demand based on the fact that this is a unique destination with a nationwide market base. The following subsections provide some discussion of these perspectives.

4.2.1 Local aviation trends

Boise Airport currently provides primary commercial air service to the McCall area. Ten airlines serve Boise Airport to/from 28 nonstop destinations, 16 of which are medium hub or larger airports. Nonstop destination markets include but are not limited to Atlanta, Chicago, Denver, Houston, Las Vegas, Los Angeles, Minneapolis, Phoenix, Salt Lake City, San Francisco, and Seattle (Source: Official Airline Guide, week of May 8, 2006). For the week of May 8, 2006, Boise Airport offered 586 departures and 47,980 available departing seats.

Enplaned passenger trends are an indicator of air service demand locally. Over the past ten years, Boise Airport has experienced significant growth. Enplaned passengers increased from 1,093,630 in calendar year 1996 to 1,408,290 in 2005 (Source: Data Base Products, Inc.), representing a compounded annual growth rate of 2.8 percent. As a comparison the Boise Metropolitan Statistical Area population from 1990 to 2000 grew at a rate of 7.71 percent. Over the last two years, enplanements have increased 17.8 percent. This positive enplanement growth rate indicates strong air service growth and demand in the local area including McCall. Likewise, the high growth rate in aircraft operations including commercial aircraft, private aircraft, and charters over the past ten years points towards a continuation of strong aviation demand.

4.2.2 National aviation trends

Each year the FAA publishes the FAA Aerospace Forecasts. The forecasts are prepared to meet budgeting and planning needs of the constituent units of the FAA and to provide information that can be used by state and local authorities, the aviation industry, and the general public. The current edition of this annual forecast is FAA Aerospace Forecasts-Fiscal Years 2005-2016. The following are excerpts from this document:

- Domestic capacity (large air carriers) is forecast to increase 0.6 percent in 2005 and 4.8 percent in 2006...capacity is expected to increase at an average annual rate of 3.5 percent over the final 10 years of the forecast period.
- Regional/commuter capacity is forecast to increase an additional 20.7 percent in 2005 and 11.9 percent in 2006, the large increases due to the projected delivery of an additional 439 regional jets over this 2-year period. Growth in capacity is expected to slow to 4.9 percent annually over the remainder of the forecast period...
Domestic enplanements (large air carriers) are projected to increase by 0.7 percent in 2005 and 3.7 percent in 2006. Enplanements are forecast to increase 2.9 (percent) annually between 2007 and 2016.

Passenger growth (regional/commuter) is growing by 15.4 percent in 2005 and 9.9 percent in 2006. Over the 12-year forecast period, regional/commuter passengers are forecast to increase 5.5 percent a year.

The generally more positive numbers posted for general aviation IFR activity provides some indication that the slowdown in business/corporate and fractional ownership flying over the past several years may be turning around.

The active general aviation fleet is projected to increase at an average annual rate of 1.1 percent...over the 12-year forecast period...the jet fleet is responsible for most of this growth.

Despite a slowdown in the demand for business jets over the past several years, the current forecast assumes that business use of general aviation aircraft will expand at a more rapid pace than that for personal/sport use.

The FAA forecasts support strong aviation demand overall with steady growth in future years for both large air carriers and regional/commuters. The projected large increase in capacity for regional/commuters provides an indication of potential opportunity for commercial air service in McCall. Finally, general aviation activity is healthy and projected to increase. This bodes well for continued growth in activity at McCall Municipal Airport.

### 4.3 Demand for air service

To develop an overall perspective regarding the demand for air service in the McCall Municipal Airport catchment area, it is important to answer three questions:

- What factors affect air service demand in the McCall area?
- What are the local economic/demographic factors that drive local area market demand?
- As a leisure/recreation market, how do the resort destinations currently impact the demand for air service and how will they impact air service demand in the future?

This section presents a discussion of the factors affecting demand for air service. Specifically, local market factors such as population and housing are discussed and the role that the resort destinations play in assessing air service demand is highlighted. Individual factors such as future resort development, available bed space, and expected visitors are also considered.

#### 4.3.1 Factors affecting air service demand

In leisure/recreation markets like McCall, two market segments drive demand for air service: the local area market and the tourism/visitor market. The local area market demand is heavily influenced by the economic and demographic characteristics of the airport’s catchment area including population, rental and non-rental housing, and the local economy, specifically local business. The demand for local air service is also a function of the level, quality, and cost of air service and the availability of alternatives, in this case, the proximity of Boise Airport.
More importantly, in a market like McCall, the tourism/visitor air service demand plays a significant role. Typically, in these types of markets, the bulk, 75 percent or more, of the airline passenger traffic is referred passenger traffic as opposed to traffic that is initiated in the local market. Accordingly, the number of visitors to resort destinations, vacation homes, and transient bed space in hotels and motels, to a large extent, determine demand for commercial air service. For example, increasing the number of hotel rooms in strong leisure markets usually results in increased demand for commercial air service. Likewise, communities whose economic base includes a significant leisure component tend to generate more air travelers than do other communities that do not rely on leisure travelers to support the local economy. In these communities seasonality plays a large role in air service demand in leisure markets.

These factors, considered together, are used to determine an area’s demand for air service and conversely the level of air service that the area can support. Theoretically, in a deregulated environment, the demand for air service should determine the level of air service available in a community. However, air carriers make air service decisions based on two primary factors: return on investment and company strategy. As the commercial airline industry has consolidated, the number of air carriers has been reduced and the level of competition in many markets has been reduced as well. Likewise, enplanements are also influenced by the proximity of larger competing commercial service airports that attract travelers from the local airport catchment area due to lower fares and more air service options.

Air service demand for the McCall Municipal Airport is and will continue to be largely affected by Boise Airport. Factors that influence passenger diversion to competing airports include drive distance, familiarity, airfares, destinations, flight frequency, jet versus turboprop service, and reliability of service (cancelled/diverted flights). Boise Airport has a significant competitive advantage with a variety of airlines including low-fare carriers, larger aircraft than what would potentially serve McCall Municipal Airport, and numerous nonstop destinations. Even with commercial air service, McCall Municipal Airport will still lose much of its passenger base to Boise Airport. Passengers that use McCall Municipal Airport will place a high value on convenience. **Exhibit 4-2** provides a map depicting the proximity of Boise Airport and McCall Municipal Airport to the McCall Municipal Airport catchment area.
Exhibit 4-2 Proximity of Boise Airport to McCall

Boise Airport is approximately 113 miles from McCall Municipal Airport, an estimated two to three hour drive. From one of the southern communities, such as Cascade, the drive time is less at just 85 miles. People from the southern catchment area communities or destined for the southern area of the catchment area will be more influenced by the proximity of Boise Airport than those air travelers from/destined to the northern part of the catchment area.

4.3.2 Local area market demand

Local economic and demographic factors assist in determining air service demand, including: population, housing, area development (building permits), and business/employers. Each area is discussed to provide a basis for determining local area demand for air service.

Valley County, the primary area served by McCall Municipal Airport and included in the airport catchment area, had a calendar year 2000 population of 7,651, an increase over 1990 of 25 percent. Adams County, also included in the airport catchment area, had a population of 3,476, an increase over 1990 of 7 percent.\(^1\) To identify the population in the total airport catchment area, Exhibit 4-1 provided the catchment area by zip code. The airport catchment area population by zip code is estimated at approximately 13,824 (source: Microsoft MapPoint 2004). In terms of air service demand, the population trends indicate a fast growing community with the potential for increasing need for commercial air service locally.

\(^1\) Sonoran Institute, *A Socioeconomic Profile*, Economic Profile System Community, 2006, p. 1
Along with population, housing is an indicator of air service demand. In Valley County, 8,084 housing units were available in 2000; 3,208 were occupied and 4,876 were vacant. Of the housing units, 4,342 of the units were for seasonal, recreational, or occasional use (54 percent of the total housing units). In Adams County, there were 1,982 housing units; 332 or 17 percent were for seasonal, recreational, or occasional use. Based on a housing needs assessment conducted for Valley County, a housing shortage in the area is evident. Housing prices are rapidly increasing with limited availability. Area businesses have noted unfilled jobs as a result of the lack of housing availability. Between January 2000 and May 2005, 1,800 residential building permits were issued. This represents an 18 percent increase in housing units since 2000. In 2004 alone, 531 permits were issued for new residential units in Valley County, more than three times the number issued in 2000. This is a further indication of recent and rapid growth in the community.

An area’s per capita income is also a component of air service demand. Higher per capita income potentially indicates more discretionary income and ability to travel. The per capita income in 1999 for Valley County was $19,246. The per capita income for Adams County was significantly less at $14,908. Compared to other recreation markets, Valley and Adams County per capita income is low, with Aspen at $40,811, Eagle/Vail at $32,011, Jackson Hole at $38,260, Steamboat Springs at $28,792, and Sun Valley at $31,346. The low per capita income in the McCall area is not a positive indicator of local air service demand.

Local business is a significant driver of air service demand. Table 4-1 provides the top industries by employment in 2005 for Valley County. As a leisure/recreation market, accommodation and food services was the top employer followed closely by retail trade. Arts, entertainment, and recreation and construction were also high on the list of employers.

<table>
<thead>
<tr>
<th>Industry description</th>
<th>Employment 2005</th>
</tr>
</thead>
<tbody>
<tr>
<td>All industries</td>
<td>3,003</td>
</tr>
<tr>
<td>Accommodation and food services</td>
<td>624</td>
</tr>
<tr>
<td>Retail trade</td>
<td>579</td>
</tr>
<tr>
<td>Arts, entertainment, and recreation</td>
<td>461</td>
</tr>
<tr>
<td>Construction</td>
<td>444</td>
</tr>
<tr>
<td>Administrative and waste services</td>
<td>117</td>
</tr>
<tr>
<td>Real estate and rental and leasing</td>
<td>102</td>
</tr>
<tr>
<td>Finance and insurance</td>
<td>99</td>
</tr>
<tr>
<td>Other services, except public administration</td>
<td>82</td>
</tr>
<tr>
<td>Manufacturing</td>
<td>61</td>
</tr>
<tr>
<td>Other</td>
<td>434</td>
</tr>
</tbody>
</table>

Source: Bureau of Labor Statistics, Quarterly Census of Employment and Wages (QCEW)

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2 Sonoran Institute, *A Socioeconomic Profile*, Economic Profile System Community, 2006, p. 3
4 2000 Census
5 Sonoran Institute, *A Socioeconomic Profile*, Economic Profile System Community, 2006, p. 9
Table 4-2 provides the major employers in Valley County. Top employers range from health care services to recreation/resort services. Based on the type of employer (Table 4-2) and the level of employees (Table 4-1), it is unlikely that local business generates a significant number of air travelers. However, with the strong focus on recreation/resort services, these businesses do likely generate a high volume of leisure travelers to the area (discussed in the next section).

Table 4-2 Major employers in Valley County

<table>
<thead>
<tr>
<th>Employer</th>
</tr>
</thead>
<tbody>
<tr>
<td>Brundage Mountain Ski Resort</td>
</tr>
<tr>
<td>Cascade School District</td>
</tr>
<tr>
<td>City of McCall</td>
</tr>
<tr>
<td>Tamarack Resort</td>
</tr>
<tr>
<td>McCall-Donnelly School District</td>
</tr>
<tr>
<td>McCall Memorial Hospital</td>
</tr>
<tr>
<td>Paul's Market</td>
</tr>
<tr>
<td>Amerititle, Inc.</td>
</tr>
<tr>
<td>US Department of Agriculture - Forest Service</td>
</tr>
<tr>
<td>Valley County</td>
</tr>
</tbody>
</table>

Source: Idaho Commerce & Labor, Valley County Profile, January 2006, p. 6

The overall assessment of local air service demand is marginal. Although the local population size is modest, the area is rapidly growing with significant increases in population over the last 10 years. Building permits have also shown a remarkable increase although housing shortages are evident. Some of the positive air service demand indicators are countered with lower than average per capita income and local business with limited local air service needs.

4.3.3 Tourism/visitor air service demand

The McCall area is largely a leisure/recreation market. A significant portion of the air service demand in the McCall area is referred passengers, i.e. passengers beginning their trip from outside the area with a destination of McCall. To understand the level of air service demand from visitors to the area, it is important to know what the area offers in terms of recreational activities and lodging.

McCall is a resort community on Payette Lake offering year round recreation opportunities. Between backpacking and boating in the backcountry to river rafting or skiing, the area offers a variety of outdoor activities. There are two primary resort destination facilities in the McCall area, Brundage Mountain Resort and Tamarack Resort. Brundage Mountain Resort is a regional ski resort to area residents and offers whitewater rafting, mountain biking, concerts, and family events during the summer. Brundage Mountain Resort does not offer lodging but is currently expanding with future construction plans for lodging facilities.

Brundage Mountain Resort tracked season pass holders for the 2003 through 2005 ski seasons. Approximately 5,485 season pass holders were documented. Of these season pass holders, 88 percent were from Idaho. An additional nine percent were from Oregon or Washington. Only three percent were from other states. In addition to season pass holders, Brundage Mountain Resort recorded every tenth
ticket sold since January 2006. The majority of ticket holders, 69 percent, were from Idaho. An additional 16 percent of ticket holders were from Oregon or Washington. The remaining 15 percent were from other areas. Although a portion of Oregon and Washington residents would use commercial air service to access the McCall area, travelers from states other than Idaho, Oregon, and Washington are assumed to be the primary drivers of air service demand.

Tamarack Resort is a four seasons ski, golf, and lake resort. Winter 2004/2005 was their inaugural ski season. A total of nine aerial lifts and five surface lifts are proposed for Tamarack Resort to serve more than 600 acres of groomed trails and 1,100 acres of ski-able terrain. Tamarack Resort offers lodging facilities with approximately 100 units or 250 beds currently available. At full build out in 10 to 15 years, 2,043 units will be available.

In addition to the two ski resorts, Jug Mountain Ranch, Whitetail Club Community, and River Ranch offer area attractions. Jug Mountain Ranch is a private residential community with a golf course and, upon completion, will offer a community village with specialty shops and restaurants and a network of private trails through the Ranch's eastern portion. The Whitetail Club Community, currently under construction, offers 221 lots for development, 18-hole golf course, lodge, and marina on Payette Lake, and numerous recreational activities. River Ranch is a gatehouse community with 64 home sites on 458 acres. The community offers a club house, swimming pool, trails, and access to the Payette River. This community is also under construction.

In assessing air service demand, one question that must be answered is how many visitors the area can support. This is largely an issue of lodging facilities. According to Idaho Commerce & Labor records, Valley County has approximately 704 rooms available for rent via hotels, motels, bed and breakfasts, and guest ranches. There are also an additional 100 condo units and 151 cabins or homes available for rent in McCall and 16 cabins or condos available for rent in Donnelly according to www.InIdaho.com. This equates to an estimated 1,407 rooms for rent in Valley County assuming 2.5 rooms per condo/cabin/home. Using an additional multiplier of 1.5 for the number of beds and 2.0 for the number of pillows, this calculates to 4,220 pillows for rent in Valley County. In addition to the existing rooms for rent, lodging facility development is on the rise in Valley County.

4.4 Comparative analysis

Air service demand is closely tied to: (1) community economics and demographics, (2) level of available commercial air service, and (3) the distance of the local airport from a larger competing airport. This section compares these factors for McCall Municipal Airport to other leisure/recreation markets to better understand air service demand in the area.

Several factors are evaluated to compare the leisure/recreation markets: population, housing units, vacation units, renter occupied units, area pillows for rent, and distance from a competing airport. Each of these factors provides some indication of the make-up of the community and lodging capacity available for tourists. Typically, an increase in lodging capacity equals a greater ability to support local tourism. Table 4-3 provides the primary economic and demographic indicators for the McCall community and five
leisure/recreation communities: Aspen, CO; Eagle/Vail, CO; Jackson Hole, WY; Steamboat Springs, CO; and Sun Valley, ID.

### Table 4-3 Comparative analysis indicators

<table>
<thead>
<tr>
<th>Airport</th>
<th>County population</th>
<th>Total housing units</th>
<th>Vacation units</th>
<th>Renter occupied units</th>
<th>Area pillows for rent</th>
<th>Miles to competing airport</th>
</tr>
</thead>
<tbody>
<tr>
<td>McCall, ID</td>
<td>7,651</td>
<td>8,084</td>
<td>4,342</td>
<td>676</td>
<td>4,220</td>
<td>113 (BOI)</td>
</tr>
<tr>
<td>Aspen, CO</td>
<td>14,872</td>
<td>10,096</td>
<td>2,728</td>
<td>2,780</td>
<td>15,080</td>
<td>186 (DEN)</td>
</tr>
<tr>
<td>Eagle/Vail, CO</td>
<td>41,659</td>
<td>22,111</td>
<td>5,932</td>
<td>5,499</td>
<td>27,778</td>
<td>156 (DEN)</td>
</tr>
<tr>
<td>Jackson Hole, WY</td>
<td>18,251</td>
<td>10,267</td>
<td>2,121</td>
<td>3,473</td>
<td>15,177</td>
<td>282 (SLC)</td>
</tr>
<tr>
<td>Steamboat Springs, CO</td>
<td>19,690</td>
<td>11,217</td>
<td>1,977</td>
<td>2,448</td>
<td>18,800</td>
<td>214 (DEN)</td>
</tr>
<tr>
<td>Sun Valley, ID</td>
<td>18,991</td>
<td>12,186</td>
<td>3,723</td>
<td>2,423</td>
<td>5,465</td>
<td>158 (BOI)</td>
</tr>
</tbody>
</table>

Source: County population/housing units = Sonoran Institute, *A Socioeconomic Profile*, Economic Profile System Community, 2006; Area pillows for rent = Local Chambers of Commerce, Mead & Hunt, Inc., & Idaho Commerce & Labor

Note: Vacation units = vacant units for seasonal, recreational, or occasional use

As indicated in Table 4-3, Valley County, representing McCall, ID, has the lowest population, which equals one-half of the second lowest population, Aspen, CO. McCall also has the lowest number of housing units, renter occupied units, and area pillows for rent. Unlike the other communities, McCall has a higher than average percentage of vacation units. Vacation units comprise 54 percent of total housing units in McCall; the five other leisure/recreation communities average only 27 percent of total housing units. This reflects recent growth in the market, specifically by Tamarack Resort, and the modest population in Valley County and rapid population growth in the Boise area. In terms of miles to a competing airport, which directly affects retention of local passengers, four of the five comparison airports have a significantly longer drive time to a competing airport than McCall Municipal Airport catchment area passengers. Sun Valley is the closest comparison airport in terms of drive distance to a competing airport.

### Table 4-4 Current air service at comparable airports

<table>
<thead>
<tr>
<th>Airport</th>
<th>Average departures per day</th>
<th>Average available seats per day</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>TP</td>
<td>RJ</td>
</tr>
<tr>
<td>Aspen, CO</td>
<td>4</td>
<td>8</td>
</tr>
<tr>
<td>Eagle/Vail, CO</td>
<td>3</td>
<td>1</td>
</tr>
<tr>
<td>Jackson Hole, WY</td>
<td>8</td>
<td>0</td>
</tr>
<tr>
<td>Steamboat Springs, CO</td>
<td>3</td>
<td>1</td>
</tr>
<tr>
<td>Sun Valley, ID</td>
<td>11</td>
<td>0</td>
</tr>
</tbody>
</table>

Source: Data Base Products, Inc. (YE September 30, 2005)

Note: TP = turboprop; RJ = Regional jet (less than 90 seats); MJ = Mainline jet

Sun Valley, ID has the lowest level of commercial air service of the five comparison markets with only 370 available seats per day and turboprop only service. This in large part may be due to the severely constrained airport serving this market. The other four comparison markets are served with both turboprop and jet service and three of the four markets enjoy mainline jet service. It is unreasonable for McCall Municipal Airport to expect jet service, regional or mainline, in the near future given the local...
Chapter 4/Commercial Air Service Demand

population and other economic/demographic indicators compared to the five other leisure/recreation markets. If McCall Municipal Airport is capable of supporting air service, discussed in the next section, it would be limited to turboprop service similar to Sun Valley.

Overall, the comparative analysis showed that the McCall area is not as developed in terms of population and housing compared to other leisure/recreation markets that enjoy air service. The lower than average economic/demographic indicators demonstrates a lower than average ability to support air service.

4.5 Estimated demand

The McCall Municipal Airport catchment area’s ability to support air service is estimated by quantifying both local air traveler and visitor demand. To estimate local air traveler demand, a travel factor, defined as the area’s propensity to use air travel and reflected as a per person multiplier, is used. In assessing an appropriate travel factor, other markets across the United States were considered and in general, an origin and destination travel factor of 1.0 is considered reasonable for smaller markets such as McCall. This represents an enplanement travel factor of 0.5. With a catchment area population of 13,824, an estimated 6,912 annual enplanements are generated from local residents.

To estimate visitors to the airport catchment area, the number of available tourist “pillows” for rent (Valley County) was used. As discussed previously, an estimated 4,220 pillows are available for rent in Valley County. It is assumed that tourist pillows are occupied 50 percent of the year on average. The occupancy rate is supported by data provided by Tamarack Resort which indicated that 40 percent of pillows are currently occupied on an annual basis. This equates to 770,150 occupied pillows per year. Based on a ski ticket lift survey by Brundage Mountain Resort of every tenth ticket sold, it is estimated that approximately 20 percent of visitors come to the area via air travel; presumably those visitors reside outside of Idaho. This is a conservative estimate that could potentially be higher based on demographic data from Tamarack Resort indicating that 49 percent of their visitors used commercial air service during the 2004/2005 winter season. To determine the number of annual air travel trips, it is estimated that the average length of stay is three days. This equates to 51,343 trips per year. Table 4-5 walks through the calculation of local and visitor air travel demand.

Table 4-5 Estimated air travel – trips per person (local and visitor)

<table>
<thead>
<tr>
<th>Statistic</th>
<th>Local</th>
<th>Visitor</th>
<th>Source</th>
</tr>
</thead>
<tbody>
<tr>
<td>Catchment area population</td>
<td>13,824</td>
<td>Microsoft MapPoint 2004</td>
<td></td>
</tr>
<tr>
<td>Enplanement travel factor</td>
<td>0.50</td>
<td>Mead &amp; Hunt, Inc.</td>
<td></td>
</tr>
<tr>
<td>Estimated local air service demand</td>
<td>6,912</td>
<td>N/A</td>
<td></td>
</tr>
<tr>
<td># of pillows - Valley County</td>
<td>4,220</td>
<td>Idaho Commerce &amp; Labor</td>
<td></td>
</tr>
<tr>
<td>% of pillows occupied</td>
<td>50%</td>
<td>CH2MHILL</td>
<td></td>
</tr>
<tr>
<td>Total pillows occupied annually</td>
<td>770,150</td>
<td>N/A</td>
<td></td>
</tr>
<tr>
<td>% of visitors flying (not driving)</td>
<td>20%</td>
<td>Brundage Mountain Resort</td>
<td></td>
</tr>
<tr>
<td># of air traveler pillows occupied</td>
<td>113,844</td>
<td>N/A</td>
<td></td>
</tr>
<tr>
<td>Average length of stay</td>
<td>3</td>
<td>Tamarack Resort</td>
<td></td>
</tr>
<tr>
<td>Estimated visitor air service demand</td>
<td>51,343</td>
<td>N/A</td>
<td></td>
</tr>
<tr>
<td>Total estimated air service demand</td>
<td>58,255</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

6 CH2MHILL, Wastewater Facilities Plan, May 18, 2006, p. 2-2
Based on the above assumptions and calculations, approximately 58,255 enplaned passengers are generated annually. However, with Boise Airport 113 miles to the south, even with commercial air service, McCall Municipal Airport will not capture the majority of air travelers to/from the McCall area. To determine if McCall Municipal Airport could support air service, varying retention levels were assessed against a minimum offering of air service using three different aircraft types (see Table 4-6).

