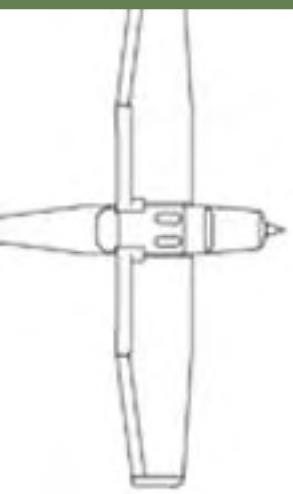
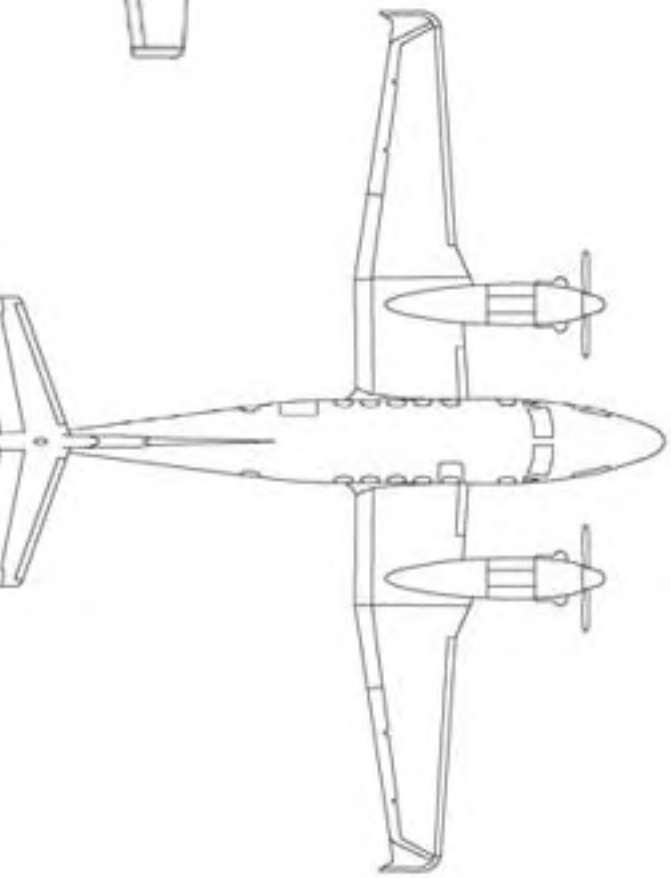
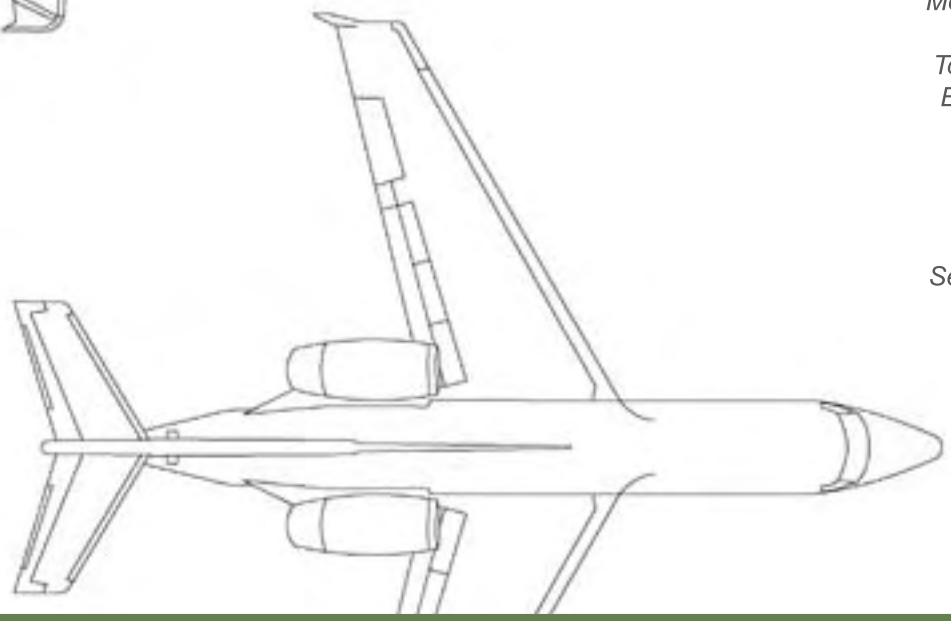
McCall Municipal Airport
Master Plan Update







Prepared For:
City of McCall, Idaho

Prepared By:
Mead & Hunt, Inc.
and
Toothman-Orton
Engineering Co.

September 2007

McCall Municipal Airport Master Plan Update

Final Technical Report

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1.1 Introduction

This master plan update approached core master plan elements by revising certain sections in the 1998 Master Plan and performing new analyses where necessary. McCall Municipal Airport's (MYL) current master plan document served as the basis for this update. Certain elements of the 1998 Master Plan Update were relevant. It was the intent of this update to resolve 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 for the future of aviation service in the region. They can continue to serve 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 was necessary to understand the type and level of aviation demand in the region. It was also necessary to determine for how long or if the existing airport site can or should accommodate future demands.

Several sub issues were analyzed in this plan document in order to address the main issues. The issue categories addressed include:

- Airfield configuration and capacity;
- Air service potential/demand;
- Land use planning;
- General aviation hangar development;
- Airspace;
- Auto parking;
- Airport aesthetics; and
- Utility infrastructure.

1.1.1 Airfield configuration and capacity

The primary runway at McCall needs to be improved to allow the continued safe landing of aircraft by existing and projected users. Mountainous terrain was a variable that was considered

and needs to be addressed to the greatest degree possible. Options to increase airport safety and efficiency and decrease its impacts on sensitive land uses were explored.

1.1.2 Air service potential/demand

The airport currently has no scheduled commercial air service and limited capability for jet operations. Yet, the local economy is becoming more dependent upon tourism and access to natural amenities for economic growth. On the other hand, the small town character of McCall is valued. The community impacts of a larger, busier airport in close proximity to the central business district and residential development are not unanimously accepted as a tradeoff with increased air service and an influx of larger private jet aircraft. The role of the airport at its current close-in location was a question that needed answering in order to provide successful planning for the Airport and the City of McCall for both the short- and long-term time frames.

Two factors are considered in answering this question, the type of airport residents want and the future capability of this airport. The former factor was a public policy decision and the latter was a planning and engineering question. Matching the public's desire for air service with airport development goals added to the importance of community and user feedback to provide a design that will work well for MYL.

1.1.3 Land use planning

Land use surrounding the airport was an outstanding issue that has become more difficult to resolve. Both the City of McCall and the Airport are under pressure to expand to meet demands. The Airport needs more land to expand. Due to the location of the Airport in relation to downtown and residential development, airport land use compatibility planning was needed. Land adjacent to the Airport had already been identified for acquisition either to buffer the Airport from urban development or preserve it for future airport development. Subdivision encroachment at the western and southern end of the airfield is a concern, as are impacts on nearby schools at the north end that are directly in the flight path of aircraft.

1.1.4 General aviation hangar development

The Airport is seeing increased demand for aircraft storage hangars. Available land for hangar development as well as general aviation services growth in general is limited on the current Airport footprint. Use of the "triangle" area bounded by the parallel taxiway has been an on-going discussion through previous planning discussions but no action had been taken. Planning and designing this area for a use, be it hangars, aprons, or storm water retention needs to be completed. The most efficient and appropriate layout of hangar, tie-down, and aircraft parking ramp areas will be completed to allow the greatest development of the Airport with the minimum investment in additional acreage.

1.1.5 Airspace

Airspace limitations are a significant variable in accommodating future aviation demands and are taken into consideration when developing alternative plan concepts. The mountainous terrain surrounding the Airport makes it difficult to reduce approach minimums during instrument flight

conditions. Several obstructions including small peaks and rising topography are located northeast and northwest of the Airport at elevations that range from 300 to 700 feet above runway elevation. There are also potential airspace and obstruction concerns in the final approach surfaces of both runway ends. South of the Airport, a ridgeline rises approximately 74 feet above the elevation of the runway. This ridgeline is a major impediment to significantly improving approaches to the south. The Airport currently has a 20:1 approach from both the north and south due to obstructions. Airspace limitations are re-evaluated in terms of increases in aviation demand including those projected for commercial air carriers. Guidance from recently updated FAA Advisory Circulars (Airport Design and anticipated TERPS changes) are used to address safety/design standards.

1.1.6 Automobile parking

Automobile parking is a current concern at the Airport. Some Airport users park cars for long periods of time for various reasons, which restrict parking spots for other users. Parking lots are located at several locations across the Airport and are unregulated. Expanding and improving parking lots and parking options for different users is an issue that is addressed in this master plan update. Plans for expanded Airport parking have been previously drawn up without implementation. These plans are reviewed, and specific plans for implementation are developed.

1.1.7 Airport aesthetics

The poor aesthetic quality of the airport is a complaint that city staff and City Council members have received numerous times. The primary source of complaints is the intersection of State Highway 55 and Deinhard Lane near the public entrance to the FBO facilities of McCall Air, and adjacent to the Airport Management and Maintenance offices. Additionally, some of the older hangars and buildings that house businesses in this same area of the airport are in need of refurbishment or replacement. With the exception of that specific area, the majority of the hangars on the airport are in general very good condition and fit together well aesthetically. The frontage along Highway 55 south of Deinhard Lane is also in need of aesthetic improvements to enhance the entrance to the City of McCall, the Airport, and to generally make it more attractive to potential airport users. Enhancement of the airport through landscaping and other design elements is an important improvement to consider.

1.1.8 Utility Infrastructure

Airport development, especially future hangar development, is partially dependent upon the extension of utility infrastructure to the airport. Steps that need to be taken to secure infrastructure which corresponds to future development patterns at the airport are identified. Previous sewer collection system expansion plans are reviewed and recommendations for their amendment are made when necessary. This will help ensure airport development results.

1.2 Planning Process

In order to address the issues with which the airport is not confronted but may be in the future, a planning process was designed and implemented that logically worked through problems using professional knowledge and skill, and many forms of public input.

1.2.1 Background/data collection

This section consists of two parts; collection of socio-economic data, and a facility inventory. Socio-economic data were collected and analyzed in order to inform aviation demand projections and facility demands listed later in the plan. This included data on population growth, personal incomes, housing, tourism, and employment. Sources for this data include the *Housing Market and Needs Assessment: Valley and Adams County* July 1, 2005 and *A Socioeconomic Profile*, McCall City, Idaho by the Sonoran Institute Economic Profile System Community. Professional experience working with similarly situated airports contributed to this background knowledge.

An inventory of airport facilities was done using the 1998 Master Plan as the primary source of data, and amending this inventory with new facility information as it came to light. Information on wetlands in the vicinity of the airport was updated using National Wetland Inventory (NWI) maps, for use in the analysis of alternative development concepts. No significant changes have been made to the airport since the previous master plan that would justify a more sophisticated method.

1.2.2 Assessment of aviation demands

The 1998 Master Plan forecast methodologies and results were reviewed for relevancy and informed the Master Plan Update forecasts. This included an analysis of recent trends at the airport, as well as trends in future aviation activity across the United States. Aviation demand projections were developed for 5-, 10-, and 20-year time periods for:

- Aircraft operations;
- Based aircraft;
- Fleet mix/design aircraft; and
- US Forest Service needs.

Aviation demand projections were developed based on a review of the current projections, recent trends, and discussions with the FAA and airport personnel. Consultant experience in planning for aviation facilities at similar resort locations were also factored in. Methodologies used in this element were reviewed with airport management and the FAA before the work was finalized.

Mead & Hunt also estimated the market demand for scheduled commercial air service. The result was an understanding of the market potential in this resort area for such service. Since much of the potential demand for commercial air service will flow from new, as opposed to existing air travelers, the demand for commercial air service *to* the region was estimated using existing market studies. These existing studies came from resort developers, air carriers, and others who completed similar studies.

1.2.3 Facility requirements and design standards

This element of the master plan update effort used demand projections to determine the facilities needed to accommodate projected levels of demand. Within this element, current activity levels were compared to the airport's operational capacity. Additionally, other modes of transportation serving the McCall area, primarily Highway 55, were looked at to see if any changes are planned, such as upgrades, which may increase or decrease the need for air travel into and out of the area. Using established FAA criteria, a determination of the airport's existing facilities was made to assess their adequacy to meet future aviation demand. Existing capacity was compared to demand projections to determine the time frame in which capacity constraints could occur. Facilities addressed include:

- Airfield design standards (Runways, taxiways, aprons, tie downs areas);
- Runway length analysis;
- General aviation facilities (primarily aircraft storage hangars, but includes FBO);
- Commercial air service facilities/infrastructure;
- Possible passenger terminal facilities;
- Service facilities (e.g., ARFF, SRE, etc.);
- Lighting and NAVAIDs;
- Airport parking, access and circulation;
- FAR Part 139 criteria

Along with the facility needs analysis, there was a re-evaluation of the critical aircraft that determines the airport reference code (ARC) used in airport facility planning and airspace limitations. The previous master plan used airport reference code B-II standards supplemented with B-III standards on the west side of the airport used by the US Forest Service Aircraft. A combination of FAA design guidance and consultant-developed facility planning guidelines were used to complete this analysis. A table listing all deviations from the current FAA design standards pertaining to the recommended ARC is provided in the report that includes proposed disposition of the deviations. Runway length requirements and dimensional standards for this Master Plan Update are referenced in FAA Advisory Circular 150/5325-4B – *Airport Design*.

1.2.4 Alternative plan concepts

Using various ARC standards and parallel taxiway location and spacing requirements, airfield configurations were developed. Then plans for land side development including general aviation were created. Future alternative design options were produced that would accommodate aviation demands and meet FAA airfield standards. Four airfield, and three facilities layout versions, including redevelopment of the triangle area were produced. These explore the accommodation of commercial air service and general aviation based on needs. The purpose of these layouts is to further assist local decision makers in determining what level of air service is desirable at this existing site and define the amount of physical airport expansion that is acceptable.

During this element of the planning process, a decision was made to pursue/plan for scheduled air service.

The City of McCall is committed to long-term continued investment in the existing airport and desires aesthetic improvements to the airport to enhance the image of the City. The aesthetic improvements may include landscaping and/or architectural elements to enhance existing and future facilities. Planning for sanitary sewer and water distribution systems and coordination with City of McCall Public Works will also take place.

1.2.5 Land use planning

This element was created anew with the expectation that facility demands have changed from the 1998 Master Plan. Land surrounding the airport is of utmost importance to the future functionality of the airport and the community it serves. Land needs to accommodate future development are described. Land use tools (e.g. noise contours, safety zoning) are assessed to determine their effectiveness in accomplishing land use goals of the airport. The McCall comprehensive plan, zoning codes and ordinances, and other land conservation/development plans were reviewed. Coordination with the appropriate City departments also took place. The resulting section recommends appropriate land use management strategies including acquisition and zoning in the airport influence area to prevent further encroachment by incompatible land uses.

As a part of the land use analysis, noise exposure contours using the FAA's Integrated Noise Model were developed for existing conditions and future (5 year) conditions. Noise impacts on surrounding land uses, and land use compatibility issues are discussed.

1.2.6 Financial plan

This section combines the results of the previous chapters into a list of recommendations. Consultants worked with airport staff and the Planning Advisory Committee to prioritize recommendations, develop a general timeline for their implementation, and identify barriers and specific steps to their completion.

Particular focus was given to detailing short-term development projects in a capital improvement program (CIP). A realistic capital improvement program was developed, which identifies projects which need environmental documentation, as part of this element. Applicable airport projects and data from the financial plan are moved forward into this update.

Cost estimates are made for recommended improvements in the CIP. Funding sources are also identified and discussed. Approximate FAA, state and local cost shares are documented for each project.

1.3 Project Participants

1.3.1 Planning Advisory Committee

A Planning Advisory Committee (PAC) was formed to oversee the update process and provide input for local aviation related matters to the Consultants. A master plan update process is a complex exercise that requires the guidance of local leaders that have knowledge and/or interest in aviation in McCall. The Planning Advisory Committee will generally represent the airport and local interests. The planning consultants will meet with the Committee during the course of the study to review study progress, concepts, and working papers. The master planning team members met with the Planning Advisory Committee at five meeting over the 13-month period. This committee consists of a diverse set of stakeholders:

- Dan Scott – PAC Chairman - President McCall Aviation
- Lori MacNichol– Pilot / Owner Mountain Canyon Flying
- Paul Jorgensen – IAA President/Alaska Airlines Captain
- Dave Sparks – McCall Fire Chief
- Frank Bruneel – Airport User/Businessman
- Roger Millar – Director, McCall Community Development
- Mike Anderson – Airport user/Owner McCall Real Estate
- Scott Turlington – Director External Relations, Tamarack Resort
- Bill Keating – Pilot/Public Works Director
- John Sabala – Whitetail Club/Resort
- John Stright – United States Forest Service (USFS)[1]
- Rick Harvey – McCall Airport Manager[2]

The first meeting of the PAC took place on February 21, 2006, prior to the public Kick-off meeting. The Kick-off meeting gave the consultants an opportunity to explain the planning effort and for PAC members to guide and give input.

1.3.2 Airport Advisory Committee

The Airport Advisory Committee (AAC) was established in 1987 by the city of McCall. The AAC is a five member committee, four of which are at-large members appointed by the mayor with city council concurrence. The fifth member is appointed by the United States Forest Service (USFS) to represent their interests as a major tenant at the airport. These members included:

- John Seevers, Chairman
- Jerry McCauly[3]
- Gordon Eccles
- Dan Scott
- Frankie Romero[4]

[1] *John Stright was replaced by Eric Hagen in September of 2006*
[2] *Rick Harvey was replaced by John Anderson in January of 2007*
[3] *Jerry McCauly was replaced by Rick Harvey in March 2007*
[4] *Frankie Romero was replaced by Eric Hagen in late 2006*

The role of the AAC is "to advise and make recommendations to the McCall City Council on matters pertaining to the operation and maintenance of the McCall Municipal Airport".

The planning team included the AAC members in the initial kick-off meetings with the PAC and City Council. The team met with the AAC during the planned visits to McCall during the Master Planning process to keep them informed, receive their feedback and buy-in prior to City Council action.

1.3.3 McCall City Council

The McCall City Council, the final decision maker and owner of the airport hosted presentations by the planning consultants four times during the planning process: (February 21, 2006; June 22, 2006; September 7, 2006; and March 22, 2007). City Council members also attended many of the public meetings, "Open Houses", that were held at critical times during the planning process. The plan documents are intended to be adopted by the City Council after approval from the Airport Advisory Committee and review from various other city agencies and committees.

Several City of McCall departments were involved at the inception of the plan through meeting and interviews with department managers. These included the Zoning and Planning Commission, Public Works, and Community Development.

1.3.4 Federal and State Government Agency Coordination

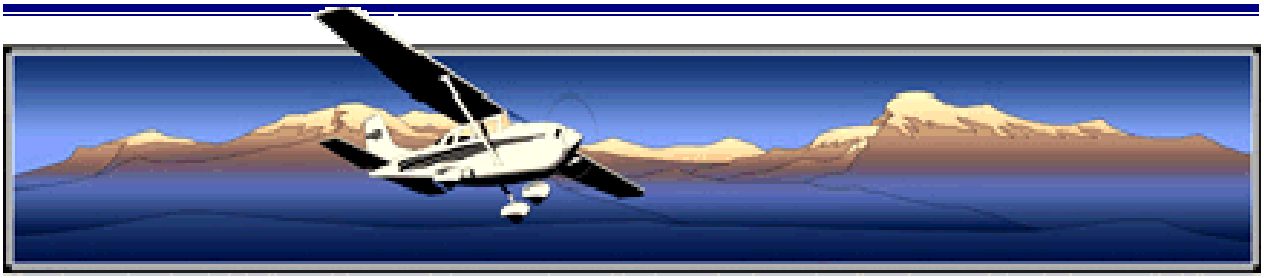
The FAA and the Idaho Department of Aeronautics were involved periodically throughout the process. The FAA reviewed the scope of services and aviation demand projections, airport improvement recommendations, and other elements that deserved their attention in order to ensure a successful plan.

On February 24, 2006, the Consultants met with an aviation project manager from the Idaho Department of Transportation-Division of Aeronautics.

1.3.5 General Public

A public kick-off meeting was held February 21, 2006, at City Hall in order to inform the public about the planning process and take comments on what should be included. This public meeting took place as a special city council meeting. Additional public meetings were held on:

- June 22, 2006 – In conjunction with McCall City Council Meeting
- September 7, 2006 – 2 meetings with one at 12 p.m. and one at 6 p.m. at McCall Fire Station.
- October 2, 2006 – McCall Aviation Hangar
- January 29, 2007 – McCall Fire Station
- March 21, 2007 – McCall Fire Station



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 are important to this plan as they concentrate 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. 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 can 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).

Controlling the magnitude of these new demands on cities and regions is very difficult. However, guiding them poses a challenge but is not impossible. Determining the best way to accommodate growth in air travelers and aircraft is the major challenge of this Airport 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.

[1] *People born between the years 1946 and 1964*

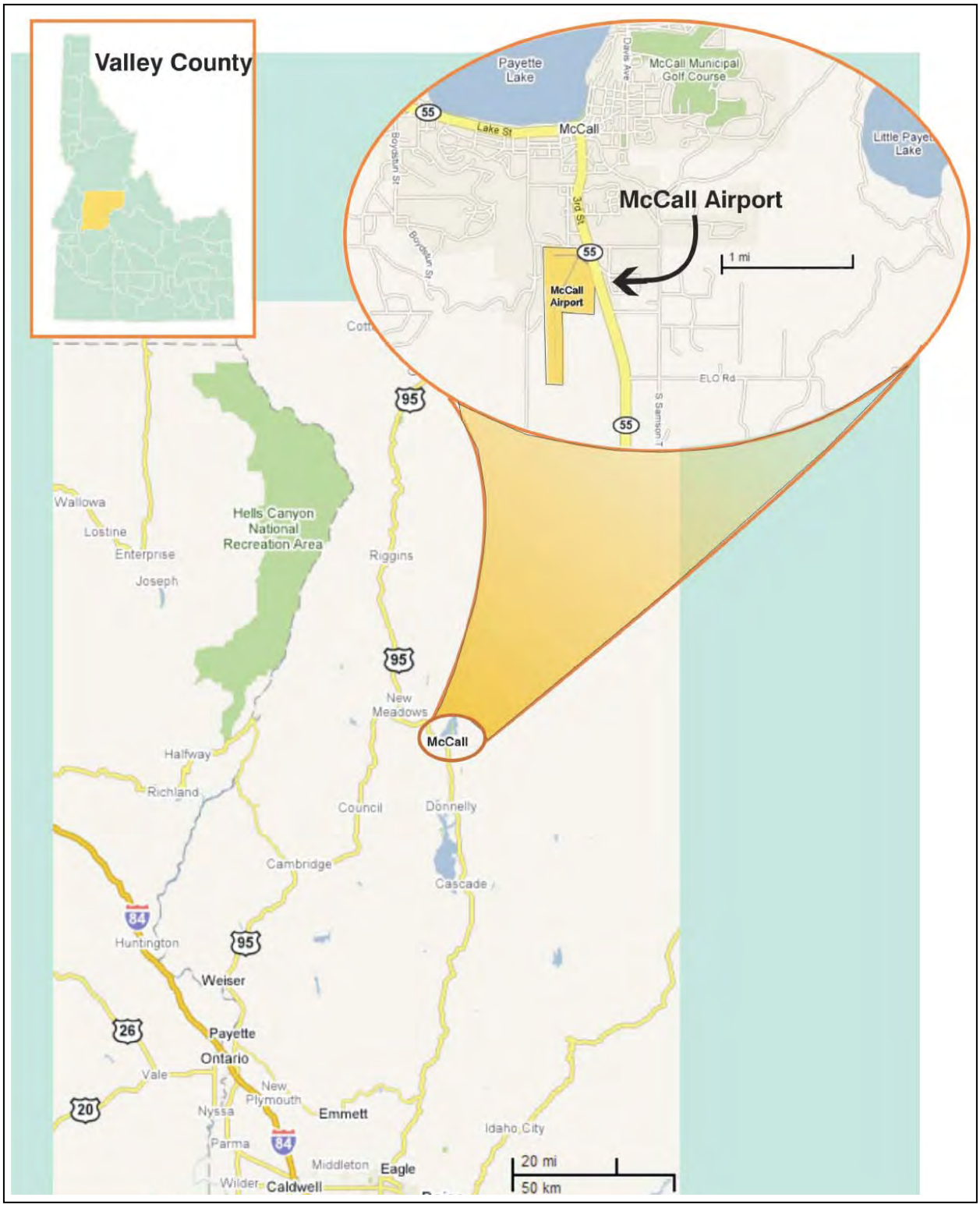


Exhibit 2-1
Location Map

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 was 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 over the last 30 years.