### Table 4-6 Ability to support air service

<table>
<thead>
<tr>
<th>Statistic</th>
<th>15%</th>
<th>20%</th>
<th>25%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total air service demand</td>
<td>58,255</td>
<td>58,255</td>
<td>58,255</td>
</tr>
<tr>
<td>Retained passengers</td>
<td>8,738</td>
<td>11,651</td>
<td>14,564</td>
</tr>
<tr>
<td><strong>Beechcraft 1900, B-II (19-seat, 2 per day):</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Outbound seats per year</td>
<td>13,870</td>
<td>13,870</td>
<td>13,870</td>
</tr>
<tr>
<td>Load factor</td>
<td>63%</td>
<td>84%</td>
<td>105%</td>
</tr>
<tr>
<td><strong>Embraer 120, B-II (30-seat, 2 per day):</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Outbound seats per year</td>
<td>21,900</td>
<td>21,900</td>
<td>21,900</td>
</tr>
<tr>
<td>Load factor</td>
<td>40%</td>
<td>53%</td>
<td>67%</td>
</tr>
<tr>
<td><strong>De Havilland Dash, B-III 8 200 (37-seat, 2 per day):</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Outbound seats per year</td>
<td>27,010</td>
<td>27,010</td>
<td>27,010</td>
</tr>
<tr>
<td>Load factor</td>
<td>32%</td>
<td>43%</td>
<td>54%</td>
</tr>
</tbody>
</table>

The range of retention levels were determined based on studies conducted at similar airports, specifically Pullman, WA and Sun Valley, ID. Pullman, WA was used due to the similarity in distance to a competing airport and the level of service at Pullman versus what is expected as a minimum level of service at McCall. A recent study conducted in Pullman, WA determined that the catchment area is retaining approximately 27 percent of air travelers. A study conducted in Sun Valley determined that 62 percent used the local airport. McCall Municipal Airport's retention would most likely fall below these two communities given the proximity to a larger competing airport, Boise, and the limited air service offering, i.e. two roundtrips per day, assumed in this analysis compared to the other two airports. It is expected that McCall would have a much lower level of air service initially than that offered at either Pullman or Sun Valley thus contributing to the 15 to 25 percent retention level used in this analysis.

The ability to support air service has been determined based on a load factor calculation for the three different aircraft types most likely to serve McCall Municipal Airport: Beechcraft 1900, Embraer 120, and de Havilland Dash 8 200; all turboprop aircraft of varying size ranging from 19 seats to 37 seats. In general, for an airline to be profitable, i.e. for McCall Municipal Airport to be able to support air service, load factors must meet or exceed 55 percent. Load factors are contingent on the airport’s ability to retain passengers. With a retention level of 15 percent, McCall Municipal Airport could potentially support Beechcraft 1900 air service. However, the Beechcraft 1900 is not the most desirable aircraft given its smaller size, limited baggage capacity, and overall lower quality of service compared to the other two aircraft. At a 25 percent retention level, McCall Municipal Airport could potentially support Beechcraft 1900 service or Embraer 120 service but it falls short of supporting service with the de Havilland Dash 8 200, the most preferable aircraft of the three aircraft types.
Although the analysis suggests that marginal service with smaller sized aircraft, i.e. 19 to 30 seats, could potentially be supported, successful commercial air service in McCall faces several hurdles. The following are air service challenges that face the McCall community:

- Similar to other recreation markets, McCall is a seasonal market. To be profitable in a seasonal market, airlines must reduce or cease service in the shoulder months which is costly for the airlines.
- The market is relatively small. Airlines face high risk in small markets, particularly markets with no air service history to base projections of demand.
- McCall Municipal Airport competes with a larger airport, Boise, which has 28 non-stop destinations and a low-fare airline.

With all of these factors combined, McCall Municipal Airport is considered high risk by airline managers. Like many other recreation markets, it is unlikely that McCall Municipal Airport could support air service without a subsidy provided to an airline.

4.6 Air Service Feasibility

Though is it unlikely that McCall Municipal Airport could support air service without subsidy given the hurdles present, there may be potential for subsidized air service. The feasibility of air service at the airport then depends on the level of subsidy the community is willing to provide and the amount of subsidy an airline would require to operate out of McCall. Feasibility also depends on several other factors including: 1) the desire of local residents and the government to transform the airport into a commercial service airport, 2) financial support from the FAA and city, and 3) the physical limitations of the current airport site.
Chapter 5
Facility Requirements and Design Standards

5.1 Introduction

This chapter uses the aviation demands forecast presented in Chapters 3 and 4 to estimate facility needs at McCall Municipal Airport. The estimated facility needs in this chapter do not take into account the community’s desire to expand or not to expand the airport, financial resources or physical constraints at the airport, adjacent urban development, or topography. The facility requirements are defined on the basis of existing user demands and the associated FAA design standard requirements. This chapter will consider the following elements:

- Runway length, width and safety areas
- Taxiways
- Aircraft storage hangars
- Ramp tie-down area
- Automobile parking and circulation
- Lighting and NAVAIDS
- General aviation terminal area
- Snow Removal Equipment and Aircraft Rescue and Firefighting
- Highway 55
- Utilities
- Accommodating commercial aircraft

Expansion or improvement of airport facilities is sometimes seen by community members as a catalyst for more growth—more people and associated life style change. To a degree this is correct. Airports are an access point and more people will use it if it is improved to a degree that can accommodate a significant new group of aircraft. However, even without improvements, activity will increase as pilots will continue to use the airport out of desire or need to come to Valley County. Facility improvements are normally a result of existing demand; they generally do not create demand nor control it. The City of McCall cannot control the size or frequency of aircraft that fly into the airport, regardless of the quality of, or number of facilities.\(^1\) It is up to individual pilots or a company’s policy whether or not to operate at an airport that may in fact be inadequate for their particular aircraft from a design standards viewpoint. In addition to meeting the needs of current users, facility improvements should also be planned with an eye to future needs as well.

Traditionally, the FAA has not required general aviation airports to expand facilities based upon general aviation aircraft size. This is changing. The FAA is giving general aviation airports more attention as private aircraft performance and operations increase. The FAA is now requesting that GA airports

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\(^1\) Article 1, Section 8, Clause 3, of the Constitution empowers Congress "to regulate Commerce with foreign Nations, and among several States, and with the Indian Tribes." The term commerce as used in the Constitution means business or commercial exchanges in any and all of its forms between citizens of different states, including purely social communications between citizens of different states by telegraph, telephone, or radio, and the mere passage of persons from one state to another for either business or pleasure. Interstate commerce, or commerce among the several states, is the free exchange of commodities between citizens of different states across state lines. FAA policy dictates that airports are an important element to interstate commerce and that their capacity to transport goods and citizens should no be restricted.
upgrade airfields to meet the demands for general aviation traffic and encouraging other improvements (like aircraft rescue and firefighting facilities). Given the change in the FAA’s posture toward general aviation airports, this chapter takes on greater importance. It should also be noted that the FAA’s position on design compliance by airports with commercial air service is far more rigorous. In general the FAA expects airport owners to comply with the assurances attached to airport improvement program grants which include taking proactive measures to achieve design compliance.

Though the stance of the FAA is changing toward requiring facility improvements, it is also true outside FAA grant assurances no regulation requires the expansion or improvement of MYL, except basic pavement and NAVAID maintenance. However, not complying with FAA safety standards may increase the liability of the City of McCall in the event of an accident.

5.2 Runway 16/34 and Taxiways

As mentioned in Chapter 3, the airport is now designated as an ARC B-II facility. The continuation of the preexisting ARC B-II designation recommended in the 1998 McCall Municipal Airport Master Plan took into consideration the characteristics of the majority of the fleet, but was also based on the, “extensive difficulty and significant costs that would be incurred if the airport were to attempt to fully comply with design criteria associated with the application of B-III or the use of C-II criteria.” This conclusion was based in part on the occasional use of B-III and C-II aircraft use although the probability of significant future use was considered to be high as the local resort market matured. The purview of the analysis in this section and chapter does not include these considerations but does include appropriately the required airfield standards to safely operate aircraft that are and will use MYL.

Runway 16/34 and its associated taxiways are the most important elements of the airfield at MYL and have the most bearing on airport safety. The dimensions of Runway 16/34 and associated taxiways help define the airport’s future capability and its role at its current location. The following sections analyze and contrast existing and future runway and associated safety area dimensions.

The design standards in this section are airport design safety requirements—they are not optional. The FAA will not approve an airport layout plan unless the airport meets or depicts a plan to meet these requirements. Furthermore, when the airport accepts grant money, it assures the FAA that it will work to meet all applicable runway safety requirements.

5.2.1 Runway Length

Runway length requirements are a function of critical aircraft performance and weight, airport altitude, wind, air temperature, runway gradient, runway surface conditions, flap settings, obstructions, aircraft stage length and pilot skill. Local noise abatement programs may also affect runway length. Given the complexity of factors that could affect runway length requirements, the FAA has developed methods to competently estimate runway length requirements to meet aircraft needs. Two methods are used herein: the method detailed in Advisory Circular 150/5325-4B Runway Length Requirements for Airport Design...
and a FAA spreadsheet computer model. Runway length requirements during winter weather conditions and for select commercial aircraft are also explored.

As discussed in the previous chapter, an increase in ARC C-II aircraft operations above the substantial use threshold of 500 operations is realistic and expected by 2017 or 2019, though it may happen sooner. The aircraft that are and will continue to operate at MYL in increasing numbers throughout the time horizon of this master plan are identified in Table 5-1. The runway requirements of these aircraft assuming maximum takeoff weight (MTOW), sea level elevation (SL), and international standard atmospheres (ISA) are also included.

Table 5-1

<table>
<thead>
<tr>
<th>Aircraft</th>
<th>ARC</th>
<th>Runway Take-off Length at SL, ISA, MTOW (ft.)</th>
<th>MTOW (lbs.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gulfstream III</td>
<td>C-II</td>
<td>5,050</td>
<td>70,900</td>
</tr>
<tr>
<td>Gulfstream IV</td>
<td>C-II</td>
<td>5,450</td>
<td>73,900</td>
</tr>
<tr>
<td>Bombardier Challenger 604</td>
<td>C-II</td>
<td>5,699</td>
<td>47,600</td>
</tr>
<tr>
<td>Cessna Citation VII</td>
<td>C-II</td>
<td>4,790</td>
<td>22,450</td>
</tr>
<tr>
<td>Hawker 800XP</td>
<td>C-II</td>
<td>5,030</td>
<td>28,000</td>
</tr>
</tbody>
</table>

Source: Mead & Hunt, Inc

Advisory Circular Methodology

The majority of the airplanes in this sample are below 60,000 pounds MTOW and the aircraft with the longest runway requirements is under 60,000 pounds MTOW. Therefore, this analysis uses the family grouping of large airplanes as the design approach as defined in AC 150/5325-4B. The family groupings approach does not use the single most demanding aircraft but a composite of aircraft that have similar performance characteristics and operating weights (in this case between 12,500 and 60,000 lbs). The recommended runway length for this weight category of airplanes is based on performance curves developed from FAA-approved airplane flight manuals in accordance with the provisions of 14 Code of Federal Regulations Part 25, Airworthiness Standards: Transport Category Airplanes, and Part 91, General Operating and Flight Rules.

In this method, aircraft weight is used with temperature and elevation to help determine runway length. The elevation of the runway at MYL above sea level at Runway 16/34’s mid-point is 5,003 feet. The mean daily maximum temperature of the hottest month (July) at the airport is 81 degrees Fahrenheit. The FAA runway length graphs used in this analysis are based on a general grouping of turbojet-powered fleet and business jets (not the specific aircraft in Table 5-1) under assumed loading conditions, a runway gradient of zero and dry pavement.

From this point, the FAA uses four categories for runway length which relate to the percentage of total aircraft fleet with a MTOW between 12,500 and 60,000 lbs. Table 5-2 shows these figures.
Table 5-2: AC 150/5325-4B Method

<table>
<thead>
<tr>
<th>Category</th>
<th>Runway Length at MYL</th>
</tr>
</thead>
<tbody>
<tr>
<td>75 percent of fleet at 60 percent of useful load</td>
<td>6,700</td>
</tr>
<tr>
<td>75 percent of fleet at 90 percent of useful load</td>
<td>8,600</td>
</tr>
<tr>
<td>100 percent of fleet at 75 percent of useful load</td>
<td>8,900</td>
</tr>
<tr>
<td>100 percent of fleet at 90 percent of useful load</td>
<td>10,250</td>
</tr>
</tbody>
</table>

Note: This assumed mean daily maximum temperature of 81°F
Source: FAA AC 150/5325-4-B

To understand the table, 75 percent of fleet at 60 percent useful load means the runway length would be sufficient to satisfy the operational requirements of approximately 75 percent of the fleet in this family grouping at 60 percent useful load. However, there is an important distinction concerning this analysis between the 75 and 100 percent fleet. The aircraft at 100 percent fleet require a runway 5,000 feet or longer at sea level at the standard daily temperature (59 degree F). Most of the aircraft that make up the family of critical aircraft in Aircraft in Table 5-1 require a runway length of greater than 5,000 feet so the 100 percent fleet category is most appropriate to use. Using this method, considering airport elevation and temperature, and 75 percent of useful load, a runway length of 8,900 feet is required for MYL. This distance would theoretically accommodate 100 percent of the general aviation fleet using MYL during hot days in July up to 75 percent of the useful load of the aircraft. If the airport would like to accommodate 75 percent of the fleet at 90 percent of the useful load 8,600 feet of runway would be needed.

FAA Spreadsheet Model

Another estimate of runway length requirements was made using a FAA spreadsheet computer model. Using this method, the average of the runway length requirements for the family of aircraft in Table 5-3 was calculated. This was used along with precise runway elevation, runway gradient (0.29 percent) and the mean maximum daily temperature to arrive at an average recommended runway length of 8,606 feet. Using an average is consistent with the family grouping approach detailed in AC 150/5325-4B. In this case the family is the aircraft in Table 5-3 below. This is considered a more accurate assessment than the AC method because it makes use of the precise aircraft expected to use MYL as opposed to a composite of many aircraft with similar weights and performance characteristics. It also uses the actual runway gradient and elevation at MYL in the calculation.

Table 5-3: Runway Length Calculations for MYL

<table>
<thead>
<tr>
<th>Aircraft</th>
<th>ARC</th>
<th>Runway Take-off Length (ft.) (MTOW, SL, ISA)</th>
<th>Runway Take-off Length at MYL (ft.) (MTOW, 5003’ elevation, 81° F)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gulfstream III</td>
<td>C-II</td>
<td>5,050</td>
<td>8,357</td>
</tr>
<tr>
<td>Gulfstream IV</td>
<td>C-II</td>
<td>5,450</td>
<td>9,005</td>
</tr>
<tr>
<td>Bombardier Challenger 604</td>
<td>C-II</td>
<td>5,699</td>
<td>9,408</td>
</tr>
<tr>
<td>Cessna Citation VII</td>
<td>C-II</td>
<td>4,790</td>
<td>7,936</td>
</tr>
<tr>
<td>Hawker 800XP</td>
<td>C-II</td>
<td>5,030</td>
<td>8,324</td>
</tr>
<tr>
<td>Average</td>
<td></td>
<td>5,204</td>
<td>8,606</td>
</tr>
</tbody>
</table>

Source: FAA Runway Length Spreadsheet, Mead & Hunt, 2006

This analysis, like the AC methodology assumes that aircraft are at maximum takeoff weight. Corporate jet aircraft would likely not takeoff at maximum takeoff weight from MYL because several major airports are close enough not to require a full fuel load (i.e. Seattle, Salt Lake City and Boise). However,
adjustments to these numbers based on less than MTOW because of shorter stage lengths are not possible under the spreadsheet model. As such the runway lengths in Table 5-3 are the longest runway lengths that could be required under high temperatures and maximum weights.

The current runway length at MYL is 6,107 feet. The runway is considered deficient by approximately 2,500 feet according to the FAA runway length computer model when aircraft are at maximum takeoff weight. Ideally, the runway would be extended to 8,600 feet. Aircraft could and do operate safely on shorter runways than are reported here in Table 5-3. Ultimately, it is the decision of the pilot to land or not to land on an airfield. Additionally, there is no regulation requiring the extension of the existing runway to meet the needs of general aviation aircraft.

This result should not be a surprise. The 1998 Master Plan Update found that, “Attempting to satisfy 100 percent of the fleet between 12,500 and 60,000 pounds at a reduced loading (60 percent of useful payload)…..at the mean maximum daily temperature the runway length is deficient by 2,940 feet.” The final recommendation in the 1998 plan was to extend the runway 400 feet to 6,500 feet although it states that a longer runway is potentially justifiable. See Appendix B for the 1998 Master Plan Update Runway Length Analysis narrative. Incidentally, Friedman Memorial Airport, which is experiencing similar types of demands as McCall would require the same runway length (8,600 feet) using the same assumptions.

_Wet Pavement Conditions_

Given that snowy and/or wet conditions persist through much of the year at MYL and ski resorts expansion may increase winter aircraft traffic, the influence of winter weather on runway conditions on runway length should be considered in this analysis. If the runway is wet or slippery the FAA recommends an increase in runway landing length of 15 percent (or up to a maximum distance not applicable here) for turbojets due to decrease traction of tires of pavement. **Table 5-4** below shows runway landing length estimates for winter and spring months under wet or slippery conditions, using the FAA spreadsheet computer model. Runway gradient is also included in the numbers. Altitude does not affect landings to the same degree as takeoffs because engines are not performing at or near maximum thrust and their performance is not compromised by less dense air. It is assumed that the increase in runway length due to the runway gradient of 0.29% (180 feet) is a good approximation of the additional runway length needed for landings.

**Table 5-4: Winter and Spring Average Runway Landing Length Estimates**

<table>
<thead>
<tr>
<th>Mean Max. Daily Temp.</th>
<th>November</th>
<th>December</th>
<th>January</th>
<th>February</th>
<th>March</th>
<th>April</th>
<th>May</th>
</tr>
</thead>
<tbody>
<tr>
<td>Runway Landing Distance</td>
<td>4,992</td>
<td>4,776</td>
<td>4,728</td>
<td>4,848</td>
<td>4,992</td>
<td>5,234</td>
<td>5,498</td>
</tr>
</tbody>
</table>

Source: FAA, Mead & Hunt, Inc.

An average of the landing length requirements for the family of aircraft in Table 5-1 at sea level under dry conditions was the starting place for the calculations; hence the above values should be considered an average value. Runway slope, slippery conditions and temperature were then brought into the analysis. As the table above shows, runway length for landings for the select general aviation aircraft in this analysis does not drive runway length at MYL. For landings, even under slippery conditions, the current length of the runway is adequate.
Contaminated runway conditions at takeoff are not a driver for runway length requirements and are specifically not considered in FAA runway length Advisory Circular 150/5325-4B. Aircraft tire traction during acceleration under wet runway conditions is generally not an issue like breaking during a landing. However, if the runway were contaminated with snow, pushing aircraft wheels through snow while accelerating for a takeoff may increase runway length. This length would be a function of snow depth.

**Scheduled Commercial Aircraft Runway Requirements**

As discussed in Chapter 4, there are several aircraft airlines would most likely consider using to fly to MYL assuming it was profitable: Beech 1900C, Embraer 120 or 145, and the DeHavilland Dash 8 200 or 400. The Canada Regional Jet is added to this analysis because trends support widespread use of this aircraft in the future. CRJs are being purchased in overwhelming numbers. Using the FAA runway length model and aircraft manuals, runway gradient, temperature and elevation, the following runway lengths were determined. Table 5-5 assumes maximum take off weight and shows that the airport could support with its current runway the Dash 8 Q200 and with a modest extension the Beech 1900C.

**Table 5-5: Commercial Aircraft Runway Length Requirements**

<table>
<thead>
<tr>
<th>Aircraft</th>
<th>ARC</th>
<th>Runway Take-off Length (ft.) (MTOW, SL, ISA)</th>
<th>Runway Take-off Length at MYL (ft.) (MTOW, 5003’ elevation, 81° F)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Beech 1900C</td>
<td>B-II</td>
<td>3,800</td>
<td>6,333</td>
</tr>
<tr>
<td>Embraer 120 (30 seats)</td>
<td>B-II</td>
<td>5,100</td>
<td>8,258</td>
</tr>
<tr>
<td>Embraer 145 (50 seats)</td>
<td>C-II</td>
<td>5,200</td>
<td>8,455</td>
</tr>
<tr>
<td>DeHavilland Dash 8 Q200</td>
<td>B-III</td>
<td>3,280</td>
<td>5,600</td>
</tr>
<tr>
<td>DeHavilland Dash 8 Q400</td>
<td>C-III</td>
<td>4,264</td>
<td>7,084</td>
</tr>
<tr>
<td>Boeing 737-700 (BBJ)</td>
<td>C-III</td>
<td>5,790</td>
<td>9,000+</td>
</tr>
<tr>
<td>Canada Regional Jet (200ER)</td>
<td>C-IV</td>
<td>5,800</td>
<td>9,000+</td>
</tr>
</tbody>
</table>

Source: Mead & Hunt, 2006

Aircraft weight and stage lengths also influence needed runway lengths. Markets that MYL could potentially serve if scheduled air service became viable may include: Seattle, San Francisco, Denver, Los Angeles, Salt Lake City and Phoenix. Table 5-6 summarized estimates for runway length needs for scheduled commercial aircraft using MYL and traveling to select cities. For planning purposes the existing runway could likely support the Dash 8 Q400 with a full passenger load to Salt Lake City and Seattle. To be able to serve San Francisco and use jet aircraft a runway of 7,700 feet is estimated to be required. If McCall Municipal Airport would like to preserve the option to be a Part 139 facility, a 7,700 foot runway is recommended as the minimum length for planning purposes. This would require an extension of 1,600 feet. This length would allow the operation of small propeller commercial aircraft such as the Embraer 120 and Beech 1900 and to a limited degree regional commercial jet aircraft.
Table 5-6: Runway Length for Full Passenger Capability

<table>
<thead>
<tr>
<th>Select Schedule Commercial Aircraft</th>
<th>300 NM</th>
<th>300 NM</th>
<th>515 NM</th>
<th>580 NM</th>
<th>650 NM</th>
<th>710 NM</th>
</tr>
</thead>
<tbody>
<tr>
<td>DeHavilland Dash 8 Q400 (70 seats)</td>
<td>5,900</td>
<td>5,900</td>
<td>6,350</td>
<td>6,400</td>
<td>6,600</td>
<td>7,000</td>
</tr>
<tr>
<td>Embraer 145 (50 seats)</td>
<td>7,300</td>
<td>7,300</td>
<td>7,600</td>
<td>7,800</td>
<td>8,000</td>
<td>8,200</td>
</tr>
<tr>
<td>Canada Regional Jet-200ER (50 Seats)</td>
<td>7,500</td>
<td>7,500</td>
<td>7,700</td>
<td>7,800</td>
<td>8,000</td>
<td>8,200</td>
</tr>
</tbody>
</table>

Source: Aircraft performance manuals

Note: Exact runway length needs are determined by airlines using specific aircraft they determine would best serve the market.

It is instructive to consider the fleet plans of some of the regional carriers serving the Northwest. Both Horizon Air and SkyWest Airlines have reduced and plan to continue to reduce the number of turboprop aircraft (30- and 37-seat) in their fleets. The smaller turboprop aircraft have been replaced with larger, mostly jet, aircraft (50- and 70-seat). Nationwide, the trend away from smaller, turboprop aircraft is dramatic; a total of 2,026 aircraft that are suitable to serve smaller markets are on order or optioned between the years of 2004 and 2016 in the US. Of these, only 15 are turboprop aircraft. The move toward larger aircraft and jet aircraft does not bode well for many smaller cities in the Northwest. In short, the physical constraints of the current airport limit the use of regional jets and for the foreseeable future, regional jets will continue to be the dominate aircraft type used by regional airlines to serve small markets.

This analysis calls into question the ability of the airport to physically accommodate commercial aircraft at the current site in the long-term. As a general aviation airport, MYL does not have to meet runway length requirements as recommended in this Master Plan Update. However, if scheduled commercial air service were to begin at MYL, airline policy and aircraft performance needs would very likely require a runway extension. Market viability for scheduled commercial air service is therefore not the only barrier to scheduled commercial operations. Physical constraints of the airfield may also be a limiting factor for long-term growth in this market segment. This discussion will continue in following chapters.

The operational demands for aircraft that operate at MYL are many. High altitude and warm summers require a much longer runway than what exists to safely operate C-II type aircraft. It is clear that the runway length has been inadequate for some time for the more demanding aircraft using the airport. This inadequacy will only increase in the years ahead as a result of growth use by this class of aircraft.

5.2.2 Runway Width

The width of the existing runway is 75 feet. To be in accordance with FAA Advisory Circular 150/5300-13 Airport Design, a C-II or C-III runway should be 100 feet in width.

5.2.3 Runway Shoulders

Runway shoulders provide resistance to blast erosion and accommodate the passage of emergency and maintenance equipment, and an occasional airplane veering from the runway. A natural surface, such as turf, normally reduces the possibility of soil erosion and engine ingestion of foreign objects. A low cost paved surface also is suitable, especially for Group III and higher aircraft. Stable or paved runway
shoulders are also of significant benefit to snow removal operations. Runway shoulders should run the full length of the runway and taxiways. The airport currently does not have turf or paved runway shoulders. FAA Advisory Circular 150/5300-13 *Airport Design* recommends runway shoulders of 10 feet to meet C-II design standards, and 20 feet to meet C-III standards.

### 5.2.4 Runway Blast Pad

Runway blast pads provide blast erosion protection beyond runway ends. This is an optional design requirement. Blast pads should extend across the full width of the runway including runway shoulders.

### 5.2.5 Runway Safety Area

The Runway Safety Area (RSA) is a rectangular area at the end of each runway centered on the runway centerline. The RSA should be clear and graded to designated standards so as to have no potentially hazardous surface variations. It should have no standing water; hence drainages must be outside the RSA. It should also, under dry condition, be able to support snow removal equipment, aircraft fire fighting and rescue equipment and the occasional passage of aircraft without structural damage to the aircraft. The RSA should be free of all objects except those that because of their function are needed in the area. Manholes should be constructed at grade. Objects higher than three inches should have frangible supports. Currently the RSA at the north end of MYL is 150 feet wide and 600 feet long, the RSA on the south end is 150 feet wide and 300 feet long. A C-II or C-III airfield requires a width of 500 feet and a length of 1,000 feet beyond the end of the runway. The additional required length has a significant impact to the runway configuration at MYL.

### 5.2.6 Obstacle Free Zone

The Obstacle Free Zone (OFZ) is a rectangular area centered on and surrounding the runway. Its clearing standard precludes taxiing and parked aircraft except for frangible visual NAVAIDs that need to be located in the OFZ. The runway OFZ and when applicable the inner-approach OFZ, and the inner-transitional OFZ, comprise the Runway OFZ. The runway OFZ is defined as the volume of airspace centered above the runway centerline. For airports that operate with small aircraft exclusively and with aircraft with approach speeds greater than 50 knots, a 250 foot width is recommended in FAA Advisory Circular 150/5300-13 *Airport Design*. The length off each end is required to be 200 feet. Currently the OFZ width is 250 feet and the length is 175 feet. The eastside parallel taxiway OFZ is 200 feet wide so in this case the OFZ is non-compliant.

If the airport were to install an approach lighting system, which is unlikely given the volume and other higher priority items, the inner-approach OFZ becomes applicable. The inner-approach OFZ is a defined volume of airspace centered on the approach area. It applies only to runways with an approach lighting system. The inner-approach OFZ begins 200 feet from the runway threshold at the same elevation as the runway threshold and extends 200 feet beyond the last light unit in the approach lighting system. Its width is the same as the runway OFZ and rises at a slope of 50 (horizontal) to 1 (vertical) from its beginning.
The inner-transitional OFZ is a defined volume of airspace along the sides of the runway OFZ and inner-approach OFZ. It applies only to runways with lower than 3/4-statute mile approach visibility minimums. This category of OFZ does not currently apply at MYL.

5.2.7 Runway Object Free Area

The Object Free Area (OFA) is a two dimensional surface comprising both the Runway Object Free Area (ROFA) and the Precision Object Free Area (POFA). It is located at the end parallel to and is centered on the runway. The OFA is 600 feet long on the north end. The OFA clearing standard requires clearing the OFA of above ground objects protruding above the runway safety area edge elevation. Except where precluded by other clearing standards, it is acceptable to place objects that need to be located in the OFA for air navigation or aircraft ground maneuvering purposes and to taxi and hold aircraft in the OFA. Objects non-essential for air navigation or aircraft ground maneuvering purposes are not to be placed in the OFA. This includes parked airplanes and agricultural operations. The ROFA is centered on the runway centerline. Extension of the ROFA beyond the standard length to the maximum extent feasible is encouraged. The Precision Object Free Area (POFA) is centered on the runway centerline extended, beginning at the runway threshold, 200 feet long and 800 feet wide. This area applies to all new authorized instrument approach procedures with less than ¾-mile visibility, therefore has no applicability to MYL currently.

To meet C-II FAA airport design requirements, the width of the ROFA needs to be 800 feet wide and the length 1,000 feet beyond the end of the runway. Currently the ROFA on the north end is 600 feet long wide and 500 feet wide; on the south end the ROFA 300 feet long and 500 feet wide.

5.2.8 Runway – Taxiway Centerline Separation

The FAA specifies runway centerline to taxiway centerline separation standards to prevent aircraft collisions on the airfield. This distance is such to satisfy the requirement that no part of the aircraft (tail tip or wing tip) on taxiway centerline is within the runway safety area or penetrates the obstacle free zone.

The distance between the centerline of the runway and centerline of the taxiway is a critical design component at MYL at this stage in their development. This distance affects the width of the airfield and the placement of new buildings and potentially current infrastructure like aircraft tie-down areas. The runway to taxiway separation on the west side of the airport is 300 feet, large enough to meet design for B-III Aircraft which has historically been consistent with United States Forest Service (USFS) needs. The runway to taxiway separation on the east side of the airport, however, is only 200 feet. As a B-II airport with approach visibility minimums not lower than ¾ statute miles, the separation should be 240 feet according to FAA AC 150/5300-13 Change 4. The airport received a waiver permitting a deviation from this design requirement in 1990. However, now with increasing operations and potentially more demanding aircraft using MYL, it is recommended that the airport construct an airport that meets minimum FAA safety requirements. As a future C-II airport, as determined in this master plan, the separation should be 300 feet, meaning the taxiway should be 100 feet further from the runway than it is now.
The 1998 Master Plan recommended considering options to address a B-III 300 foot separation as exists on the west side rather than the required B-II 240 foot separation to provide for enhanced approach and fleet requirement needs. A 300 foot separation was considered then, but not pursued. In 2006 looking to the future, it is a now considered a necessity to provide proper separation of 300 feet to meet C-II standards.

Modifying the runway – taxiway separation distance requires constructing a new parallel taxiway and extending connecting taxiways 100 feet. Because of the expense of this improvement, decision makers must evaluate the ramifications of complying with C-III separation design standards (a 400 foot separation) in the case that C-III aircraft begin operating at the airport in substantial numbers. Decision makers should note that currently there is minimal documentation of ARC C-III aircraft operating at the airport except for USFS tankers, and moving the taxiway another 100 feet farther to the east may affect other facilities on the airport that will increase the overall cost. Taxiway relocation will be a costly and complex action which the airport will not want to repeat in the future should C-III air carrier service become a reality. As a result it should be discussed as it may be a prudent long term financial decision for the airport.

Because a C-III design standard is not justified by current or projected data, the FAA may not fund the additional costs of constructing the extra 100 feet of connecting taxiways nor any of the costs associated with relocating other facilities necessitated by the higher standard. This cost would have to be carried by another party, likely the City of McCall perhaps with financial support from other parties. If the airport can be expanded to a C-III facility and the airport would like to accommodate these types of aircraft at this airport, the airport should consider planning for the implications of constructing a C-III airfield. Planning in contrast with construction entails acquiring or otherwise protecting land where the taxiway would go if it were to be constructed.

5.2.9 Diagonal Apron Taxiway

The diagonal taxiway stretches across the infield from the approximate location of the FBO to a point about 1,700 feet down Runway 16. This taxiway offers a convenient way to access the runway and FBO, mostly for aircraft not needing the entire distance of the runway for landings. This taxiway has historically been an important asset to the functioning of the airfield.

However, this taxiway divides a large, nearly square open area adjacent to the runway in two triangular pieces. Use of the “triangle” area has been the subject of on-going discussions over many years with many concepts being discussed but with no resulting action nor plan being put in place. Currently it is used for snow storage and water retention.

Because of the orientation of this taxiway and the resulting awkward triangle shapes of open land it creates, efficient use of the space around the taxiway is more difficult. Aligning the taxiway at a right angle to the runway and other taxiways would maximize the use of this land. Infill development should be undertaken when land needs for additional infrastructure are determined. The positioning of this taxiway and the use of the land around the taxiway are analyzed in later chapters.
5.2.10 West Side Parallel Taxiway Re-evaluation

A taxiway parallels the runway on the west side of the airport for 1,700 feet of the runway’s 6,107 feet. The runway centerline to taxiway centerline separation distance is 300 feet in order to accommodate USFS tankers. It was recommended in the 1998 Master Plan that this taxiway be extended to the end of the runway. The reasons for this recommendation were:

1) The east side taxiway cannot safely accommodate large USFS tankers because the runway centerline to east side taxiway center line is 200 feet;
2) A west side full parallel taxiway would allow USFS aircraft to taxi to and from both ends of the runway without crossing the runway; and
3) Development of airport facilities (taxiway) would deter other land uses.

In this master plan update the runway centerline to east side parallel taxiway centerline separation distance is recommended to be increased to a minimum of 300 feet from the current distance of 200 feet. If this occurs, the improvement would negate the first justification given above because USFS tankers could safely use the east side taxiway. The second justification has merit though it is unclear how great the frequency or need is for this type of ground operation. The third justification does not have merit. There are many tools (and less expensive ones) that could be used to preserve land for airport use such as zoning. Furthermore, it is unclear at this point what airport development would exist on the west side of the airport and if it would require a full length parallel taxiway.

Other issues should also be considered in re-evaluating to extend or not to extend the west side parallel runway:

1) Doing so would help maximize runway and taxiway efficiency. USFS and general aviation activity peak in the summer months. A west side parallel taxiway would allow more freedom of movement for both user groups.
2) The FAA would not fund a project to benefit only the USFS. Any extension of this parallel taxiway would need to show direct benefits to general aviation users. This need has yet to be substantiated.

Taking into account these matters, it is recommended that the construction of a west side full length parallel taxiway not be pursued now. If the USFS identifies a need for a full length parallel taxiway and it is solely for their benefit, they may be required to pay to construct it. For now it is outside the purview of general aviation users (no GA pilots use it) until USFS taxi operations begin to hinder GA operations on the east side. It is not clear that the airport has reached this point of congestion.

The potential for a west side parallel taxiway should not be ignored. Decision makers should consider the long-term future need of the airport and weigh the benefits and disadvantages of acquiring land to preserve the options of extending the west side taxiway. Land adjacent to the extension with access to Mission Street for future facility development should also be considered.
5.2.11 Runway Protection Zones (RPZ)

RPZs were established to define land areas underneath aircraft approach paths. Allowing airport operators to control these areas was important in preventing the creation of hazards, and to protect aircraft and people on the ground.

An RPZ is two trapezoidal areas that begins 200 feet beyond the end of the runway. The length, inner and outer width depends upon the runway category. It is not required to have this property under airport ownership, but it is recommended. Land use in this area is federally restricted. Decision makers should note the significant difference in dimensional standards between a RPZ for a B-II and C-II airfield as detailed in Table 5-7. The C-II RPZ occupies over twice as much area as the B-II RPZ.

5.2.12 Summary of Runway and Taxiway Design Standards

The airport clearly must expand in order to provide an airfield compliant with accommodate C-II aircraft design standards. To meet runway length requirements for the C-II aircraft, the runway must be extended 2,493 feet and widened 25 feet. At least a 10 foot turf shoulder should be added as well. The distance between the centerline of the runway and centerline of the taxiway must increase 100 feet. The safety areas around the runway must also expand both in length and width, including Runway Safety Areas and Runway Object Free Areas. A summary of the existing airfield geometry relative to various ARC standards is presented in Table 5-7.

Table 5-7: Summary of Airport Design Standards for Select Airport Reference Codes (ARC)

<table>
<thead>
<tr>
<th>Item</th>
<th>FAA Airport Design Standards</th>
<th>Existing</th>
<th>B-II</th>
<th>C-II</th>
<th>B-III</th>
<th>C-III</th>
</tr>
</thead>
<tbody>
<tr>
<td>Runway Design</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Length</td>
<td>6,105 ft</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Width</td>
<td>75 ft</td>
<td>75 ft</td>
<td>100 ft</td>
<td>100 ft</td>
<td>100 ft</td>
<td></td>
</tr>
<tr>
<td>Safety Area</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Width</td>
<td>150 ft</td>
<td>150 ft</td>
<td>400 ft</td>
<td>300 ft</td>
<td>500 ft</td>
<td></td>
</tr>
<tr>
<td>Length prior to Threshold</td>
<td>300 ft</td>
<td>300 ft</td>
<td>600 ft</td>
<td>600 ft</td>
<td>600 ft</td>
<td></td>
</tr>
<tr>
<td>Length beyond Stop End</td>
<td>300 ft</td>
<td>300 ft</td>
<td>1000 ft</td>
<td>600 ft</td>
<td>1,000 ft</td>
<td></td>
</tr>
<tr>
<td>Obstacle Free Zone</td>
<td></td>
<td>400 ft</td>
<td>400 ft</td>
<td>400 ft</td>
<td>400 ft</td>
<td></td>
</tr>
<tr>
<td>Object Free Area</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Width</td>
<td>500 ft</td>
<td>500 ft</td>
<td>800 ft</td>
<td>800 ft</td>
<td>800 ft</td>
<td></td>
</tr>
<tr>
<td>Length Beyond R/W End</td>
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<td>300 ft</td>
<td>1,000 ft</td>
<td>600 ft</td>
<td>1,000 ft</td>
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<tr>
<td>Runway Gradient (Maximum)</td>
<td>0.29%</td>
<td>2.0%</td>
<td>1.5%</td>
<td>2.0%</td>
<td>1.5%(4)</td>
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</tr>
<tr>
<td>Runway Shoulder Width</td>
<td>10 ft</td>
<td>10 ft</td>
<td>10 ft</td>
<td>20 ft</td>
<td>20 ft</td>
<td></td>
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<tr>
<td>Runway Separation</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Runway Centerline to:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Parallel Taxiway/Taxilane (East)</td>
<td>200 ft</td>
<td>240 ft</td>
<td>300 ft</td>
<td>300 ft</td>
<td>400 ft</td>
<td></td>
</tr>
<tr>
<td>Parallel Taxiway/Taxilane (West)</td>
<td>300 ft</td>
<td>240 ft</td>
<td>300 ft</td>
<td>300 ft</td>
<td>400 ft</td>
<td></td>
</tr>
<tr>
<td>Hold Line (East)</td>
<td>160 ft</td>
<td>200 ft</td>
<td>250 ft</td>
<td>200 ft</td>
<td>250 ft</td>
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</tr>
<tr>
<td>Aircraft Parking Line</td>
<td>265 ft</td>
<td>250 ft</td>
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<td>400 ft</td>
<td>500 ft</td>
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</tr>
<tr>
<td>Building Restriction Line</td>
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<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
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<tr>
<td>Taxiway Design</td>
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<td></td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Width</td>
<td>50 ft</td>
<td>35 ft</td>
<td>35 ft</td>
<td>50 ft</td>
<td>50 ft</td>
<td></td>
</tr>
<tr>
<td>Safety Area Width</td>
<td>79 ft</td>
<td>79 ft</td>
<td>79 ft</td>
<td>118 ft</td>
<td>118 ft</td>
<td></td>
</tr>
<tr>
<td>Object Free Area</td>
<td>131 ft</td>
<td>131 ft</td>
<td>131 ft</td>
<td>186 ft</td>
<td>186 ft</td>
<td></td>
</tr>
<tr>
<td>Taxiway Object Free Area Width</td>
<td>115 ft</td>
<td>115 ft</td>
<td>115 ft</td>
<td>162 ft</td>
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<td></td>
</tr>
<tr>
<td>Item</td>
<td>FAA Airport Design Standards&lt;sup&gt;1,2&lt;/sup&gt;</td>
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<td></td>
<td></td>
<td></td>
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<tr>
<td>---------------------------</td>
<td>------------------------------------------</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Airport Reference Code</td>
<td>Existing</td>
<td>B-II</td>
<td>C-II</td>
<td>B-III</td>
<td>C-III</td>
</tr>
<tr>
<td>Taxiway Separation</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Taxiway Centerline to:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Parallel Taxiway</td>
<td>165 ft</td>
<td>105 ft</td>
<td>105 ft</td>
<td>152 ft</td>
<td>152 ft</td>
<td></td>
</tr>
<tr>
<td>Fixed or Moveable Object&lt;sup&gt;7&lt;/sup&gt;</td>
<td>65.5 ft</td>
<td>65.5 ft</td>
<td>65.5 ft</td>
<td>93 ft</td>
<td>93 ft</td>
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<tr>
<td>Taxilane Separation</td>
<td></td>
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<tr>
<td>Taxilane Centerline to:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Parallel Taxilane</td>
<td>79 ft</td>
<td>97 ft</td>
<td>97 ft</td>
<td>140 ft</td>
<td>140 ft</td>
<td></td>
</tr>
<tr>
<td>Fixed or Moveable Object&lt;sup&gt;7&lt;/sup&gt;</td>
<td>57.5 ft</td>
<td>57.5 ft</td>
<td>57.5 ft</td>
<td>81 ft</td>
<td>81 ft</td>
<td></td>
</tr>
<tr>
<td>Runway Protection Zone&lt;sup&gt;8&lt;/sup&gt;</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Length&lt;sup&gt;9&lt;/sup&gt;</td>
<td>1,000 ft</td>
<td>1,000 ft</td>
<td>1,700 ft</td>
<td>1,000 ft</td>
<td>1,700 ft</td>
<td></td>
</tr>
<tr>
<td>Inner Width</td>
<td>500 ft</td>
<td>500 ft</td>
<td>500 ft</td>
<td>500 ft</td>
<td>500 ft</td>
<td></td>
</tr>
<tr>
<td>Outer Width</td>
<td>700 ft</td>
<td>700 ft</td>
<td>1,010 ft</td>
<td>700 ft</td>
<td>1,010 ft</td>
<td></td>
</tr>
<tr>
<td>Area (Acres)</td>
<td>13.77</td>
<td>13.77</td>
<td>29.46</td>
<td>13.77</td>
<td>29.46</td>
<td></td>
</tr>
<tr>
<td>Runway Protection Zone&lt;sup&gt;10&lt;/sup&gt;</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Length&lt;sup&gt;10&lt;/sup&gt;</td>
<td>-</td>
<td>1,700 ft</td>
<td>1,700 ft</td>
<td>1,700 ft</td>
<td>1,700 ft</td>
<td></td>
</tr>
<tr>
<td>Inner Width</td>
<td>-</td>
<td>1,000 ft</td>
<td>1,000 ft</td>
<td>1,000 ft</td>
<td>1,000 ft</td>
<td></td>
</tr>
<tr>
<td>Outer Width</td>
<td>-</td>
<td>1,510 ft</td>
<td>1,510 ft</td>
<td>1,510 ft</td>
<td>1,510 ft</td>
<td></td>
</tr>
<tr>
<td>Area (Acres)</td>
<td>-</td>
<td>48.98</td>
<td>48.98</td>
<td>48.98</td>
<td>48.98</td>
<td></td>
</tr>
</tbody>
</table>

Notes:
1. AC 150/5300-13, Change 8.
2. Visual runway with not lower than 3/4 statute mile visibility minimums.
3. For runways serving aircraft with maximum certified takeoff weight greater than 150,000 lbs the standard runway width is 150'.
4. Maximum of 0.8% in first and last one quarter of runway length.
5. Hold line on West side is at 200’.
6. A function of building height and the 7:1 Part 77 transitional surface, existing 420’ is based on a 25’ building height.
7. Value also applies to edge of service or maintenance roads.
8. Visual and not lower than 1-mile visibility minimum.
9. Begins 200’ from runway end.
10. Not lower than 3/4 mile visibility minimum.
11. Currently not applicable, approach minimums not lower than 3/4 mile.

### 5.3 Aircraft Storage Hangars

Aircraft storage hangars are important facilities at MYL. In snowy conditions that persist throughout much of the year, protecting aircraft from the elements is imperative. By the end of 2006, after completion of the hangar development projects, there will be 82 hangars at the airport. A waiting list for new hangars has been established and is growing. The number on the list is increasing monthly as the plan progresses and is now up to 63 from 50 a few months ago. About 33 hangars will be constructed in 2006. Another 30 will be needed in 2007 just to satisfy the current waiting list. By 2015, it is estimated that an additional 72 hangars will need to be constructed after the 2006 construction is completed. A total of 105 will need to be constructed after the latest hangar development is completed by 2025. It is estimated that the airport will have 187 hangars, including individual T-hangar units by 2025 (see Table 5-8).
Table 5-8: Hangar Building and Space Demands

<table>
<thead>
<tr>
<th>Year</th>
<th>Total Hangars Constructed</th>
<th>Total Hangars</th>
<th>Total Square Yards</th>
</tr>
</thead>
<tbody>
<tr>
<td>2006</td>
<td>49</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2007</td>
<td>82</td>
<td>30</td>
<td>39,210</td>
</tr>
<tr>
<td>2008</td>
<td>112</td>
<td>9</td>
<td>11,763</td>
</tr>
<tr>
<td>2009</td>
<td>121</td>
<td>5</td>
<td>6,553</td>
</tr>
<tr>
<td>2010</td>
<td>126</td>
<td>5</td>
<td>6,553</td>
</tr>
<tr>
<td>2011</td>
<td>131</td>
<td>5</td>
<td>6,553</td>
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<tr>
<td>2012</td>
<td>137</td>
<td>5</td>
<td>6,553</td>
</tr>
<tr>
<td>2013</td>
<td>142</td>
<td>6</td>
<td>7,842</td>
</tr>
<tr>
<td>2014</td>
<td>148</td>
<td>6</td>
<td>7,842</td>
</tr>
<tr>
<td>2015</td>
<td>154</td>
<td>3</td>
<td>3,920</td>
</tr>
<tr>
<td>2016</td>
<td>157</td>
<td>3</td>
<td>3,920</td>
</tr>
<tr>
<td>2017</td>
<td>160</td>
<td>3</td>
<td>3,920</td>
</tr>
<tr>
<td>2018</td>
<td>163</td>
<td>3</td>
<td>3,920</td>
</tr>
<tr>
<td>2019</td>
<td>166</td>
<td>3</td>
<td>3,920</td>
</tr>
<tr>
<td>2020</td>
<td>170</td>
<td>3</td>
<td>3,920</td>
</tr>
<tr>
<td>2021</td>
<td>173</td>
<td>3</td>
<td>3,920</td>
</tr>
<tr>
<td>2022</td>
<td>177</td>
<td>4</td>
<td>5,227</td>
</tr>
<tr>
<td>2023</td>
<td>180</td>
<td>4</td>
<td>5,227</td>
</tr>
<tr>
<td>2024</td>
<td>184</td>
<td>4</td>
<td>5,227</td>
</tr>
<tr>
<td>2025</td>
<td>187</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Total: 135</strong></td>
<td><strong>Total: 135,989</strong></td>
<td></td>
</tr>
</tbody>
</table>

CAGR 2006-2025 7.31%
Source: Mead & Hunt, Inc.

Note: CAGR=Compounded Annual Growth Rate

Graph 5-1: Total hangars to be constructed to meet forecasted demand

Source: Mead & Hunt, 2006
Currently, the airport does not own adequate land to accommodate substantial new hangar development. In order to accommodate estimated demand, the airport will need to dedicate 28 acres to hangar development. This assumes the fleet mix of potential hangar owners derived from the hangar survey is a good indicator of the types of hangars aircraft owners require. Single and multi-engine hangars are assumed to need 3,600 SF and jets 10,000 SF. This was multiplied by the estimated number of hangars needed. Once square feet of hangar space was calculated, the number was tripled to account for the space between hangars, taxilanes and other spaces within hangar developments. This is based upon the existing ratio at MYL between hangar building area and total hangar development area.

5.4 Automobile parking and circulation

Automobile parking takes place at many locations at MYL. The main public lot is located at the intersection of State Highway 55 and Deinhard Lane. This lot is about 5,200 SY configured to hold about 60 cars. There is also 300 square yards of parking at the airport administration office for staff and visitors. Automobiles park next to and in hangars and next to private airport tenant buildings/offices. The tie-down area on the airfield acts as a large de facto automobile parking lot as pilots are allowed to park next to their aircraft. Due to the size of this area, this automobile parking area accommodates much of the summer demand for automobile parking for aircraft owners.

There are three access points to the airport on the west side which access the USFS complex; two along Deinhard Lane (one for the FBO parking lot and one for the administration offices); and one along Highway 55 that provides access to hangars and other airport tenant buildings. The entrances along Deinhard Lane are gated. Circulation of automobiles on the airport is not controlled at present and can occur on any paved or unpaved surface including ramp spaces and taxi lanes. Signage at MYL is nearly non-existent. Access points, parking lots and the airport itself are not identified. A sculpture at the corner of Highway 55 and Deinhard Lane does identify the airport; however it is not visible in the winter and does not provide direction to drivers arriving at the airport.

The demand for expanded or new parking areas at MYL directly depends on airport policies controlling the access of automobiles to tie-down and ramp areas. It depends upon the removal of abandoned automobiles, continuous management of public parking areas and the control of access to areas of the airport. Therefore, in order to address parking facilities, parking policies must first be addressed. Exact parking lot size needs will ultimately depend upon the degree to which recommendations are implemented.