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 but, 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 leaves the area because of the seasonally slow economy, to a high of more than 15,000 in the summer at the peak of the tourist season. Because part-time residents make up such a large portion of the total population, 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 increased dramatically in recent years. 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 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 properties 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

Year	Property Values (Billions)
1995	1.007
1996	1.150
1997	1.280
1998	1.310
1999	1.330
2000	1.380
2001	1.400
2002	1.401
2003	1.500
2004	1.800
2005	2.600
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 come from Treasure Valley, Idaho, which encompasses Boise. A very large percentage of the residents of McCall only live in the McCall area part of the year. Immigration is creating new retail, service and construction employment and higher revenues for these industries.

With this historical data in mind, 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 a 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

Demographics is not the only local factor driving growth and change. It, along with economic development, 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. The location of some of these can be seen on **Exhibit 2-2**.

- **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 investors.

- **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 residences 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, an 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, an indoor and outdoor basketball court, 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.

McCall Municipal Airport
Exhibit 2-2: Resort and Recreational Development

Scale: 1:90,000

Sources: City of McCall
Mead & Hunt, Inc., 2006

- **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 in 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 in McCall. The changes ahead will undoubtedly require expansion of public facilities and infrastructure that includes 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 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 tourists who 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 (MYL) 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 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 nearly 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 and is considered "The Gateway to the Backcountry". This airport plays an important role for the region and the State of Idaho. It provides 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, then charter flights into the backcountry for backpacking, rafting and big game hunting. They fly out of McCall to the backcountry because it is 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, which is 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

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

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, 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 increased in recent years. While the mix of aircraft that use MYL has been slowly evolving to more sophisticated turbo prop and business jet aircraft, the airport is used primarily by single engine propeller aircraft. The number of based aircraft has also increased; 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 6,106 feet long, 75 feet wide, and 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 and has 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 feeder taxiways that connect the runway to the full parallel taxiway and two feeder taxiways that connect from the runway to the partial west side taxiway.

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 provides 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.


McCall Municipal Airport Master Plan Update 2006
Exhibit 2-3: Existing Facilities
McCall Municipal Airport
Existing Airport Facilities
1 City of McCall Building
2 Hangar - Manchester
3 McCall Air Taxi
4 Hangar - Evergreen Forest Service
5 Fuel Farm
6 Pioneer Air Service
7 Hangar - Ballard Smith
8 T-Hangars (8)
9 Hangar - Slayton
10 Hangar - McGee
11 Hangar - Woolen
12 Hangar - Woolen
13 Hangar - May
14 Hangar - Miller
15 Hangar - Mancini
16 Hangar - Southwest Lumber
17 Hangars
18 Flight Line Hangars - 4
19 Flight Line Hangars - 5
20 Hangar - Scott
21 USFS Aircraft Hangar
22 Main USFS Building
23 USFS Pilot Ready Building
24 USFS Retardant Tanks
25 Hangar - Woolen
EXISTING RUNWAY 16-34 75' x 6107'
EAST PARALLEL TAXIWAY
APRON
WATER RETENTION BASIN
HELIPAD
WIND CONE & SEGMENTED CIRCLE
INDUSTRIAL LAND USE
MISSION STREET
TO MOSE
STATE HIGHWAY 55
RESIDENCY ACCESS ROAD
EXISTING VASI
REIL
ASOS
N
SCALE IN FEET

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

Runway Approach Lighting
- Runway 16 and 34: Non-Precision

Runway Landing Aids
- VASI-4 box (Visual Approach Slope Indicator Lights)- Runway 34 (FAA owned)
- PAPI-2 light (Precision Approach Path Indicator Lights)- RWY 16 (Airport Owned)
- Runway End Lights: REILS- Runway 16 and 34
- Runway Edge Lights: MIRL (Medium Intensity Runway Edge Lights)- Runway 16/34
- Wind Indicator, segmented circle, beacon

Instrument Approaches
- RWY 34: GPS and NDB approaches

Weather
- ASOS

BUILDING AREA

Area east of runway
- FBO, flight training facilities, and transient aircraft parking
- Aircraft storage hangars of various shapes and sizes
- Automobile parking
- Maintenance building
- Airport Administrative office

Area west of runway
- USFS facilities (smoke jumpers and tanker program)

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.

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

Source: Data compiled by Mead & Hunt, Inc. (March 2004)

MYL is outfitted with pubic 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 positions 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 de-icing, 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 are busier than before. But the FBO 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. Mountain Aviation Corporation is a flight school that provides: private, instrument, and commercial flight training; aircraft rental and storage; scenic air tours; and sells pilot supplies. 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 from 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 (IFR) 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 the improvement of approaches from the south. The slope of the approach is a non-standard 20:1. Improving to a standard 34:1 for a non-precision 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 at 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 had considered vacating the trackage on the west side of the airport; the Idaho Transportation Department has studied the best alignment for State Highway 55; the sawmill in McCall had closed; large recreational developments were proposed; and numerous facilities at the airport needed upgrades or repairs.

Major recommendations from that Master Plan included: Proposal for establishment of 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 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 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 included 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 concluded that McCall Municipal Airport directly and indirectly supported 192 jobs, contributed $4,200,000 to payroll and generated $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 concluded:

> *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 reported 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.

3.1 Aviation Demand Projections

The analyses below do not include projections for possible commercial air service. Though air service is conditionally viable as discussed in Chapter 4, precisely when air service would be feasible, 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.

3.1.1 National, State and Local Context

In order to determine future aviation demand 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.

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 greater risk of 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 lays ahead obtaining labor concessions and revamping route networks.

Fuel prices are a major determinant for airline profitability and have increased 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[1] and are expected to average between $64 and $65 per barrel in 2006[2]. The future of oil prices is relatively uncertain, but it is 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 increased flying hours. High fuel costs will impact this GA activity as well.

From a 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[3]. 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 as new deliveries increased 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, which make 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[4]. In 2005 the number of GA jet flights was 2.6 percent higher than in 2004[5].

[1] *FAA. 2005-2016 Aerospace Forecasts. Executive Summary. p.6.*
[2] *Energy Information Administration (EIA), a statistical agency of the U.S. Department of Energy http://www.eia.doe.gov/*
[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*

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 and 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 increased 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.

Many of the jet aircraft that will account for this increase are Very Light Jets (VLJ's). This new general aviation jet aircraft coming to market between 2006-2008 timeframe will weigh 10,000 pounds or less maximum certified weight, and certified for single pilot operations. Industry forecasts indicate the potential for 4,000 to 5,000 VLJ's to be in service in the United States by 2017. Up to 40% of these new aircraft are anticipated to replace the existing turboprop fleet, 20% replacing the existing business jet fleet and 40% as additional aircraft in the business jet fleet. It is anticipated that the VLJ will be highly utilized in the air taxi market.

The many VLJ's being produced by several manufacturers are being specifically designed and built to operate at general aviation airports with shorter runway lengths and less stringent airport design requirements than those necessary for the contemporary business jet fleet. It is too early to tell what impact these new jets will have on the airport system as a whole or for any airport specifically.

The VLJ's are not identified separately in the following forecasts for based aircraft or operations at McCall Municipal Airport as it is felt that they will not have a significant impact on the airport in the near future. This is partly due to the fact that many VLJ sales will take the place of a sale of a turboprop or contemporary business jet, and although the specific type of aircraft using MYL may change, the number of aircraft will not significantly change in the near term. However, these aircraft could have an impact on capacity at resort airports over the long term if they truly sell in the numbers being forecast. This situation warrants close attention throughout the planning period.

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 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 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 piston rotorcraft. In addition, the FAA expects that the

relatively inexpensive Microjets, which are soon expected to enter the active national GA fleet, 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 than 40 percent over the next ten years (2015)[6] to 9,680 aircraft (not including very light jets)[7]. Honeywell predicts 9,900 new aircraft will be purchased 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 average[8]. 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.

State Conditions

As the scale of analysis changes so do the variables that impact McCall Municipal Airport. Taking into consideration other important variables gives a different perspective on the forces in play that affect 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 airports that have air service, enplanements have increased 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 Nevada, Arizona, Florida, Georgia, and Utah. In 2005, Idaho had an estimated population of 1,429,096, 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.

Local Conditions

There is little doubt the population of McCall is and has been growing at an unprecedented rate and that the local economy is growing quickly in some sectors. Recent and significant increases in tourism, resident population, housing units, the development of Tamarack Resort, continued expansion of Brundage Mountain and Whitetail Resorts together with the development of River Ranch and Jug Mountain give reason to believe that McCall will be growing rapidly in the next ten years approximately.

[6] *Collagan David (November 2005). "Most of the Market in One Place." Business and Commercial Aviation. p. 148.*
[7] *Business and Commercial Aviation. "A Tale of Two Forecasts. December 2005. p. 28.*
[8] *Business and Commercial Aviation. "A Moment Full of Promise." December 2005. p. 7.*

This is due to several factors that relate to the driving forces behind the current boom period. It is expected that the acute impacts of resort community expansion will have passed within that ten year period. Tamarack expects to be built out in ten to fifteen years. Baby Boomers (who are now between the ages of 42 and 60) are driving population growth in McCall will have, by in large, finished relocating either due to age or because they have already relocated to where they want to be. Tourism, however, 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 have never continued 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 that is seasonal in nature. If baby boomers cease to relocate to McCall and/or tourism wanes, the economy would slow. There then is a risk that 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, and 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 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 were 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

	Itinerant Operations					Local Operations			
Year	AC	AT & Comm.	GA	Mil	Total	GA	Mil[/1]	Total	Total OPS
1995	0	5,000	20,000	100	25,100	9,000	0	9,000	34,100
1996	10	7,000	22,000	100	29,110	10,500	0	10,500	39,610
1997	0	7,074	22,364	100	29,538	10,673	0	10,673	40,211
1998	0	7,151	22,745	100	29,996	10,855	0	10,855	40,851
1999	0	7,230	23,289	100	30,619	11,187	0	11,187	41,806
2000	0	7,307	23,833	100	31,240	11,519	0	11,519	42,759
2001	0	7,385	23,907	100	31,392	11,626	0	11,626	43,018
2002	0	7,465	24,483	100	32,048	11,984	0	11,984	44,032
2003	0	7,546	25,060	100	32,706	12,343	0	12,343	45,049
2004	0	7,626	25,629	100	33,355	12,696	0	12,696	46,051
2005	0	16,205	26,206	100	42,511	13,055	0	13,055	55,566
CAGR 1995-2005	*N/A*	*12.48%*	*2.74%*	*0.00%*	*5.41%*	*3.79%*	*N/A*	*3.79%*	*5.00%*

Source: FAA TAF, 2006

Notes [/1] Military

According to the TAF, total operations at the airport have increased 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 when the TAF more than doubled. 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 increased from 2003 to 2005.

Table 3-2: Monthly Jet & Turbo Prop Operations (Itinerant and Local) by Aircraft Design Group[9]

	ADG I	ADG II <12,500 lbs	ADG II >12,500 lbs < 25,000 lbs	ADG II >25,000 lbs	ADG III	ADG IV	Total
2003							
January	6	6	2	2	0	0	16
February	6	6	2	0	0	0	14
March	8	6	2	2	0	0	18
April	8	4	2	0	0	0	14
May	26	24	14	4	0	0	68
June	74	82	82	24	0	0	262
July	116	78	126	36	12	0	368
August	84	80	68	38	238	0	508
September	74	20	16	14	96	0	220
October	32	60	12	14	36	0	154
November	6	8	8	12	0	0	34
December	10	10	4	8	0	0	32
Total	***450***	***384***	***338***	***154***	***382***	***0***	***1,708***
2004							
January	8	10	10	4	0	0	32
February	12	10	8	4	0	0	34
March	10	14	8	8	0	0	40
April	16	18	10	8	0	0	52
May	24	78	20	8	0	0	130
June	34	58	62	20	0	0	174
July	54	150	106	32	32	0	374
August	80	166	102	42	120	0	510
September	54	90	48	22	0	0	214
October	28	40	20	12	0	0	100
November	6	6	12	2	0	0	26
December	10	22	10	24	0	0	66
Total	***336***	***662***	***416***	***186***	***152***	***0***	***1,752***
2005							
January	6	36	28	6	0	0	76
February	12	24	20	2	0	0	58
March	12	10	16	2	0	0	40
April	10	26	14	6	0	0	56
May	24	60	40	6	0	0	130
June	26	74	72	16	0	0	188
July	66	156	108	30	30	0	390
August	62	216	136	42	150	0	606
September	44	106	74	32	66	0	322
October	38	58	32	4	0	0	132
November	18	24	12	6	0	0	60
December	16	20	22	2	0	0	60
Total	***334***	***810***	***574***	***154***	***246***	***0***	***2,118***

Sources: McCall Aviation and Mead & Hunt, 2006

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

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 listed 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 few 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

		Operations		
	Aircraft	2003	2004	2005
Tanker Program	P3 Orion	224	86	260
	P2V 5/7 Neptune	226		32
	Douglas C-54G (DC-4)	222		
	DC-7	2		
	Air Tractor AT-802 F	38	318	386
Smoke Jumper Program	Turbine DC3	10-Year Average: 300+ annual operations		
	deHavailland DHC6			
Total Operations		1,012	704	978

Sources: US Forest Service; Mead & Hunt, 2006

Another source of data investigated for historic operations levels was traffic counts from the McCall Family Fly-In (see **Table 3-4**). This annual August event that 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

Year	Operations
2002	1,800
2003	1,450
2004	1,250
2005	1,460

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

	General Aviation			
Year	Local	Itinerant	Military	Total Operations
1997	11,500	27,500	100	39,100
2002	12,760	30,510	100	43,370
2007	14,160	33,850	100	48,110
2017	17,430	41,670	100	59,200

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 that emerge from this forecast method show slow and stable annual growth to 2025 as seen in **Table 3-6**.

Table 3-6: TAF

	Itinerant Operations				Local Operations		
Year	AT & Comm.	GA	Mil	Total Itinerant	GA	Total GA	Total OPS
2000	7,307	23,833	100	31,240	11,519	42,659	42,759
2001	7,385	23,907	100	31,392	11,626	42,918	43,018
2002	7,465	24,483	100	32,048	11,984	43,932	44,032
2003	7,546	25,060	100	32,706	12,343	44,949	45,049
2004	7,626	25,629	100	33,355	12,696	45,951	46,051
2005*	16,205	26,206	100	42,511	13,055	55,466	55,566
2006*	16,375	26,782	100	43,257	13,414	56,571	56,671
2010*	17,022	28,876	100	45,998	14,690	60,588	60,688
2015*	17,867	31,725	100	49,692	16,457	66,049	66,149
2020*	18,753	34,856	100	53,709	18,437	72,046	72,146
2025*	19,684	38,295	100	58,079	20,655	78,634	78,734
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 continue to experience 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 the wastewater facilities planning 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

	Itinerant				Local Operations		
Year	AT & Comm	GA	Mil	Total Itinerant	GA	Total GA	Total Ops
1995	5,000	20,000	100	25,100	9,000	34,000	34,100
2000	7,307	23,833	100	31,240	11,519	42,659	42,759
2005	16,205	26,206	100	42,511	13,055	55,466	55,566
2006	16,477	26,646	100	43,224	13,274	56,398	56,498
2010	19,472	31,489	100	51,061	15,687	66,648	66,748
2015	23,700	38,327	100	62,127	19,093	81,120	81,220
2020	28,020	45,313	100	73,434	22,574	95,907	96,007
2025	33,491	54,161	100	87,752	26,981	114,633	114,733
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 defines 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 not likely to be a good predictor of what is in store for the airport. Again this is 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 underway in the region.

Because the peer airports in the sample have already experienced their major growth spurt, they cannot be used to accurately predict what will happen to McCall in the short-term (ten years) during which 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

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

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, based on averages. (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, an important conclusion that gives credence to both data sets when 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

Year	Itinerant				Local Operations		Total Ops
	AT & Comm.	GA	Mil	Total Itinerant	GA	Total GA	
1995	5,000	20,000	100	25,100	9,000	34,000	34,100
2000	7,307	23,833	100	31,240	11,519	42,659	42,759
2005	16,205	26,206	100	42,511	13,055	55,466	55,566
2006	16,477	26,646	100	43,224	13,274	56,398	56,498
2010	19,472	31,489	100	51,061	15,687	66,648	66,748
2015	23,700	38,327	100	62,127	19,093	81,120	81,220
2020	26,090	42,191	100	68,381	21,018	89,300	89,400
2025	28,721	46,446	100	75,267	23,138	98,305	98,405
CAGR 1995-2005	*12.48%*	*2.74%*	*0.00%*	*5.41%*	*3.79%*	*5.02%*	*5.00%*
CAGR 2006-2025	*2.97%*	*2.97%*	*0.00%*	*2.96%*	*2.97%*	*2.97%*	*2.96%*

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

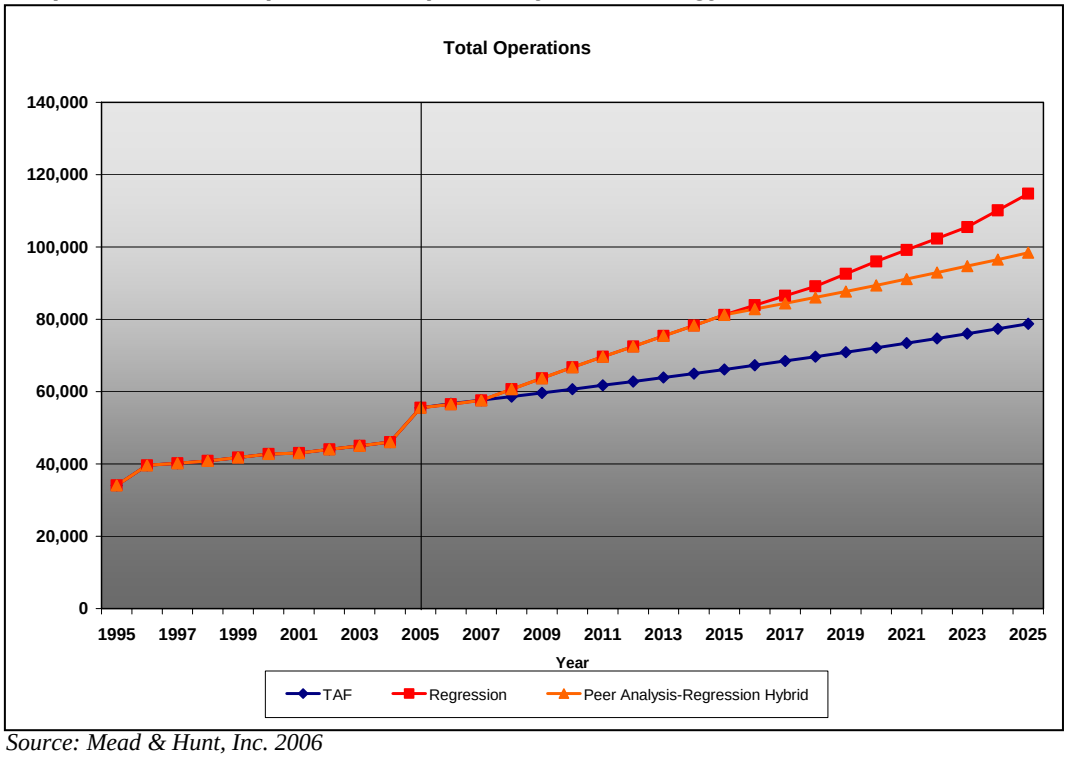
Note: CAGR=Compounded Annual Growth Rate

The result is faster growth in the short-term, followed by a relative leveling off in the long-term, similar with peer communities.

Preferred Forecast

Below is a graph that illustrates 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.

Graph 3-1: Future Operations Expected by Methodology



Source: Mead & Hunt, Inc. 2006

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, 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 3-10: McCall Municipal Airport Based Aircraft

Year	Single Engine	Multi-Engine	Jet	Helicopters	Total
1993	59	6	1	1	67
1994	61	5	3	1	70
1995	62	6	4	1	73
1997	65	6	3	1	75
2006	95	8	0	1	104
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 with the growth rates of peer airports. The number of single engine aircraft have increased steadily while 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 are not likely to 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 do not track well considering the current backlog of hangars and new hangar development and therefore were not used in the forecast of based aircraft. **Table 3-11** is the FAA TAF.

Table 3-11: TAF Based Aircraft Forecast

Year	Total Based Aircraft
2000	107
2001	99
2002	100
2003	102
2004	100
2005	102
2006	104
2010	113
2015	125
2020	139
2025	154
CAGR 2006-2025	2.09%

Source: FAA Terminal Area Forecast

Note: CAGR=Compounded Annual Growth Rate

The number of based aircraft at McCall is largely influenced by the number of available hangars —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 was completed in the summer of 2006 and hangars are expected to be fully occupied in 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 that want 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 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 too 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 3-12: Based Aircraft Forecast

Year	Single Engine	Multi-Engine	Jet	Helicopters	Total
1993	59	6	1	1	67
1994	61	5	3	1	70
1995	62	6	4	1	73
1997	65	6	3	1	75
2006	95	8	0	1	104
2007	122	10	1	1	134
2010	160	13	3	1	177
2015	190	15	4	1	210
2020	210	17	5	1	233
2025	230	19	6	1	256
CAGR 1993-2006	*3.73%*	*2.24%*			*3.44%*
CAGR 2007-2025	*3.59%*	*3.57%*	*9.11%*	*0.00%*	*3.65%*

Source: Mead & Hunt, Inc. (2006)

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 that use 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 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, Changes 1-10, Airport Design, aircraft are grouped into five categories (typical aircraft examples shown):

Category A: Approach speeds less than 91 knots.
(Cessna 172, Beech Baron B55, Piper Cherokee)
Category B: Approach speed of 91 knots or more, but less than 121 knots.
(Beech King Air, Cessna 402/Citation I, Learjet 28/29)
Category C: Approach speed of 121 knots or more, but less than 141 knots.
(Learjet 24, Westwind, Canadair CL-600, Gulfstream G-III)
Category D: Approach speed of 141 knots or more, but less than 166 knots.
(Gulfstream G-II/IV)
Category E: Approach speed of 166 knots or more.
(High performance military jet aircraft)

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

Group I: Wingspans up to but not including 49 feet.
(Cessna 172, Beech King Air B100, Cessna Citation I)
Group II: Wingspans of 49 feet up to but not including 79 feet.
(Beech Super King Air 200, Grumman G-III, Canadair CRJ-200/701, Embraer 120)
Group III: Wingspans of 79 feet up to but not including 118 feet.
(Lockheed P-3, MDC-DC-9, DeHavilland Dash 8 Q400)
Group IV: Wingspans of 118 feet up to but not including 171 feet.
(Airbus A-300, Boeing 757/767, Canadair CL-44)
Group V: Wingspans of 171 feet up to but not including 214 feet.
(Boeing 747-all, Boeing 777)
Group VI: Wingspan of 214 feet up to but not including 262 feet.
(Lockheed C-5B Galaxy)

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 that 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 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

Year	B-II	B-III	C-II	C-III
2003	609	448	137	224
2004	880	0	167	86
2005	1096	32	184	260

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

				Operations		
	Aircraft	Category	Group	2003	2004	2005
Tanker Program	P3 Orion	C	III	224	86	260
	P2V 5/7 Neptune	B	III	226		32
	Douglas C-54G (DC-4)	B	III	222		
	DC-7	B	IV	2		
	Air Tractor AT-802 F	A	II	38	318	386
Smoke Jumper Program	Turbine DC3	A	III	10-Year Average: 300+ annual operations		
	deHavailland DHC 6	A	II			
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 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 well below the necessary levels to justify a C-III airport.

Like C-III aircraft, there are no documented B-III general aviation operations at the airport. 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 occur 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, which is likely in years ahead, the airport will become less constrained, and the number of larger, faster aircraft will increase. This is due to the general economic growth in the area and fewer infrastructure shortcomings that would 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 IV, (C-II) Challenger 600 series (C-II), Citation VII (C-II) and X, Galaxy (C-II), Hawker 800 (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

a contaminant free runway during the winter season. This number is based upon phone calls from pilots and diversions enroute to MYL that the FBO is aware of. This estimate has ramifications 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 little 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 those who can afford fast charter aircraft and those that own 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 more expensive and sophisticated turbine-powered aircraft (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

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

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. This is carried out until a point is reached when 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 supports the 1998 Master Plan. It reported, "While the majority of aircraft using the airport are contained in ARC B-II, an increased 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 16-34."[10] 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 for very long-term planning because future demands in the region may make this a possibility in the future.