Several improvements should be considered as the airport begins to handle more automobile traffic. The recommendations listed in this section are best practices. It is not expected that the airport adopt these recommended practices, but that the airport take steps to move toward these ideals.

Recommended Automobile Parking and Circulation Practices for McCall Municipal Airport

Currently automobiles can enter the airfield through open-gated and un-gated entrances and drive onto the runway and taxiways. This is a safety hazard and source of potential liability for the city. If an aircraft and car collide, the city can be sued for damages. In order to increase public safety at the airport the following steps are recommended:
• Use electric gates on all entrances to the airfield and maintain entrances during winter to ensure snow does not prevent gate operation.
• Consider preventing public automobile parking on aircraft ramps and tie-down areas.
• Provide public parking lots near hangars and ramps with easy access to aircraft.
• Provide painted automobile right-of-way lanes on airport grounds for airport tenants, airport administration and maintenance vehicles.
• Provide dedicated and controlled public parking spaces for aircraft charter company patrons.
• Install clear and sufficient signage to direct automobile traffic on the airport.
• Install clear and sufficient signage to identify access points to the airport from Deinhard Lane and Highway 55.
• Install signage on Deinhard Lane and Highway 55 informing drivers they are approaching the airport.
• Actively manage public parking areas and consider requiring payment for automobile parking.

Automobile parking will need to be expanded in the future to accommodate growth in general and the advent of Air Carrier operations and associated security requirements will limit the number of personal vehicles allowed on the airfield. This will drive the need for additional parking on the airport but off from the airfield itself. Currently there is space for 60 vehicles to park in front of the FBO. This is an unpaved unregulated lot. If this lot were to be paved and reconfigured the airport could conservatively provide parking for 100 cars.

For this analysis it is assumed that for every two aircraft in the tie-down area there is one associated car and all of the tie-down areas are occupied by aircraft during the summer months. It is also assumed that parking in front of McCall Aviation is at capacity. Given these assumptions, it is estimated that 20 additional parking spots are needed at the airport now after adding 40 stalls in the reconfigured existing lot. For planning purposes 350 square feet per car is used. This number includes total space requirements for lanes, turns and stalls. This assumes individual stalls which are typically 9 feet by 18 feet, a size that may not be adequate based on the typical vehicles found parked at the airport. A total of 778 SY is needed now to accommodate peak parking needs.

To project parking needs, the itinerant aircraft operations forecast is used. The results are summarized in Table 5-9. By 2025, an estimated 109 additional stalls will be needed. This equates to about one acre of additional automobile parking. An additional area(s) will also need to be set aside for snow storage.

In light of the substantial snow fall in the McCall area this may be significant.

Table 5-9: Automobile Parking Requirements

<table>
<thead>
<tr>
<th>Year</th>
<th>Stall Demand from Ramp</th>
<th>Stall Demand for FBO and Other Tenants</th>
<th>Sub Total Stall Demand</th>
<th>Current Stall Capacity at Airport with Reconfigured Lot</th>
<th>Stall Needs</th>
<th>Additional Square Yards Needed</th>
</tr>
</thead>
<tbody>
<tr>
<td>2006</td>
<td>60</td>
<td>60</td>
<td>120</td>
<td>100</td>
<td>20</td>
<td>778</td>
</tr>
<tr>
<td>2010</td>
<td>71</td>
<td>71</td>
<td>142</td>
<td>100</td>
<td>42</td>
<td>1,624</td>
</tr>
<tr>
<td>2015</td>
<td>86</td>
<td>86</td>
<td>172</td>
<td>100</td>
<td>72</td>
<td>2,819</td>
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<tr>
<td>2020</td>
<td>95</td>
<td>95</td>
<td>190</td>
<td>100</td>
<td>90</td>
<td>3,494</td>
</tr>
<tr>
<td>2025</td>
<td>104</td>
<td>104</td>
<td>209</td>
<td>100</td>
<td>109</td>
<td>4,237</td>
</tr>
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</table>

Source: Mead & Hunt
Parking lot planning and construction should take into consideration additional factors. The parking lot should be lit for safety and security. Lighting should be shielded so as to limit light pollution that may affect pilot vision. The lot should be paved, striped, stalls could be numbered, and symbols to direct the flow of traffic should be included. The design of parking lots should conform to the following:

- American Association of State Highway and Transportation Officials’s policy on Geometric Design of Highways and Streets; and
- Americans with Disabilities Act/State and Federal Handicapped standards.

The parking lot should be rectangular and align stalls at 90 degrees when possible. The long side of the parking area should be parallel to the main access road. Traffic lanes should be designed to serve two rows of parking stalls where possible and the perimeter of the area should contain parking stalls. Pedestrian movement in parked vehicle areas must be planned to provide the highest degree of safety and convenience. Efforts should be made to limit stormwater runoff through environmental design. Parking areas should be aesthetically enhanced by attractive landscaping that includes proper plantings and fencings in screening areas. A snow storage area should be designated near the parking area. Without this feature the parking lot will not have the required capacity.

5.4.1 Automobile Parking Condos

Automobile parking condos are leased climate controlled garage spaces that allow airport users to park cars at the airport for weeks or months. This type of parking option has proved to be successful at airports with affluent part-time resident populations such as MYL. From the perspective of auto condo users, the condo increases convenience because users can drive their own automobile to and from the airport without having to rely on friends, family or a private car service. The condos provide a more secure and controlled environment for long-term automobile storage (especially in the winter) than an aircraft storage hangar. It also makes more space available in the hangar for aviation uses. From the airport’s perspective, condos can provide an additional revenue source and help limit the number of automobiles in the general aviation area. There is no covered long-term automobile parking at MYL and auto condos could provide that amenity. This type of amenity may only be viable for a commercial service airport, such as Glacier Park International Airport where it has been successful, however if space were available for it in the future it is worthy of consideration. Two acres of land could be set aside for this type of development.

5.5 Ramp tie-down area

Historically, a small percentage of locally-based aircraft use ramp tie-down areas at MYL, and the aircraft that did use the tie-down areas were those unable to find hangar space. Assuming hangar space increases to meet based aircraft demands, the need for future tie-down space will be driven by itinerant aircraft.

There are currently six tie-down slots for larger aircraft, eight for Design Group II aircraft and 90 tie-down slots for smaller GA aircraft totaling 104 tie-down spots. Of these tie-downs, 53 are seasonal (assigned leased spots for the season) and 39 tie-downs are for transient aircraft. There is 67,800 SY of tie-down areas not including the north ramp area. This area is used on a first come/first served basis and is highly
utilized in the summer during the peak fire months by the USFS and therefore is not always available. The general aviation tie-down areas are occupied by automobiles during peak periods of airport activity. Parking policies at the airport impact the demand for more tie-down areas just as they influence the need for automobile parking. Assuming that cars are removed from the tie-down area and placed in an automobile parking lot, an analysis of demand and capacity can be made.

The amount of ramp tie-down is estimated using the methodology outlined in FAA AC 150/5300-13 Change 4. The estimate is used by determining the number of transient operations made during a busy day during the busiest month of year (August) not including USFS operations. About 29 percent of annual itinerant operations occur in August. By applying this percentage to the projected number of annual itinerant airport operations, an estimate of the number of itinerant operations on an average day during the busiest month can be derived. This analysis follows the assumption in AC 150/5300-13 that 50 percent of the transient aircraft will be on the ramp during a busy day. This reflects the seasonality of the operations at MYL and the fact that many of the aircraft operating into and out of the area during the peak season remain at the airport for extended periods of time, rather than just an hour or two.

More ramp area is generally needed for itinerant aircraft parking than for based aircraft parking. An average of 400 square yards per itinerant aircraft was used in this analysis and applied to the number of general aviation itinerant spaces needed to determine future ramp requirements (see Table 5-10).

Table 5-10: General Aviation Ramp Tie-Down Area Demand

<table>
<thead>
<tr>
<th>Year</th>
<th>Number of Aircraft on Ramp</th>
<th>Ramp Space Needed (SY)</th>
<th>Existing Ramp Space (SY)</th>
<th>Ramp Space Deficit (SY)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1995</td>
<td>108</td>
<td>43,038</td>
<td>67,800</td>
<td>-24,762</td>
</tr>
<tr>
<td>2000</td>
<td>137</td>
<td>54,695</td>
<td>67,800</td>
<td>-13,105</td>
</tr>
<tr>
<td>2005</td>
<td>190</td>
<td>76,092</td>
<td>67,800</td>
<td>8,292</td>
</tr>
<tr>
<td>2006</td>
<td>194</td>
<td>77,446</td>
<td>67,800</td>
<td>9,646</td>
</tr>
<tr>
<td>2010</td>
<td>231</td>
<td>92,324</td>
<td>67,800</td>
<td>24,524</td>
</tr>
<tr>
<td>2015</td>
<td>283</td>
<td>113,332</td>
<td>67,800</td>
<td>45,532</td>
</tr>
<tr>
<td>2020</td>
<td>313</td>
<td>125,206</td>
<td>67,800</td>
<td>57,406</td>
</tr>
<tr>
<td>2025</td>
<td>346</td>
<td>138,277</td>
<td>67,800</td>
<td>70,477</td>
</tr>
</tbody>
</table>

Source: Mead & Hunt Inc., 2006

Currently, there is an average of 590 SY for every tie-down at the airport. However the tie-down area is on a curved surface so there are spatial inefficiencies. Future ramp designs will likely be more space efficient. 400 SY for each aircraft (3,600 SF) is a reasonable estimate. Snow storage may be compromised in this assumption and the airport may need to identify additional snow storage areas.
As can be seen in the Graph 5-2 above, demand for itinerant tie-down space was exceeded in 2000. Demand for tie-down spots continues to rise as operations increase to 2025. The large jump in 2005 is reflected by the large jump in itinerant aircraft operations as reported by the TAF in the same year. By 2025, the tie-down area will need to increase by 70,477 SY to accommodate peak month demands. This equates to 14.5 acres.

The 1998 Master Plan showed a deficit in ramp space in year 2000. By year 2005 the deficit grew to 20,343 SY, to 36,674 SY by 2010 and then 53,070 by 2015. The 1998 Master Plan assumes a need for 711 SY for each aircraft therefore the space needs estimate is slightly higher, likely due to snow storage considerations.

### 5.6 Lighting and NAVAIDs

NAVAID requirements for MYL are based on requirements contained in Advisory Circular 150/5300-13, Change 6, Airport Design, FAA Order 7031.2C, Airway Planning Standards Number One - Terminal Air Navigation Facilities and Air Traffic Control Services, and general trends in aviation.

NAVAIDs provide services related to airport operations, precision guidance to a specific runway end and non-precision guidance to a runway or an airport itself. The distinction between precision and non-precision NAVAIDs is that a precision approach provides the pilot with electronic glide slope (descent) and distance information, while a non-precision approach offers alignment, may not offer distance information and does not offer glide slope information. Safety considerations and an airport’s operations role determine whether an airport is equipped with precision or non-precision approach capability. The
type, mission, and volume of aeronautical activity, used in association with meteorological, airspace, and capacity data, determine an airport’s eligibility and need for various NAVAIDs.

For this study, NAVAIDs are divided into two general categories: Approach NAVAIDs, and Visual NAVAIDs. These two categories of NAVAIDs are discussed in the following subsections.

**Approach NAVAIDs**

This category of NAVAIDs assists aircraft executing an approach to the airport. An instrument approach is a series of predetermined maneuvers for the orderly transfer of an aircraft under instrument flight conditions from enroute or local flight to a point from which landing may be made visually. **Table 5-11** presents a list of instrument and visual NAVAIDs and lighting currently available at the airport, as well as those proposed.

**Table 5-11: NAVAIDs and Lighting**

<table>
<thead>
<tr>
<th>Instrument NAVAIDs</th>
<th>Runway 16</th>
<th>ILS</th>
<th>LOC</th>
<th>GPS</th>
<th>VOR/</th>
<th>NDB</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>E</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>E</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Visual NAVAIDs</th>
<th>Runway 16</th>
<th>SC</th>
<th>CCP</th>
<th>MALSR</th>
<th>PAPI</th>
<th>VASI</th>
<th>REIL</th>
<th>MIRL</th>
<th>WI</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>E</td>
<td>E</td>
<td>E</td>
<td>E</td>
<td>E</td>
<td>E</td>
<td>E</td>
<td>E</td>
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<tr>
<td></td>
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<td>E</td>
<td>E</td>
<td>E</td>
<td>E</td>
<td>E</td>
<td>E</td>
</tr>
</tbody>
</table>

Source: Airport Layout Plan; 1998 Airport Master Plan Update, 1998; www.airnav.com

Notes: E - Existing
P - Planned

1/1 RNAV (GPS) – A second GPS approach will be commissioned January 7, 2007

System:
- ILS – Instrument Landing System
- LOC – Localizer (Back Course)
- GPS – Global Positioning System (non-precision)
- VOR – Very High Freq, Omni-directional Range
- NDB – Non-directional Beacon
- SC – Segmented Circle
- MALSR – Med. Intensity Approach Lighting
- VASI – Visual Approach Slope Indicator
- PAPI – Precision Approach Path Indicator
- REIL – Runway End Indicator Lights
- VASI – Vertical Approach Slope Indicator
- WI – Wind Indicator
- CCB – Compass Calibration Pad
- MIRL – Medium Intensity Runway Light

The availability of instrument approach procedures at an airport permits aircraft landings during periods of limited visibility. The extent to which approach minimums, in terms of ceiling and visibility, can be lowered is dependent on a number of factors. These include the instrumentation available upon which the approach procedure may be developed and obstructions in the approach and/or missed approach areas. At times, instrument approaches are restricted to certain aircraft and flight crews which have been certified to conduct the procedure by the FAA.
MYL is currently not equipped with precision instrument approach NAVAIDS. The visibility minimums are summarized in Table 5-12 below:

**Table 5-12: MYL Approach Visibility Minimums**

<table>
<thead>
<tr>
<th></th>
<th>Category A and B</th>
<th>Category C</th>
<th>Category D</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Decision Height</td>
<td>Visibility Minimums</td>
<td>Decision Height</td>
</tr>
<tr>
<td>Runway 34 GPS</td>
<td>5,560</td>
<td>1 mile</td>
<td>5,560</td>
</tr>
<tr>
<td>NDB</td>
<td>5,800</td>
<td>1.25 miles</td>
<td>5,800</td>
</tr>
</tbody>
</table>

Source: US Department of Transportation, US Terminal Procedures
Note: Airfield elevation is 5,003 feet above sea level

**Visual NAVAIDs & Lighting**

Visual NAVAIDs and airfield lighting provide aircraft guidance once the aircraft is within sight of the airport. The visual aids and lighting also assist the aircraft in maneuvering on the ground. Numerous visual NAVAIDs are provided at the airport as can be seen in Table 5-11.

MYL has a single non-precision instrument approach based on the Donnelly Non-Directional Beacon on Runway 34 and a GPS non-precision approach. The NDB straight-in approach for Category B aircraft can only be used when the cloud ceiling at the airport is 792 feet above the runway threshold and airport is visible from 1.25 miles away. The straight-in GPS approach for Category B aircraft can only be used when the cloud ceiling at the airport is 552 feet above the runway threshold and the airport is visible from 1 mile away. It also uses a 20:1 slope—the best that can be achieved in light of the rising terrain directly south of the airport.

The decision to improve NAVAIDs is a complex one that must take into consideration variables analyzed in later chapters such as topography, runway length and the type of airport the community would like at the existing site. Potential improvements in NAVAIDs are discussed in later chapters, as well as factors that are limiting approaches.

### 5.7 General Aviation Terminal Area

The FBO building functions as the GA terminal area. The building contains a lounge for passengers and pilots, flight planning, food, storage, car rental, fuel service, showers, restrooms, and internet among other services. The size and amenities offered by the FBO are under the control of McCall Aviation. Considering the changing role of the airport, support services offered by the FBO may change. The airport and specifically the FBO facility is a gateway for an increasing number of people to the McCall area, be they tourists, part-time residents or business people. Opportunities should be explored collaboratively between the city and the FBO to ensure visitors’ needs are addressed at this entrance point, be it information or services outside the purview of airports such as lodging, recreation or shopping.

Airport Management in cooperation with the city is looking at options to make the best use of the valuable property currently used as an airport parking lot between McCall Aviation and the Whitetail Hangar. The potential reuse of this property as a source of revenue will be evaluated in later chapters in the context of a suite of recommended facility improvements.
5.8 Aircraft Rescue and Firefighting (ARFF)

MYL is not required to meet federal laws requiring the presence of ARFF facilities on the airport because it is a GA facility. If MYL were to become a scheduled commercial air service facility (Part 139 operator) it would need to meet federal ARFF standards.

A new fire station was recently constructed adjacent to and north of the airport along Deinhard Lane. Fire trucks and personnel have excellent access to the airport from this location. This station serves both the city of McCall and the airport and meets current needs of both the USFS and the general aviation community.

5.9 Snow Removal Equipment and Maintenance Building

Snow removal equipment (plows) at the airport are not meeting the needs of some users. A fine layer of snow may cover the runway that a plow cannot remove. The east side parallel taxiway to the runway is not plowed. Keeping the runway free of snow and ice is critically important to the safe operations of aircraft at MYL. The importance of adequate snow removal and response time escalates with jet traffic and in particular scheduled commercial air service. A runway broom would increase the reliability of the airport during winter months. The expense of a broom including, capital costs, labor and the absence of federal cost-sharing for general aviation airports means that a broom would only be purchased if and when the airport becomes a Part 139 scheduled commercial air service facility. The FAA would financially assist the City with the purchase of a broom if MYL were to become a Part 139 operator. Brooms range in size and design. FAA AC 150/5220-20 Change 1 and AC 150/5200-30a provide a good overview of brooms and guidance on the performance goals for clearing airfields of snow.

Snow, ice, and slush should be removed as expeditiously as possible to maintain runways, high-speed turnoffs, and taxiways in a "no worse than wet" condition. Snow, ice, and slush on aircraft movement surfaces can degrade the coefficient of friction and reduce aircraft braking and directional control. Snow, ice, slush, and standing water impede aircraft acceleration. Although acceptable limits vary by aircraft, most jet aircraft flight manuals limit the aircraft to landing with one inch or less of slush or standing water on the runway and to taking off with one-half inch or less of slush or standing water on the runway. FAA AC 91-6A provides information, guidelines, and recommendations concerning the operation of turbojet aircraft when water, slush, and snow are on the runway. Snow should also not obscure NAVAIDs.

Brooms or sweepers are excellent tools to clear runway and other paved surfaces of snow. Snow sweepers (brooms) are primarily used in the high-speed sweeping and cleaning of snow and debris from airport operational areas either as a stand alone piece of equipment for light snow events or in conjunction with snowplows and rotary blowers for heavy snowfall events. They incorporate high speed brooms that consist of a number of brush sections and may be complimented by an airblast system. The sweeper airblast system is used to sweep the pavement area clean of snow, slush, sand and other debris, help dry the pavement surface, and clear snow from around runway lights. All are capable of sweeping wet slushy snow as well as fine dry snow, slush, sand and other debris; help dry the pavement surface, and clear snow from around runway lights.
Whenever possible, snow and ice control equipment should be housed in heated garages during the winter to prolong the useful life of the equipment and to enable rapid response to operational needs. Repair facilities should be available for on-site equipment maintenance and repair during the winter season. Equipment deterioration accelerates under conditions of freezing temperature, snow, rain, dust, sun, and chemical contamination. Routine maintenance of this equipment can be optimized if it is performed under sheltered conditions that are worker friendly. Abrasives and chemicals stored outdoors are subject to deterioration or composition change which can make them ineffective or unavailable for use. Personnel morale and efficiency are directly related to environmentally friendly working conditions. These conditions can be enhanced by including sufficient office space, lavatories, locker rooms, and training/lunch rooms in the building design.

The maintenance building should be located near the airport's operational area and be situated in such a manner that associated activities (such as automobile parking) will not inadvertently block any airport fire lane or infringe upon any aircraft operational area. To avoid the problems inherent in traveling circuitous routes during heavy snow storms, the building should be located to permit equipment to move directly to and from aircraft operational areas. The building site should be capable of accommodating future building expansion. Maneuvering of equipment preparatory to parking is done outside of the building; thereby, conserving interior floor space and reducing overall building costs.

All applicable local and national codes and ordinances must be followed in the design, construction or modifications of a building. Vertical clearances must accommodate the maximum height of any piece of equipment that is either budgeted for or currently in use at the airport. These clearances should maximize at 22 feet floor to ceiling in the service area. This height will permit high profile vehicles to negotiate within the building as well as allow material spreader trucks to elevate their beds for maintenance. Equipment should access the building via overhead industrial-type doors that are of either roller or counterweight design. They should be made of heavy-duty, weather-resistant material that is easily repaired in the event of minor accidents.

Airport sweepers, displacement snowplows, and rotary snowplows are normally much wider than highway type vehicles and often have bulky projections not visible from the operator's position. For this reason, it is recommended that extra clearance be provided in door sizes. Minimum door size requirements for large displacement plows, rotary plows, and sweepers require doors are 18 feet high by 25 feet wide.

The current maintenance building is undersized and has the capacity to house one maintenance vehicle which is inadequate for the current inventory of equipment used at the airport. The current inventory of equipment owned and/or used for airport snow removal and maintenance is as follows: A 2006 Deere 644J Front End Loader with a 13-yard bucket and 12-foot articulated plow; a 1957 Oshkosh rotary snow blower; a Kenworth Heavy Duty Truck equipped with dump box and a 12-foot high speed plow. A new maintenance building is necessary to house the existing and any additional equipment such as a broom that may be added during the planning period. The size of a maintenance facility will partially depend upon the size and type of equipment added. However, square foot estimates (see Table 5-13) are possible for planning purposes:
Table 5-13: Maintenance Building Space Estimates (SF)

<table>
<thead>
<tr>
<th>Equipment Parking Area</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Front-End Loader 20x40</td>
<td>800</td>
</tr>
<tr>
<td>Rotary Snow Blower</td>
<td>800</td>
</tr>
<tr>
<td>Heavy Duty Plow Truck</td>
<td>800</td>
</tr>
<tr>
<td>Extra Parking Space for expansion 20x40</td>
<td>1,600</td>
</tr>
<tr>
<td>Repair Bay</td>
<td>1,000</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Ancillary Support Area</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Bathroom and locker room</td>
<td>350</td>
</tr>
<tr>
<td>Lunchroom</td>
<td>300</td>
</tr>
<tr>
<td>Parts Storage</td>
<td>150</td>
</tr>
<tr>
<td>Lube, oil and grease</td>
<td>150</td>
</tr>
<tr>
<td>Sand and salt</td>
<td>400</td>
</tr>
<tr>
<td>Machine Room (heat, vent)</td>
<td>600</td>
</tr>
<tr>
<td>Bench area</td>
<td>200</td>
</tr>
<tr>
<td>Misc. Storage</td>
<td>450</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Aisle Area Estimate</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Aisle Area Estimate</td>
<td>2,000</td>
</tr>
</tbody>
</table>

| Total SF                                        | 9,600|

Source: FAA AC 150/5220-18, Mead & Hunt, Inc.

Note: Generally, the recommended area for a typical parking space is 25 ft. by 40 ft.

It is recommended that the airport plan for a 9,600 SF facility that strives to meet the design recommendations outlined above. This will allow the storage of airport equipment with room for expansion if necessary.

5.10 Highway 55

The primary ground access to the City of McCall and the Valley County area in general, is via Idaho State Highway 55 (SH-55). This highway connects McCall with the Treasure Valley and the cities of Boise, Meridian, Nampa and Caldwell, located approximately 110 to 120 miles to the south (see Figure 5-1). SH-55 continues north and west from McCall connecting with U.S. Highway 95 (US-95) which continues north to Lewiston, Idaho approximately 160 miles. The airports at Boise and Lewiston are the closest available access points for commercial service. Both SH-55 and US-95 are two lane highways characterized by narrow winding canyons, limited passing lanes, and frequent backups behind slow moving vehicles. With the increasing population in the Treasure Valley and the growth of the recreational market in Valley County, traffic has increased significantly on SH-55. It is reported that the once routine travel time of 2 hours between Boise and McCall has now increased to 2.5 to 3.0 hours. Traffic is particularly heavy prior to and at the end of weekends. Traffic conditions can be expected to worsen with continued development unless capacity improvements are made to SH-55. As an alternative to SH-55 improvements, there is also potential benefit to improving SH-95 or constructing a new highway through Indian Valley connecting from State Highway 16 (SH-16) in Emmett, Idaho.
In the absence of highway capacity improvements, increased congestion could add impetus to improved air access into Valley County.

A meeting was held with a transportation planner with the Idaho Transportation Department (ITD) to determine the status of capacity improvement planning for SH-55 in particular. In short, at the present time, there are no capacity improvements planned for SH-55 in at least a 15 year horizon. Planned improvement projects will focus on pavement maintenance, installation of guard rails and several turn lanes in the immediate vicinity of the City of McCall. Additionally, the concept of a new highway through Indian Valley is a distant, remote possibility and capacity improvement to US-95 is limited at best in the study’s planning horizon.

In summary, it is considered probable that a lack of capacity improvement to SH-55 will result in a continued deterioration in ground access to Valley County which in turn will prompt a greater demand for private and possibly commercial air access to Valley County.

Highway 55 provides the main access to MYL. As such, it can be expected that as the airport expands and become busier, more traffic will be exiting and entering SH-55. It is possible a new entrance or entrances could be added to the airport along SH-55 as airport expansions take place. These access points could require a controlled intersection and/or turn lanes. Traffic entering and exiting McCall may be slowed because of traffic entering and exiting the airport and the increased number of automobiles driving on Highway 55 to reach MYL.

5.11 Airport Utilities

Adequate utility infrastructure is crucial for current as well as long-term viability of the airport. Water service, underground power and telephone service are currently available to all developed areas of the airport. Availability of sewer service is limited to the USFS base and the immediate vicinity of Highway 55 and Deinhard Lane. Natural gas is not available in the McCall area.

5.11.1 Sanitary Sewer System

In 1993 Toothman-Orton Engineering prepared engineering drawings and specifications to provide sewer service to all developed areas of the airport. Portions of this plan were implemented in 1997 and 2003 when dry lines were constructed for future use. When the plan is completed, the system will eliminate a City operated lift station at the intersection of Krahn Lane and SH-55 and connect with an existing live
sewer line near the USFS base. The completed system will have the required capacity for long-term development of the airport as well as development adjacent to the airport. Completion of this proposed improvement requires crossing the existing airport with a trunk line sanitary sewer.

Under an agreement with the Idaho Department of Environmental Quality (DEQ), hangars are allowed to be equipped with bathrooms but they must be connected to holding tanks. Completion of the sewer system will eliminate these holding tanks and comply with conditions of the agreement with DEQ.

5.11.2 Water System

Water is provided to airport tenants via a connection to the City of McCall water system. All points of use are metered and flow is generally adequate for current consumption. Previous studies and discussions with City officials indicate that the current system does not provide adequate fire flows nor account for long-term growth at the airport. Completion of the south loop along Deinhard Lane has likely improved fire flows since the last study, but existing line sizes and an absence of a looped system are still issues. Lines serving the limited number of fire hydrants are 6-inches in diameter and the main line supplying the existing hangars is not looped. Given the size of these existing hangars and the sophisticated mix of aircraft currently using the airport, this is a serious deficiency.

The previous Master Plan noted the need for improvements to the existing water system to provide adequate fire flow for the type of aircraft currently using the McCall airport. These recommendations included extending water mains to the south end of Runway 34 for fire protection. Since that time no improvements have been made to the existing system. The recommendation remains valid.

In conclusion, the existing water and sewer systems are not adequate and must be improved to meet the current and projected demand at the airport. The sanitary sewer system should be completed as planned since 1993 to eliminate holding tanks and the water system upgraded to provide appropriate fire protection. Future extensions to the south will be required if the airport is to expand.

5.12 Accommodating Commercial Air Service

Based on potential for enplanements and hence profitability, Chapter 4 of this Master Plan Update determined that scheduled commercial air service into McCall is currently unlikely and may only be possible with substantial subsidy to an airline in the form of a revenue guarantee. Nevertheless, facility requirements necessary to become a Part 139 operator are of interest to local decision makers to help answer several outstanding questions. The outline below summarizes a logical decision-making hierarchy that will be followed in this master plan.

Assuming commercial air service is a desired goal for MYL and the airport sponsors believe it beneficial to obtain a Part 139 certificate to support air carrier operations:

a. In the judgment of local decision makers, are the management, infrastructure and financial obligations imposed by a larger more regulated airport worth the possible benefits?

b. Can the airport physically expand into a commercial aviation facility, or is it not possible to build the infrastructure that would be needed at the current site?
If the answer is “no” to either questions above, the analysis of air service stops and the conclusion is that no planning should be done at this time for commercial air service at MYL. If there are no clear answers to these questions at this time, the City must decide how to best proceed given uncertainty. One possible way to proceed would be to acquire land to preserve the option for development when clear answers are available. If the answer is “yes” to both questions then the analysis continues.

c. Is a Part 139 facility desirable at the current airport location?
   1. If “yes”, should the airport be planned and designed to identify and protect land from development now so spatial conflicts between facilities and land uses are minimized in the future?
   2. If “no”, how much infrastructure investment and what kind should be made at the existing airport?

Answers to all of these questions cannot be provided in this section, but the discussion can begin by providing local decision makers with information related to the facilities and management requirements to help answer questions a. and b. above. Conceptual layouts in the next chapter will continue this analysis by including these facilities in various conceptual drawings to specifically answer question b.

5.12.1 14 CFR Part 139 Federal Aviation Requirements

Scheduled commercial aircraft cannot operate into airports unless they are certificated as a Part 139 airport, meaning the airports have infrastructure and services in place so scheduled commercial aircraft can safely operate at the airport. It is a combination of a community’s air service demand and desires along with the Federal Aviation Administrations concurrence that decides if a community will have a certificated airport in the community. Once the airport becomes Part 139 compliant, the FAA will require continued compliance with all rules and regulations which may mean additional investment in safety and security measures as well as upgraded facilities over time to meet demand. Becoming a commercial air service airport is a major decision point in the evolution of an airport with ramifications for the community. Becoming a Part 139 airport means the abdication of local control of many aspects of the airport to the FAA. (This is not to imply the airport has full control over its operations now—they do not. The airport must allow all general aviation aircraft/pilots who wish to use the airport full accessibility. MYL cannot control their operations. They however can currently control scheduled commercial operations in that the city could decide not to become a Part 139 operator. However, once MYL becomes a Part 139 operator, control over scheduled commercial operations is lost.)

Part 139 requires the FAA to issue airport operating certificates to airports that:

- Serve scheduled and unscheduled air carrier aircraft with more than 30 seats;
- Serve scheduled air carrier operations in aircraft with more than nine seats but less than 31 seats; and
- The FAA Administrator requires that the airport have a certificate.
Airport Operating Certificates (AOC) serves to ensure safety in air transportation. To obtain a certificate, an airport must agree to meet certain airport management, operational and safety standards. Before Part 139 requirements can be outlined a determination of the category of airport MYL would fit into must be defined. In the case of McCall Municipal Airport, it would be considered a Class III airport. A Class III airport means an airport is certificated to serve scheduled operations of small air carrier aircraft. A Class III airport cannot serve scheduled or unscheduled large air carrier aircraft.

Each certificate holder (airport) must create, adopt and comply with an Airport Certification Manual (ACM). This manual details how the airport will comply with Part 139 regulations and must be kept current at all times. The elements of the manual for a Class III airport are contained in Appendix A. A certificate is issued when the issuer:

- Submits written documentation that an airline will begin service on a certain date;
- Submits an application including the ACM which meets FAA requirements; and
- The Administrator, after investigation, finds the applicant is properly and adequately equipped and able to provide a safe airport operating environment.

5.12.2 Airport Management, Operations and Facilities

The sections below summarize the airport operations requirements for Part 139 facilities. For details on each operational requirement see Part 139 regulatory language in Appendix A. An airport that receives an AOC must comply with the requirements of subparts C and D. Airport design requirements are detailed in various FAA Advisory Circulars.

Records and Personnel
On-going training of various staff must be provided and documented. Sufficient and qualified staff must be available and equipped with adequate resources to comply with Part 139 requirements. An airport is required to maintain all training and certain other records for specified periods of time. For example, these would include but not be limited to all personnel training, airport self inspections, accident and incident reports. These records must be in a manner prescribed in the applicable section of Part 139 and as authorized by the Airport Certification Safety Inspector (ACSI). These records must be made available during inspection.

MYL would, at a minimum, need to employ another full-time administrative staff person to share in the tasks of managing the airport. Other support staff such as janitors and year around facility maintenance personnel would also be needed.

Paved Surfaces
The airport must maintain and promptly repair the pavement of each runway, taxiway, loading ramp, and parking area on the airport that is available for air carrier use according to certain standards. Paved areas must be kept clean of mud, dirt and other debris and sufficiently drained and free of depressions to prevent ponding that obscures markings or impairs safe aircraft operations.

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4 More than nine passenger seats but less than 31
5 31 passenger seats or more
Unpaved Surfaces
The airport must maintain and promptly repair the surface of each gravel, turf, or other unpaved runway, taxiway, or loading ramp and parking area on the airport that is available for air carrier use.

Safety Areas
The airport must provide and maintain, for each runway and taxiway that is available for air carrier use, a safety area of specified dimensions. Each certificate holder must provide and maintain marking, sign and lighting systems for air carrier operations.

Snow and Ice Control
The airport must prepare, maintain, and carry out a snow and ice control plan. The snow and ice control plan required by this section must include, at a minimum, instructions and procedures for: (1) prompt removal or control, as completely as practical, of snow, ice, and slush on each movement area; (2) positioning snow off the movement area surfaces so all air carrier aircraft propellers, engine pods, rotors, and wing tips will clear any snowdrift and snowbank as the aircraft's landing gear traverses any portion of the movement area; (3) selection and application of authorized materials for snow and ice control to ensure that they adhere to snow and ice sufficiently to minimize engine ingestion; and other requirements as detailed in Appendix A. The immediate impact on MYL would be the need to remove snow from the parallel taxiways.

Aircraft Rescue and Firefighting (ARFF)
MYL, as a Class III airport, would provide a level of safety comparable to Index A, which includes as a minimum, one fire fighting vehicle carrying at least — 500 pounds of sodium-based dry chemical, halon 1211, or clean agent; or 450 pounds of potassium-based dry chemical and water with a commensurate quantity of AFFF to total 100 gallons for simultaneous dry chemical and AFFF application. Pre-arranged firefighting and emergency medical response procedures would need to be developed, including agreements with responding services. Training would also need to be provided to staff. The capabilities of the existing fire station and staff need to be analyzed to determine the necessary steps needed to become Index A compliant.

Handling and storing of hazardous substances and materials
If the airport acts as a cargo handling agent, it must establish and maintain procedures for the protection of persons and property on the airport during the handling and storing of any material regulated by the Hazardous Materials Regulations (49 CFR 171 through 180) that is, or is intended to be, transported by air.

Traffic and wind direction indicators
The airport must provide and maintain the following on its airport: (a) A wind cone that visually provides surface wind direction information to pilots. For each runway available for air carrier use, a supplemental wind cone must be installed at the end of the runway or at least at one point visible to the pilot while on final approach and prior to takeoff. If the airport is open for air carrier operations at night, the wind direction indicators, including the required supplemental indicators, must be lighted; (b) for airports serving any air carrier operation when there is no control tower operating, a segmented circle, a landing strip indicator and a traffic pattern indicator must be installed around a wind cone for each runway with a right-hand traffic pattern.
Airport emergency plan
The airport must develop and maintain an airport emergency plan designed to minimize the possibility and extent of personal injury and property damage on the airport in an emergency.

Self-inspection program
The airport must inspect daily (or at other times as required) the airport to assure compliance with requirements. This is a key provision.

Pedestrian and Ground Vehicles
The airport must limit access to movement areas and safety areas only to those pedestrians and ground vehicles necessary for airport operations and establish and implement procedures for the safe and orderly access to, and operation in, movement areas and safety areas by pedestrians and ground vehicles.

Obstructions
The airport must ensure that each object in each area within its authority that has been determined by the FAA to be an obstruction is removed, marked, or lighted, unless determined to be unnecessary by an FAA aeronautical study.

Protection of NAVAIDS
The airport must prevent the construction of facilities on its airport that, as determined by the Administrator, would derogate the operation of an electronic or visual NAVAID and air traffic control facilities on the airport; and prevent, insofar as it is within the airport's authority, interruption of visual and electronic signals of NAVAIDS.

Public protection
The airport must provide safeguards to prevent inadvertent entry to the movement area by unauthorized persons or vehicles and reasonable protection of persons and property from aircraft blast. Fencing that meets the requirements of applicable FAA and Transportation Security Administration (TSA) security regulations in areas subject to these regulations is acceptable.

Wildlife hazard management
The airport must prepare a plan and take immediate action to alleviate wildlife hazards whenever they are detected.

Airport condition reporting
The airport must provide for the collection and dissemination of airport condition information to air carriers.

Identifying, marking, and lighting construction and other unserviceable areas
The airport must (1) mark and, if appropriate, light (i) each construction area and unserviceable area that is on or adjacent to any movement area or any other area of the airport on which air carrier aircraft may be operated; (ii) each item of construction equipment and each construction roadway, which may affect the safe movement of aircraft on the airport; and (iii) any area adjacent to a NAVAID that, if traversed, could cause derogation of the signal or the failure of the NAVAID; and (2) provide procedures, such as a
review of all appropriate utility plans prior to construction, for avoiding damage to existing utilities, cables, wires, conduits, pipelines, or other underground facilities.

Non-Compliance Conditions
An airport must limit air carrier operations to only those parts of the airport that are safe for air carrier operations.

Inspections
To ensure that airports with Airport Operating Certificates are meeting Part 139 requirements, these airports are inspected annually. If the FAA finds that an airport is not meeting its obligations, it often imposes an administrative action. It can also impose a financial penalty for each day the airport continues to violate a Part 139 requirement. In extreme cases, the FAA might revoke the airport's certificate or limit the areas of an airport where air carriers can land or takeoff.

5.12.3 49 CFR, Chapter XII Subchapter C—Airport Security Requirements

Airport security would be needed at MYL if commercial air service is pursued. Transportation Security Administration (TSA) regulations determine airport security requirements at airports in the U.S. in order to protect the public. The details of these requirements are many. Compliance can be very costly. The potentially applicable security requirements related to airport operations and facility development are summarized below.

Part 1540—Contains rules that cover all segments of civil aviation security. It contains rules that apply to passengers, aviation employees, and other individuals and persons related to civil aviation security, including airport operators, aircraft operators, and foreign air carriers.

Part 1542—Requires airport operators to adopt and carry out a security program approved by TSA. It describes requirements for security programs, including establishing secured areas, air operations areas, security identification display areas, and access control systems. This part also contains requirements for fingerprint-based criminal history record checks of specified individuals.

Part 1544—Applies to certain aircraft operators holding operating certificates for scheduled passenger operations, public charter passenger operations, private charter passenger operations, and other aircraft operators. This part requires such operators to adopt and carry out a security program approved by TSA. It contains requirements for screening of passengers and property.

Part 1548—Applies to indirect air carriers, such as freight forwarders. It requires such carriers to adopt and carry out a security program and describes requirements for preventing the carriage of unauthorized explosives or incendiaries aboard passenger aircraft.

5.12.4 Air Carrier Passenger Terminal

A passenger terminal facility is necessary for ticketing, baggage handling, aircraft parking, organized passenger deplaning and boarding and airport security such as passenger screening. The size of the terminal at small airports is usually based upon peak-hour enplanments. Approximately 10 to 12 acres
are needed to accommodate a minimum-size terminal, a roadway system, and aircraft and auto parking. The terminal facilities can be housed in approximately 6,000 to 8,000 SF, exclusive of mechanical, utility, or building maintenance areas. Concessions are often contained with the terminal. This normally includes rental car, restaurant and gift shop.

5.12.5 Air Traffic Control Tower (ATCT)

An ATC is not required for Part 139, however it is highly desirable. The location and orientation of runways and taxiways must be such that the existing (or future) airport traffic control tower (ATCT) has a clear line of sight to all traffic patterns, the final approaches to all runways, all runway structural pavement and other operational surfaces controlled by ATC. A clear line of sight to taxilane centerlines is desirable. Operational surfaces not having a clear unobstructed line of sight from the ATCT are designated by ATC as uncontrolled or non-movement areas through a local agreement with the airport owner. The ATCT generally required about one to four acres of land.

5.12.6 Airports with Civilian and US Government Operations

USFS and civilian operations occur at MYL. Though the airport is not considered “joint use” because the airport is not owned by the U.S. Government, the USFS complex needs to be considered within the purview of Part 139. The agreement between the USFS and the City of McCall may require modification to address Part 139 requirements and responsibilities.
PART 139—CERTIFICATION OF AIRPORTS

Subpart A—General
Sec.
139.1 Applicability.
139.3 Delegation of authority.
139.5 Definitions.
139.7 Methods and procedures for compliance.

Subpart B—Certification
139.101 General requirements.
139.103 Application for certificate.
139.105 Inspection authority.
139.107 Issuance of certificate.
139.109 Duration of certificate.
139.111 Exemptions.
139.113 Deviations.

Subpart C—Airport Certification Manual
139.201 General requirements.
139.203 Contents of Airport Certification Manual.
139.205 Amendment of Airport Certification Manual.

Subpart D—Operations
139.301 Records.
139.303 Personnel.
139.305 Paved areas.
139.307 Unpaved areas.
139.309 Safety areas.
139.311 Marking, signs, and lighting.
139.313 Snow and ice control.
139.315 Aircraft rescue and firefighting: Index determination.
139.317 Aircraft rescue and firefighting: Equipment and agents.
139.319 Aircraft rescue and firefighting: Operational requirements.
139.321 Handling and storing of hazardous substances and materials.
139.323 Traffic and wind direction indicators.
139.325 Airport emergency plan.
139.327 Self-inspection program.
139.329 Pedestrians and Ground Vehicles.
139.331 Obstructions.
139.333 Protection of NAVAIDS.
139.335 Public protection.
139.337 Wildlife hazard management.
139.339 Airport condition reporting.
139.341 Identifying, marking, and lighting construction and other unserviceable areas.
139.343 Noncomplying conditions.
Authority: 49 U.S.C. 106(g), 40113, 44701-44706, 44709, 44719
Source: Docket No. FAA-2000-7479, Amendment No. 139-26 (69 FR 6380, 02/10/04)
effective 06/09/04

Subpart A—General

§ 139.1 Applicability.
(a) This part prescribes rules governing the certification and operation of airports in any State of the United States, the District of Columbia, or any territory or possession of the United States serving any—
   (1) Scheduled passenger-carrying operations of an air carrier operating aircraft designed for more than 9 passenger seats, as determined by the aircraft type certificate issued by a competent civil aviation authority; and
   (2) Unscheduled passenger-carrying operations of an air carrier operating aircraft designed for at least 31 passenger seats, as determined by the aircraft type certificate issued by a competent civil aviation authority.
(b) This part applies to those portions of a joint-use or shared-use airport that are within the authority of a person serving passenger-carrying operations defined in paragraphs (a)(1) and (a)(2) of this section.
(c) This part does not apply to—
   (1) Airports serving scheduled air carrier operations only by reason of being designated as an alternate airport;
   (2) Airports operated by the United States;
   (3) Airports located in the State of Alaska that only serve scheduled operations of small air carrier aircraft and do not serve scheduled or unscheduled operations of large air carrier aircraft;
   (4) Airports located in the State of Alaska during periods of time when not serving operations of large air carrier aircraft; or
   (5) Heliports.

§ 139.3 Delegation of authority.
The authority of the Administrator to issue, deny, and revoke Airport Operating Certificates is delegated to the Associate Administrator for Airports, Director of Airport Safety and Standards, and Regional Airports Division Managers.

§ 139.5 Definitions.
The following are definitions of terms used in this part:
AFFF means aqueous film forming foam agent.
Air carrier aircraft means an aircraft that is being operated by an air carrier and is categorized as either a large air carrier aircraft if designed for at least 31 passenger seats or a small air carrier aircraft if designed for more than 9 passenger seats but less than 31 passenger seats, as determined by the aircraft type certificate issued by a competent civil aviation authority.
Air carrier operation means the takeoff or landing of an air carrier aircraft and includes the period of time from 15 minutes before until 15 minutes after the takeoff or landing.
Airport means an area of land or other hard surface, excluding water, that is used or intended to be used for the landing and takeoff of aircraft, including any buildings and facilities.
Airport Operating Certificate means a certificate, issued under this part, for operation of a Class I, II, III, or IV airport.

Average daily departures means the average number of scheduled departures per day of air carrier aircraft computed on the basis of the busiest 3 consecutive calendar months of the immediately preceding 12 consecutive calendar months. However, if the average daily departures are expected to increase, then “average daily departures” may be determined by planned rather than current activity, in a manner authorized by the Administrator.

Certificate holder means the holder of an Airport Operating Certificate issued under this part.

Class I airport means an airport certificated to serve scheduled operations of large air carrier aircraft that can also serve unscheduled passenger operations of large air carrier aircraft and/or scheduled operations of small air carrier aircraft.

Class II airport means an airport certificated to serve scheduled operations of small air carrier aircraft and the unscheduled passenger operations of large air carrier aircraft. A Class II airport cannot serve scheduled large air carrier aircraft.

Class III airport means an airport certificated to serve scheduled operations of small air carrier aircraft. A Class III airport cannot serve scheduled or unscheduled large air carrier aircraft.

Class IV airport means an airport certificated to serve unscheduled passenger operations of large air carrier aircraft. A Class IV airport cannot serve scheduled large or small air carrier aircraft.

Clean agent means an electrically nonconducting volatile or gaseous fire extinguishing agent that does not leave a residue upon evaporation and has been shown to provide extinguishing action equivalent to halon 1211 under test protocols of FAA Technical Report DOT/FAA/AR-95/87.

Heliport means an airport, or an area of an airport, used or intended to be used for the landing and takeoff of helicopters.

Index means the type of aircraft rescue and firefighting equipment and quantity of fire extinguishing agent that the certificate holder must provide in accordance with Sec. 139.315.

Joint-use airport means an airport owned by the United States that leases a portion of the airport to a person operating an airport specified under Sec. 139.1(a).

Movement area means the runways, taxiways, and other areas of an airport that are used for taxiing, takeoff, and landing of aircraft, exclusive of loading ramps and aircraft parking areas.

Regional Airports Division Manager means the airports division manager for the FAA region in which the airport is located.

Safety area means a defined area comprised of either a runway or taxiway and the surrounding surfaces that is prepared or suitable for reducing the risk of damage to aircraft in the event of an undershoot, overshoot, or excursion from a runway or the unintentional departure from a taxiway.

Scheduled operation means any common carriage passenger-carrying operation for compensation or hire conducted by an air carrier for which the air carrier or its representatives offers in advance the departure location, departure time, and arrival location. It does not include any operation that is conducted as a supplemental operation
under 14 CFR part 121 or public charter operations under 14 CFR part 380.

Shared-use airport means a U.S. Government-owned airport that is co-located with an airport specified under Sec. 139.1(a) and at which portions of the movement areas and safety areas are shared by both parties.

Unscheduled operation means any common carriage passenger-carrying operation for compensation or hire, using aircraft designed for at least 31 passenger seats, conducted by an air carrier for which the departure time, departure location, and arrival location are specifically negotiated with the customer or the customer’s representative. It includes any passenger-carrying supplemental operation conducted under 14 CFR part 121 and any passenger-carrying public charter operation conducted under 14 CFR part 380.

Wildlife hazard means a potential for a damaging aircraft collision with wildlife on or near an airport. As used in this part, "wildlife" includes feral animals and domestic animals out of the control of their owners.

Note: Special Statutory Requirement to Operate to or From a Part 139 Airport. Each air carrier that provides—in an aircraft designed for more than 9 passenger seats—regularly scheduled charter air transportation for which the public is provided in advance a schedule containing the departure location, departure time, and arrival location of the flight must operate to and from an airport certificated under part 139 of this chapter in accordance with 49 U.S.C. 41104(b). That statutory provision contains stand-alone requirements for such air carriers and special exceptions for operations in Alaska and outside the United States. Certain operations by air carriers that conduct public charter operations under 14 CFR part 380 are covered by the statutory requirements to operate to and from part 139 airports. See 49 U.S.C. 41104(b).

§ 139.7 Methods and procedures for compliance.
Certificate holders must comply with requirements prescribed by subparts C and D of this part in a manner authorized by the Administrator. FAA Advisory Circulars contain methods and procedures for compliance with this part that are acceptable to the Administrator.
Subpart B—Certification

§ 139.101 General requirements.
(a) Except as otherwise authorized by the Administrator, no person may operate an airport specified under §139.1 of this part without an Airport Operating Certificate or in violation of that certificate, the applicable provisions, or the approved Airport Certification Manual.
(b) Each certificate holder must adopt and comply with an Airport Certification Manual as required under § 139.203.
(c) Persons required to have an Airport Operating Certificate under this part must submit their Airport Certification Manual to the FAA for approval, in accordance with the following schedule:

§ 139.103 Application for certificate.
Each applicant for an Airport Operating Certificate must—
(a) Prepare and submit an application, in a form and in the manner prescribed by the Administrator, to the Regional Airports Division Manager.
(b) Submit with the application, two copies of an Airport Certification Manual prepared in accordance with subpart C of this part.