[10] *1998 McCall Municipal Airport Master Plan, p. 6-25.*

This Chapter 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 describes 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

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:

Typically, aviation demand forecasts use recent and historical aircraft and passenger activity to project future levels of aviation demand. However, historical information of 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.

4.1 Role of the airport

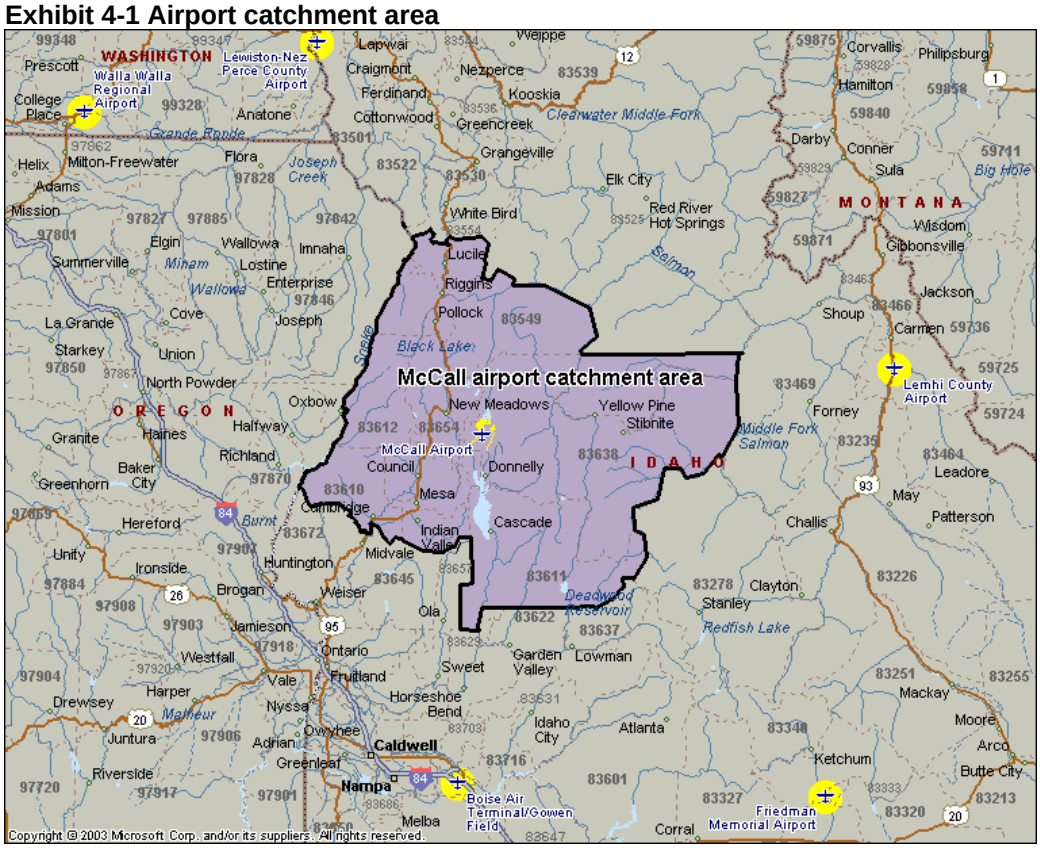
In order to estimate aviation demand at McCall Municipal Airport, it is important to understand the role of the Airport. This section presents an overview of the current and potential role of the Airport with regard to commercial air service. This section also provides a depiction of the geographical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

As the local economy becomes more dependent upon tourism and access to natural amenities for economic growth the future role of the McCall Municipal Airport will most likely change. Commercial air service is part of the economic foundation of many 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, especially when paired with increased air service and an influx of larger private jet aircraft.

When 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 that occur locally and those specific to 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 within 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)…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 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 is also 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. 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.

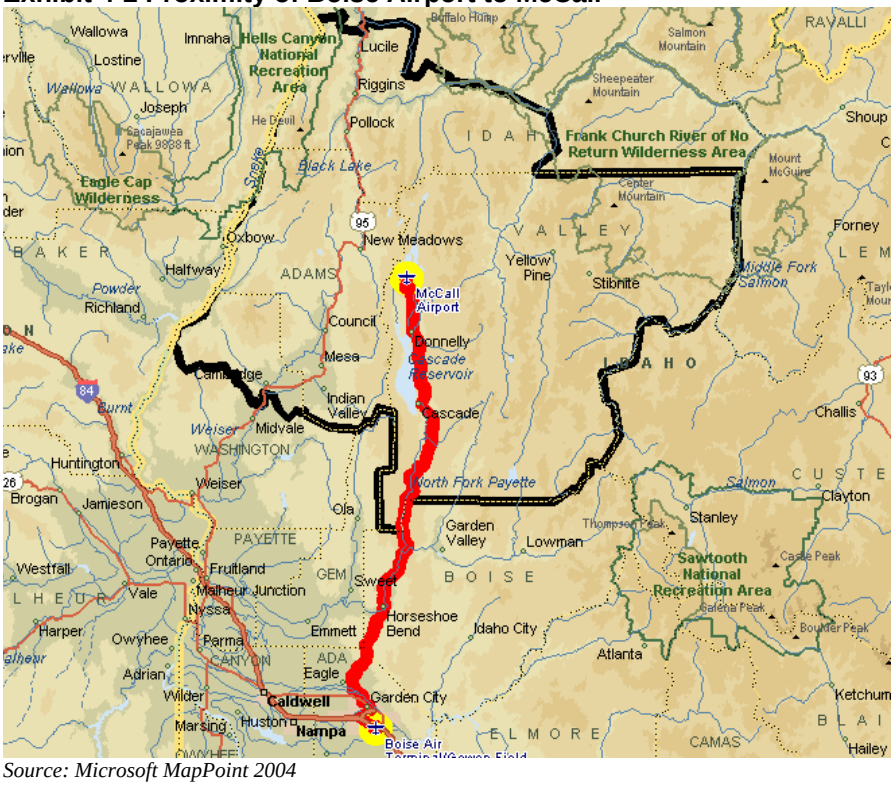
More importantly, in a market like McCall, the tourism/visitor air service demand plays a significant role. Typically, in these types of markets, 75 percent or more of the airline passenger traffic is referred passenger traffic as opposed to traffic that is initiated in the local market. Accordingly, the number of visitors to resort destinations, vacation homes, and transient bed space in hotels and motels, to a large extent, determines demand for commercial air service. For example, an increase in 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 communities that do not. 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



Source: Microsoft MapPoint 2004

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 distance 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 to determine air service demand. These factors include 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 from 1990 of 7 percent.[1] To identify the population in the total airport catchment area, Exhibit 4-1 provides the catchment area by zip code. The airport catchment area population by zip code is estimated at

[1] *Sonoran Institute,* A Socioeconomic Profile, *Economic Profile System Community, 2006, p. 1*

approximately 13,824 (source: Microsoft MapPoint 2004). In terms of air service demand, population trends indicate a fast growing community with the potential for an increased need for local commercial air service.

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.[2] 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.[3] This is a greater 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.[4] 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.[5] 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, recreation, and construction were also high on the list of employers.

Table 4-1 Top industries in Valley County

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

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

[2] *Sonoran Institute,* A Socioeconomic Profile, *Economic Profile System Community, 2006, p. 3*
[3] *Rees Consulting, Housing Market and Needs Assessment, July 2005, p. 5-7*
[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

Employer
Brundage Mountain Ski Resort
Cascade School District
City of McCall
Tamarack Resort
McCall-Donnelly School District
McCall Memorial Hospital
Paul's Market
Amerititle, Inc.
US Department of Agriculture - Forest Service
Valley County

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 McCall as their final destination. 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 or boating in the backcountry and 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 for 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 9 percent were from Oregon or Washington. Only 3 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 its inaugural ski season. A total of nine aerial lifts and five surface lifts are proposed for Tamarack Resort, which will provide 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, an 18-hole golf course, a lodge, and a 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, a swimming pool, trails, and access to the Payette River. This community is also under construction.

To assess 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. This number will increase as 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 between the local airport and 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

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

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 provides the current level of commercial air service available at the other community airports.

Table 4-4 Current air service at comparable airports

	Average departures per day				Average available seats per day
Airport	TP	RJ	MJ	Total	
Aspen, CO	4	8	0	12	755
Eagle/Vail, CO	3	1	4	8	865
Jackson Hole, WY	8	0	5	13	871
Steamboat Springs, CO	3	1	2	6	484
Sun Valley, ID	11	0	0	11	370

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 service only. 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 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. To assess 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.[6] The occupancy rate is supported by data provided by Tamarack Resort which indicated that 40 percent of the time pillows are occupied. 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)

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

Source: Mead & Hunt, Inc.

[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, varied 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

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

Source: Mead & Hunt, Inc.

The range of retention levels was determined based on studies conducted at similar airports, specifically Pullman, WA and Sun Valley, ID. Pullman, WA was used for comparison 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 determined that the catchment area retains 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 likely fall below these two communities given its proximity to a larger competing airport, Boise, and the limited air service, i.e. two roundtrips per day, assumed in this analysis compared with 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 with the other two aircraft. At a 25 percent retention level, McCall Municipal Airport could potentially support Beechcraft 1900 service or Embraer 120 service, but would fall short of supporting service of 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 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.

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 subsidy.

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 depends on the level of subsidy the community is willing to provide and the amount of subsidy an airline would require operating at 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) the level of financial support from the FAA and city, and 3) the physical limitations of the current airport site.

5.1 Introduction

This chapter uses the aviation demand forecast presented in Chapters 3 and 4 to estimate facility needs at McCall Municipal Airport. The estimated facility needs in this chapter are "unconstrained" and do not take into account outside influence, financial resources, physical constraints at the airport, adjacent urban development, or topography. The facility requirements are defined on the basis of existing user demands and associated FAA design standard requirements.

This chapter will consider the following elements:

- *Runway length, width, and safety areas*
- *Taxiway length, width, and safety areas*
- *Aircraft storage needs (T-hangars, medium and large hangars)*
- *Ramp tie-down area*
- *Automobile parking and circulation*
- *Lighting and NAVAIDS*
- *General aviation terminal*
- *Snow Removal Equipment and Aircraft Rescue and Fire Fighting (ARFF)*
- *Highway 55 Access*
- *Utilities*
- *Accommodating Commercial Air Service*

McCall Airport is an important access point to the community and more people will use it if it is improved. However, even without improvements, activity will increase due to population growth, increased popularity of local businesses, and out of a desire or need to come to Valley County. In addition to meeting the needs of current users, facility improvements should also be planned with an eye to future needs as well.

The FAA is giving general aviation (GA) airports more attention as private aircraft performance and operations increase. The FAA recommends that GA airports upgrade airfields to meet the demands for general aviation traffic and encourages other improvements (like aircraft rescue and firefighting facilities). In general the FAA expects airport owners to comply with the assurances attached to Airport Improvement Program (AIP) grants that emphasize include taking proactive measures to achieve compliance with design standards.

5.2 Runway 16/34 and Taxiways

As stated in Chapter 3, the airport is now designated as an ARC B-II facility. The ARC B-II designation took into consideration the characteristics of the majority of the fleet, but also recognized the difficulty and costs that would be incurred if the airport were to attempt to fully comply with associated design criteria. This conclusion was based in part on the occasional use of design group B-lll and C-ll aircraft, although the probability of significant future use was considered to be high as the local resort market matures. The purview of the analysis in this section and chapter does not include these considerations but does include the required airfield standards appropriate to safely operate aircraft that 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 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, and obstructions. Given the complexity of factors that could affect runway length requirements, the FAA has developed methods to competently estimate 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 Year 2017 or 2019, though it may happen sooner. The aircraft that will 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

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

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*.

This method uses aircraft weight, 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

Category	Runway Length at MYL
75 percent of fleet at 60 percent of useful load	6,700
75 percent of fleet at 90 percent of useful load	8,600
100 percent of fleet at 75 percent of useful load	8,900
100 percent of fleet at 90 percent of useful load	10,250

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

To understand the preceding 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, most of the aircraft that make up the family of critical aircraft in Table 5-1 require a runway length greater than 5,000 feet, so the 100 percent fleet category is most appropriate to use. This method, considers airport elevation and temperature, and 75 percent of useful load, a runway length of 8,900 feet is required for MYL. Theoretically this distance would accommodate 100 percent of the general aviation fleet, at a 75 percent useful load, using MYL during hot days in July. 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 by using a FAA spreadsheet computer model. The average of the runway length requirements for the family of aircraft in **Table 5-3** was calculated. This was used 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. The use of 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

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

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

This analysis, like the AC methodology assumes that aircraft are at maximum takeoff weight. However, adjustments to runway lengths due to decreased aircraft weight 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 6,106 feet. The runway is considered deficient in length 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. However, it should be noted that similar aircraft operate safely on shorter runways than are reported in Table 5-3. Additionally, there is no regulation that requires the extension of the existing runway to meet the needs of all general aviation aircraft.

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 by 400 feet to 6,500 feet, although it states that a longer runway is potentially justifiable. See **Appendix A** for the 1998 Master Plan Update Runway Length Analysis narrative.

Wet Pavement Conditions

Given that snowy and/or wet conditions persist through much of the year at MYL, and that ski resort expansion may increase winter aircraft traffic, the influence of winter weather on runway conditions as it regards runway length should be considered in this analysis. When the runway is wet or slippery the FAA recommends an increase in runway landing length of 15 percent for turbojets due to decreased traction of tires on pavement. **Table 5-4** shows the FAA model's estimates for runway landing length in winter and spring months under wet or slippery conditions, using the FAA spreadsheet computer model. Runway gradient is also considered in the analysis. Altitude does not affect landings to the same degree as takeoffs because engines do not perform at or near maximum thrust and 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

	NOV	DEC	JAN	FEB	MAR	APR	MAY
Mean Max. Daily Temp.	40	31	29	34	40	50	61
Runway Landing Distance	4,992	4,776	4,728	4,848	4,992	5,234	5,498

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 a composite average. Runway slope, existence of slippery conditions, and temperature were added to 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 requirements. This would be a function of snow depth.

Scheduled Commercial Aircraft Runway Requirements

As discussed in Chapter 4, there are several aircraft that airlines would consider using to operate at MYL. These include the Beech 1900C, Embraer 120, DeHavilland Dash 8 Q200 or Q400 and the Canadair Regional Jet (CRJ). CRJs are being purchased in substantial numbers and, over time, are expected to replace older propeller aircraft (see **Graph 5-1)**.

Runway lengths were determined using the FAA runway length model, which takes into account aircraft manuals, runway gradient, temperature and elevation (see **Table 5-5)**. This analysis assumes maximum take off weight, i.e., full fuel and passenger loads, and shows that the current runway length could support the Embraer 120 and Dash 8 Q200 under "hot day" conditions. As shown in Table 5-5, many of the commercial aircraft included in this analysis would require a runway extension to operate on more demanding "hot days". For example, the Beechcraft 1900 requires a few hundred more feet in runway length, while a CRJ requires several thousand feet of additional runway.

Table 5-5: Commercial Aircraft Runway Length Requirements

Aircraft	ARC	Runway Take-off Length (ft.) (MTOW, SL, ISA)	Runway Take-off Length at MYL (ft.) (MTOW, 5003' elevation, 81° F)
Beechcraft 1900C	B-II	3,800	6,333
Embraer 120 (30 seats)[1]	B-II	5,100	5,600
Embraer 145 (50 seats)	C-II	5,200	8,455
DeHavilland Dash 8 Q200	B-III	3,280	5,600
DeHavilland Dash 8 Q400	C-III	4,264	7,084
Boeing 737-700 (BBJ)	C-III	5,790	9,000+
Boeing 737-400	C-III	9,500	not determinable[2]
Canada Regional Jet 200ER	C-II	5,800	9,000+
Canada Regional Jet 700ER	C-II	6,700	9,000+

Source: Mead & Hunt, 2006

[1] *PW 118A Engines*
[2] *According to performance manual for 737-400, there is no runway long enough at MTOW at 5,003 feet.*

Aircraft weight and stage lengths also influence runway lengths. Markets that MYL could potentially serve if scheduled air service became viable include: Seattle, San Francisco, Denver, Los Angeles, Salt Lake City and Phoenix. **Table 5-6** summarizes estimates for runway length needs for scheduled commercial aircraft using MYL and traveling to select cities. For planning purposes, the existing runway would likely support the Dash 8 Q400 with a full passenger load to Salt Lake City or Seattle. To be able to serve San Francisco using jet aircraft, a runway of over 7,000 feet is estimated to be required.

Table 5-6: Runway Length for Full Passenger Capability

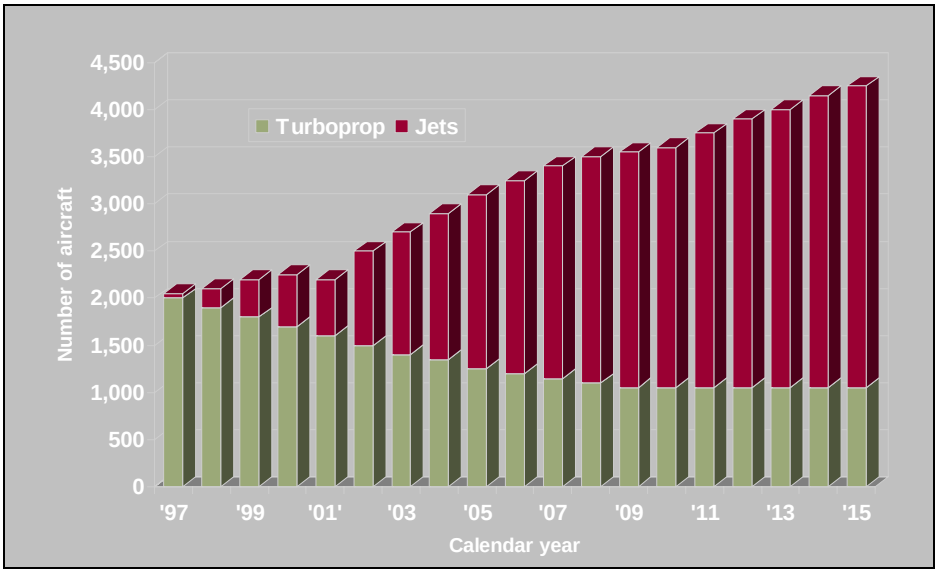
Select Schedule Commercial Aircraft	300 NM Salt Lake City	300 NM Seattle	515 NM San Francisco	580 NM Denver	650 NM Los Angeles	710 NM Phoenix
DeHavilland Dash 8 Q400 (70 seats)	5,900	5,900	6,350	6,400	6,600	7,000
Embraer 145 (50 seats)	7,300	7,300	7,600	7,800	8,000	8,200
Canada Regional Jet-200ER (50 Seats)	7,500	7,500	7,700	7,800	8,000	8,200
Canada Regional Jet-700ER (70 Seats)	8,600	8,600	8,900	9,000	9,200	9,200

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 that serve the Pacific 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 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 unless another carrier begins operation of smaller turboprops. In short, the physical constraints of the current airport limit the use of regional jets and in the foreseeable future, regional jets will continue to be the dominant aircraft type used by regional airlines to serve small markets.

Graph 5-1 Comparison of Aircraft Orders, Turboprop vs. Jets/1997-2015



Source: FAA, 2004 Forecast

This analysis shows that several smaller propeller aircraft currently used by SkyWest and Horizon could operate at MYL with minor modifications to runway length. However, terrain around the airport questions the ability of the airport to physically accommodate commercial aircraft at the current site in the long-term. This is especially relevant since future fleet trends are toward larger and higher performance type aircraft operating at MYL. It is also possible that as CRJs begin to dominate the regional aircraft market, a new airline that uses turboprops could fill the niche at smaller airports.

As a general aviation airport, MYL does not have to meet runway length requirements recommended in this Master Plan Update. However, if scheduled commercial air service were to begin at MYL, airline policy and aircraft performance needs would 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 to long-term growth in this market segment. This discussion will continue in following chapters.

The operational demands of aircraft that operate at MYL are many. High altitude and warm summers require a much longer runway to safely operate C-II type aircraft. It is clear that runway length has been inadequate for some time for more demanding aircraft that use the airport. This inadequacy will likely increase in the years ahead as a result of additional use of 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, accommodate the passage of emergency and maintenance equipment and provide a margin of safety for the occasional airplane that veers 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. Blast pads, also known as overrun areas or stopways, are often constructed just before the start of a runway where jet blast produced by large aircraft during the take-off role could erode the ground and eventually damage the runway[3]. Blast pads are normally the width of the runway and include the paved shoulders, and may extend for a 1,000 feet beyond the end of the runway, although most blast pads are considerably shorter. This is an optional design requirement.

[3] *AC 150/5300-13 Change 9, Table 3-3*

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 conditions, be able to support snow removal equipment, aircraft fire fighting and rescue equipment, and the occasional passage of aircraft without causing 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 and the RSA on the south end is 150 feet wide and 300 feet long. It does not comply with design standards. A C-II or C-III airfield would require an RSA 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 on the runway configuration at MYL.

5.2.6 Obstacle Free Zone

The Obstacle Free Zone (OFZ) is a rectangular area centered on and encompassing the runway. Its clearing standard precludes taxiing and parked aircraft except for frangible visual navigational aids system (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 have small aircraft operations 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. It does not comply with design standards. 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 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 feet (horizontal) to 1 foot (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 because of the higher approach minimums.

5.2.7 Runway Object Free Area

The Object Free Area (OFA) is a two dimensional surface comprised of both the Runway Object Free Area (ROFA) and the Precision Object Free Area (POFA). The OFA is 600 feet long on the north end. The OFA clearing standard requires clearing the OFA of above ground objects that protrude 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. Included in this category are 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 extended runway centerline, 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 it has no current applicability to MYL.

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

5.2.8 Runway – Taxiway Centerline Separation

The FAA specifies runway centerline to taxiway centerline separation standards. The distance between the centerline of the runway and centerline of the taxiway is a critical design component at MYL. This distance affects the width of the airfield and the placement of new buildings, infrastructure, and 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 that permitted 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 meet minimum FAA safety requirements. As a future C-II airport, as determined in this master plan, the separation should be 300 feet, which means the taxiway should be 100 feet further from the runway than it is now.

The 1998 Master Plan recommended options be considered 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, it is now considered a necessity to provide proper separation of 300 feet to meet C-II standards.

Modifying the runway centerline to taxiway centerline separation distance would require constructing a new parallel taxiway and extending connecting taxiways 100 feet farther away from the runway. 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. 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-lll air carrier service become a reality. As a result, the 400 foot separation 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 fund neither the additional costs of constructing an 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 would like to accommodate these types of aircraft, the airport should consider planning for the implications of constructing a C-III airfield. Land Use Planning entails acquisition of, or protection of land where the taxiway would go if 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 means of access to the runway and FBO, mostly for aircraft that do not need the entire distance of the runway for landings. This taxiway has historically been an important asset to the functionality of the airfield.

However, this taxiway divides a large, nearly square open area adjacent to the runway into two triangular pieces. Use of the “triangle” area has been the subject of on-going discussions over many years with many concepts having been discussed, but with no resulting action or plan having been 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 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.

This master plan update recommends that the runway centerline to east side parallel taxiway centerline separation distance is recommended to be increased by 100 feet to a minimum of 300 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 (including less expensive ones) such as zoning that could be used to preserve land for airport use. 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 evaluating whether 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.

Accounting for 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 to extend the west side taxiway. Land adjacent to the extension with access to Mission Street should also be considered for future facility development.

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 order to prevent the creation of hazards, and for the protection of aircraft and people on the ground.