§ 139.105 Inspection authority.
Each applicant for, or holder of, an Airport Operating Certificate must allow the Administrator to make any inspections, including unannounced inspections, or tests to determine compliance with 49 U.S.C. 44706 and the requirements of this part.

§ 139.107 Issuance of certificate.
An applicant for an Airport Operating Certificate is entitled to a certificate if—
(a) The applicant provides written documentation that air carrier service will begin on a date certain.
(b) The applicant meets the provisions of § 139.103.
(c) The Administrator, after investigation, finds the applicant is properly and adequately equipped and able to provide a safe airport operating environment in accordance with—
   (1) Any limitation that the Administrator finds necessary to ensure safety in air transportation.
   (2) The requirements of the Airport Certification Manual, as specified under § 139.203.
   (3) Any other provisions of this part that the Administrator finds necessary to ensure safety in air transportation.
(d) The Administrator approves the Airport Certification Manual.

§ 139.109 Duration of certificate.
An Airport Operating Certificate issued under this part is effective until the certificate holder surrenders it or the certificate is suspended or revoked by the Administrator.

§ 139.111 Exemptions.
(a) An applicant or a certificate holder may petition the Administrator under 14 CFR part 11, General Rulemaking Procedures, of this chapter for an exemption from any requirement of this part.
(b) Under 49 U.S.C. 44706(c), the Administrator may exempt an applicant or a certificate holder that enplanes annually less than one-quarter of 1 percent of the total number of passengers.
enplaned at all air carrier airports from all, or part, of the aircraft rescue and firefighting equipment requirements of this part on the grounds that compliance with those requirements is, or would be, unreasonably costly, burdensome, or impractical.

(1) Each petition filed under this paragraph must—
   (i) Be submitted in writing at least 120 days before the proposed effective date of the exemption;
   (ii) Set forth the text of §§ 139.317 or 139.319 from which the exemption is sought;
   (iii) Explain the interest of the certificate holder in the action requested, including the nature and extent of relief sought; and
   (iv) Contain information, views, or arguments that demonstrate that the requirements of §§ 139.317 or 139.319 would be unreasonably costly, burdensome, or impractical.

(2) Information, views, or arguments provided under paragraph (b)(1) of this section must include the following information pertaining to the airport for which the Airport Operating Certificate is held:
   (i) An itemized cost to comply with the requirement from which the exemption is sought;
   (ii) Current staffing levels;
   (iii) The current annual financial report, such as a single audit report or FAA Form 5100-127, Operating and Financial Summary;
   (iv) Annual passenger enplanement data for the previous 12 calendar months;
   (v) The type and frequency of air carrier operations served;
   (vi) A history of air carrier service;
   (vii) Anticipated changes to air carrier service;

(c) Each petition filed under this section must be submitted in duplicate to the—
   (1) Regional Airports Division Manager and
   (2) U.S. Department of Transportation's Docket Management System, as specified under 14 CFR part 11.

§ 139.113 Deviations.
In emergency conditions requiring immediate action for the protection of life or property, the certificate holder may deviate from any requirement of subpart D of this part, or the Airport Certification Manual, to the extent required to meet that emergency. Each certificate holder who deviates from a requirement under this section must, within 14 days after the emergency, notify the Regional Airports Division Manager of the nature, extent, and duration of the deviation. When requested by the Regional Airports Division Manager, the certificate holder must provide this notification in writing.
Subpart C—Airport Certification Manual

§ 139.201 General requirements.
(a) No person may operate an airport subject to this part unless that person adopts and complies with an Airport Certification Manual, as required under this part, that—
(1) Has been approved by the Administrator;
(2) Contains only those items authorized by the Administrator;
(3) Is in printed form and signed by the certificate holder acknowledging the certificate holder’s responsibility to operate the airport in compliance with the Airport Certification Manual approved by the Administrator; and
(4) Is in a form that is easy to revise and organized in a manner helpful to the preparation, review, and approval processes, including a revision log. In addition, each page or attachment must include the date of the Administrator's initial approval or approval of the latest revision.
(b) Each holder of an Airport Operating Certificate must—
(1) Keep its Airport Certification Manual current at all times;
(2) Maintain at least one complete and current copy of its approved Airport Certification Manual on the airport, which will be available for inspection by the Administrator; and
(3) Furnish the applicable portions of the approved Airport Certification Manual to airport personnel responsible for its implementation.
(c) Each certificate holder must ensure that the Regional Airports Division Manager is provided a complete copy of its most current approved Airport Certification Manual, as specified under paragraph (b)(2) of this section, including any amendments approved under § 139.205.
(d) FAA Advisory Circulars contain methods and procedures for the development of Airport Certification Manuals that are acceptable to the Administrator.

§ 139.203 Contents of Airport Certification Manual.
(a) Except as otherwise authorized by the Administrator, each certificate holder must include in the Airport Certification Manual a description of operating procedures, facilities and equipment, responsibility assignments, and any other information needed by personnel concerned with operating the airport in order to comply with applicable provisions of subpart D of this part and paragraph (b) of this section.
(b) Except as otherwise authorized by the Administrator, the certificate holder must include in the Airport Certification Manual the following elements, as appropriate for its class:
## REQUIRED AIRPORT CERTIFICATION MANUAL ELEMENTS

<table>
<thead>
<tr>
<th>Manual elements</th>
<th>Class I</th>
<th>Class II</th>
<th>Class III</th>
<th>Class IV</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Lines of succession of airport operational responsibility</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
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<tr>
<td>1. Lines of succession of airport operational responsibility</td>
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<td>2. Each current exemption issued to the airport from the requirements of this part</td>
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<td>3. Any limitations imposed by the Administrator</td>
<td>X</td>
<td>X</td>
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<tr>
<td>4. A grid map or other means of identifying locations and terrain features on and around the airport that are significant to emergency operations</td>
<td>X</td>
<td>X</td>
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<td>5. The location of each obstruction required to be lighted or marked within the airport's area of authority</td>
<td>X</td>
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<tr>
<td>6. A description of each movement area available for air carriers and its safety areas, and each road described in § 139.319(k) that serves it</td>
<td>X</td>
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<td>X</td>
<td>X</td>
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<tr>
<td>7. Procedures for avoidance of interruption or failure during construction work of utilities serving facilities or NAVAIDS that support air carrier operations</td>
<td>X</td>
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<td>8. A description of the system for maintaining records, as required under § 139.301</td>
<td>X</td>
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<td>9. A description of personnel training, as required under § 139.303</td>
<td>X</td>
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<td>10. Procedures for maintaining the paved areas, as required under § 139.305</td>
<td>X</td>
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<td>11. Procedures for maintaining the unpaved areas, as required under § 139.307</td>
<td>X</td>
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<tr>
<td>12. Procedures for maintaining the safety areas, as required under § 139.309</td>
<td>X</td>
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<tr>
<td>13. A plan showing the runway and taxiway identification system, including the location and inscription of signs, runway markings, and holding position markings, as required under § 139.311</td>
<td>X</td>
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<td>14. A description of, and procedures for maintaining, the marking, signs, and lighting systems, as required under § 139.311</td>
<td>X</td>
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<tr>
<td>15. A snow and ice control plan, as required under § 139.313</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
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<tr>
<td>16. A description of the facilities, equipment, personnel, and procedures for meeting the aircraft rescue and firefighting requirements, in accordance with §§ 139.315, 139.317 and 139.319</td>
<td>X</td>
<td>X</td>
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<td>X</td>
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</tbody>
</table>
### REQUIRED AIRPORT CERTIFICATION MANUAL ELEMENTS

<table>
<thead>
<tr>
<th>Manual elements</th>
<th>Airport certificate class</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>Class I</td>
</tr>
<tr>
<td>17. A description of any approved exemption to aircraft rescue and</td>
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<tr>
<td>firefighting requirements, as authorized under § 139.111.</td>
<td>X</td>
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<tr>
<td>18. Procedures for protecting persons and property during the storing,</td>
<td>X</td>
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<tr>
<td>dispensing, and handling of fuel and other hazardous substances and</td>
<td></td>
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<td>materials, as required under § 139.321.</td>
<td>X</td>
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<tr>
<td>19. A description of, and procedures for maintaining, the traffic and wind</td>
<td>X</td>
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<tr>
<td>direction indicators, as required under § 139.323.</td>
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<tr>
<td>20. An emergency plan as required under § 139.325</td>
<td>X</td>
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<tr>
<td>21. Procedures for conducting the self-inspection program, as required</td>
<td>X</td>
</tr>
<tr>
<td>under § 139.327.</td>
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<tr>
<td>22. Procedures for controlling pedestrians and ground vehicles in</td>
<td>X</td>
</tr>
<tr>
<td>movement areas and safety areas, as required under § 139.329</td>
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<tr>
<td>23. Procedures for obstruction removal, marking, or lighting, as required</td>
<td>X</td>
</tr>
<tr>
<td>under § 139.331.</td>
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<tr>
<td>24. Procedures for protection of NAVAIDS, as required under § 139.333.</td>
<td>X</td>
</tr>
<tr>
<td>25. A description of public protection, as required under § 139.335..</td>
<td>X</td>
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<tr>
<td>26. Procedures for wildlife hazard management, as required under</td>
<td>X</td>
</tr>
<tr>
<td>§ 139.337.</td>
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<tr>
<td>27. Procedures for airport condition reporting, as required under</td>
<td>X</td>
</tr>
<tr>
<td>§ 139.339.</td>
<td></td>
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<tr>
<td>28. Procedures for identifying, marking, and lighting construction and</td>
<td>X</td>
</tr>
<tr>
<td>other unserviceable areas, as required under § 139.341.</td>
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<tr>
<td>29. Any other item that the Administrator finds is necessary to ensure</td>
<td>X</td>
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<tr>
<td>safety in air transportation.</td>
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§ 139.205 Amendment of Airport Certification Manual.

(a) Under Sec. 139.3, the Regional Airports Division Manager may amend any Airport Certification Manual approved under this part, either—

1) Upon application by the certificate holder or

2) On the Regional Airports Division Manager's own initiative, if the Regional Airports Division Manager determines that safety in air transportation requires the amendment.

(b) A certificate holder must submit in writing a proposed amendment to its Airport Certification Manual to the Regional Airports Division Manager at least 30 days before the proposed effective date of the amendment, unless a shorter filing period is allowed by the Regional Airports Division Manager.

(c) At any time within 30 days after receiving a notice of refusal to approve the application for amendment, the certificate holder may petition the Associate Administrator for Airports to reconsider the refusal to amend.

(d) In the case of amendments initiated by the FAA, the Regional Airports Division Manager notifies the certificate holder of the proposed amendment, in writing, fixing a reasonable period (but not less than 7 days) within which the certificate holder may submit written information, views, and arguments on the amendment. After considering all relevant material presented, the Regional Airports Division Manager notifies the certificate holder within 30 days of any amendment adopted or rescinds the notice. The amendment becomes effective not less than 30 days after the certificate holder receives notice of it, except that, prior to the effective date, the certificate holder may petition the Associate Administrator for Airports to reconsider the amendment, in which case its effective date is stayed pending a decision by the Associate Administrator for Airports.

(e) Notwithstanding the provisions of paragraph (d) of this section, if the Regional Airports Division Manager finds there is an emergency requiring immediate action with respect to safety in air transportation, the Regional Airports Division Manager may issue an amendment, effective without stay on the date the certificate holder receives notice of it. In such a case, the Regional Airports Division Manager incorporates the finding of the emergency and a brief statement of the reasons for the finding in the notice of the amendment. Within 30 days after the issuance of such an emergency amendment, the certificate holder may petition the Associate Administrator for Airports to reconsider either the finding of an emergency, the amendment itself, or both. This petition does not automatically stay the effectiveness of the emergency amendment.
Subpart D—Operations

§ 139.301 Records.
In a manner authorized by the Administrator, each certificate holder must—
(a) Furnish upon request by the Administrator all records required to be maintained under this part.
(b) Maintain records required under this part as follows:
   (1) Personnel training. Twenty-four consecutive calendar months for personnel training records, as required under §§ 139.303 and 139.327.
   (2) Emergency personnel training. Twenty-four consecutive calendar months for aircraft rescue and firefighting and emergency medical service personnel training records, as required under § 139.319.
   (3) Airport fueling agent inspection. Twelve consecutive calendar months for records of inspection of airport fueling agents, as required under § 139.321.
   (4) Fueling personnel training. Twelve consecutive calendar months for training records of fueling personnel, as required under § 139.321.
   (5) Self-inspection. Twelve consecutive calendar months for self-inspection records, as required under § 139.327.
   (6) Movement areas and safety areas training. Twenty-four consecutive calendar months for records of training given to pedestrians and ground vehicle operators with access to movement areas and safety areas, as required under Sec. 139.329.
   (7) Accident and incident. Twelve consecutive calendar months for each accident or incident in movement areas and safety areas involving an air carrier aircraft and/or ground vehicle, as required under § 139.329.
   (8) Airport condition. Twelve consecutive calendar months for records of airport condition information dissemination, as required under § 139.339.
(c) Make and maintain any additional records required by the Administrator, this part, and the Airport Certification Manual.

§ 139.303 Personnel.
In a manner authorized by the Administrator, each certificate holder must—
(a) Provide sufficient and qualified personnel to comply with the requirements of its Airport Certification Manual and the requirements of this part.
(b) Equip personnel with sufficient resources needed to comply with the requirements of this part.
(c) Train all personnel who access movement areas and safety areas and perform duties in compliance with the requirements of the Airport Certification Manual and the requirements of this part. This training must be completed prior to the initial performance of such duties and at least once every 12 consecutive calendar months. The curriculum for initial and recurrent training must include at least the following areas:
   (1) Airport familiarization, including airport marking, lighting, and signs system.
   (2) Procedures for access to, and operation in, movement areas and safety areas.
   (3) Airport communications, including radio communication between the air traffic control tower and personnel, use of the common traffic advisory
frequency if there is no air traffic control
tower or the tower is not in operation,
and procedures for reporting unsafe
airport conditions.

(4) Duties required under the Airport
Certification Manual and the
requirements of this part.

(5) Any additional subject areas
required under §§ 139.319, 139.321,
139.327, 139.329, 139.337, and 139.339,
as appropriate.

(d) Make a record of all training
completed after June 9, 2004, by each
individual in compliance with this
section that includes, at a minimum, a
description and date of training received.
Such records must be maintained for 24
consecutive calendar months after
completion of training.

(e) As appropriate, comply with the
following training requirements of this
part:

(1) § 139.319, Aircraft rescue and
firefighting: Operational requirements;

(2) § 139.321, Handling and storage
of hazardous substances and materials;

(3) § 139.327, Self-inspection
program;

(4) § 139.329, Pedestrians and Ground
Vehicles;

(5) § 139.337, Wildlife hazard
management; and

(6) § 139.339, Airport condition
reporting.

(f) Use an independent organization,
or designee, to comply with the
requirements of its Airport Certification
Manual and the requirements of this part
only if—

(1) Such an arrangement is authorized
by the Administrator;

(2) A description of responsibilities
and duties that will be assumed by an
independent organization or designee is
specified in the Airport Certification
Manual; and

(3) The independent organization or
designee prepares records required under
this part in sufficient detail to assure the
certificate holder and the Administrator
of adequate compliance with the Airport
Certification Manual and the
requirements of this part.

§ 139.305 Paved areas.

(a) In a manner authorized by the
Administrator, each certificate holder
must maintain, and promptly repair the
pavement of, each runway, taxiway,
loading ramp, and parking area on the
airport that is available for air carrier use
as follows:

(1) The pavement edges must not
exceed 3 inches difference in elevation
between abutting pavement sections and
between pavement and abutting areas.

(2) The pavement must have no hole
exceeding 3 inches in depth nor any hole
the slope of which from any point in the
hole to the nearest point at the lip of the
hole is 45 degrees or greater, as
measured from the pavement surface
plane, unless, in either case, the entire
area of the hole can be covered by a 5-
inch diameter circle.

(3) The pavement must be free of
cracks and surface variations that could
impair directional control of air carrier
aircraft, including any pavement crack or
surface deterioration that produces loose
aggregate or other contaminants.

(4) Except as provided in paragraph
(b) of this section, mud, dirt, sand, loose
aggregate, debris, foreign objects, rubber
deposits, and other contaminants must be
removed promptly and as completely as
practicable.

(5) Except as provided in paragraph
(b) of this section, any chemical solvent
that is used to clean any pavement area
must be removed as soon as possible,
consistent with the instructions of the manufacturer of the solvent.

(6) The pavement must be sufficiently drained and free of depressions to prevent ponding that obscures markings or impairs safe aircraft operations.

(b) Paragraphs (a)(4) and (a)(5) of this section do not apply to snow and ice accumulations and their control, including the associated use of materials, such as sand and deicing solutions.

(c) FAA Advisory Circulars contain methods and procedures for the maintenance and configuration of paved areas that are acceptable to the Administrator.

§ 139.307 Unpaved areas.

(a) In a manner authorized by the Administrator, each certificate holder must maintain and promptly repair the surface of each gravel, turf, or other unpaved runway, taxiway, or loading ramp and parking area on the airport that is available for air carrier use as follows:

(1) No slope from the edge of the full-strength surfaces downward to the existing terrain must be steeper than 2:1.

(2) The full-strength surfaces must have adequate crown or grade to assure sufficient drainage to prevent ponding.

(3) The full-strength surfaces must be adequately compacted and sufficiently stable to prevent rutting by aircraft or the loosening or build-up of surface material, which could impair directional control of aircraft or drainage.

(4) The full-strength surfaces must have no holes or depressions that exceed 3 inches in depth and are of a breadth capable of impairing directional control or causing damage to an aircraft.

(5) Debris and foreign objects must be promptly removed from the surface.

(b) FAA Advisory Circulars contain methods and procedures for the maintenance and configuration of unpaved areas that are acceptable to the Administrator.

§ 139.309 Safety areas.

(a) In a manner authorized by the Administrator, each certificate holder must provide and maintain, for each runway and taxiway that is available for air carrier use, a safety area of at least the dimensions that—

(1) Existed on December 31, 1987, if the runway or taxiway had a safety area on December 31, 1987, and if no reconstruction or significant expansion of the runway or taxiway was begun on or after January 1, 1988; or

(2) Are authorized by the Administrator at the time the construction, reconstruction, or expansion began if construction, reconstruction, or significant expansion of the runway or taxiway began on or after January 1, 1988.

(b) Each certificate holder must maintain its safety areas as follows:

(1) Each safety area must be cleared and graded and have no potentially hazardous ruts, humps, depressions, or other surface variations.

(2) Each safety area must be drained by grading or storm sewers to prevent water accumulation.

(3) Each safety area must be capable under dry conditions of supporting snow removal and aircraft rescue and firefighting equipment and of supporting the occasional passage of aircraft without causing major damage to the aircraft.

(4) No objects may be located in any safety area, except for objects that need to be located in a safety area because of their function. These objects must be constructed, to the extent practical, on frangibly mounted structures of the
lowest practical height, with the frangible point no higher than 3 inches above grade.

(c) FAA Advisory Circulars contain methods and procedures for the configuration and maintenance of safety areas acceptable to the Administrator.

§ 139.311 Marking, signs, and lighting.

(a) Marking. Each certificate holder must provide and maintain marking systems for air carrier operations on the airport that are authorized by the Administrator and consist of at least the following:

1. Runway markings meeting the specifications for takeoff and landing minimums for each runway.
2. A taxiway centerline.
3. Taxiway edge markings, as appropriate.
4. Holding position markings.
5. Instrument landing system (ILS) critical area markings.

(b) Signs.

1. Each certificate holder must provide and maintain sign systems for air carrier operations on the airport that are authorized by the Administrator and consist of at least the following:
   (i) Signs identifying taxiing routes on the movement area.
   (ii) Holding position signs.
   (iii) Instrument landing system (ILS) critical area signs.

2. Unless otherwise authorized by the Administrator, the signs required by paragraph (b)(1) of this section must be internally illuminated at each Class I, II, and IV airport.

3. Unless otherwise authorized by the Administrator, the signs required by paragraphs (b)(1)(ii) and (b)(1)(iii) of this section must be internally illuminated at each Class III airport.

(c) Lighting. Each certificate holder must provide and maintain lighting systems for air carrier operations when the airport is open at night, during conditions below visual flight rules (VFR) minimums, or in Alaska, during periods in which a prominent unlighted object cannot be seen from a distance of 3 statute miles or the sun is more than six degrees below the horizon. These lighting systems must be authorized by the Administrator and consist of at least the following:

1. Runway lighting that meets the specifications for takeoff and landing minimums, as authorized by the Administrator, for each runway.
2. One of the following taxiway lighting systems:
   (i) Centerline lights.
   (ii) Centerline reflectors.
   (iii) Edge lights.
   (iv) Edge reflectors.
3. An airport beacon.
4. Approach lighting that meets the specifications for takeoff and landing minimums, as authorized by the Administrator, for each runway, unless provided and/or maintained by an entity other than the certificate holder.
5. Obstruction marking and lighting, as appropriate, on each object within its authority that has been determined by the FAA to be an obstruction.

(d) Maintenance. Each certificate holder must properly maintain each marking, sign, or lighting system installed and operated on the airport. As used in this section, to "properly maintain" includes cleaning, replacing, or repairing any faded, missing, or nonfunctional item; keeping each item unobscured and clearly visible; and ensuring that each item provides an accurate reference to the user.
(e) Lighting interference. Each certificate holder must ensure that all lighting on the airport, including that for aprons, vehicle parking areas, roadways, fuel storage areas, and buildings, is adequately adjusted or shielded to prevent interference with air traffic control and aircraft operations.

(f) Standards. FAA Advisory Circulars contain methods and procedures for the equipment, material, installation, and maintenance of marking, sign, and lighting systems listed in this section that are acceptable to the Administrator.

(g) Implementation. The sign systems required under paragraph (b)(3) of this section must be implemented by each holder of a Class III Airport Operating Certificate not later than 36 consecutive calendar months after June 9, 2004.

§ 139.313 Snow and ice control.
(a) As determined by the Administrator, each certificate holder whose airport is located where snow and icing conditions occur must prepare, maintain, and carry out a snow and ice control plan in a manner authorized by the Administrator.

(b) The snow and ice control plan required by this section must include, at a minimum, instructions and procedures for—
   (1) Prompt removal or control, as completely as practical, of snow, ice, and slush on each movement area;
   (2) Positioning snow off the movement area surfaces so all air carrier aircraft propellers, engine pods, rotors, and wing tips will clear any snowdrift and snowbank as the aircraft’s landing gear traverses any portion of the movement area;
   (3) Selection and application of authorized materials for snow and ice control to ensure that they adhere to snow and ice sufficiently to minimize engine ingestion;
   (4) Timely commencement of snow and ice control operations; and
   (5) Prompt notification, in accordance with § 139.339, of all air carriers using the airport when any portion of the movement area normally available to them is less than satisfactorily cleared for safe operation by their aircraft.

(c) FAA Advisory Circulars contain methods and procedures for snow and ice control equipment, materials, and removal that are acceptable to the Administrator.

§ 139.315 Aircraft rescue and firefighting: Index determination.
(a) An index is required by paragraph (c) of this section for each certificate holder. The Index is determined by a combination of—
   (1) The length of air carrier aircraft and
   (2) Average daily departures of air carrier aircraft.

(b) For the purpose of Index determination, air carrier aircraft lengths are grouped as follows:
   (1) Index A includes aircraft less than 90 feet in length.
   (2) Index B includes aircraft at least 90 feet but less than 126 feet in length.
   (3) Index C includes aircraft at least 126 feet but less than 159 feet in length.
   (4) Index D includes aircraft at least 159 feet but less than 200 feet in length.
   (5) Index E includes aircraft at least 200 feet in length.

(c) Except as provided in § 139.319(c), if there are five or more average daily departures of air carrier aircraft in a single Index group serving that airport, the longest aircraft with an average of five or more daily departures
determines the Index required for the airport. When there are fewer than five average daily departures of the longest air carrier aircraft serving the airport, the Index required for the airport will be the next lower Index group than the Index group prescribed for the longest aircraft.

(d) The minimum designated index must be Index A.

(e) A holder of a Class III Airport Operating Certificate may comply with this section by providing a level of safety comparable to Index A that is approved by the Administrator. Such alternate compliance must be described in the ACM and must include:

1) Pre-arranged firefighting and emergency medical response procedures, including agreements with responding services.