An RPZ consists of two trapezoidal areas that begin 200 feet beyond the end of the runway. The length, inner width, and outer width are dependent 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 to limited uses, such as; agricultural practices, golf course operations and similar type activities that do not allow for congregations of large numbers of people or obstructions. 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

Clearly, the airport must expand in order to provide an airfield compliant with 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)

Item	FAA Airport Design Standards[1,2]				
Airport Reference Code	**Existing**	**B-II**	**C-II**	**B-III**	**C-III**
Runway Design					
Length	6,105 ft	Varies w/ Aircraft, See Table 5-3			
Width	75 ft	75 ft	100 ft	100 ft	100 ft[(3)]
Safety Area					
Width	150 ft	150 ft	400 ft	300 ft	500 ft
Length prior to Threshold	300ft	300 ft	600 ft	600 ft	600 ft
Length beyond Stop End	300 ft	300 ft	1000 ft	600 ft	1,000 ft
Obstacle Free Zone	175 ft (East)	400 ft	400 ft	400 ft	400 ft
Object Free Area					
Width	500 ft	500 ft	800 ft	800 ft	800 ft
Length Beyond R/W End	300 ft	300 ft	1,000 ft	600 ft	1,000 ft
Runway Gradient (Maximum)	0.29%	2.0%	1.5%	2.0%	1.5%[(4)]
Runway Shoulder Width	10 ft	10 ft	10 ft	20 ft	20 ft
Runway Separation					
Runway Centerline to:					
Parallel Taxiway/Taxilane (East)	200 ft	240 ft	300 ft	300 ft	400 ft
Parallel Taxiway/Taxilane (West)	300 ft	240 ft	300 ft	300 ft	400 ft
Hold Line (East)[5]	160 ft	200 ft	250 ft	200 ft	250 ft
Aircraft Parking Line	265 ft	250 ft	400 ft	400 ft	500 ft
Building Restriction Line[6]	420'	-	-	-	-
Taxiway Design					
Width	50 ft	35 ft	35 ft	50 ft	50 ft
Safety Area Width	79 ft	79 ft	79 ft	118 ft	118 ft
Object Free Area	131 ft	131 ft	131 ft	186 ft	186 ft
Taxilane Object Free Area Width	115 ft	115 ft	115 ft	162 ft	162 ft
Taxiway Separation					
Taxiway Centerline to:					
Parallel Taxiway	165 ft	105 ft	105 ft	152 ft	152 ft
Fixed or Moveable Object[7]	65.5 ft	65.5 ft	65.5 ft	93 ft	93 ft
Taxilane Separation					
Taxilane Centerline to:					
Parallel Taxilane	79 ft	97 ft	97 ft	140 ft	140 ft
Fixed or Moveable Object[7]	57.5 ft	57.5 ft	57.5 ft	81 ft	81 ft
Runway Protection Zone[8]					
Length[9]	1,000 ft	1,000 ft	1,700 ft	1,000 ft	1,700 ft
Inner Width	500 ft	500 ft	500 ft	500 ft	500 ft
Outer Width	700 ft	700 ft	1,010 ft	700 ft	1,010 ft
Area (Acres)	13.77	13.77	29.46	13.77	29.46
Runway Protection Zone[10]					
Length	-	1,700 ft	1,700 ft	1,700 ft	1,700 ft
Inner Width	-	1,000 ft	1,000 ft	1,000 ft	1,000 ft
Outer Width	-	1,510 ft	1,510 ft	1,510 ft	1,510 ft
Area (Acres)	-	48.98	48.98	48.98	48.98

Notes:

1 AC 150/5300-13, Change 8
2 Visual runway with not lower than ¾ statute mile visibility
3 For runways serving aircraft with maximum certified takeoff weight >150,000lbs, the standard runway width is 150'
4 Maximum of 0.8% in first and last one quarter of runway length
5 Hold line n 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

The dimensions in Table 5-7 as stated in Note 2 assume a visual runway with not lower than ¾ statute mile approach visibility minimums. The dimensions of some aspects of the airfield change if it assumes a runway with visibility minimums lower than ¾ statute miles. Three airfield dimensions are of greatest importance to MYL at this time—runway length, runway centerline to taxiway centerline distance and safety area width and length. These parameters, more than any others, impact the future design of the airport.

A change in minimums has no impact on runway length at MYL. The runway centerline to taxiway centerline distance for a C-II airfield with approach visibility minimums not lower than ¾ of a mile is 300 feet. For a C-III airfield it is 400 feet. If visibility minimums were to be lowered below ¾ statute miles, this distance would change to 400 feet for a C-II airfield, a 100 foot difference equal to a C-III airfield with minimums now lower than ¾ of a mile.

RSA width and length beyond the runway end would double from 150 to 300 feet and from 300 to 600 feet with a change from minimums equal to or greater than ¾ statute miles to less than ¾ statute miles. For a B-III airfield these dimensions would increase from 300 to 400 feet and from 600 to 800 feet. For a Category C airfield these dimension remain unchanged.

OFA dimensions change with a change in minimums for Category B airfields. The width and length of the OFA for a B-II airfield increase from 500 to 800 feet and from 300 to 600 feet. For a B-III airfield the width of the OFA does not change but the length increases from 600 to 800 feet.

5.3 Aircraft Storage Hangars

Aircraft storage hangars are important facilities at MYL. In the snowy conditions that persist throughout much of the year, that protection of aircraft from the elements is imperative. As of the end of 2006, there were 82 hangars at the airport. A waiting list for new hangars has been established and is steadily growing.

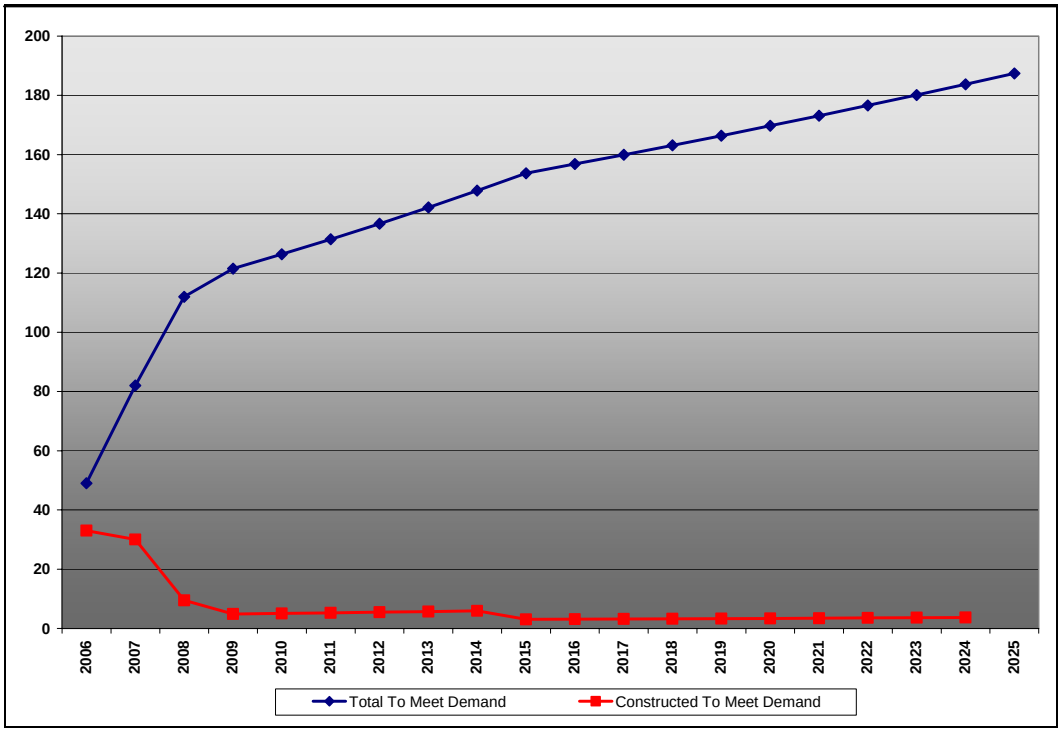
Thirty-three hangars were constructed in 2006 and another 30 will be needed in 2007 to satisfy the current waiting list. By 2015, it is estimated that there will be demand for 72 additional hangars. It is estimated that the airport will have 187 hangars, including individual T-hangar units by 2025 (see **Table 5-8**).

Table 5-8: Hangar Building and Space Demands

Year	Total Hangars	Constructed	Total Square Yards
2006	49	33	
2007	82	30	39,210
2008	112	9	11,763
2009	121	5	6,553
2010	126	5	6,553
2011	131	5	6,553
2012	137	5	6,553
2013	142	6	7,842
2014	148	6	7,842
2015	154	3	3,920
2016	157	3	3,920
2017	160	3	3,920
2018	163	3	3,920
2019	166	3	3,920
2020	170	3	3,920
2021	173	3	3,920
2022	177	4	5,227
2023	180	4	5,227
2024	184	4	5,227
2025	187	**Total: 135**	**Total: 135,989**
CAGR 2006-2025	*7.31%*		

Source: Mead & Hunt, Inc.
Note: CAGR=Compounded Annual Growth Rate

Graph 5-2: 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

There are many locations for parking at MYL. The largest public lot is located at the intersection of State Highway 55 and Deinhard Lane. This lot is about 5,200 SY, and is configured to hold about 60 cars. There are 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 the 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 that also access the USFS complex; three access points along Deinhard Lane (fire/rescue access, FBO parking lot access, administration offices access); and one access point 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 depends on airport policies that control 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 a source of potential liability for the city, if an aircraft and car were to collide. 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 at 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 that informs drivers they are approaching the airport.
- Actively manage public parking areas and consider the requirement of 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 at the airport but off of 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 that 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 after the addition of 40 stalls in the existing reconfigured 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 per McCall city code of 9 feet by 20 feet. 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 snowfall in the McCall area this may be significant.

Table 5-9: Automobile Parking Requirements

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

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 to limit light pollution that may affect pilot vision. The lot should be paved and striped; stalls could be numbered, and symbols could direct the flow of traffic. The design of parking lots should conform to the following:

- American Association of State Highway and Transportation Official'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 stalls should be aligned 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 in communities 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 long-term automobile storage option for aircraft owners or part-time residents who are gone from the area for long periods of time. 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 so 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 would 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 are for transient aircraft. There are 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 demand for ramp tie-downs 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 aircraft 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 operations at MYL and 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.

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[4] 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

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

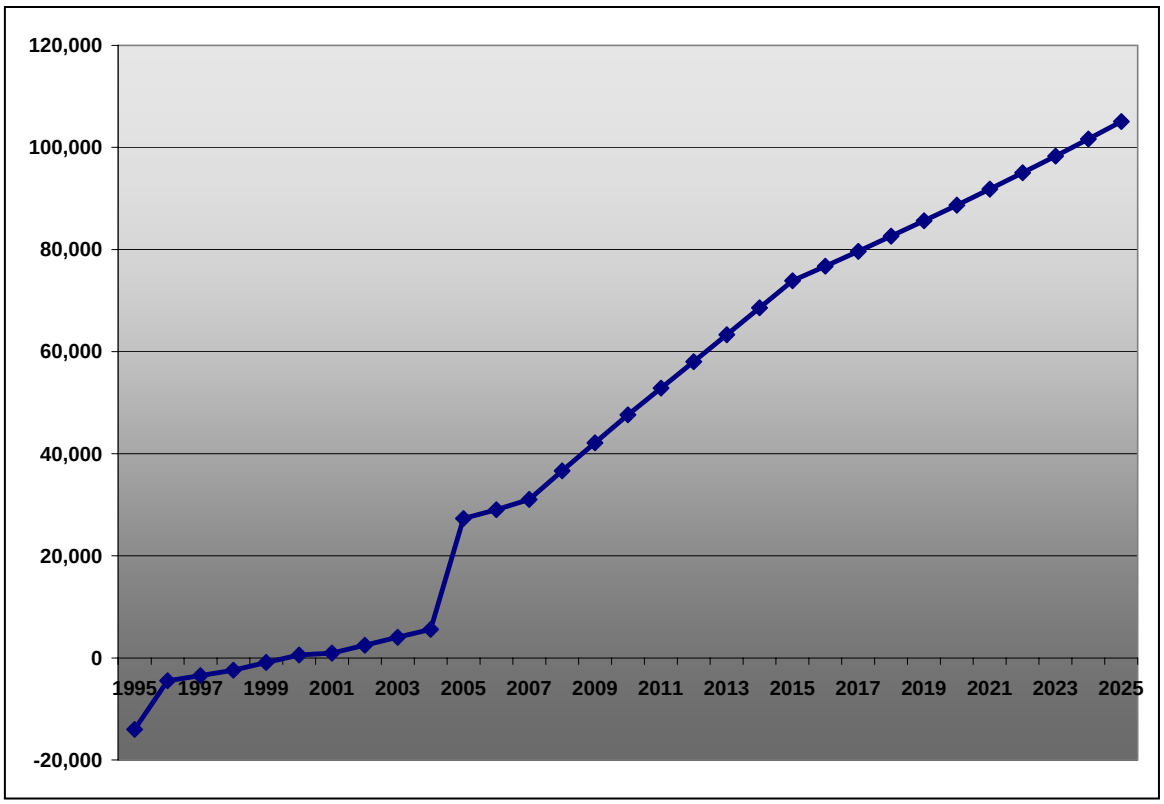
Source: Mead & Hunt Inc., 2006

As can be seen in the **Graph 5-3** below, 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 of 711 SY for each aircraft therefore the space needs estimate is slightly higher, likely due to snow storage considerations.

[4] *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.*

Graph 5-3: General Aviation Ramp Tie-Down Area Demand



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 the role of an airport's operations 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

Instrument NAVAIDs								
Runway	ILS	LOC	GPS	VOR/	NDB			
16			E[/1]					
34			E		E			
Visual NAVAIDs								
Runway	SC	CCP	MALSR	PAPI	VASI	REIL	MIRL	WI
16	E			E		E	E	E
34	E				E	E	E	E

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

Notes: E - Existing
P – Planned

[/1] 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 that have been certified to conduct the procedure by the FAA.

MYL is not currently equipped with precision instrument approach NAVAIDS. The visibility minimums are summarized in **Table 5-12** below:

Table 5-12: MYL Approach Visibility Minimums

		Category A and B		Category C		Category D	
		Decision Height	Visibility Minimums	Decision Height	Visibility Minimums	Decision Height	Visibility Minimums
Runway 34	GPS	5,560	1 mile	5,560	1.5 miles	5,560	1.75 miles
	NDB	5,800	1.25 miles	5,800	2.25 miles	5,800	2.5 miles

Source: US Department of Transportation, US Terminal Procedures

Note: Airfield elevation is 5,003 feet above sea level

Visual NAVAIDs and Lighting

Visual NAVAIDs and airfield lighting provide aircraft guidance once the aircraft is within sight of the airport. Visual aids and lighting also assist the aircraft to maneuver while 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 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 the increasing number of people that travel 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 that visitors' needs are addressed at this entrance point. This includes 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 that demand 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.

Presently the fire station has four vehicles that can dispense foam, they are as follows:

1. ARFF (Index B)
2. Engine #7
    a. CAFS (pump and roll capabilities)
    b. Class A foam and AFFF
    c. 1000 gpm pump
    d. 500 gallons of water
3. Engine #11
    a. Class A and AFFF foam (inducted)
    b. 1500 gpm pump
    c. 750 gallon tank
4. Engine #12
    a. Class A Foam
    b. 1750 gpm pump
    c. 500 gallon tank

The station has a minimum of two Fire Fighters/Emergency Medical Technicians (FF/EMT) on shift 24 hours per day, seven days a week. On staff are eight full time FF/EMTs and an additional 25 part-time (volunteers) on call back. Fifteen personnel have completed ARFF training either at Big Bend Community College or through Riechmann Safety Services.

The station has the capability to extinguish petroleum fires as they carry Class B Aqueous film forming foams (AFFF).

If the airport becomes a Part 139 operator, ARFF requirements that meet FAA standards will have to be met. As a Class III airport, MYL, would need to provide a level of safety comparable to ARFF 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. The fire station currently exceeds these standards and complies with Part 139.317 Index (B) requirements[5]:

- 500 lbs of dry chemical
- 1500 gallons of water with AFFF

However, the fire station would need to develop automatic mutual aid with other agencies for aircraft incidents. Pre-arranged firefighting and emergency medical response procedures would need to be developed, including agreements with responding services. If a mass casualty incident were to occur now, the McCall fire department would request assistance from Donnelly Fire District for EMS and Fire Services.

[5] *Index (B) relates to aircraft greater than 90 feet but less than 126 feet in length*

5.9 Snow Removal Equipment and Maintenance Building

Keeping the runway free of snow and ice is critical to safe operation of aircraft at MYL. Airport reliability due to unplowed or inadequately cleaned surfaces has been cited as an issue in the past by airport users. Inadequate numbers, and types of equipment, staffing, and budget have been cited as the main reasons for this. Additionally, the east side parallel taxiway is not plowed during the winter due to lack of need.

The importance of adequate snow removal and response time escalates with jet traffic and in particular, with scheduled commercial air service. 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 on landing, and impede aircraft acceleration during takeoff. Although acceptable limits vary by aircraft, most jet aircraft flight manuals limit the aircraft to land with one inch or less of slush or standing water on the runway, and to take off with one-half inch or less of slush or standing water. *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. A runway broom could be used to “sweep” away light dustings of snow that occur from time to time, or to provide a cleaner surface than can be achieved with a snowplow. Snow sweepers (brooms) are primarily used in 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. All are capable of sweeping wet slushy snow as well as fine dry snow, slush, sand and other debris. They also help dry the pavement surface and clear snow from around runway lights. A runway broom could 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 likely 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. *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.

Whenever possible, snow and ice control equipment should be housed in heated garages during 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 somewhere that will permit equipment to move directly to and from aircraft operational areas. The building site should be capable of accommodating future building expansion. Maneuvering 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 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)

Equipment Parking Area	
Front-End Loader 20x40	800
Rotary Snow Blower	800
Heavy Duty Plow Truck	800
Extra Parking Space for expansion 20x40	1,600
Repair Bay	1,000
Ancillary Support Area	
Bathroom and locker room	350
Lunchroom	300
Parts Storage	150
Lube, oil and grease	150
Sand and salt	400
Machine Room (heat, vent)	600
Bench area	200
Misc. Storage	450
Aisle Area Estimate	2,000
Total SF	9,600

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

Note/1 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 storage of airport equipment with room for expansion if necessary.

5.10 State 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 and connects 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 average travel time of 2 hours between Boise and McCall has now increased to 2.5 to 3 hours. Traffic is particularly heavy prior to and at the end of weekends. Traffic conditions can expect 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 the improvement of construction of SH-95 or a new highway through Indian Valley connecting to State Highway 16 (SH-16) in Emmett, Idaho.

Figure 5-1

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 at the Idaho Transportation Department (ITD) to determine the status of capacity improvement planning for SH-55. In short, at the present time there were no capacity improvements planned for SH-55 for 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 continued deterioration in ground access to Valley County. This in turn will prompt a greater demand for private and possibly commercial air access to Valley County.

State 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 around the airport, and the increased number of automobiles that drive on State Highway 55 to reach MYL.

5.11 Airport Utilities

Adequate utility infrastructure is crucial for current and 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.

It should be noted that due to the current and near term inadequacies of the McCall sanitary sewer system, the IDEQ has put a moratorium on any future building permits that require a sewer hook-up. Additionally, this moratorium extends to any new hook-ups/connections to holding tanks. This action will limit growth at the airport for any future facilities requiring a sewer connection including upgrades or additions to current facilities.

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 does it 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 that would provide adequate fire flow for the type of that uses 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 in 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 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 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 and what kind of infrastructure investment 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 and include these facilities in various conceptual drawings to specifically answer question b.

5.12.1 14 CFR Part 139 Federal Aviation Requirements

Scheduled commercial aircraft with 10 seats or more 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. A combination of a community's air service demand and desires, along with the Federal Aviation Administration's concurrence, 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. This may require additional investment in safety and security measures as well as upgraded facilities over time to meet demand. Whether or not to becoming a commercial air service airport is a major decision in the evolution of an airport that has ramifications on the community it serves.

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) 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, MYL's categorical definition must be determined. For McCall Municipal

Airport, this would be considered a Class III airport[6]. 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[7] in accordance with FAA safety criteria.

Each certificate holder (airport) must create, adopt and comply with an Airport Certification Manual (ACM). This manual details compliance regulation for Part 139 and must be kept current at all times. The elements of the manual for a Class III airport are contained in **Appendix B**. 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
- 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 airport operations requirements for Part 139 facilities. For details on each operational requirement see Part 139 regulatory language in Appendix B. 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, 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, and accident and incident reports. These records must be accounted 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 need to employ, at a minimum, one new 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 available for air carrier use according to certain standards. Paved areas must be kept clean of mud, dirt and other debris, sufficiently drained, and kept free of depressions to prevent ponding that obscures markings or impairs safe aircraft operations.

Part 139 airports must have skid resistant pavement such as Porous Friction Course. Grooved runway surfaces should also be considered.

[6] *More than nine passenger seats but less than 31*
[7] *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 available for air carrier use.

Safety Areas

The airport must provide and maintain, for each runway and taxiway available for air carrier use, a safety area of specified dimensions. Each certificate holder must provide and maintain markings, signs, 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 (4) other requirements as detailed in Appendix B. The immediate impact on MYL would be the need to remove snow from the parallel taxiways.

Aircraft Rescue and Firefighting (ARFF)

MYL would need to offer ARFF services. See Section 5.8 for details.

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 at 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 to minimize the possibility and extent of personal injury and property damage on the airport in an emergency.

Self-inspection program

The airport must be inspected daily (or at other times as required) 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 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 those movement and safety areas by pedestrians and ground vehicles.

Obstructions

The airport must ensure that any object in an area within its authority determined by the FAA to be an obstruction is removed, marked, or lighted, unless determined 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 or 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 avoidance of 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, they 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 the 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. 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 establishment of 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 that hold 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 prevention of 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. They normally include rental car, restaurant and gift shop facilities.

5.12.5 Air Traffic Control Tower (ATCT)

An ATCT 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, 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 without 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. An ATCT generally requires 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.

This chapter presents alternative airport layout concepts. These layout concepts depict airside and landside facilities needed to serve the requirements discussed in Chapter 5. Airfield safety design requirements representing FAA, airport reference code (ARC) C-II, are presented along with key landside facility development areas that are estimated to be able to accommodate demands to 2025. ARC design standards, as detailed in Chapter 5, play an important role in determining what type of airport should be developed at the current airport site. This chapter will present an analysis of airfield ARC options and the preferred options.

This chapter is organized in the following sections:

- *Airport reliability;*
- *Airport improvement alternatives;*
- *Other considerations.*

ARC design safety standards are only one of the major elements that determine the design and success of an airport whether it be general aviation (GA) or commercial aviation facilities. This chapter describes reliability and availability issues related to weather and terrain, and how they affect airports in general and MYL specifically. Other factors that affect the airports role in the community are addressed in Chapter 7, "Land Use Compatibility".

To facilitate education for all parties on these issues a number of public workshops were held. Two workshops were held on September 7, 2006, to talk about conceptual airport designs and receive community feedback. An additional public meeting with similar but refined content was conducted on October 2, 2006, in an effort to reach out to more of the local McCall community. On January 29, 2007, a Planning Advisory Committee (PAC) meeting was held to discuss airfield

and facility expansion and alternatives. An additional public meeting of the PAC was held on March 21, 2007, along with a publicized "Open House" that followed the same evening. This chapter essentially provides written documentation of the review and decision making process the City of McCall went through in crafting this plan.

6.1 Airport Reliability

The ability of an airport to safely and reliably serve visitors and residents is an important factor in its success. This applies to both GA and commercial service airports. Reliability, as it is used here, can be defined as the ability of an airport to consistently and safely accommodate aircraft traffic. The purpose of this section is to briefly discuss some major factors that influence airport reliability, and place them in the context of McCall Municipal Airport.

Aircraft use navigational systems, including radio transmitters on the ground and receivers in the aircraft, to navigate to an airport, even when the airport cannot be seen visually due to cloud cover or other visibility obstructions. Once an aircraft enters the vicinity of an airport, a series of procedures are followed by the pilot to navigate to a specific runway end for landing. These procedures constitute a published "approach" to the airport. An airport may have one or several different published approaches that allow pilots to navigate to different runway ends or to use different navigation equipment with different levels of accuracy. At the completion of an approach, a pilot must make the decision to either land at the airport using visual guidance, or to execute a "missed approach" and continue the flight to either an alternate destination, or to make another approach to the airport.

Reliability is an important factor to the airport and consists of several parts including, but not limited to:

- Visibility and weather
- US Terminal Instrument Procedures (TERPS)
- NAVAIDS and Approaches
- Aircraft approach speed and size
- Obstructions
- Runway conditions

Many of these elements influence aircraft approach minimums. An approach minimum is the vertical and horizontal distance from the runway threshold at which point the pilot must make a decision to land or not to land an aircraft. This point is often referred to as the missed approach point or decision point. The horizontal distance is measured in miles and vertical distance is measured in feet. When an aircraft reaches the missed approach point the pilot must be able to see the airport. If the airport cannot be seen, the approach is aborted and a missed approach procedure is undertaken. If the missed approach point is lower (closer to the runway) the pilot has a better chance to see the runway in inclement weather and make a safe landing. Approaches with the lowest minimums provide the best possible chance for a pilot to safely execute a successful approach and landing at the airport. As such, lower approach minimums result in better reliability of an airport. Table 5-12, in the previous chapter, summarizes current decision heights at McCall Municipal Airport for different approach types.

Obstructions to approach flight paths such as trees, buildings, antennas or terrain, can influence approach minimums and affect airport reliability. If an obstruction exists on an approach, the approach surface (e.g. flight path) may need to be elevated to avoid the obstruction. As discussed previously, a higher minimum altitude results in more missed approaches, which makes reliability an operational issue as well as financial one for commercial operators. A significant increase in runway length may result in "new" obstructions that may adversely impact approach minimums.

Missed approach procedures also impact airport reliability. Once an aircraft aborts an approach and begins a missed approach procedure, the pilot must navigate the aircraft along a set path to reach a position that is free of obstructions and other aircraft. Approach minimums must be high enough to allow safe execution of the missed approach procedure. The minimum altitude for the missed approach is set such that it provides a safe climb rate so that aircraft will be able to avoid obstructions that may be present along the missed approach path. Terrain north of the airport raises the approach minimums on Runway 34 to 600:1 for the Global Position System (GPS) approach and 800:1 ¼ for Non-Directional Beacon (NDB) approaches.

Aside from approach minimums and missed approaches, other variables impact the reliability of airports. High winds can make landing small aircraft difficult or impossible. Crosswind runways are constructed to overcome this challenge. Wet or icy conditions on the runway also make landing more exacting and require a greater safety margin. Pilots make the decision to land at an airport not only during approach but also as they assess existing and expected conditions at the destination airport during their flight planning prior to takeoff. A flight to McCall Municipal Airport (MYL) may never begin if forecast or actual runway and weather conditions will make operation at the airport unsafe.

Navigational aids (NAVAIDs) play a role in airport reliability. NAVAIDs guide aircraft to the general vicinity of the airport and even to the runway threshold. They make it safer to land aircraft in poor weather by improving the visibility of the airfield and the ability of pilots to navigate the aircraft on the correct path, thus ensuring a successful landing. Better NAVAIDs can improve reliability but cannot overcome some constraints on approach minimums and missed approach procedures such as topography. It should be noted that not all aircraft have the technology to take advantage of advanced NAVAIDs that may be provided by an airport. Without this technology onboard, their approach minimums are usually higher, lessening their chances of making a successful approach. A study to improve NAVAIDs must consider if they would be used and how often. For example, any approach aids that would require additional cockpit instrumentation might go unused or marginally used if few or no aircraft using MYL have that instrumentation.

McCall Municipal Airport Reliability

In Chapter 5, Table 5-12 (MYL Approach Visibility Minimums) shows the approach minimums for Runway 34 with GPS and NDB approaches. It is unlikely that these approach minimums can be improved (lowered) at the current site due to the raised terrain north and west of the airport which determines the missed approach procedure and visibility minimums. Considering the discussion

in the above paragraphs, MYL faces several challenges to reliability which have ramifications for charter and other commercial operations.

High terrain in the approach path of Runway 34 limits approach minimums and influences the flight path of aircraft on approach to Runway 34. If Runway 34 were to be extended southward (the only expansion option available) as required to meet runway length requirements, removal and grading of terrain obstructions south of the airport would be necessary. This requires the potential removal of several million cubic yards of existing soil materials.

Due to missed approach criteria and raised terrain south of the airport, approaches to the south utilizing Runway 16 are infrequent. Also approaches from the north run directly over the waterfront, downtown, hospital, and school. These elements are relatively close to the airport, which make undesirable low approaches over populated areas. Pilots are encouraged to approach from the south and depart to the south whenever possible. Pilots also prefer departures to the south over the plateau rather than departures to the north due to the higher mountainous terrain and other obstructions located north of the airport. These operational preferences, to depart to the south and arrive from the south, create an undesirable head-to-head operation for flight operations but support keeping aircraft traffic over congested developed areas to a minimum.

It is conceivable that a precision approach procedure that lowers minimums could be structured on the Runway 34 approach. A precision approach (along with a longer runway) would likely be necessary for MYL to be served by commercial air carriers. A precision approach normally has a 50:1 slope compared with the current 34:1 slope and would require extensive earthwork. In addition, a precision approach requires the installation of an Instrument Landing System (ILS), GPS with Wide Area Augmentation System (WAAS) or other precision approach systems such as a WAAS-Localizer Performance with Vertical Guidance (LPV) approach. Improved approach lighting systems and runway markings are also required or recommended based upon visibility minimums.

MYL is being considered for a WAAS-LPV approach. This approach system uses a corrected and highly accurate WAAS/GPS system that adds a vertical guidance component. This approach results in lower minimums, as low as a 200 foot decision height and ½ mile visibility. This is a highly accurate system on par with a Category I ILS. Obstacle clearance issues on the south end of the airport may pose less of a problem with this new approach as the approach surface is horizontally thinner than other systems. This system may decrease the amount of earthwork needed if the runway were to be extended to the south.

Runway 16 approaches, as cited in the 1998 Master Plan, are restricted due to terrain. Terrain directly north of the runway centerline rises by approximately 2,500 feet above the runway elevation five miles north of the airport. Topography along either side of the extended runway centerline also rises steeply above the airport. These terrain features north of the airport and along both sides of Payette Lake, coupled with pending changes to the FAA terminal instrument approach procedures prevent structuring of a precision approach to Runway 16. Although, a non-precision approach capability could still be provided by routing traffic over Payette Lake at a 15-

degree easterly divergence off of the runway heading. A more extensive use of runway 16 approaches and runway 34 departures are undesirable due to over flight of a school, a hospital, and the downtown area of the City of McCall, all in close proximity to the airport. Additionally, extensive tree removal on private property would be needed to structure a non-precision approach on Runway 16. For these reasons, the previous master plan determined that improved approaches on Runway 16 were not a viable alternative. None of these circumstances have changed since the last Master Plan.

Instrument departure procedures that utilize the non-directional beacon (NDB) are becoming an issue as the NDB is scheduled for decommissioning.

Aside from airspace modification, there are limited other actions to improve airport reliability. Prompt and complete snow removal on the runway and associated environs has been a reliability issue. The airport has addressed this issue in the last few years with the purchase of additional equipment, more staffing during critical winter months, and a policy to ensure that the airport is open and providing safe facilities. Consistently accurate weather reports also add to reliability. An Automated Surface Observation System (ASOS)[1] owned and operated by the National Weather Service exists at the airport. It is reported that due to localized pockets of fog, an ASOS may report weather conditions more limiting than actually exist in the local area. In reviewing data that concerns the siting of the ASOS, the current location provides the best margin of safety for pilots initiating an approach into MYL.

6.2 Airport Improvement Alternatives

In the following subsections, several airfield (runway/taxiway) layouts and landside facilities options are presented as alternatives to improve the functionality of MYL. Each carries with it advantages and disadvantages.

Five basic airfield layouts are presented in this chapter, including:

- Alternative 1, B-II Compliance;
- Alternative 2, C-II Incremental;
- Alternative 3, C-II Full Compliance;
- Alternative 4, C-III Full Compliance;
- The Preferred Alternative.

Four landside facilities options are also presented in this chapter, including:

- West Option “A”
- West Option “B”
- East Option
- Landside facilities recommendation

Progressively more detailed drawings are included in this chapter as the vision for the airport is refined. Once the airfield dimensions are determined, key facilities represented by colored boxes to indicate the necessary land needs are brought into the analysis. The location of facilities are

[1] *The ASOS is a suite of sensors, which automatically measures, collects and broadcasts weather data to help meteorologists, pilots and flight dispatchers prepare and monitor weather forecasts, plan flight routes, and provide necessary information for correct takeoffs and landings.*

then evaluated and a preferred layout chosen. The preferred layout is incorporated into the airport layout plan.

6.2.1 Airfield Alternatives

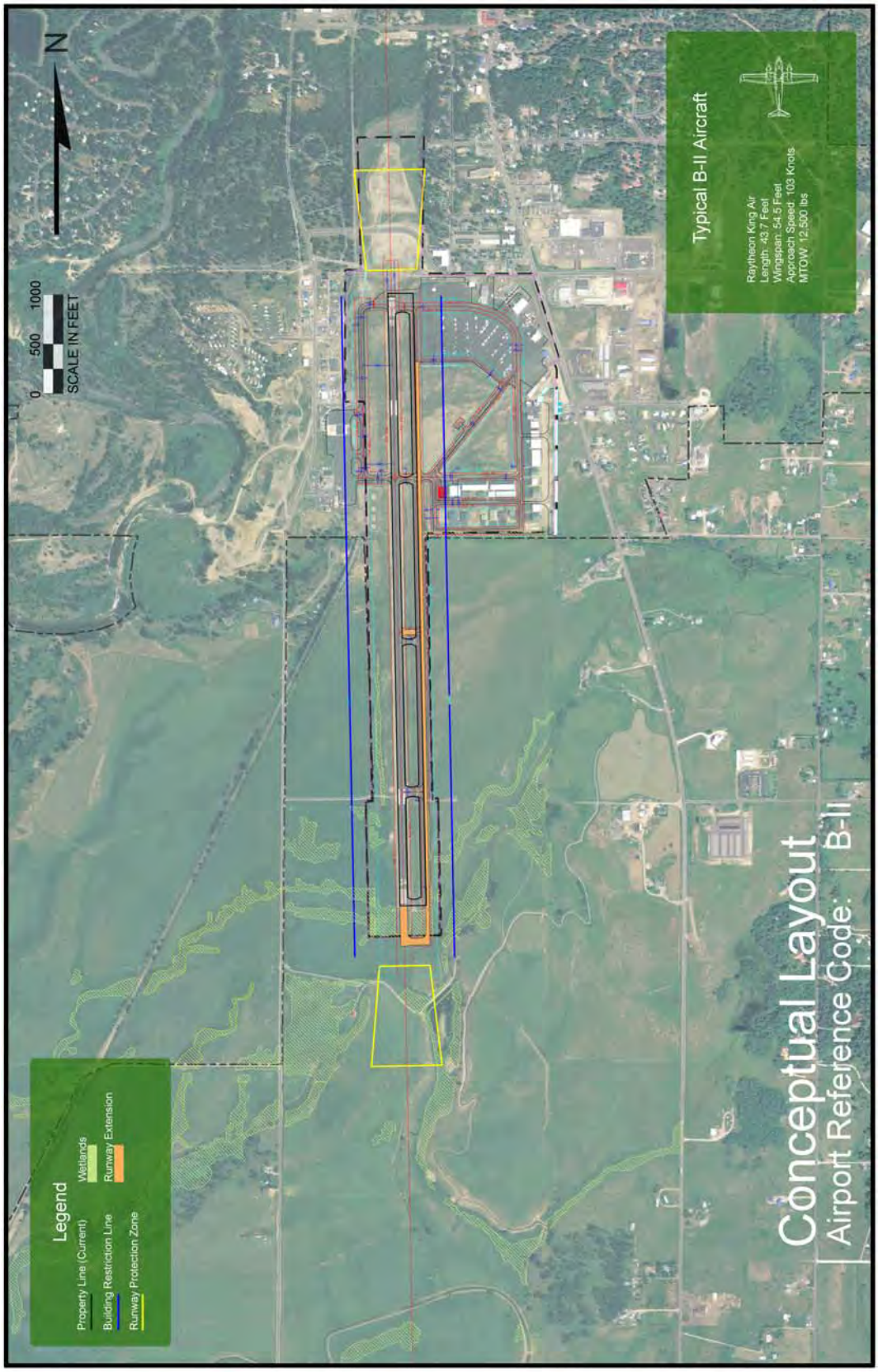
Alternative 1: B-II Compliance

The B-II layout represents the current GA airfield, but brings it into full compliance with B-II design standards (see **Exhibit 6-2**). To meet these standards, the runway centerline to taxiway centerline separation would need to be increased by 40 feet, to meet the 240 foot minimum separation standard, and runway length would have to be extended to 6,500 feet to meet the runway length requirements of most of the fleet of small aircraft less than 12,500 pounds. This extension was recommended in the 1993 Master Plan. Additionally, the current 75 foot runway width is adequate to serve B-II aircraft. Aircraft that could safely use this B-II airport include the Beech Super King Air, Beech 1900C, Cessna Citation II/III and the Dassault Falcon 900. Additionally, commercial aircraft such as the Beechcraft 1900C and Embraer 120 could also use the airport under this design alternative.

To provide the additional 400 feet of runway to the south and a relocated taxiway, the acquisition of approximately 16 acres of land is necessary. The moving of the taxiway 40 feet to the east to comply with B-II design standards would impact a strip of wetlands along much of the taxiway's length.

This option is not considered viable because it fails to meet the basic requirements for ARC C-II design standards needed to accommodate the type of aircraft using MYL today and forecast to use MYL in greater numbers in the years ahead. It does not meet the needs of airport tenants and users and does not provide the required safety areas for the size and type of aircraft currently using the airport. It also fails to optimize the use of a valuable community asset or consider future demands.

Exhibit 6-2. B-II Compliance



Alternative 2: C-II Incremental

The C-II airfield is the largest airfield justified in this master plan according to FAA requirements for critical aircraft use (see **Exhibit 6-3**). It provides for a C-II runway safety area (RSA), an obstruction free area (OFA), a runway protection zone (RPZ), and a runway centerline to taxiway centerline separation of 300 feet compliant with FAA design standards. Because of the larger C-II runway object free areas and runway safety areas at the runway ends, the Runway 16 threshold must be shifted 400 feet to the south so the north end of the RSA is south of Deinhard Lane. A public road in an RSA is a violation of FAA safety area design standards.

Phase I of this concept, adding 400 feet to the south end of the runway, retains the existing 6,106 feet of runway length for aircraft landing on Runway 34, but provides aircraft departing on Runway 16 a greater useable length of 6,506 feet. Although the additional 400 feet of runway on the south end does not help landing aircraft, it does provide extra length for aircraft that depart to the south, which is the critical operation, and makes a safer operation for a number of aircraft that currently use this airport. An upgrade to the approach speed C category also requires a runway width of 100 feet, or 25 feet wider than the present runway.

Shifting the runway south requires grading the hill south of the airport. **Exhibit 6-4** shows the needed grading for Phase I (before and after) that removes penetrations to the runway approach surface and ensures safer landings. The excavation pictured in Exhibit 6-4 provides for an approach slope of 20:1. This 400 foot extension will have some wetland impacts associated with it; however, the 20:1 slope avoids Brown's Pond. The Brown's Pond embankment; however, does not conform to recommended safety area grading standards. The disposition of the pond will require further review during subsequent environmental studies as there are multiple issues to consider such as wetlands, water rights, irrigation system function, waterfowl attractant and historic uses.

Phase II of this concept adds another 494 feet to the south end of the runway to bring takeoff distance on Runway 16 to 7,000 feet and landing length to the north on Runway 34 to 6,600 feet. These runway lengths, while less than optimum, support a wider range of both corporate and commercial aircraft that currently use and are forecast to use the airport in the future in greater numbers. These lengths are expected to be more attractive to the regional airline aircraft that currently operate in this region, and expected to be used in the future as detailed in Exhibit 6-3.

The addition of another 494 feet of runway to the south to gain a 7,000 foot runway has greater impacts and costs associated with it that the first 400 feet in Phase I. This extension requires extensive earthwork, impacts more wetland acres, and requires the removal of Brown's pond since the extended parallel taxiway physically intersects the pond embankment. A graphic of the additional excavation and grading for Phase II is not shown; however, it would be similar to that pictured in Exhibit 6-4 but would extend farther into the hill south of the airport and would also show the removal of Brown's pond.

Exhibit 6-3. C-II (Incremental)

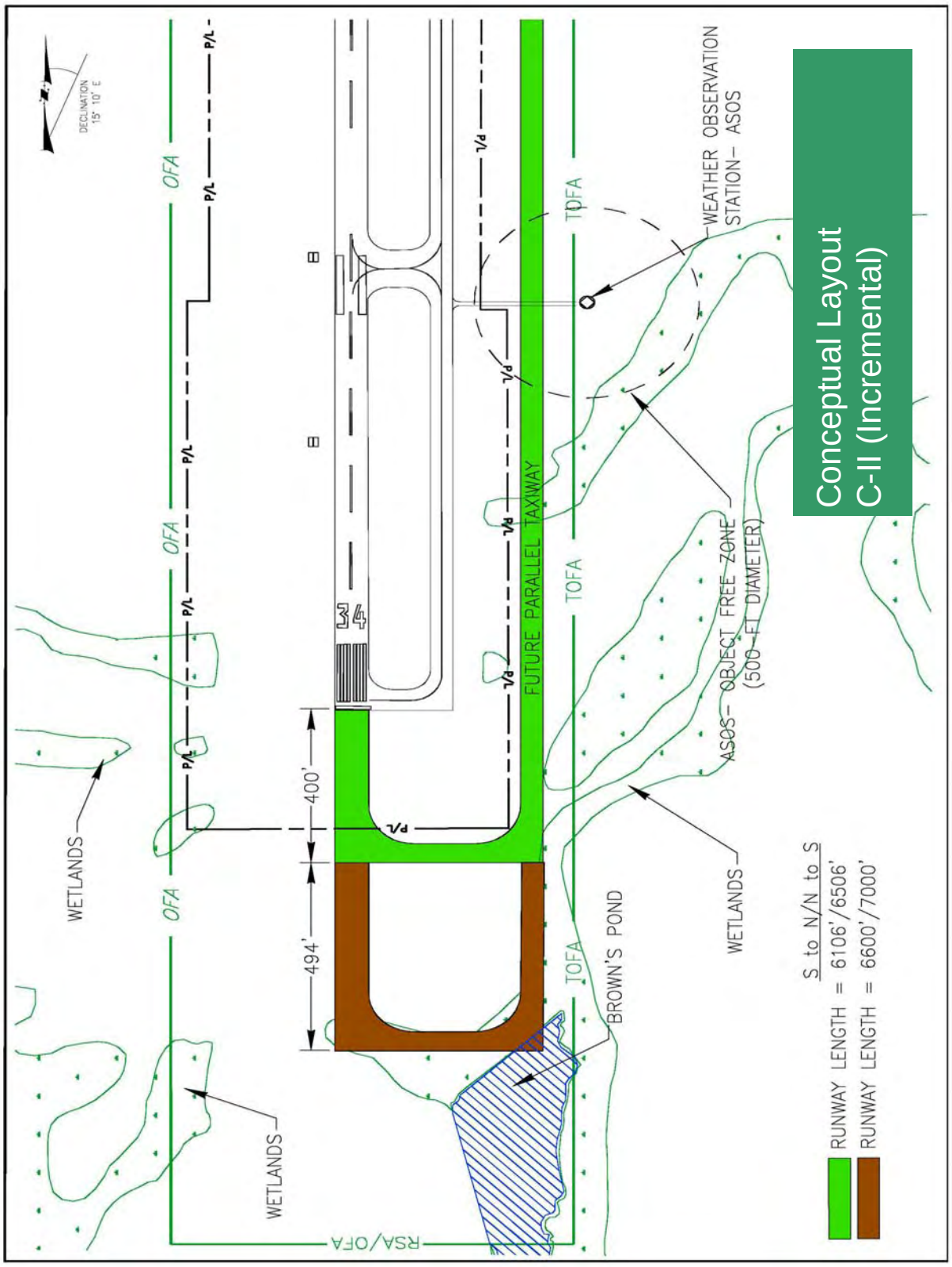
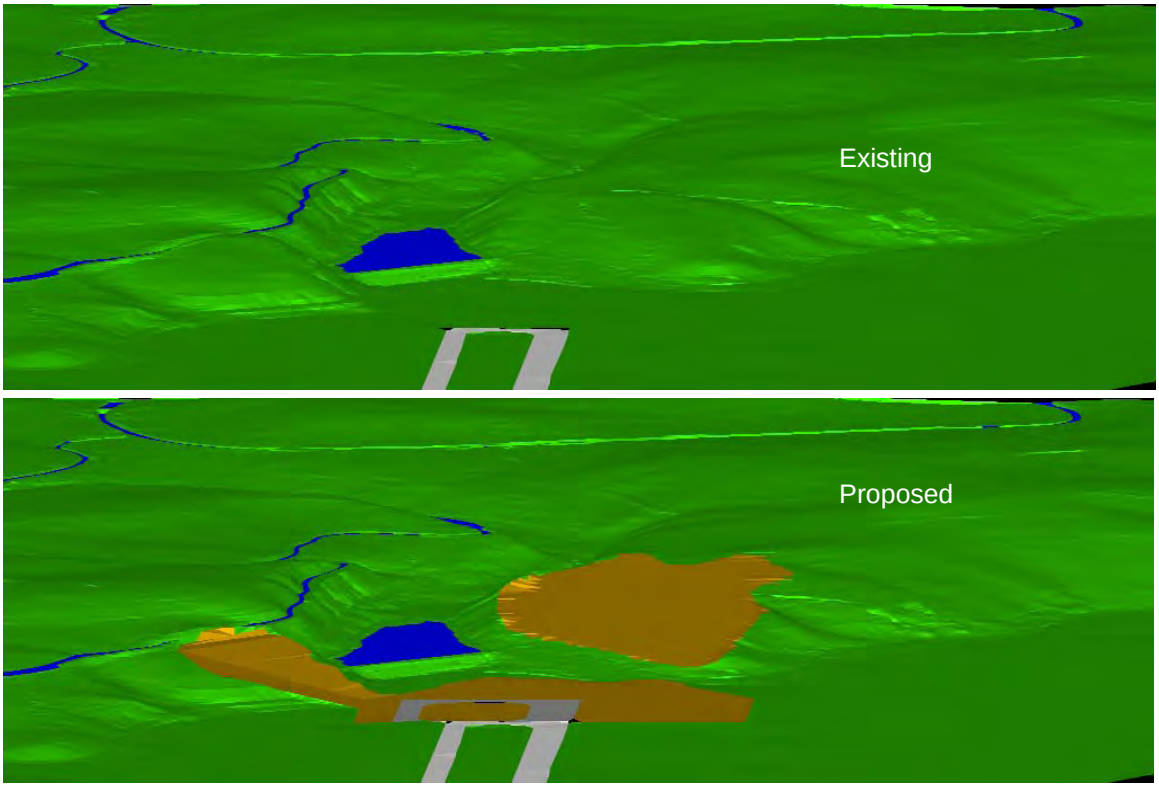


Exhibit 6-4: Phase I, 400 Foot Runway Extension Grading



Source: Toothman-Orton Engineering Co. Depiction of excavation and grading of the 20:1 visual approach slope needed for 400 ft. runway extension.

The Alternative 2 configuration will significantly improve safety standard compliance for existing critical aircraft operations when compared with the B-II layout depicted in Alternative 1, and is especially true of improvements added in Phase II. An environmental assessment (EA) will be required as both Phase I and Phase II impact wetlands, water conveyance, and storage facilities on the south and east side of the runway and also require significant acquisition of land. The land acquisition and estimated costs associated with each of these phases is summarized in **Table 6-1**.

Although this alternative does not provide the optimum recommended runway length as described in Chapter 5, which limits the use by certain aircraft into the future, it will allow the airport to accommodate most regional air carrier and business aircraft for many years. This design works well as interim phases of a long-term program.

Table 6-1. Alternative 2/Cost Estimates

	Phase I	Phase II	Total
Land Acquisition	65 acres ($6.5 M)	10 acres ($1.0 M)	75 acres ($7.5 M)
Construction	$9.5 M	$ 31 M	$ 40.5 M

Source: Toothman-Orton Engineering Co.

Alternative 3: C-II Full Compliance

This alternative (presented in **Exhibit 6-5**) is identical to the C-II incremental improvement alternative but lengthens the runway to 8,600 feet (the ideal runway length recommended in this plan) to fully accommodate Gulfstream III and IV, Bombardier Challenger 604, Cessna Citation VII, Hawker 800XP and other similar aircraft. This airfield could also accommodate many of the commercial C-II aircraft used today by regional airlines including Embraer 145 and the CRJ 200, 700, and 900. This airfield meets many of the demands of today's small commercial aircraft but does not meet the design criteria (such as runway centerline to taxiway centerline) that are required for Design Group III aircraft to include the DHQ-400. This deficiency can be expected to limit the potential for use by regional airlines that use this aircraft, as well as some general aviation users.

This full compliance airfield alternative would require extensive earthwork (3.7 million cubic yards) to extend the runway into the plateau south of the airport to provide for runway length, safety areas, and approach slopes. It also requires significant land acquisition for construction of improvements and grading of approaches. Significant wetland and waterway impacts are also an issue.