2) Means for alerting firefighting and emergency medical response personnel.

3) Type of rescue and firefighting equipment to be provided.

4) Training of responding firefighting and emergency medical personnel on airport familiarization and communications.

§ 139.317 Aircraft rescue and firefighting: Equipment and agents.

Unless otherwise authorized by the Administrator, the following rescue and firefighting equipment and agents are the minimum required for the Indexes referred to in § 139.315:

(a) Index A. One vehicle carrying at least—

1) 500 pounds of sodium-based dry chemical, halon 1211, or clean agent; or

2) 450 pounds of potassium-based dry chemical and water with a commensurate quantity of AFFF to total 100 gallons for simultaneous dry chemical and AFFF application.

(b) Index B. Either of the following:

1) One vehicle carrying at least 500 pounds of sodium-based dry chemical, halon 1211, or clean agent and 1,500 gallons of water and the commensurate quantity of AFFF for foam production.

2) Two vehicles—

i) One vehicle carrying the extinguishing agents as specified in paragraphs (a)(1) or (a)(2) of this section; and

ii) One vehicle carrying an amount of water and the commensurate quantity of AFFF so the total quantity of water for foam production carried by both vehicles is at least 1,500 gallons.

(c) Index C. Either of the following:

1) Three vehicles—

i) One vehicle carrying the extinguishing agents as specified in paragraphs (a)(1) or (a)(2) of this section; and

ii) Two vehicles carrying an amount of water and the commensurate quantity of AFFF so the total quantity of water for foam production carried by all three vehicles is at least 3,000 gallons.

2) Two vehicles—

i) One vehicle carrying the extinguishing agents as specified in paragraph (b)(1) of this section; and

ii) Two vehicles carrying an amount of water and the commensurate quantity of AFFF so the total quantity of water for foam production carried by both vehicles is at least 3,000 gallons.

(d) Index D. Three vehicles—

1) One vehicle carrying the extinguishing agents as specified in paragraphs (a)(1) or (a)(2) of this section; and

2) Two vehicles carrying an amount of water and the commensurate quantity of AFFF so the total quantity of water for foam production carried by all three vehicles is at least 4,000 gallons.
(c) Index E. Three vehicles—

(1) One vehicle carrying the extinguishing agents as specified in paragraphs (a)(1) or (a)(2) of this section; and

(2) Two vehicles carrying an amount of water and the commensurate quantity of AFFF so the total quantity of water for foam production carried by all three vehicles is at least 6,000 gallons.

(f) Foam discharge capacity. Each aircraft rescue and firefighting vehicle used to comply with Index B, C, D, or E requirements with a capacity of at least 500 gallons of water for foam production must be equipped with a turret. Vehicle turret discharge capacity must be as follows:

(1) Each vehicle with a minimum-rated vehicle water tank capacity of at least 500 gallons, but less than 2,000 gallons, must have a turret discharge rate of at least 500 gallons per minute, but not more than 1,000 gallons per minute.

(2) Each vehicle with a minimum-rated vehicle water tank capacity of at least 2,000 gallons must have a turret discharge rate of at least 600 gallons per minute, but not more than 1,200 gallons per minute.

(g) Agent discharge capacity. Each aircraft rescue and firefighting vehicle that is required to carry dry chemical, halon 1211, or clean agent for compliance with the Index requirements of this section must meet one of the following minimum discharge rates for the equipment installed:

(1) Dry chemical, halon 1211, or clean agent through a hand line—5 pounds per second.

(2) Dry chemical, halon 1211, or clean agent through a turret—16 pounds per second.

(h) Extinguishing agent substitutions. Other extinguishing agent substitutions authorized by the Administrator may be made in amounts that provide equivalent firefighting capability.

(i) AFFF quantity requirements. In addition to the quantity of water required, each vehicle required to carry AFFF must carry AFFF in an appropriate amount to mix with twice the water required to be carried by the vehicle.

(j) Methods and procedures. FAA Advisory Circulars contain methods and procedures for ARFF equipment and extinguishing agents that are acceptable to the Administrator.

(k) Implementation. Each holder of a Class II, III, or IV Airport Operating Certificate must implement the requirements of this section no later than 36 consecutive calendar months after June 9, 2004.

§ 139.319 Aircraft rescue and firefighting: Operational requirements.

(a) Rescue and firefighting capability. Except as provided in paragraph (c) of this section, each certificate holder must provide on the airport, during air carrier operations at the airport, at least the rescue and firefighting capability specified for the Index required by § 139.317 in a manner authorized by the Administrator.

(b) Increase in Index. Except as provided in paragraph (c) of this section, if an increase in the average daily departures or the length of air carrier aircraft results in an increase in the Index required by paragraph (a) of this section, the certificate holder must comply with the increased requirements.

(c) Reduction in rescue and firefighting. During air carrier operations with only aircraft shorter than the Index aircraft group required by paragraph (a)
of this section, the certificate holder may reduce the rescue and firefighting to a lower level corresponding to the Index group of the longest air carrier aircraft being operated.

(d) Procedures for reduction in capability. Any reduction in the rescue and firefighting capability from the Index required by paragraph (a) of this section, in accordance with paragraph (c) of this section, must be subject to the following conditions:

1. Procedures for, and the persons having the authority to implement, the reductions must be included in the Airport Certification Manual.

2. A system and procedures for recall of the full aircraft rescue and firefighting capability must be included in the Airport Certification Manual.

3. The reductions may not be implemented unless notification to air carriers is provided in the Airport/Facility Directory or Notices to Airmen (NOTAM), as appropriate, and by direct notification of local air carriers.

(e) Vehicle communications. Each vehicle required under § 139.317 must—

1. All other required emergency vehicles;

2. The air traffic control tower;

3. The common traffic advisory frequency when an air traffic control tower is not in operation or there is no air traffic control tower, and

4. Fire stations, as specified in the airport emergency plan.

(f) Vehicle marking and lighting. Each vehicle required under § 139.317 must—

1. Have a flashing or rotating beacon and

2. Be painted or marked in colors to enhance contrast with the background environment and optimize daytime and nighttime visibility and identification.

(g) Vehicle readiness. Each vehicle required under § 139.317 must be maintained as follows:

1. The vehicle and its systems must be maintained so as to be operationally capable of performing the functions required by this subpart during all air carrier operations.

2. If the airport is located in a geographical area subject to prolonged temperatures below 33 degrees Fahrenheit, the vehicles must be provided with cover or other means to ensure equipment operation and discharge under freezing conditions.

3. Any required vehicle that becomes inoperative to the extent that it cannot perform as required by paragraph (g)(1) of this section must be replaced immediately with equipment having at least equal capabilities. If replacement equipment is not available immediately, the certificate holder must so notify the Regional Airports Division Manager and each air carrier using the airport in accordance with § 139.339. If the required Index level of capability is not restored within 48 hours, the airport operator, unless otherwise authorized by the Administrator, must limit air carrier operations on the airport to those compatible with the Index corresponding to the remaining operative rescue and firefighting equipment.
(h) Response requirements.

(1) With the aircraft rescue and firefighting equipment required under this part and the number of trained personnel that will assure an effective operation, each certificate holder must—
   (i) Respond to each emergency during periods of air carrier operations; and
   (ii) When requested by the Administrator, demonstrate compliance with the response requirements specified in this section.

(2) The response required by paragraph (h)(1)(ii) of this section must achieve the following performance criteria:
   
   (i) Within 3 minutes from the time of the alarm, at least one required aircraft rescue and firefighting vehicle must reach the midpoint of the farthest runway serving air carrier aircraft from its assigned post or reach any other specified point of comparable distance on the movement area that is available to air carriers, and begin application of extinguishing agent.

   (ii) Within 4 minutes from the time of alarm, all other required vehicles must reach the point specified in paragraph (h)(2)(i) of this section from their assigned posts and begin application of an extinguishing agent.

   (i) Personnel. Each certificate holder must ensure the following:

   (1) All rescue and firefighting personnel are equipped in a manner authorized by the Administrator with protective clothing and equipment needed to perform their duties.

   (2) All rescue and firefighting personnel are properly trained to perform their duties in a manner authorized by the Administrator. Such personnel must be trained prior to initial performance of rescue and firefighting duties and receive recurrent instruction every 12 consecutive calendar months. The curriculum for initial and recurrent training must include at least the following areas:

   (i) Airport familiarization, including airport signs, marking, and lighting.

   (ii) Aircraft familiarization.

   (iii) Rescue and firefighting personnel safety.

   (iv) Emergency communications systems on the airport, including fire alarms.

   (v) Use of the fire hoses, nozzles, turrets, and other appliances required for compliance with this part.

   (vi) Application of the types of extinguishing agents required for compliance with this part.

   (vii) Emergency aircraft evacuation assistance.

   (viii) Firefighting operations.

   (ix) Adapting and using structural rescue and firefighting equipment for aircraft rescue and firefighting.

   (x) Aircraft cargo hazards, including hazardous materials/dangerous goods incidents.

   (xi) Familiarization with firefighters' duties under the airport emergency plan.

(3) All rescue and firefighting personnel must participate in at least one live-fire drill prior to initial performance of rescue and firefighting duties and every 12 consecutive calendar months thereafter.

(4) At least one individual, who has been trained and is current in basic emergency medical services, is available during air carrier operations. This individual must be trained prior to initial performance of emergency medical services. Training must be at a minimum 40 hours in length and cover the following topics:

   (i) Bleeding.

   (ii) Cardiopulmonary resuscitation.
(iii) Shock.
(iv) Primary patient survey.
(v) Injuries to the skull, spine, chest, and extremities.
(vi) Internal injuries.
(vii) Moving patients.
(viii) Burns.
(ix) Triage.

(5) A record is maintained of all training given to each individual under this section for 24 consecutive calendar months after completion of training. Such records must include, at a minimum, a description and date of training received.

(6) Sufficient rescue and firefighting personnel are available during all air carrier operations to operate the vehicles, meet the response times, and meet the minimum agent discharge rates required by this part.

(7) Procedures and equipment are established and maintained for alerting rescue and firefighting personnel by siren, alarm, or other means authorized by the Administrator to any existing or impending emergency requiring their assistance.

(j) Hazardous materials guidance. Each aircraft rescue and firefighting vehicle responding to an emergency on the airport must be equipped with, or have available through a direct communications link, the "North American Emergency Response Guidebook" published by the U.S. Department of Transportation or similar response guidance to hazardous materials/dangerous goods incidents. Information on obtaining the "North American Emergency Response Guidebook" is available from the Regional Airports Division Manager.

(k) Emergency access roads. Each certificate holder must ensure that roads designated for use as emergency access roads for aircraft rescue and firefighting vehicles are maintained in a condition that will support those vehicles during all-weather conditions.

(l) Methods and procedures. FAA Advisory Circulars contain methods and procedures for aircraft rescue and firefighting and emergency medical equipment and training that are acceptable to the Administrator.

(m) Implementation. Each holder of a Class II, III, or IV Airport Operating Certificate must implement the requirements of this section no later than 36 consecutive calendar months after June 9, 2004.

§ 139.321 Handling and storing of hazardous substances and materials.

(a) Each certificate holder who acts as a cargo handling agent must establish and maintain procedures for the protection of persons and property on the airport during the handling and storing of any material regulated by the Hazardous Materials Regulations (49 CFR 171 through 180) that is, or is intended to be, transported by air. These procedures must provide for at least the following:

(1) Designated personnel to receive and handle hazardous substances and materials.

(2) Assurance from the shipper that the cargo can be handled safely, including any special handling procedures required for safety.

(3) Special areas for storage of hazardous materials while on the airport.

(b) Each certificate holder must establish and maintain standards authorized by the Administrator for protecting against fire and explosions in storing, dispensing, and otherwise handling fuel (other than articles and materials that are, or are intended to be,
aircraft cargo) on the airport. These standards must cover facilities, procedures, and personnel training and must address at least the following:

1. Bonding.
2. Public protection.
3. Control of access to storage areas.
4. Fire safety in fuel farm and storage areas.
5. Fire safety in mobile fuelers, fueling pits, and fueling cabinets.
6. Training of fueling personnel in fire safety in accordance with paragraph (e) of this section. Such training at Class III airports must be completed within 12 consecutive calendar months after June 9, 2004.
7. The fire code of the public body having jurisdiction over the airport.

(c) Each certificate holder must, as a fueling agent, comply with, and require all other fueling agents operating on the airport to comply with, the standards established under paragraph (b) of this section and must perform reasonable surveillance of all fueling activities on the airport with respect to those standards.

(d) Each certificate holder must inspect the physical facilities of each airport tenant fueling agent at least once every 3 consecutive months for compliance with paragraph (b) of this section and maintain a record of that inspection for at least 12 consecutive calendar months.

(e) The training required in paragraph (b)(6) of this section must include at least the following:

1. At least one supervisor with each fueling agent must have completed an aviation fuel training course in fire safety that is authorized by the Administrator. Such an individual must be trained prior to initial performance of duties, or enrolled in an authorized aviation fuel training course that will be completed within 90 days of initiating duties, and receive recurrent instruction at least every 24 consecutive calendar months.

2. All other employees who fuel aircraft, accept fuel shipments, or otherwise handle fuel must receive at least initial on-the-job training and recurrent instruction every 24 consecutive calendar months in fire safety from the supervisor trained in accordance with paragraph (e)(1) of this section.

(f) Each certificate holder must obtain a written confirmation once every 12 consecutive calendar months from each airport tenant fueling agent that the training required by paragraph (e) of this section has been accomplished. This written confirmation must be maintained for 12 consecutive calendar months.

(g) Unless otherwise authorized by the Administrator, each certificate holder must require each tenant fueling agent to take immediate corrective action whenever the certificate holder becomes aware of noncompliance with a standard required by paragraph (b) of this section. The certificate holder must notify the appropriate FAA Regional Airports Division Manager immediately when noncompliance is discovered and corrective action cannot be accomplished within a reasonable period of time.

(h) FAA Advisory Circulars contain methods and procedures for the handling and storage of hazardous substances and materials that are acceptable to the Administrator.

§ 139.323 Traffic and wind direction indicators.

In a manner authorized by the Administrator, each certificate holder
must provide and maintain the following on its airport:
(a) A wind cone that visually provides surface wind direction information to pilots. For each runway available for air carrier use, a supplemental wind cone must be installed at the end of the runway or at least at one point visible to the pilot while on final approach and prior to takeoff. If the airport is open for air carrier operations at night, the wind direction indicators, including the required supplemental indicators, must be lighted.
(b) For airports serving any air carrier operation when there is no control tower operating, a segmented circle, a landing strip indicator and a traffic pattern indicator must be installed around a wind cone for each runway with a right-hand traffic pattern.
(c) FAA Advisory Circulars contain methods and procedures for the installation, lighting, and maintenance of traffic and wind indicators that are acceptable to the Administrator.

§ 139.325 Airport emergency plan.
(a) In a manner authorized by the Administrator, each certificate holder must develop and maintain an airport emergency plan designed to minimize the possibility and extent of personal injury and property damage on the airport in an emergency. The plan must—
(1) Include procedures for prompt response to all emergencies listed in paragraph (b) of this section, including a communications network;
(2) Contain sufficient detail to provide adequate guidance to each person who must implement these procedures; and
(3) To the extent practicable, provide for an emergency response for the largest air carrier aircraft in the Index group required under § 139.315.
(b) The plan required by this section must contain instructions for response to—
(1) Aircraft incidents and accidents;
(2) Bomb incidents, including designation of parking areas for the aircraft involved;
(3) Structural fires;
(4) Fires at fuel farms or fuel storage areas;
(5) Natural disaster;
(6) Hazardous materials/dangerous goods incidents;
(7) Sabotage, hijack incidents, and other unlawful interference with operations;
(8) Failure of power for movement area lighting; and
(9) Water rescue situations, as appropriate.
(c) The plan required by this section must address or include—
(1) To the extent practicable, provisions for medical services, including transportation and medical assistance for the maximum number of persons that can be carried on the largest air carrier aircraft that the airport reasonably can be expected to serve;
(2) The name, location, telephone number, and emergency capability of each hospital and other medical facility and the business address and telephone number of medical personnel on the airport or in the communities it serves who have agreed to provide medical assistance or transportation;
(3) The name, location, and telephone number of each rescue squad, ambulance service, military installation, and government agency on the airport or in the communities it serves that agrees to provide medical assistance or transportation;
(4) An inventory of surface vehicles and aircraft that the facilities, agencies, and personnel included in the plan under paragraphs (c)(2) and (3) of this section will provide to transport injured and deceased persons to locations on the airport and in the communities it serves;

(5) A list of each hangar or other building on the airport or in the communities it serves that will be used to accommodate uninjured, injured, and deceased persons;

(6) Plans for crowd control, including the name and location of each safety or security agency that agrees to provide assistance for the control of crowds in the event of an emergency on the airport; and

(7) Procedures for removing disabled aircraft, including, to the extent practical, the name, location, and telephone numbers of agencies with aircraft removal responsibilities or capabilities.

(d) The plan required by this section must provide for—

(1) The marshalling, transportation, and care of ambulatory injured and uninjured accident survivors;

(2) The removal of disabled aircraft;

(3) Emergency alarm or notification systems; and

(4) Coordination of airport and control tower functions relating to emergency actions, as appropriate.

(e) The plan required by this section must contain procedures for notifying the facilities, agencies, and personnel who have responsibilities under the plan of the location of an aircraft accident, the number of persons involved in that accident, or any other information necessary to carry out their responsibilities, as soon as that information becomes available.

(f) The plan required by this section must contain provisions, to the extent practicable, for the rescue of aircraft accident victims from significant bodies of water or marsh lands adjacent to the airport that are crossed by the approach and departure flight paths of air carriers. A body of water or marshland is significant if the area exceeds one-quarter square mile and cannot be traversed by conventional land rescue vehicles. To the extent practicable, the plan must provide for rescue vehicles with a combined capacity for handling the maximum number of persons that can be carried on board the largest air carrier aircraft in the Index group required under § 139.315.

(g) Each certificate holder must—

(1) Coordinate the plan with law enforcement agencies, rescue and firefighting agencies, medical personnel and organizations, the principal tenants at the airport, and all other persons who have responsibilities under the plan;

(2) To the extent practicable, provide for participation by all facilities, agencies, and personnel specified in paragraph (g)(1) of this section in the development of the plan;

(3) Ensure that all airport personnel having duties and responsibilities under the plan are familiar with their assignments and are properly trained; and

(4) At least once every 12 consecutive calendar months, review the plan with all of the parties with whom the plan is coordinated, as specified in paragraph (g)(1) of this section, to ensure that all parties know their responsibilities and that all of the information in the plan is current.

(h) Each holder of a Class I Airport Operating Certificate must hold a full-scale airport emergency plan exercise at
least once every 36 consecutive calendar months.

(i) Each airport subject to applicable FAA and Transportation Security Administration security regulations must ensure that instructions for response to paragraphs (b)(2) and (b)(7) of this section in the airport emergency plan are consistent with its approved airport security program.

(j) FAA Advisory Circulars contain methods and procedures for the development of an airport emergency plan that are acceptable to the Administrator.

(k) The emergency plan required by this section must be submitted by each holder of a Class II, III, or IV Airport Operating Certificate no later than 24 consecutive calendar months after June 9, 2004.

§ 139.327 Self-inspection program.

(a) In a manner authorized by the Administrator, each certificate holder must inspect the airport to assure compliance with this subpart according to the following schedule:

(1) Daily, except as otherwise required by the Airport Certification Manual;

(2) When required by any unusual condition, such as construction activities or meteorological conditions, that may affect safe air carrier operations; and

(3) Immediately after an accident or incident.

(b) Each certificate holder must provide the following:

(1) Equipment for use in conducting safety inspections of the airport;

(2) Procedures, facilities, and equipment for reliable and rapid dissemination of information between the certificate holder's personnel and air carriers; and

(3) Procedures to ensure qualified personnel perform the inspections. Such procedures must ensure personnel are trained, as specified under Sec. 139.303, and receive initial and recurrent instruction every 12 consecutive calendar months in at least the following areas:

(i) Airport familiarization, including airport signs, marking and lighting.

(ii) Airport emergency plan.

(iii) Notice to Airmen (NOTAM) notification procedures.

(iv) Procedures for pedestrians and ground vehicles in movement areas and safety areas.

(v) Discrepancy reporting procedures; and

(4) A reporting system to ensure prompt correction of unsafe airport conditions noted during the inspection, including wildlife strikes.

(c) Each certificate holder must—

(1) Prepare, and maintain for at least 12 consecutive calendar months, a record of each inspection prescribed by this section, showing the conditions found and all corrective actions taken.

(2) Prepare records of all training given after June 9, 2004 to each individual in compliance with this section that includes, at a minimum, a description and date of training received. Such records must be maintained for 24 consecutive calendar months after completion of training.

(d) FAA Advisory Circulars contain methods and procedures for the conduct of airport self-inspections that are acceptable to the Administrator.

§ 139.329 Pedestrians and ground vehicles.

In a manner authorized by the Administrator, each certificate holder must—
(a) Limit access to movement areas and safety areas only to those pedestrians and ground vehicles necessary for airport operations;

(b) Establish and implement procedures for the safe and orderly access to, and operation in, movement areas and safety areas by pedestrians and ground vehicles, including provisions identifying the consequences of noncompliance with the procedures by an employee, tenant, or contractor;

(c) When an air traffic control tower is in operation, ensure that each pedestrian and ground vehicle in movement areas or safety areas is controlled by one of the following:
   (1) Two-way radio communications between each pedestrian or vehicle and the tower;
   (2) An escort with two-way radio communications with the tower accompanying any pedestrian or vehicle without a radio; or
   (3) Measures authorized by the Administrator for controlling pedestrians and vehicles, such as signs, signals, or guards, when it is not operationally practical to have two-way radio communications between the tower and the pedestrian, vehicle, or escort;

(d) When an air traffic control tower is not in operation, or there is no air traffic control tower, provide adequate procedures to control pedestrians and ground vehicles in movement areas or safety areas through two-way radio communications or prearranged signs or signals;

(e) Ensure that each employee, tenant, or contractor is trained on procedures required under paragraph (b) of this section, including consequences of noncompliance, prior to moving on foot, or operating a ground vehicle, in movement areas or safety areas; and

(f) Maintain the following records:
   (1) A description and date of training completed after June 9, 2004 by each individual in compliance with this section. A record for each individual must be maintained for 24 consecutive months after the termination of an individual's access to movement areas and safety areas.
   (2) A description and date of any accidents or incidents in the movement areas and safety areas involving air carrier aircraft, a ground vehicle or a pedestrian. Records of each accident or incident occurring after the June 9, 2004, must be maintained for 12 consecutive calendar months from the date of the accident or incident.

§ 139.331 Obstructions.
In a manner authorized by the Administrator, each certificate holder must ensure that each object in each area within its authority that has been determined by the FAA to be an obstruction is removed, marked, or lighted, unless determined to be unnecessary by an FAA aeronautical study. FAA Advisory Circulars contain methods and procedures for the lighting of obstructions that are acceptable to the Administrator.

§ 139.333 Protection of NAVAIDS.
In a manner authorized by the Administrator, each certificate holder must—
(a) Prevent the construction of facilities on its airport that, as determined by the Administrator, would derogate the operation of an electronic or visual NAVAID and air traffic control facilities on the airport;
(b) Protect—or if the owner is other than the certificate holder, assist in
§ 139.335 Public protection.

(a) In a manner authorized by the Administrator, each certificate holder must provide—

(1) Safeguards to prevent inadvertent entry to the movement area by unauthorized persons or vehicles; and

(2) Reasonable protection of persons and property from aircraft blast.

(b) Fencing that meets the requirements of applicable FAA and Transportation Security Administration security regulations in areas subject to these regulations is acceptable for meeting the requirements of paragraph (a)(1) of this section.

§ 139.337 Wildlife hazard management.

(a) In accordance with its Airport Certification Manual and the requirements of this section, each certificate holder must take immediate action to alleviate wildlife hazards whenever they are detected.

(b) In a manner authorized by the Administrator, each certificate holder must ensure that a wildlife hazard assessment is conducted when any of the following events occurs on or near the airport:

(1) An air carrier aircraft experiences multiple wildlife strikes;

(2) An air carrier aircraft experiences substantial damage from striking wildlife. As used in this paragraph, substantial damage means damage or structural failure incurred by an aircraft that adversely affects the structural strength, performance, or flight characteristics of the aircraft and that would normally require major repair or replacement of the affected component;

(3) An air carrier aircraft experiences an engine ingestion of wildlife; or

(4) Wildlife of a size, or in numbers, capable of causing an event described in paragraphs (b)(1), (b)(2), or (b)(3) of this section is observed to have access to any airport flight pattern or aircraft movement area.