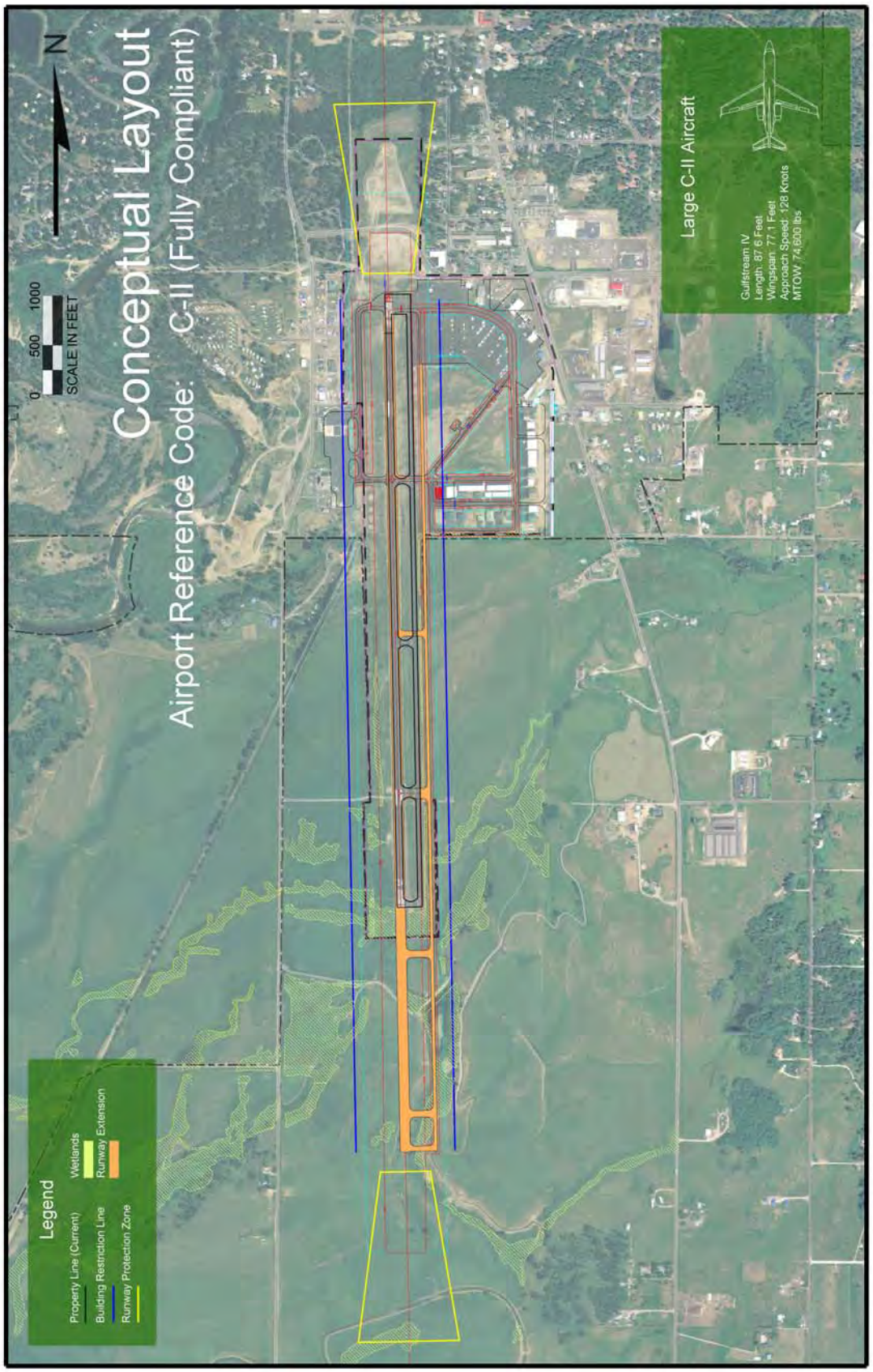
Table 6-2 summarizes land acquisition and cost estimates for this layout. This layout requires 75 more acres of land than the C-II Incremental Improvement alternative and adds an estimated $28.1 million to the project cost.

Table 6-2. Alternative 3/Cost Estimates

Land Acquisition		Cost Average	Total
Airfield:	150 ac. ($15 M)	Construction + Land	$42-46 M

Source: Toothman-Orton Engineering Co.

Exhibit 6-5. C-II (Fully compliant)



Alternative 4: C-III Compliance

A C-III airfield (presented in **Exhibit 6-6**) represents a commercial air service airfield that would meet the demands of C-III aircraft such as the Dash 8 Q400, the Boeing 737 and other aircraft operated by airlines serving this region, i.e., Horizon Airlines. The runway length in this alternative configuration should be a minimum of 7,000 feet and in the ideal situation, 8,600 feet, the optimum for unlimited use by jet aircraft. The critical difference between this configuration and that described in Alternative 3 is that the runway centerline to taxiway centerline separation is 400 feet in lieu of 300 feet. This will allow use of the Q400, a desirable air carrier aircraft to the McCall environment. With an expansion to 8,600 feet, and with an approach slope of 20:1, the amount of earth needing to be removed from the hill south of the airport will be approximately 4.2 million cubic yards, approximately 500,000 cubic yards more than Alternative 3.

A summary of land acquisition and cost estimates is presented in **Table 6-3**. This layout, with an 8,600 foot runway, 400-foot runway to taxiway separation, and greater safety areas would require an estimated ten additional acres of land acquisition and $12 million in cost beyond Alternative 3.

Table 6-3. Alternative 4/Cost Estimates

Land Acquisition		Cost Average	Total
Airfield:	160 ac. ($16 M)	Construction + Land	$58-61 M

Source: Toothman-Orton Engineering Co.

Exhibit 6-7 graphically shows the excavation and grading needed to support a 2,500-foot south extension to Runway 16/34, with a 20:1 clear approach scope.

Exhibit 6-6. C-III

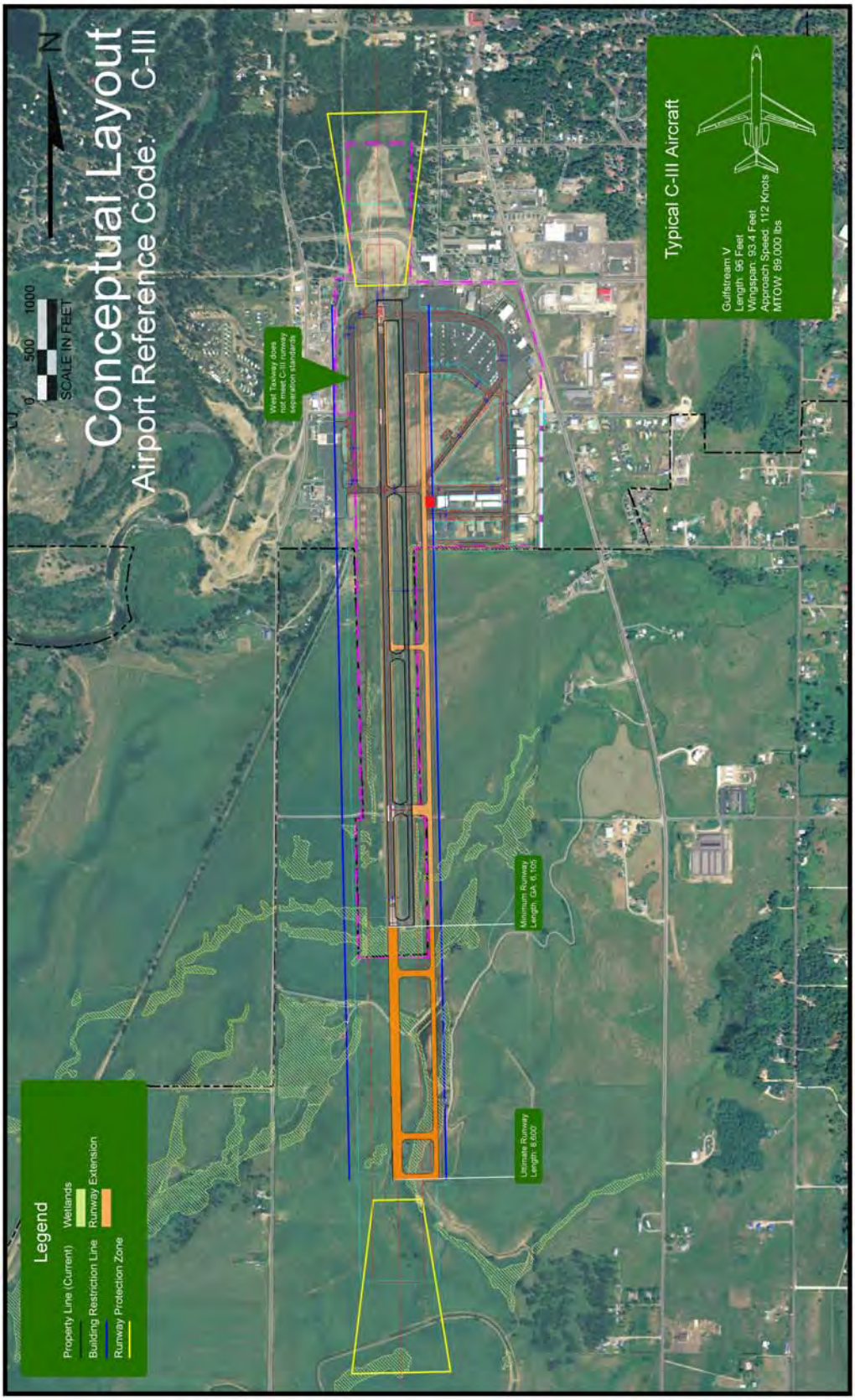
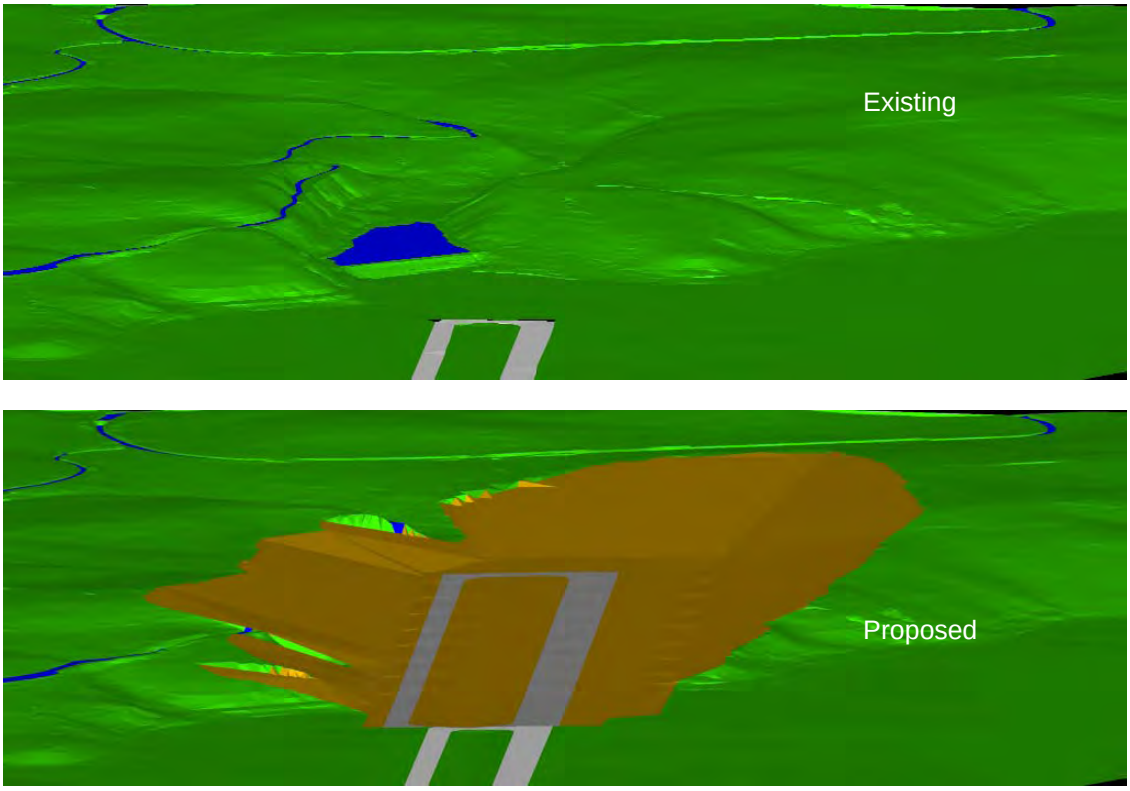


Exhibit 6-7. 2,500 Foot Runway Extension Grading



Source: Toothman-Orton Engineering Co. - Depiction of excavation and grading needed for 2,500-foot runway extension.

Preferred Alternative

The preferred airfield alternative is a combination of Alternatives 2 and 4 which will allow the airport to become compliant with aircraft approach speed C Runway Safety Area requirements as well as accommodation of critical design Group II runway to taxiway separations. The preferred alternative for the near-term (10 years or less) is predominately the C-II incremental alternative with a C-III (400 foot) runway centerline to taxiway centerline separation. This alternative will meet FAA design safety standards for aircraft that currently use the airport. It would also allow the airport to accept certain C-III aircraft, if necessary and desirable, at some point in the future without having to once again relocate a parallel taxiway another 100 feet away from the runway. This action is considered a rational, cost effective, strong design element in proper long-term facility planning. This design will accommodate smaller commercial aircraft such as the EMB 120 used by SkyWest as well as serve the potential use by the Dash 8 Q400 from Horizon. With the aggressive, successful development of the Tamarack Resort, expansion of Brundage Mountain, and other developments in Valley County, this is considered a highly probable scenario.

The construction of this alternative is expected to be phased over a number of years primarily as a result of availability of AIP funding. It would likely be phased in the following way:

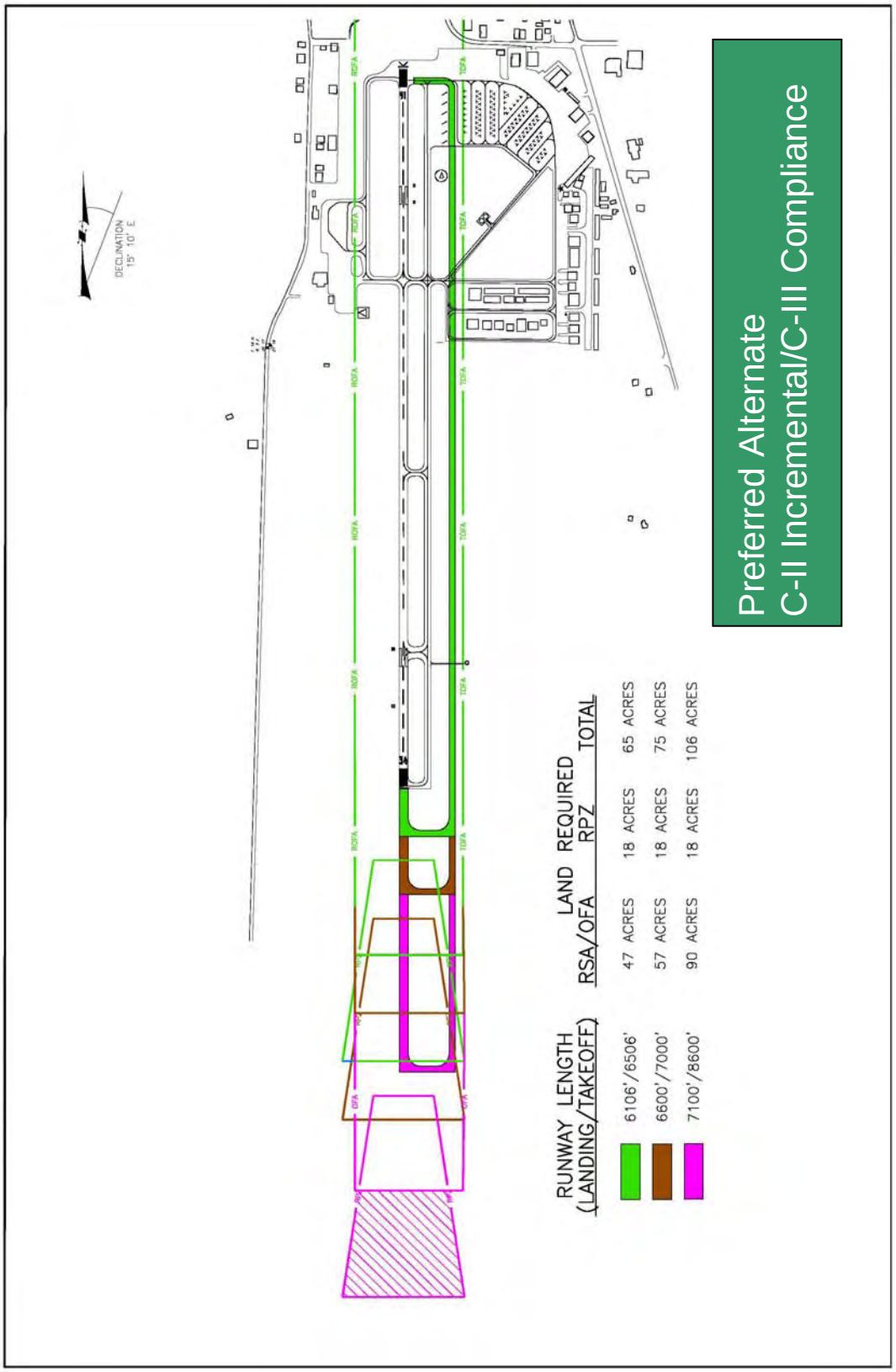
1. Enlargement of the safety areas to C-II standards
2. Runway-taxiway separation
3. Runway and taxiway extension, and related RSA/OFA grading

The runway could be extended to 6,500 feet and again to 7,000 feet in two phases or done as one larger project (see **Exhibit 6-8**). Under normal circumstances, this would be the most cost effective approach; however, in this case due to environmental issues and incrementally higher excavation costs, it is likely that the extensions will be two distinct and separate phases. Because of the larger C-II runway object free areas and safety areas at the runway ends, the Runway 16 threshold must be shifted 400 feet to the south to avoid Deinhard Lane. Therefore, in order to maintain the current usable runway length, 400 feet of runway will need to be added to the south end of the runway. It has been noted that 6,500 feet of usable runway is also desired to accommodate the B-II fleet, with an extension to 7,000 feet of usable surface that would take place within five years and better accommodate jet aircraft and potentially the Q400 aircraft.

As mentioned above, to add another 494 feet to the runway to get to 7,000 feet will likely require a significant effort. There will be impacts to wetlands, removal of Brown's Pond, (which is reported to have local cultural significance), and a significant amount of additional excavation to the hill south of the airport.

It should also be noted that aircraft using the airport, particularly air carriers, may also need or desire upgraded NAVAIDS which may alter the approach surface slopes, require a review of obstructions, and potentially require additional investment in the airport. Evaluation and design of an LPV approach (FY 2007 and 2008) will further identify the significance of this issue.

Exhibit 6-8. Preferred Alternative



Summary of Airfield Alternatives

Table 6-4. Alternatives Summary

Alternate	Title	Airfield Land Required[2]	Earthwork	EA or EIS?	Cost Range[3]	Meets Demand	
						Present	Future
1	B-II Compliance[1]	16 acres	65,000 cubic yards	Yes	$3.5 - $5.0 M	No	No
2	Incremental C-II Phase 1	65 acres	190,000 cubic yards	Yes	$9.5 – $11 M	Partial	No
	Phase 2	10 acres	1,500,000 cubic yards	Yes	$24.5-$31 M	Yes	Partial
3	Full C-II Compliance	150 acres	3,690,000 cubic yards	Yes	$42 – $46 M	Yes	No
4	C-III Compliance	160 acres	4,200,000 cubic yards	Yes	$58 – $61 M	Yes	Yes
Preferred Alternative	Phase 1	65 acres	190,000 cubic yards	EA	$9.5 – $11 M	Yes	No
	Phase 2	75 acres	1,500,000 cubic yards	Yes	$24.5 - $31 M	Yes	Yes
	Ultimate >10 Years	106 acres	4,200,000 cubic yards	Yes	$58 - $61 M	Yes	Yes

[1] This alternative is not considered compliant with FAA policy

[2] Provides no additional land for development, i.e., hangars, terminal, etc.

[3] Cost includes land acquisition (Average Cost of $100,000 ac.) and a contingency for wetland/environmental issues (4 %).

6.2.2. Landside Facilities Alternatives

This section analyzes key alternative facility locations in and around the airport to determine the optimum placement of facilities that best meet the airport's short-, medium-, and long-term needs. The size of these facilities is based upon data compiled and discussed in Chapter 5. The key facilities analyzed in this master plan update are: expanded general aviation hangar, ramp and tie-down areas, and future terminal building locations.

The options listed are broken into two distinct areas:

- Development of Airport Owned Property
- Development Options for Land to be Acquired

Development of Airport Owned Property

The property that is currently owned by the airport and that should be fully utilized as a first step in satisfying user demand is the rectangular area of approximately 25 acres located in the northeast quadrant of the airfield. This area currently has the diagonal taxiway running northeast to southwest through it. This area has dedicated tie-downs on the northern one third. The remainder of the area is used for additional aircraft parking during fly-ins and other events, such

as the McCall Family Fly-In or the height of the fire season when it is heavily used by USFS helicopters for staging. In the winter months it is used primarily as an airport snow storage area.

The 1998 Master Plan recommended hangar development on the south side of the diagonal taxiway, preserving the area on the north side of the diagonal taxiway for additional tie-downs and itinerant uses as demand presented itself. There was much discussion throughout the current planning process regarding the best use for this parcel and whether the diagonal taxiway provides a benefit or detriment to better utilization of this area.

The goal of the consulting team and the planning advisory committee for development of this parcel was to create a plan to optimize the limited available space in such a way as to meet the short term needs of the airport and yet provide flexibility as the needs of tenants and the airport change. The issues that were discussed and included in the recommendations for this parcel focused on the style, size, type, and orientation (facing direction) of hangars that are desired and needed by tenants and as documented in the demand forecasts. The fleet mix of aircraft that will be kept in the hangars and the resulting size of ramps and taxi-lanes needed to accommodate these aircraft also help shape the layout of this area. The flow patterns for aircraft to maneuver to and from hangars, ramps, and tie-down areas were also discussed, not only looking at convenience, but also in terms of safety. Access to and from the FBO was considered, as was aircraft maneuvering and parking at the FBO location. Other important issues that were discussed and will be part of the layout include snow removal and storage, security, vehicle parking, and the movement of private vehicles and pedestrians in the airport environment. It was also recognized that a certain portion of the existing tie down area would be lost due to the relocation of the parallel taxiway. This area requires replacement in the development plan.

It should be noted that the analysis of future aviation demand, presented earlier in this planning document, forecasts increased use of MYL by corporate jet aircraft. The number and size of jet aircraft will increase overall and this will be especially noticeable during community or area wide events as is the case at many airports located in a resort type setting. The airport's FBO will need to have facilities to accommodate this traffic on a regular basis and the layout of the taxiway, ramp(s), and tie-down area needs to be designed to safely handle this type of traffic. This fact warranted a complete review of current aircraft parking and movement patterns with an eye toward reconfiguration to meet demand.

After looking at and discussing three different prepared utilization options with different hangar and tie-down orientations, hangar sizes, and aircraft movement patterns, along with the other issues described in the proceeding paragraph, the following decisions were made:

First, that the best utilization and flexibility of this parcel can be achieved by the removal of the diagonal taxiway. In its current location it impedes efficient utilization of this area for hangar development. Even though this taxiway provides convenient access to the parallel taxiway and runway environment and is used regularly by smaller aircraft based at and using the airport, other aircraft movement avenues exist, and the area is too valuable for efficient hangar and

tie-down area development to be limited by this taxiway. It is believed that the continued existence of this taxiway and how to deal with development with this feature running through it is a significant impediment to the development of this area.

Second, that the dedicated tie-down area on the north edge of this parcel works well in its current location and in general should remain where it is. The area has been redesigned to accommodate more tie-down spaces, spaces for larger aircraft and helicopters, and to provide for the displacement of Taxiway E. In conjunction with this is the recommendation that Taxiway E be relocated away from the immediate proximity to the fixed base operator (FBO) and other businesses in that corner of the airport (see **Exhibit 6-9)**. It is felt the current situation presents a major safety issue with the operation of large turbo prop and business jet aircraft in close proximity to pedestrians, visitors, workers, buildings and equipment. This situation can be expected to worsen as the number of operations and size of aircraft increase.

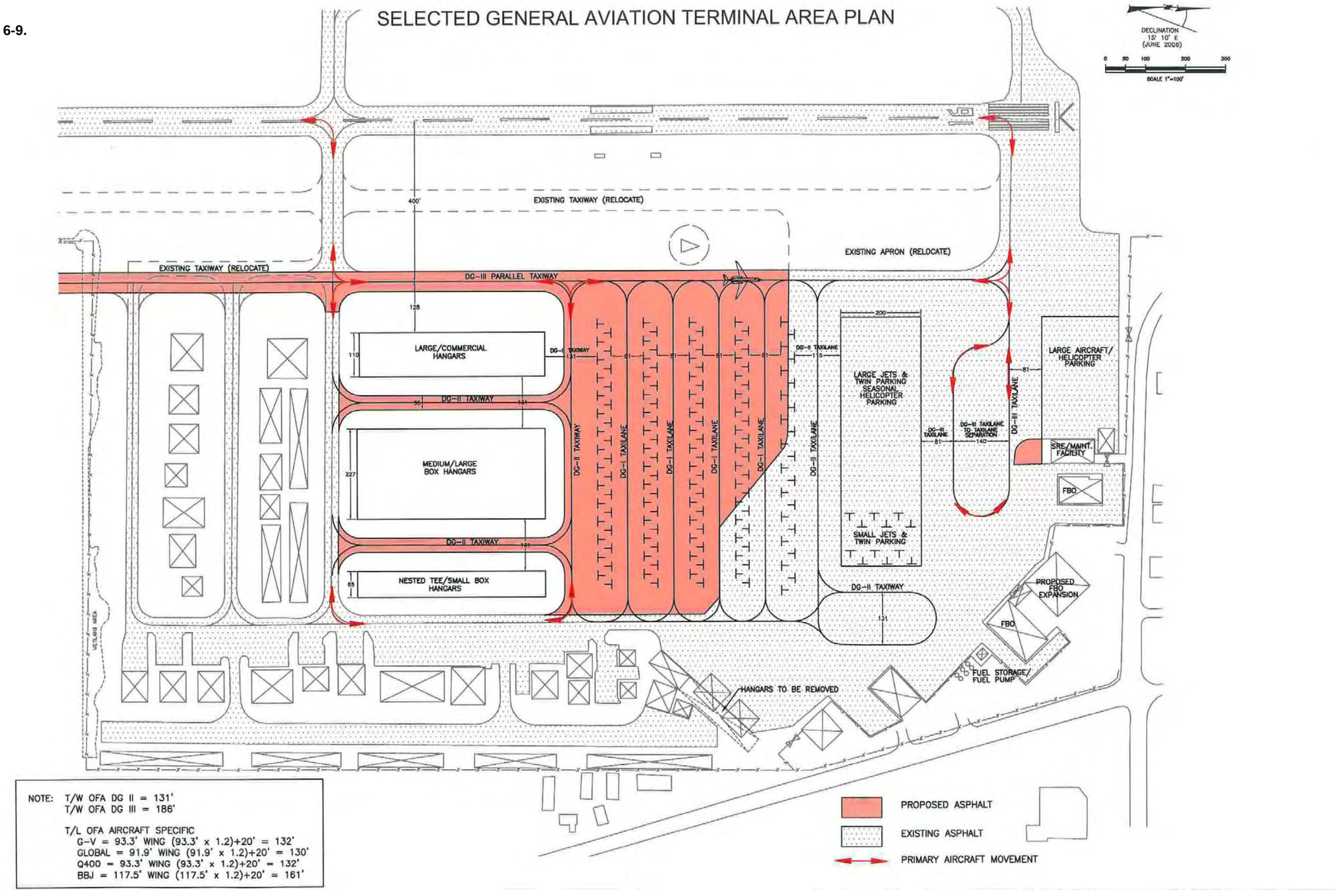
Third, the planning team feels that the current FBO location is the best location on the airport, at least at the current time and within the immediately foreseeable future, to safely accommodate current and forecast traffic. The NE corner of the airport centered on the FBO should continue to be developed for commercial operations. This development should include an evaluation of the usefulness of a number of older hangars to see if the space they occupy could be better used to accommodate the future needs of the airport.

The redevelopment of an area is seldom popular, however, it is critical based on the cost of acquiring land that the community make the most efficient use of the property that it currently owns.

A review of Exhibit 6-9 shows the recommended overall layout for this parcel of airport-owned property with the basic items discussed above. This layout allows for general aviation development to meet the short-term needs of MYL without major costs. It also is laid out such that the number of hangars developed versus the number of additional tie-downs installed can be adjusted as the needs of one versus the other develop over the short-term.

An additional area to be addressed is the designated helicopter landing pads located on the diagonal taxiway, and the use of this parcel in general for staging purposes by USFS helicopters during the fire season. It was determined that the dedicated helipads can be relocated to the north side of the redesigned tie-down area to provide an area that avoids smaller fixed wing aircraft to the maximum extent possible. It is further recommended that the USFS helicopter operations be relocated to the west side of the airfield. Due to the size of these aircraft and the effect that their rotor wash has on other aircraft, it would be in the interest of safety if these aircraft could operate mainly from the west side of the airfield. The USFS also uses four unpaved

Exhibit 6-9.


SELECTED GENERAL AVIATION TERMINAL AREA PLAN
DECLINATION
15° 10' E
(JUNE 2006)
0 50 100 200 300
SCALE 1"=100'
EXISTING TAXIWAY (RELOCATE)
EXISTING APRON (RELOCATE)
DG-III PARALLEL TAXIWAY
400'
128
LARGE/COMMERCIAL HANGARS
DG-I TAXIWAY
DG-II TAXIWAY
MEDIUM/LARGE BOX HANGARS
NESTED TEE/SMALL BOX HANGARS
DG-II TAXILANE
DG-I TAXILANE
LARGE JETS & TWIN PARKING SEASONAL HELICOPTER PARKING
DG-III TAXILANE
DG-III TAXILANE TO TAXILANE SEPARATION
LARGE AIRCRAFT/ HELICOPTER PARKING
SRE/MAINT. FACILITY
FBO
SMALL JETS & TWIN PARKING
PROPOSED FBO EXPANSION
FUEL STORAGE/ FUEL PUMP
HANGARS TO BE REMOVED
WETLAND AREA
NOTE: T/W OFA DG II = 131'
T/W OFA DG III = 186'
T/L OFA AIRCRAFT SPECIFIC
G-V = 93.3' WING (93.3' x 1.2)+20' = 132'
GLOBAL = 91.9' WING (91.9' x 1.2)+20' = 130'
Q400 = 93.3' WING (93.3' x 1.2)+20' = 132'
BBJ = 117.5' WING (117.5' x 1.2)+20' = 161'
PROPOSED ASPHALT
EXISTING ASPHALT
PRIMARY AIRCRAFT MOVEMENT

helicopter landing pads on the west side of the airfield adjacent to their ramp area. These pads are located in the runway object free area (ROFA), violate airport design standards, and will need to be relocated in the short-term. In the next section, *Development Options for Land to Be Acquired*, it is proposed that the USFS purchase additional land to the south of their current base of operations to accommodate their helicopter landing pads specifically and their flight operations in general.

Development Options for Land to Be Acquired

In addition to land that is currently owned and available for development, the airport will need to acquire significant additional property. The acquisition is not only required to allow needed improvements to meet safety requirements but also to provide space for expected development needs and to retain control of the area around the airport which helps protect its future viability.

This section of the plan presents options for the orderly growth of the airport over a 20-year planning period to meet current and expected future demands. The land area that would need to be acquired as described in the following options is the acreage needed for future growth of: general aviation hangars, ramps, tie-downs, and additional or expanded fixed base operations; a future passenger terminal with ramp, automobile parking, rental cars, and other ancillary services; and space to accommodate other airport users such as aviation businesses, USFS, etc. The area of land described in association with these services does not include land needed for runway and taxiway improvements described previously.

An area of approximately ten acres is deemed necessary according to both FAA guidance and the consultant's collective experience to provide for a basic commercial air service terminal. This can provide a 1 to 2 gate, 20,000 square foot terminal with appropriately sized hold rooms, waiting area, ticketing and baggage claim, and space for services such as rental car and taxicab counters and administrative offices. This would also include aircraft and automobile parking facilities and roadways.

A new snow removal equipment, storage, and maintenance building is recommended as part of the plan and would require about three acres. The need for this facility and a more detailed plan with recommended square footages is included in Chapter 5.

Additional areas for the expansion of the current fixed base operator or for a second fixed base operator and for future general aviation growth for hangars, tie-downs and other aviation businesses are shown on the various plans.

Future expansion acreage is shown on all of the options that allow for future growth and protect investment in any facilities built so they can be expanded in the future rather than having to be moved to a larger site.

Three different development options were looked at as being viable for planning purposes, some individually and some in combination with another option, to provide for the future needs of the airport as mentioned above. The location of these options is similar to those described and put

forth in the 1998 Master Plan, although the layout and details have changed somewhat due to growth at the airport. These options are presented as "West A Option", "West B Option", and "East Option".

The West A Option

The West A Option encompasses an area of approximately 29 acres south of the USFS property and is situated between Runway 16/34 and Mission Street (see **Exhibit 6-10**). This area would accommodate a future terminal complex, future terminal expansion, and an area of about 11 acres for an FBO complex or related facility. The advantages and disadvantages of this area are as follows:

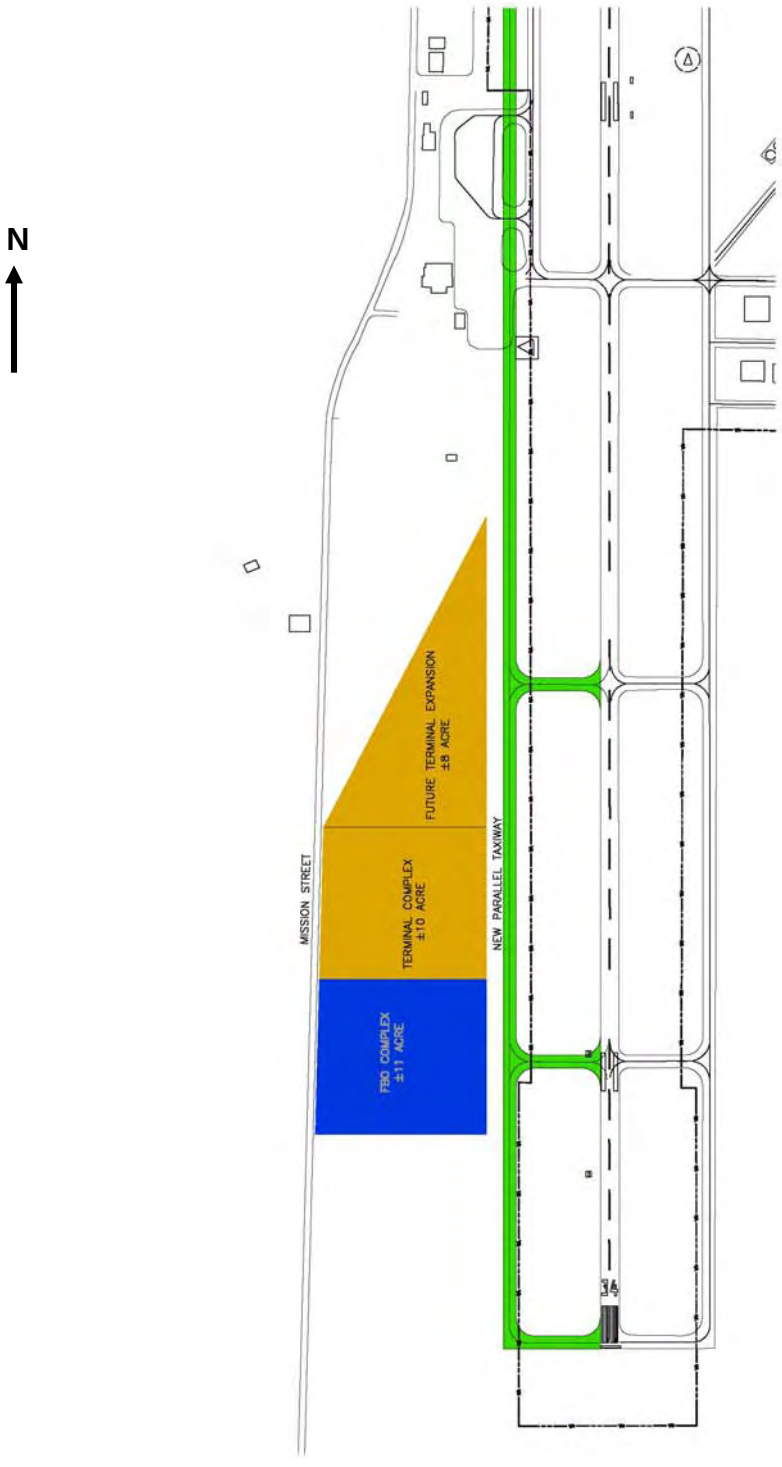
Advantage:

- A future terminal area in a stand alone location such as this would be easier and arguably cheaper to provide for the security needs of commercial air service.
- Access to Mission Street, which is a lightly used roadway, would be a positive for users.
- Land for future expansion could be purchased.
- The location would provide ample separation from GA traffic and congestion.

Disadvantage:

- A west side location would add traffic to Deinhard Lane and Mission Street.
- The terminal location would not be as readily accessible as an east side location.
- A passenger terminal in this location may bring unwanted side effects; such as, roadway congestion, truck traffic, or noise to the area west of Mission Street where high end residential development is taking place.
- A full length west side parallel taxiway would need to be constructed to meet FAA Safety criteria.
- A full length west side taxiway would route air carrier traffic in front of the USFS Smokejumper Base which is highly congested during parts of the year.
- To expand to a C-III category airfield and provide a taxiway with 400 foot runway centerline to taxiway centerline distances, would require acquiring or infringing upon the USFS ramp and seriously hamper their respective operation or render it unusable for all practical purposes.
- Site is not easily accessible from other parts of the airport for any support services required.
- Utilities to this location may be more expensive than to the east side option.

Exhibit 6-10. West A Option



The West B Option

The West B Option is not an alternate air carrier terminal option but an option to provide additional GA growth. This parcel, as shown on **Exhibit 6-11**, is located in the same approximate area as the West A Option and includes an area of about 21 acres. This would provide a stand alone GA area to provide expansion capabilities for hangars, tie-downs, and/or possible aviation related businesses. The advantages and disadvantages of this option are as follows:

Advantage:

- Access to Mission Street, which is a lightly used roadway, would be a positive for users.
- This type of development would not add significant amounts of traffic to Mission Street.
- Land for future expansion could be purchased.
- The location would help decentralize airport operations and keep aircraft and airfield congestion down as the airport and its operations grow.
- Provides buffer between airport operations and housing development west of Mission Street.

Disadvantage:

- A taxiway of an undetermined length would have to be constructed either as shown on Exhibit 6-12 or in some other manner approved by the FAA to provide access from this area to the runway environment.
- Utilities would need to be extended to this location.

Exhibit 6-11. West B Option

The East Option

The East Option provides an alternative for an air carrier terminal complex, an SRE and maintenance complex, allows for GA development, and provides acreage for ancillary services likely to be expected in conjunction with an air carrier terminal. This area is show in **Exhibit 6-12** and comprises a rectangular area immediately south of the current hangar area on the airport. The area highlighted consists of 56 acres; however, there is a total of 73 acres available in this rectangle that should be considered for purchase as the land provides for future airport growth and helps guard against unwanted development or encroachment upon the airport's east side. The advantages and disadvantages of this option are as follows:

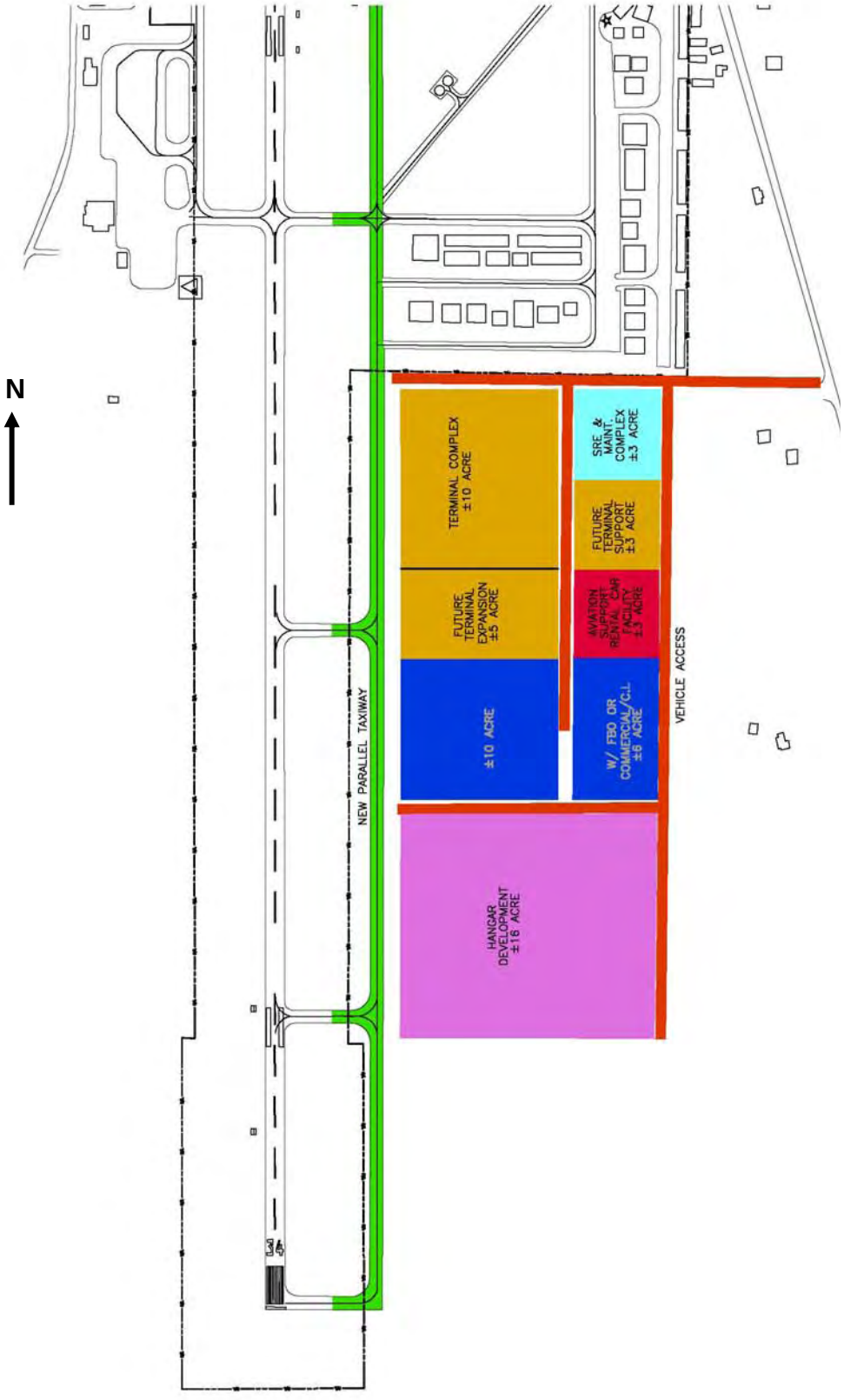
Advantage:

- A future air carrier terminal would be easily accessed and viewed off State Highway 55.
- A terminal in this location would be centrally located at the airport for commercial aircraft operations.
- Space is available to provide adequate separation from GA traffic movements and provide security.
- A new terminal with associated ramp could be easily tied into the proposed relocated east side parallel taxiway.
- A proposed roadway for the terminal, an extension of Krahn Street, would provide additional access to the existing general aviation area and reduce vehicle movements on other operational parts of the airport and improve overall airport safety.
- Utilities could be extended to this area more cost efficiently than to the west side.

Disadvantage:

- Access to and from terminal runs onto a busy thoroughfare (State Highway 55) and could provide added congestion to this area and would likely require a controlled intersection.
- Puts commercial traffic in closer proximity to GA operations.
- Access to this area requires a road connection to State Highway 55.
- Significant expansion of City of McCall infrastructure, i.e. water and sewer is required.

Exhibit 6-12. East Option



Landside Improvement Recommendations

Based on discussions that took place with the Master Plan Advisory Committee and the Airport Advisory Committee, a derivative of the landside alternatives is recommended. It is believed that the East Option provides the best location for a future passenger terminal, related support facilities, SRE and Maintenance area, and future GA growth opportunities to meet the needs for MYL. The West B option is also viable for future GA growth and provides other benefits noted with that option. In addition to the GA development, an area on the north end of the West B option should be considered for purchase by the USFS to meet their demands and to provide space for those operations displaced as the infield area of the airport with the diagonal taxiway is developed and is less compatible for their operations and aircraft.

The recommended land acquisition needed for these future facilities and a conceptual idea of where each of the respective facilities would be located within these parcels is shown on **Exhibit 6-13**.

A terminal location on the west side as shown in option West A is not desirable due to taxiway issues that pertain to separation standards, the impact on the USFS Smokejumpers Base, and the traffic flow of air carrier aircraft past the base especially during summer months. It should be noted, however, that the acreage associated with options, West A and West B is valuable property for future airport uses and should be considered for acquisition.

It is recommended that McCall buy the 73 acres associated with the East Option as soon as possible, then purchase the land on the west side of the airport. However, land associated with the runway and taxiway extensions and separation issues should be the first land acquisition pursued by the City of McCall. This initial acquisition should include all lands within the Runway OFA. A means to control the RPZ, by either acquisition or easement, should also be established.

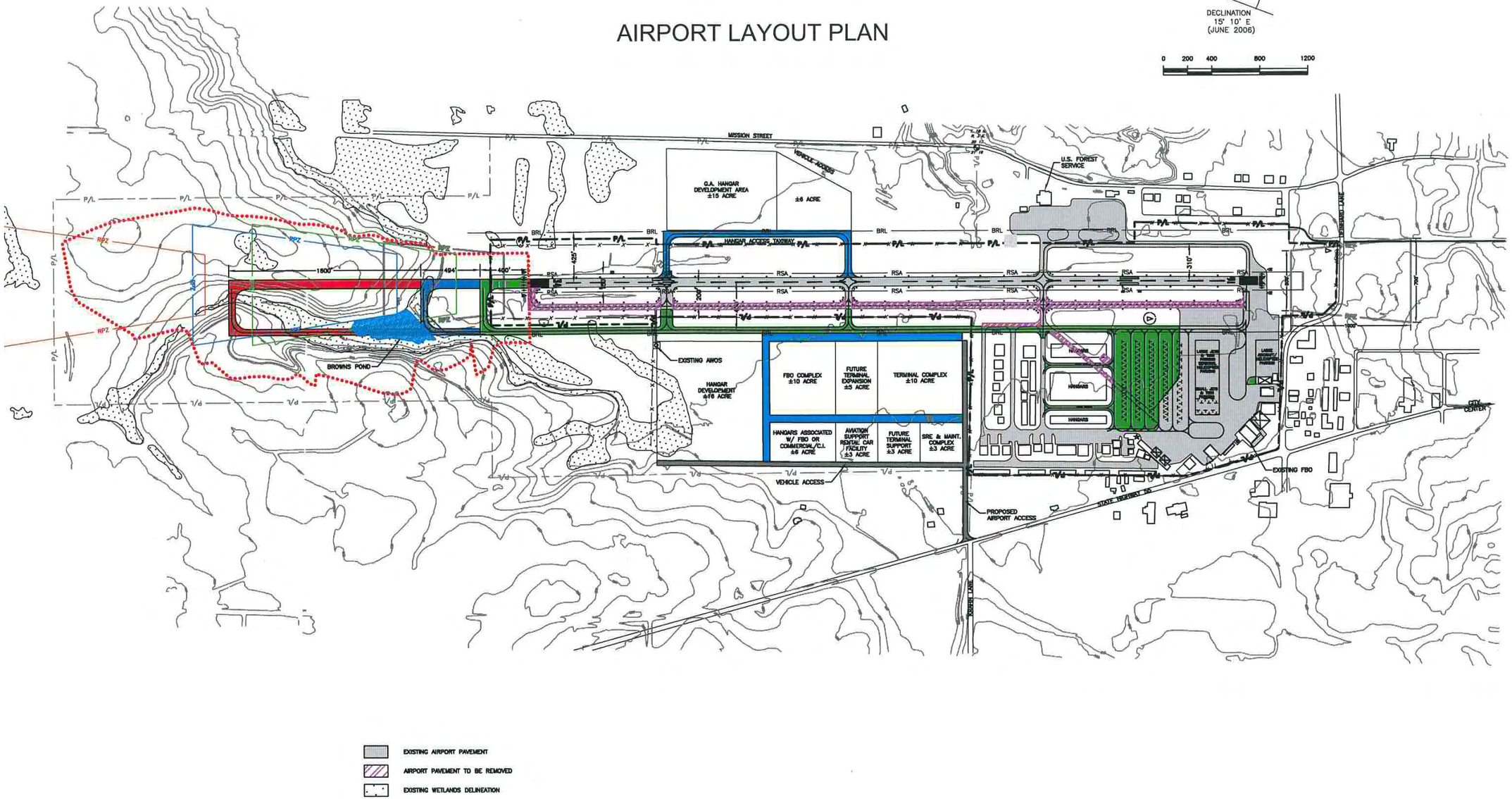
Exhibit 6-13. Landside Facilities Recommendation

Airside and Landside Alternatives - Recommendations

An Airport Layout Plan, base map, is shown as **Exhibit 6-14** and depicts a combination of the recommended airside and landside alternatives. This base map portrays what the airport will look like at the end of the planning period based on the recommendations of the master plan.