(c) The wildlife hazard assessment required in paragraph (b) of this section must be conducted by a wildlife damage management biologist who has professional training and/or experience in wildlife hazard management at airports or an individual working under direct supervision of such an individual. The wildlife hazard assessment must contain at least the following:

(1) An analysis of the events or circumstances that prompted the assessment.

(2) Identification of the wildlife species observed and their numbers, locations, local movements, and daily and seasonal occurrences.

(3) Identification and location of features on and near the airport that attract wildlife.

(4) A description of wildlife hazards to air carrier operations.

(5) Recommended actions for reducing identified wildlife hazards to air carrier operations.

(d) The wildlife hazard assessment required under paragraph (b) of this section must be submitted to the Administrator for approval and determination of the need for a wildlife hazard management plan. In reaching this determination, the Administrator will consider—

(1) The wildlife hazard assessment;
(2) Actions recommended in the wildlife hazard assessment to reduce wildlife hazards;
(3) The aeronautical activity at the airport, including the frequency and size of air carrier aircraft;
(4) The views of the certificate holder;
(5) The views of the airport users; and
(6) Any other known factors relating to the wildlife hazard of which the Administrator is aware.

(e) When the Administrator determines that a wildlife hazard management plan is needed, the certificate holder must formulate and implement a plan using the wildlife hazard assessment as a basis. The plan must—
(1) Provide measures to alleviate or eliminate wildlife hazards to air carrier operations;
(2) Be submitted to, and approved by, the Administrator prior to implementation; and
(3) As authorized by the Administrator, become a part of the Airport Certification Manual.

(f) The plan must include at least the following:
(1) A list of the individuals having authority and responsibility for implementing each aspect of the plan.
(2) A list prioritizing the following actions identified in the wildlife hazard assessment and target dates for their initiation and completion:
   (i) Wildlife population management;
   (ii) Habitat modification; and
   (iii) Land use changes.
(3) Requirements for and, where applicable, copies of local, State, and Federal wildlife control permits.
(4) Identification of resources that the certificate holder will provide to implement the plan.

(5) Procedures to be followed during air carrier operations that at a minimum includes—
   (i) Designation of personnel responsible for implementing the procedures;
   (ii) Provisions to conduct physical inspections of the aircraft movement areas and other areas critical to successfully manage known wildlife hazards before air carrier operations begin;
   (iii) Wildlife hazard control measures; and
   (iv) Ways to communicate effectively between personnel conducting wildlife control or observing wildlife hazards and the air traffic control tower.

(6) Procedures to review and evaluate the wildlife hazard management plan every 12 consecutive months or following an event described in paragraphs (b)(1), (b)(2), and (b)(3) of this section, including:
   (i) The plan's effectiveness in dealing with known wildlife hazards on and in the airport's vicinity and
   (ii) Aspects of the wildlife hazards described in the wildlife hazard assessment that should be reevaluated.

(7) A training program conducted by a qualified wildlife damage management biologist to provide airport personnel with the knowledge and skills needed to successfully carry out the wildlife hazard management plan required by paragraph (d) of this section.

(g) FAA Advisory Circulars contain methods and procedures for wildlife hazard management at airports that are acceptable to the Administrator.
139.339 Airport condition reporting.
In a manner authorized by the Administrator, each certificate holder must—
(a) Provide for the collection and dissemination of airport condition information to air carriers.
(b) In complying with paragraph (a) of this section, use the NOTAM system, as appropriate, and other systems and procedures authorized by the Administrator.
(c) In complying with paragraph (a) of this section, provide information on the following airport conditions that may affect the safe operations of air carriers:
(1) Construction or maintenance activity on movement areas, safety areas, or loading ramps and parking areas.
(2) Surface irregularities on movement areas, safety areas, or loading ramps and parking areas.
(3) Snow, ice, slush, or water on the movement area or loading ramps and parking areas.
(4) Snow piled or drifted on or near movement areas contrary to § 139.313.
(5) Objects on the movement area or safety areas contrary to § 139.309.
(6) Malfunction of any lighting system, holding position signs, or ILS critical area signs required by § 139.311.
(7) Unresolved wildlife hazards as identified in accordance with § 139.337.
(8) Nonavailability of any rescue and firefighting capability required in §§ 139.317 or 139.319.
(9) Any other condition as specified in the Airport Certification Manual or that may otherwise adversely affect the safe operations of air carriers.
(d) Each certificate holder must prepare and keep, for at least 12 consecutive calendar months, a record of each dissemination of airport condition information to air carriers prescribed by this section.
(e) FAA Advisory Circulars contain methods and procedures for using the NOTAM system and the dissemination of airport information that are acceptable to the Administrator.

§ 139.341 Identifying, marking, and lighting construction and other unserviceable areas.

(a) In a manner authorized by the Administrator, each certificate holder must—
(1) Mark and, if appropriate, light in a manner authorized by the Administrator—
(i) Each construction area and unserviceable area that is on or adjacent to any movement area or any other area of the airport on which air carrier aircraft may be operated;
(ii) Each item of construction equipment and each construction roadway, which may affect the safe movement of aircraft on the airport; and
(iii) Any area adjacent to a NAVAID that, if traversed, could cause derogation of the signal or the failure of the NAVAID; and
(2) Provide procedures, such as a review of all appropriate utility plans prior to construction, for avoiding damage to existing utilities, cables, wires, conduits, pipelines, or other underground facilities.
(b) FAA Advisory Circulars contain methods and procedures for identifying and marking construction areas that are acceptable to the Administrator.
§ 139.343 Noncomplying conditions.

Unless otherwise authorized by the Administrator, whenever the requirements of subpart D of this part cannot be met to the extent that uncorrected unsafe conditions exist on the airport, the certificate holder must limit air carrier operations to those portions of the airport not rendered unsafe by those conditions.
Appendix B / McCall Municipal Airport Master Plan Update 2006: Runway Length Requirements
RUNWAY

The adequacy of the airfield system must be analyzed from a number of perspectives, including runway orientation, airfield capacity, runway length, and pavement strength. From this information, the need for airfield enhancements at MYL are assessed and determined.

Runway Orientation
Runway 16-34 has an active pavement length of 6,150 feet long by 75 feet wide and is oriented in a north-northwest to south-southeast direction. Ideally, the primary runway at an airport should be oriented as close as practical to the direction of the predominant winds to maximize the runway’s usage. This minimizes the percent of time that crosswind conditions can make the preferred runway inoperable. 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 95 percent wind coverage is computed on the basis of the crosswind not exceeding 10.5 knots (12 mph) for Airport Reference Codes A-I and B-I, 13 knots (15 mph) for Airport Reference Codes A-II and B-II, and 16 knots (18 mph) for Airport Reference Codes A-III, B-III and C-I through D-III. When crosswinds exceed the allowable percentage for the aircraft categories using an airport, a crosswind runway should be available.

Wind data for the McCall area was sought from a variety of sources but was not available. In order to evaluate the adequacy of the current runway configuration, discussions were held with the FBO, airport engineering staff, and aircraft operators. Based on these discussions it was determined that, while there are periods when crosswind conditions exist, it was generally concluded the present runway orientation adequately addresses the demands of those aircraft based at the facility, and those that operated into and out of McCall on an itinerant basis. As a result, no additional runway orientations are recommended to satisfy wind coverage requirements at MYL. With the installation of an upgraded Automated Weather Observation System (AWOS) the airport working with the U.S. Weather Service should attempt to maintain more detailed wind and weather information for use in future planning efforts. While local knowledge and experience is a valuable source of information, it does not replace the value and accuracy of specific weather observations taken routinely on a frequent basis.

Runway Length
The determination of runway length requirements for the airport is based on five primary factors:

- Critical aircraft type(s) expected to use the airport.
- Stage length of the longest nonstop trip destinations.
- Mean maximum daily temperature of the hottest month.
- Airport elevation and weather conditions.

The aircraft affecting runway length requirements at MYL are those operating in the business fleet, particularly the larger business jet aircraft based at McCall and itinerant users of the airport. Discussions with representatives of the U.S. Forest Service indicate that the existing runway is adequate for the fleet of aircraft presently used by the Forest Service and their individual contract
flyers as well as the aircraft they expect to operate in the future. The inventory process identified that MYL is presently home to several based general aviation jets including a Falcon 900. Additionally, interviews with the airport FBO coupled with flight logs maintained by the on-airport engineer indicate an increasing level of operations by both based and itinerant jet aircraft. From an airport design standpoint, the requirements of the general aviation business fleet are being used to drive the assessment of runway length for the facility requirements evaluation. The type of business jets operating into and out of the airport were delineated in Table 5-1.

The analysis of runway length for MYL has utilized two separate analytical approaches. The initial step in the analysis employed the FAA's Airport Design Software and specifically the Runway Length Recommended for Airport Design package that is based on Chapter 2 of Advisory Circular AC 150/5325-4A. This package provides a general description of runway length needs for various groupings of similarly sized aircraft. The second method employed a privately developed computer program that analyzed specific runway length needs for specific general aviation aircraft at specified weights and user selected temperatures. For this analysis the temperatures selected consisted of 5 degree Fahrenheit gradients ranging from standard day (59 degrees Fahrenheit) to the mean maximum daily temperature for MYL of 80.8 degrees Fahrenheit. An additional temperature level of 85 degrees was also generated which is just above the mean maximum, but a temperature that is not uncommon during the summer months in McCall.

Table 5-3 presents the generic runway length requirements for utility aircraft, business jet aircraft and larger aircraft types based on the FAA's Airport Design software for a series of stage lengths. This program provides a general assessment of runway length needs based on the aggregate operational characteristics of aircraft within broad aircraft classifications established based on aircraft weight. The aircraft categories used in the FAA software consist of small aircraft under 12,500 pounds with less than 10 passenger seats, small aircraft under 12,500 pounds with 10 or more passenger seats, large aircraft of between 12,500 pounds and 60,000 pounds, and aircraft of over 60,000 pounds.

The category of aircraft between 12,500 pounds and 60,000 pounds is further divided into four subgroups based on a selected percentage of the total fleet to be accommodated and a load factor at which the planes will be operated. These four sub-classifications coupled with the under 12,500 pound categories are relevant to McCall since virtually all of the domestic general aviation fleet is contained within these ranges. Further, both the based aircraft at MYL and the general aviation itinerant aircraft operating into and out of the airport are in these categories. The final category listed in the FAA runway length program encompasses a wide array of aircraft over 60,000 pounds ranging from large jet aircraft used by the major and national airlines to a number of the specialized fleet of aircraft in use by the contractors flying for the Forest Service. Because of the manner in which aircraft are grouped, this method of runway length should be viewed as providing a general analysis of length requirements.
Table 5-3
Runway Length Requirements by General Class of Aircraft
McCall Municipal Airport Master Plan

<table>
<thead>
<tr>
<th>Category</th>
<th>Runway Length by Temperature (F)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>60</td>
</tr>
<tr>
<td>Small Aircraft &lt;10 Pax</td>
<td>5,560</td>
</tr>
<tr>
<td>Small Aircraft &gt;10 Pax</td>
<td>5,550</td>
</tr>
<tr>
<td>Large Aircraft under 60,000 lbs</td>
<td></td>
</tr>
<tr>
<td>75% of fleet at 60% load</td>
<td>6,040</td>
</tr>
<tr>
<td>75% of fleet at 90% load</td>
<td>8,430</td>
</tr>
<tr>
<td>100% of fleet at 60% load</td>
<td>7,560</td>
</tr>
<tr>
<td>100% of fleet at 90% load</td>
<td>9,400</td>
</tr>
<tr>
<td>Aircraft over 60,000 lbs (dry Rwy)</td>
<td>6,770</td>
</tr>
</tbody>
</table>

Source: FAA Airport Design Software

Based on the FAA’s software, the current 6,150 foot length of Runway 16-34 is adequate for all small aircraft (under 12,500 pounds) operating from the airport up to the mean maximum daily temperature of 80 degrees. When the temperature exceeds the mean daily maximum, the runway would need to be extended slightly to provide adequate length to accommodate takeoffs by aircraft under 12,500 pounds. Table 5-1 provides an indication of the types of aircraft that are contained in the under 12,500 pound category. These consist primarily of single engine and twin engine piston aircraft. A substantial number of the based and itinerant users of MYL are contained within this general aircraft grouping. Thus, for these aircraft the existing runway length is adequate to meet their needs during dry operating conditions at or below the mean daily maximum temperature.

As noted earlier, however, these are not the only aircraft that currently utilize the airport. McCall is presently home to several based general aviation jets including a Dassault Falcon 900, a Falcon 10, a Beechjet and a Citation. Further, the airport is seeing an increasing number of itinerant jet operations as the area’s reputation as a tourism destination increases. This activity includes operations by Gulfstream G-IV’s, Hawker Siddleys, Citations, Learjets, Sabreliners and other Falcons. All of these aircraft, with the exception of the Citation I, are over 12,500 pounds and under 60,000 pounds. The FAA runway length software has four groupings for runway length determination which are tied to the percentage of the total aircraft fleet between 12,500 pounds and 60,000 pounds, and the percent of payload (passengers, fuel, etc.) on the aircraft. These are displayed in Table 5-3.

Applying the FAA’s computer analysis to the fleet of aircraft over 12,500 pounds and under 60,000 pounds, the current runway is insufficient to meet the needs of even the least inclusive category used
in the FAA’s runway length program. Based on Table 5-3, the current length of Runway 16-34 does not satisfy the length requirements of the 75 percent of the fleet at 60 percent of useful load category at MYL when the temperature exceeds 65 degrees. As the temperature increases the length of runway needed for 75 percent of the fleet at a 60 percent useful load also increases, reaching 6,540 feet of required runway at the mean maximum daily temperature, and 6,860 feet of required runway at 85 degrees.

It should be noted that this analysis encompasses only 75 percent of the total aircraft fleet between 12,500 and 60,000 pounds, leaving fully 25 percent of the aircraft fleet between 12,500 and 60,000 pounds incapable of using the airport. Additionally, of the 75 percent that are capable of using the runway, these are only capable of doing so at a reduced payload and/or fuel loading (i.e. 60 percent of useful load). As the temperature increases, aircraft comprising the 75 percent fleet category would need to operate at payload levels below the 60 percent level or at reduced fuel loadings if they are to operate out of McCall, based on the FAA software. Thus, the combination of the airport’s elevation, existing runway length and temperature combine to limit the operational capability of the airport to meet the runway length needs of much of the fleet of aircraft between 12,500 pounds and 60,000 pounds.

Reviewing the other fleet and payload thresholds within the 12,500 pound to 60,000 pound category results in even greater deficiencies in runway length for existing Runway 16-34 at all temperature gradients displayed in Table 5-3. Meeting 75 percent of the fleet at 90 percent useful payload results in the runway being 2,280 feet deficient at 60 degrees Fahrenheit and 2,630 feet short at the airport’s mean maximum daily temperature of 80.8 degrees. Attempting to satisfy 100 percent of the fleet between 12,500 pounds and 60,000 pounds at a reduced loading (60 percent of useful payload) would result in the need to provide a significant runway extension. At 60 degrees, the runway would be 1,410 feet short to meet this category based on FAA criteria, while at the mean maximum daily temperature the runway length is deficient by 2,940 feet. Based on Table 5-3, when the 100 percent of fleet at 90 percent of load criteria is used the runway length deficiency is significantly increased reaching an estimated 4,840 feet of additional required runway to meet operational requirements at the airport for the mean maximum daily temperature. Realistically, attempting to design for 100 percent of the fleet at 90 percent loading is not recommended, although designing for 100 percent of the fleet at 60 percent loading is not unheard of. What this analysis does point out, however, is that the current runway length is deficient to meet significant components of the anticipated fleet even at reduced loads and even in periods of lower ambient temperatures. For planning purposes the airport, if feasible, should provide a runway length that would accommodate either 100 percent of the fleet at reduced loadings or meet the needs of 75 percent of the fleet at a slightly higher loading than the generic 60 percent level used in the FAA’s analysis. In short, the airport should plan for between the 75 percent of the fleet at 60 percent of load and the 100 percent of fleet at 60 percent load criteria.

While the FAA software provides one analysis of runway length needs, it is often necessary to identify runway length needs for specific aircraft. Information was reviewed for an array of aircraft in the general aviation fleet applying both different loading and temperature criteria. Table 5-4 depicts the runway length requirements for a set of aircraft that presently use the airport, or are likely to use the
airport. This is not intended to be an exhaustive listing of all aircraft, but rather a representation of an array of aircraft in the GA fleet. The runway lengths are based on the performance characteristics specified by each aircraft manufacturer, and have been adjusted for the elevation and temperature conditions typical of MYL. Table 5-4 confirms what would normally be assumed, which is that the fleet of aircraft generally requiring additional runway length at MYL consists of segments of the business jet fleet and larger turbo-prop aircraft. Specifically, business jet aircraft typical of the based and itinerant fleet using McCall are faced with the need to limit fuel and payloads in order to operate from the airport. While these aircraft presently do operate under these restricted parameters, these conditions have a direct impact on the airport and its businesses including lost fuel sale revenue to the FBO and the city of McCall.

Table 5-4
Runway Length Requirements for Specific Aircraft by Temperature

<table>
<thead>
<tr>
<th>Aircraft Type</th>
<th>Takeoff Weight (lbs)</th>
<th>Runway Length (in feet) By Temperature Gradient</th>
</tr>
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<tbody>
<tr>
<td></td>
<td></td>
<td>60</td>
</tr>
<tr>
<td>Cessna 177</td>
<td>2,500</td>
<td>2,377</td>
</tr>
<tr>
<td>Cessna 182</td>
<td>2,950</td>
<td>2,291</td>
</tr>
<tr>
<td>Cessna 310</td>
<td>5,500</td>
<td>5,354</td>
</tr>
<tr>
<td>Aero Commander 980E</td>
<td>7,700</td>
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### Table 5-4 (Continued)

**Runway Length Requirements for Specific Aircraft by Temperature**

McCall Municipal Airport Master Plan

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<thead>
<tr>
<th>Aircraft Type</th>
<th>Takeoff Weight (lbs)</th>
<th>Runway Length (in feet) By Temperature Gradient</th>
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### Table 5-4 (Continued)
#### Runway Length Requirements for Specific Aircraft by Temperature

<table>
<thead>
<tr>
<th>Aircraft Type</th>
<th>Takeoff Weight (lbs)</th>
<th>Runway Length (ft) By Temperature Gradient</th>
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Bolding used to identify those aircraft exceeding available runway length

As displayed in Table 5-4, the current runway length is generally adequate for the identified fleet of single engine and twin engine piston aircraft. This is consistent with the evaluation employing the FAA's runway length analysis program. However, for a number of the jets identified in the table the existing runway length is insufficient, not only at the mean maximum daily temperature, but also at temperatures well below the average maximum. This is significant since it points out that the runway length deficiency is not just associated with limited periods of time when temperatures are high. It needs to be remembered that the higher the temperature the longer the runway that is required due...
to the fact that high temperatures reflect lower air densities, resulting in a lower output of thrust. Based on data in Table 5-4, a number of aircraft that presently use the airport are have to be weight restricted at temperatures of 60, 65 and 70 degrees Fahrenheit. Aircraft including the Falcon 900, one of which is base at the airport, Falcon 20, Falcon 200, Falcon 50, Sabreliner 40, 60, 65 and 80, Gulfstream II, III and IV, Learjet 20, 30 and 50 series as well as turbo-props including the Metro III, Emb 120 and SF 340 all are impacted by limitations associated with the current runway length at the airport. The analysis contained in Table 5-4 provides added support for the need to provide for additional runway length at MYL.

Applying a combination of the general FAA Airport Design Software and information relating to specific aircraft capabilities, it is recommended that an extension of the primary runway be considered. To conform with the goal of meeting a higher percentage of the fleet as well as a slightly higher load factor it is recommended to extend the current runway from 6,150 feet to a total length of 7,000 feet to meet the current needs of both based and itinerant users of the airport. While it is apparent that this length is not the maximum amount necessary to accommodate 100 percent of the fleet of general aviation aircraft even using the 60 percent load category, or enough to meet the length requirements of all of the aircraft identified in Table 5-4, the additional 850 feet of runway would provide for a level of enhancement allowing for greater than 60 percent useful load for a number of aircraft operating from the airport. Further an extension to 7,000 feet would all the airport to accommodate a greater percentage of the fleet of aircraft between 12,500 pounds and 60,000 pounds.

An additional benefit accruing from the development of added runway length at MYL is the enhancement of the runways capability and safety of operations in wet or slushy conditions. While the FAA's runway length software did not identify any need for added runway length in wet or slushy conditions, this appears to run counter to accepted planning practice. As noted in Planning and Design of Airports, by Robert Horonjeff and Francis X. McKelvey; "slush or standing water on the runway has an undesirable effect on aircraft operation. Slush is equivalent to wet snow. It has a slippery texture which makes braking extremely poor. Being a fluid, it is displaced by tires rolling through it, causing significant retarding force, especially on takeoff. The retarding force can get so large that the aircraft can no longer accelerate to takeoff speed. In the process slush is sprayed on the aircraft, which further increases the resisting forces on the vehicle... Between 0.25 and 0.5 inch depth, the takeoff weight must be reduced substantially to overcome the retarding force of water or slush." Given the climatological characteristics of the McCall area, the potential for slush or water being on the runway is substantial during a major portion of the year and it is not only appropriate, but is also a prudent safety consideration to consider adjusting runway length needs to meet these criteria. While the FAA Runway Length software did not suggest any adjustment to runway lengths for these conditions, previous FAA guidance has. Based on information delineated in FAA Advisory Circular AC 150/5325-4A, a 15 percent increase in the length of the runway is recommended for wet and slippery conditions although this can vary depending upon load and other operational considerations. While not recommending the adjustment of the proposed 7,000 foot runway by an additional 15 percent, although there is certainly some basis for this action, it needs to be clearly noted that the addition of 850 feet of runway significantly enhances operational activity by existing aircraft using the airport during the frequent periods when slush and/or water may be present and may impact operations.
For example, aircraft presently requiring roughly 5,225 feet of runway in dry conditions would, applying the FAA's general criteria, be able to still operate without load restrictions during wet conditions on the current runway. However, aircraft requiring greater than 5,225 feet of runway in dry operating conditions could face weight restrictions of varying degrees or be precluded from operating from the airport during wet conditions. A cursory review of the information displayed in Table 5-4 provides an indication of the impact such restrictions could have at McCall based on the current runway length and factoring in the penalty for wet operating conditions. Although the airport will still be impacted by wet runway operating conditions, the proposed extension of Runway 16-34 to 7,000 feet will enhance the operational capability of the runway to meet the needs of the current fleet of aircraft in wet conditions. Again applying FAA general criteria relative to the impact of wet runway conditions to the future 7,000 foot runway, the proposed 850 foot runway extension would allow aircraft requiring up to 5,950 feet of runway in dry weather to operate without weight restrictions.

The recommended runway extension enhances the operational capability of the airport to serve existing tenants and itinerant users at MYL. The extension, while not the maximum extension potentially justifiable, is a reasonable recommendation that allows a greater percentage of the general aviation fleet to operate into and out of MYL as well as allowing higher payloads by this fleet of aircraft. Further, the proposed extension enhances the safety and viability of aircraft operations in wet conditions. In short, the recommended extension is a reasonable compromise between what may be justifiable using planning criteria and what may be reasonable given the conditions existing in the vicinity of the airport.

**Runway Strength**

Data provided by both pavement management and engineering reports indicate that Runway 16-34 can accommodate a single wheel loading (SWL) of 80,000 pounds, a dual wheel loading (DWL) of 110,000 pounds, and a dual tandem wheel loading (DTL) of 150,000 pounds.

The pavement strength of Runway 16-34 is adequate for the present fleet of based aircraft as well as for aircraft anticipated to base and/or operate from the airport over the course of the planning period. Both the extension of Runway 16-34, its existing parallel taxiway and development of a full length parallel taxiway along the west side to Runway 16-34 should provide a pavement strength rating equal to that of the runway to accommodate both the needs of the general aviation fleet and those of the Forest Service and their contractors.

**TAXIWAYS**

Taxiways are constructed to facilitate aircraft movements to and from the runway system. Some taxiways are necessary simply to provide access between the aprons and runways, whereas other taxiways become necessary as activity increases at an airport to provide safe and efficient use of the airfield. The demand/capacity assessment indicated that the overall airfield capacity was adequate to meet anticipated demand for the planning period. This is due, in part, to the existing parallel taxiway and system of exit taxiways at the airport. The capacity assessment indicates no major capacity enhancement needs at the airport. This does not mean, however, that improvements to the