A recommended chronology of this airport development to meet FAA guidelines and provide for current and future aviation demands is shown in **Exhibit 6-15.** This exhibit provides an outline based on current information of what needs to be accomplished and approximately when it needs to be accomplished. This timeline will likely change as circumstances for the community and for aviation in general changes, but helps provide a basis for development of a capital improvement program (CIP) for the airport. Several major improvements are depicted as "phased" projects. Phasing is recommended in anticipation of limited availability of AIP grant funds in a single year.

Exhibit 6-14. Airside and Landside Alternatives - Recommendations



TOOTHMAN–ORTON ENGINEERING CO.
ENGINEERS • SURVEYORS • PLANNERS
9777 CHINDEN BOULEVARD • BOISE, IDAHO 83714–2008
PHONE: 208–323–2288 • FAX: 208–323–2399

Exhibit 6-15. Recommended Development Options and Timetable

Project Description	Implementation Year
LPV Approach	2008
Rehabilitate Runway & Parallel Taxiway	2008
Phase I, Land Acquisition Appraisals for RSA Improvements/Taxiway Relocation	2008
Environmental Assessment, RSA Improvements/Taxiway Relocation	2008
Phase 1, Relocate 2,300 feet of East Parallel Taxiway (North End)	2009
Phase I, Construct Apron/Remove Diagonal Taxiway (Relocate Heli-Pads)	2010
Land Acquisition (75 acres)	2010
Extend Runway 34 (400 feet)/RSA Improvements	2010
Overlay/Widen Runway 16/34	2011
Drainage Modifications/Wetlands Mitigation	2011
Construct Perimeter Fencing	2011
Rehabilitate/Reconstruct Existing Apron and Taxiways	2012
Phase II, Relocate/Extend Parallel Taxiway	2012
Construct Hangar Access Taxiways/Taxilanes	2013
Phase II, Construct Apron	2013
Acquire Snow Removal Equipment	2014
Construct Snow Removal Equipment (SRE) Building	2014
Master Plan Update	2014
Phase II, Land Acquisition (Appraisals, etc.)	2014 or ASAP
Phase II, Land Acquisition (120 acres)	2015 or ASAP
Environment Assessment-Runway and Taxiway Extension	2015
Extend Runway 34/Parallel Taxiway (500 feet)	2016
Wetlands, Drainage Issues	2016
Construct Terminal Complex and Perimeter Fencing	2016
Phase III, Land Acquisition (Appraisals)	2016 or ASAP
Construct Apron	2017
Acquire Snow Removal Equipment	2017
Phase III, Land Acquisition (25 acres)	2017
Construct New Hangar Taxiways/Apron	2017

6.3 Other Considerations for Future Development

A number of airport or related improvements that were discussed and recommended in the 1998 Master Plan have been accomplished. Most notably among these is the relocation of Deinhard Lane to provide for the required runway safety areas on the north end of the airport. McCall built a modern, well equipped fire station adjacent to the relocated Deinhard Lane that also serves as an Aircraft Rescue and Fire Fighting (ARFF) facility. This facility, staffing and equipment could easily meet the ARFF requirements of FAA Part 139 if and/or when the airport becomes an air carrier airport.

There are several items that were recommended in the 1998 Master Plan that remain valid are more vital now to protect the future of the airport. These items concern future airport growth and improve safety and congestion both on the airfield and regarding access to the airport. These items include:

- land acquisition
- utilities
- access onto the airport and private vehicle movements on the airport
- automobile parking
- snow storage

Land Acquisition

Most of the acreage identified in the recommend runway length and facilities options was identified for purchase to accommodate growth. The reasons for acquisition then and now are the same. The airport needs additional acreage to provide safe aircraft movement areas including runways, taxiways and associated safety areas, to provide space for additional general aviation growth, and to accommodate an air carrier terminal if McCall is to get air service. The areas identified for purchase also provide long-term growth potential and serve as a buffer for incompatible land uses that will occur if this land is not protected. The value of the land adjacent to the airport continues to increase and is being looked at for development potential that may or may not be compatible with the airport. The land has increased in value from $25,000 an acre in 1998 to more than $100,000 an acre at the present time. Its value may continue to escalate as additional development takes place in and around the City of McCall.

Utilities

The installation of utilities, particularly sewer and water, is also vital to the continued growth of the airport and any facilities to be built thereon. At this time the Idaho Department of Environmental Quality has a moratorium on any additional permits for buildings that require water and sewer hook-up. This is a City of McCall issue; however, it affects growth at the airport until the issue is addressed and the necessary infrastructure is built and put into service.

Airport Access

A plan needs to be developed that limits the number of access points onto or off of the airport as they influence both safety and security. The current situation allows vehicles access onto the airport from a number of locations from Deinhard Lane and State Highway 55. Additionally, when private vehicles drive onto the airport, they drive from that access to wherever their business takes them, usually driving across ramps, taxiways, and tie-down areas. This has contributed to several near-accidents involving taxiing aircraft, vehicles, and pedestrians.

The first step is to limit the number of access points to the minimum number feasible to better control vehicle access onto the airport. In reverse, this also improves safety by feeding vehicles back onto either Deinhard Land or State Highway 55 at designated locations instead of at multiple points along the street. A good example of this is the parking lot at McCall Aviation, which is accessible at any point along its perimeter next to Deinhard Lane. The next step is to designate drive lanes for private vehicle drivers to follow when on airport movement areas. With designated

drive lanes, aircraft operators are alerted to the fact that vehicles may occasionally be navigating that roadway and be alert for them. To be effective, this requires an educational program for both tenants and itinerant aircraft operators.

The Master Plan Advisory Committee also took into account driving habits and needs of tenants and visitors when laying out the hangar, ramp, and tie-down plan. This was also the driving force behind the recommendation to reroute Taxiway E in front of the commercial section of the airport centered on McCall Aviation.

Automobile Parking

Private vehicle parking at the airport is an issue that needs to be reviewed. The current system does not adequately accommodate the parking needs of airport users. Parking issues are addressed in Chapter Five under section 5.4 "Automobile parking and circulation". Since that assessment was made, the FBO, airport management, and the city have worked on a plan in conjunction with a proposed new hangar in this location that addresses a number of the issues presented. The existing problems addressed include: limited access points, better parking lot layout, repaving and striping, signage, and the removal of abandoned vehicles.

Possible alternative parking locations in close proximity to the FBO are shown in the alternative facilities section, Exhibit 6-9 of this chapter "Future Apron Option 4". Automobile parking in the vicinity of the FBO will be difficult to accommodate as the airport grows.

Snow Storage

As the infield area of the airport becomes more developed with hangars and parking ramps, the ability to store snow will be diminished. This development will likely take place over several years and as such is not an immediate crucial issue. However, due to the varying amounts of ramp space needed during the winter months, snow is often handled more than once to accommodate the requirements of both the commercial operators and tenants.

With the current fleet of equipment available at the airport, the ability to haul large amounts of snow or any amount of snow very far is not feasible. However, there are a couple of areas that should be considered. The first is a vacant area off the end of Runway 16 north of Deinhard Lane. There are safety area considerations as well as slope and drainage issues that need to be looked into, but this area could provide some amount of storage. Also, as the airport moves forward and acquires properties previously identified, this new property would provide areas for snow storage for a number of years before the area is built up with a terminal or GA development. Areas could be identified and graded to handle the storage and allow for gradual runoff in the spring.

Airport snow removal options, including limited hauling or snow melting equipment, will need to be addressed as additional or replacement snow removal equipment is evaluated for purchase by the airport in the future.

Aesthetics

It is desirable to improve the aesthetics of certain areas of the airport, primarily near the intersection of State Highway 55 and Deinhard Lane. The goal is to make that portion of the airport look less industrial and also to provide a buffer. Planting berms and vegetation is the best and most cost-effective way the City can improve the aesthetics in this area. A berm with native plantings would break up the silhouette of the hangars and draw attention away from them. Some type of architectural treatment of buildings in this area to change their appearance to more closely blend with local styles (e.g. use of natural stone) is another option.

Land Use Compatibility

Airports offer increased accessibility to communities and provide economic growth opportunities in the cities and regions where they are located. This results in additional commercial, residential, and tourism development. However, airports can be negatively impacted by growth they help bring to their communities. Airport growth can be hemmed in by uncontrolled community development as it encroaches upon the airport perimeter. As an airport becomes busier and as urban development encroaches on the airfield, complaints about noise can increase.

Growth also results in additional automobile traffic, which can increase road congestion, noise, and other unwanted issues that the community must deal with. Ultimately, the airport becomes both a resource and a source of impact.

This chapter presents information on issues related to:

MYL is required to meet certain FAA safety standards as an obligation from acceptance of Federal grant money. As an ARC C-II airport, MYL will need to provide a larger runway safety area, greater runway centerline to taxiway centerline distances, and wider runway surfaces. However, the airport is not obligated by the FAA to extend runways or build more hangars just to accommodate more aircraft. Most of the decisions about the future growth of the airport, and whether to accommodate air service or not, are local decisions.

Given this dynamic between airports, land use, economic development, and impacts, it is necessary to encourage land uses around airports that are compatible with airport functions. The benefit of such planning can:

- Minimize noise, light, automotive traffic and vehicle, and aircraft engine emission impacts on the community;
- Lessen the need for a costly and complicated airport relocation;
- Maximize aviation safety and functionality;
- Maximize accessibility to and from the airport; and
- Preserve the potential of maintaining property values even while the airport expands.

7.1 Urban Growth Trends

McCall and the region are under numerous growth pressures from population, resort development, and home construction. Airports are only one of many factors that influence regional economic growth. MYL brings people and goods into the region, and an improved airport facility would likely bring more people and goods to the region.

Though general impacts can be outlined, it is speculative to predict how expansion of an airport would affect the growth pattern of the City of McCall. Zoning, infrastructure expansion (roads, water and sewer), housing needs, marketing efforts, and downtown revitalization efforts all influence urban growth trends.

7.2 Social, Economic, and Environmental Factors

Social, economic and environmental factors also impact the local community and the success of an airport. They encompass issues including, but not limited to, aircraft noise, private property acquisition, quality of air service offered in a community, airport finances, local economic growth, urban growth, and general quality of life issues.

Communities can maximize the benefits of an airport's growth while minimizing any negative impacts associated with that growth. This entails making careful decisions about land use around the airport. The inclusion of the Airport and surrounding areas into the *Comprehensive Land Use Plan* and zoning plans for McCall will help prevent future incompatible land uses near the Airport. This may limit future Airport growth and/or lead to conflicts within the community.

7.3 Surface Transportation

As the McCall Municipal Airport grows, automobile use of State Highway 55 near the Airport will increase as people travel to and from the Airport. The degree to which this occurs is a function of the aviation demands at the Airport and Airport facility development. It is likely that a new entrance to the Airport will be needed at Krahn Lane to serve not only the existing hangar area, but also any new development that takes place south of the existing hangar area. An intersection closer than at Krahn Lane would be too close to Deinhard Lane and installment of an intersection farther south on SH-55 would be problematic based on the raised terrain and sight distances needed for safety. If and when a passenger terminal is built as proposed for this area and accessed via an upgraded Krahn Lane, the resulting intersection with SH-55 will be a major one. This section of SH-55 is already busy at certain times of the day and a new intersection at this location will need to be controlled with traffic lights. To mitigate some of this traffic, shuttle vans or some type of multiple-occupant vehicle operating from the airport could be used to take visitors to resort destinations or transport large numbers of people that come to McCall for special community events.

7.4 Natural Features

Like many of the community impacts of an airport, environmental impacts are not possible to evaluate in detail until a specific airport design is chosen. However, some generalizations can be made in order to aid in the decision as to what basic type of airport the City of McCall would like.

Extensive wetlands exist in the area of MYL, especially south of the runway and taxiway. Brown's pond, a cultural resource, is located in this area and will be impacted by the runway extensions that are being proposed in this plan. The longer extensions would probably require the removal or relocation of the pond.

The amount of wetland impact depends upon the degree to which the airport is expanded, though any expansion of the airport would result in the loss of some wetlands. Loss or alteration of wetlands would require permitting from the Army Corps of Engineers. This is necessary because wetlands are valued for flood control, water quality, and plant and animal habitat. When wetlands are filled or degraded, mitigation steps are necessary. These steps can include construction of new wetlands, improvement of the quality of wetlands elsewhere, or payment to a wetland banking system that uses money to create, improve, and preserve wetlands.

Increased impervious surfaces due to airport improvements would increase stormwater runoff. Mitigation actions are often taken to limit the impacts from this runoff. This is typically handled during the design engineering phase.

7.5 Local Land Use Controls

This section presents discussions from State of Idaho legislation, City of McCall zoning, and the City of McCall Comprehensive Plan.

7.5.1 State of Idaho Statutes Related to Aviation

Title 21 of the Idaho State Statutes regulates airports and zoning related to airports in the state (other sections of the statutes that are also pertinent to airports). The purpose of this act is to further the public interest and aeronautical progress. Title 5, Chapter 5 provides for the establishment of zones and the regulation of those zones to protect the airport and prevent the establishment of airport hazards. Title 39, Chapter 75 restricts the siting of waste facilities near airports. Title 67, Chapter 65 allows the acquisition of property for airport uses and the transfer of development rights to fulfill the goals of the city. Title 50, Chapter 3 allows the acquisition, leasing, maintenance, and operation of aviation facilities.

7.5.2 City of McCall Airport Zoning Ordinance

Title 3 Planning and Zoning, City of McCall, Chapter 6 Open Spaces and Public Zones and Standards contains the City of McCall's airport zoning regulations. The ordinance adopted in March of 2006 established zones related directly to FAR Part 77 surfaces as they apply to the McCall Municipal Airport. The ordinance regulates height and uses in the vicinity of the Airport. After this study is completed and the airport layout plan (ALP) is approved by the FAA, the City should amend the zoning plan to include the new FAR Part 77 exhibit.

7.5.3 City of McCall Comprehensive Plan

The existing Comprehensive Plan describes the Airport and cites several improvements recommended by the 1998 Master Plan Update. A new comprehensive plan is being written as this plan document is being produced. It is expected that this airport master plan document will be referenced in the new comprehensive plan to provide overall guidance to airport development.

7.6 FAA Required Safety/Protection Areas

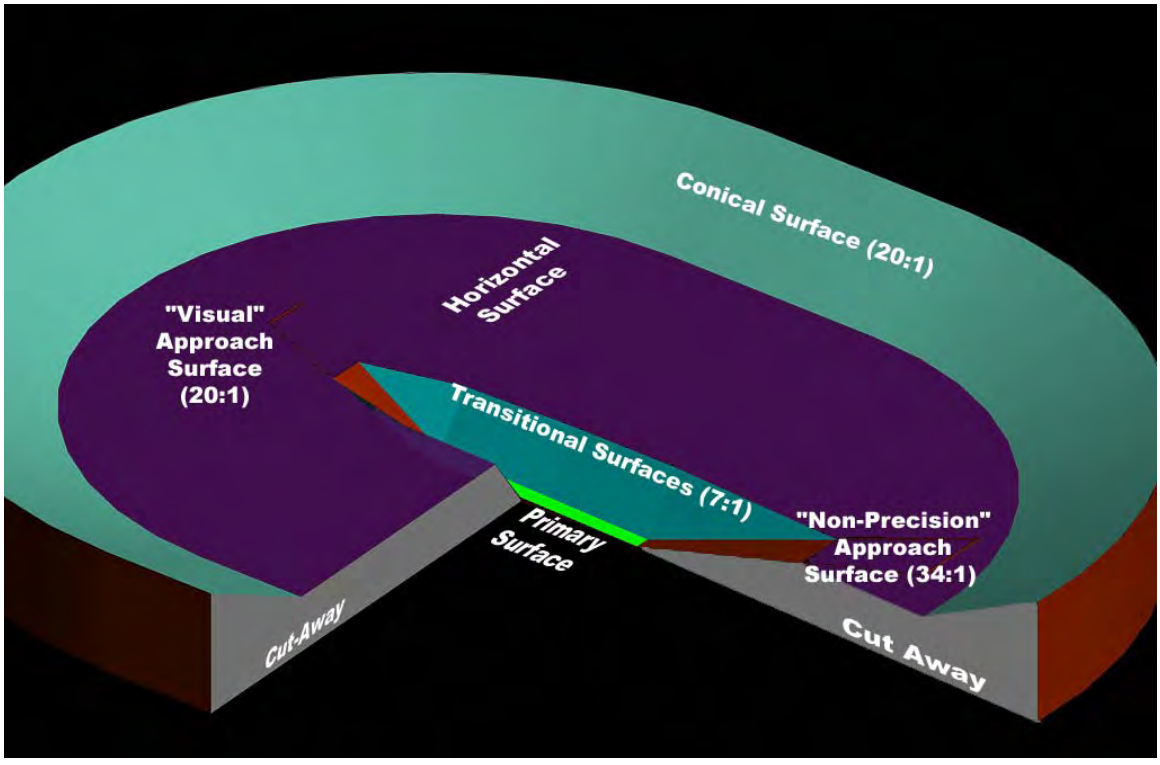
Specific areas of consideration at and around airports are defined by two primary FAA criteria: *Federal Aviation Regulations (FAR) Part 77 - Objects Affecting Navigable Airspace*, and *FAA Advisory Circular 150/5300-13, Airport Design*. These two documents provide the foundation for delineating the physical limits some of the most critical environs affected by aircraft near airports.

7.6.1 FAR Part 77 Surfaces

FAR Part 77 establishes standards that determine which structures pose potential obstructions and hazards to air navigation. The airspace areas of concern are defined using three dimensional imaginary surfaces. **Exhibit 7-1** shows the typical imaginary surfaces outlined in FAR Part 77, including:

- Primary surface
- Transitional surface
- Horizontal surface
- Conical surface
- Approach surface

Exhibit 7-1. FAR Part 77 Airspace Surfaces



The official FAR Part 77 drawing for MYL is presented in the Airport Layout Plan.

FAR Part 77 surfaces were devised by the FAA to protect specific three-dimensional airspace areas, while airport design standards are intended to protect specific ground areas. It is vital to provide safe and clear approach and departure ends of each runway. The dimensions of FAR Part 77 surfaces vary depending on the type of runway approach that serves that runway. There are three types of runway approaches: visual, non-precision instrument and precision instrument. The primary differences between these approaches are:

- A visual approach is one in which the pilot must visually see the runway and maneuver/control the aircraft to the runway by looking outside of the aircraft with no instrument approach capabilities. Visual approaches also include instances where the existing or planned instrument approach is a circling rather than a straight-in approach. A circling approach requires the pilot to have visual contact with the runway while aligning the aircraft for landing.

- A non-precision instrument runway uses air navigational facilities with only electronic horizontal guidance, aligning them with the runway centerline for straight-in approaches. Runway 16 and 34 at MYL are served by non-precision instrument approaches.

- A precision instrument runway approach uses an Instrument Landing System (ILS), a Precision Approach Radar (PAR), or a similar system. These approach systems provide both vertical and horizontal alignment for aircraft to a particular runway, allowing the pilot greatest accuracy and margin of safety for landing. Airports with scheduled commercial passenger traffic and heavily-used general aviation airports usually have instrument approaches.

Definitions for the primary FAR Part 77 surfaces related to land use compatibility include:

Primary surface

The primary surface is longitudinally centered on a runway. When the runway has a paved hard surface, the primary surface extends 200 feet beyond each end of that runway. When the runway does not have a specially prepared hard surface, or planned hard surface, the primary surface terminates at each end of the runway. The width of a primary surface ranges from 250 to 1,000 feet depending on the existing or planned approach and runway type (i.e., visual, non-precision, or precision). The primary surface must be clear of all obstructions except those fixed by their function. Examples of such obstructions include runway edge lights, navigational aids and airport signage.

Transitional and horizontal surface

The transitional surfaces extend outward and upward at right angles to the runway centerline, and are extended at a slope of seven feet horizontally for each foot vertically (7:1) from the sides of the primary and approach surfaces. The transitional surfaces extend to the point at which they intercept the horizontal surface at a height of 150 feet above the runway elevation. For precision approach surfaces that project through and beyond the limits of the conical surface, the

transitional surface also extends 5,000 feet horizontally from the edge of the approach surface and at right angles to the runway centerline.

Conical surface

The conical surface extends upward and outward from the periphery of the horizontal surface at a slope of one foot for every 20 feet (20:1) for a horizontal distance of 4,000 feet.

Approach surface

The approach surface is longitudinally centered on the extended runway centerline. The approach surface extends outward and upward from the end of the primary surface. An approach surface is applied to the end of each runway based upon the type of approach. The approach slope of a runway is a ratio of 20:1, 34:1, or 50:1, depending on the sophistication of the approach. The length of the approach surface varies from 5,000 to 50,000 feet. The inner edge of the approach surface is the same width as the primary surface and expands uniformly to a width ranging from 1,250 feet to 16,000 feet, depending on the type of runway and approach.

As previously noted, imaginary surfaces in both plan view and profile view representations provide the dimensional requirements for each of the FAR Part 77 surfaces. A visual approach runway has relatively small imaginary surfaces with approach and horizontal surfaces extending 5,000 feet from the primary surface, at an approach slope of 20:1. For a non-precision approach runway, both the approach and horizontal surfaces extend either 5,000 or 10,000 feet from the primary surface, depending on the design category of the runway. The imaginary surfaces for precision approach runways are similar to those for non-precision approach runways except that the approach surface extends 50,000 feet from the primary surface, and the horizontal surfaces extend 10,000 feet from the primary surface.

Although the FAA can determine if structures obstruct air navigation, the FAA is not authorized to regulate tall structures (these are commonly controlled through local zoning). Under FAR Part 77, an aeronautical study is undertaken by the FAA to determine whether the structure in question would be a hazard to air navigation. However, there is no specific authorization in any statute that permits the FAA to limit structure heights or determine which structures should be lighted or marked. In fact, in every aeronautical study determination, the FAA acknowledges that state or local authorities control the appropriate use of property beneath an airport's airspace.

7.6.2 FAA Design Standards

Safety areas, as defined by *FAA Advisory Circular 150/5300-13, Airport Design,* are meant to be implemented for the safe and efficient operation of an airport. There are many design requirements contained in this advisory circular; however, the ones discussed here are directly related to areas in proximity to the runway ends and approach areas near the runway. These safety areas focus on ground level requirements. These safety areas include:

- Runway protection zones (RPZs)
- Runway safety areas (RSAs)
- Runway object free areas (ROFAs) or (ROFZs)

These areas fulfill safety-related functions for the airport and for aircraft that use it. Understanding each of these areas and their roles is important to our discussion. Brief summaries of these design criteria are presented below:

Runway Protection Zones

Formerly known as clear zones, RPZs were originally established to define land areas underneath aircraft approach paths. Allowing airport operators to control these areas was important to prevent the creation of airport hazards or the development of incompatible land uses. First recommended in a 1952 report by the President's Airport Commission titled *The Airport and Its Neighbors*, the establishment of clear areas beyond runway ends was deemed worthy of federal management. Providing these clear areas was intended to preclude obstructions potentially hazardous to aircraft and to control building construction for the protection of people on the ground. The FAA adopted clear zones with dimensional standards to implement the commission's recommendation.

Recommended guidelines included that runway protection zones be kept free of structures and developments that would create a place of public assembly.

An RPZ is a trapezoidal area that begins at a point 200 feet beyond the end of the runway. The length of the RPZ extends 1,000, 1,700 or 2,500 feet, depending on the category of runway and type of approach (visual, non-precision, or precision). The inner width of an RPZ is located closest to the runway end with the outer width extending out beyond the runway end. The inner width ranges from 250 to 1,000 feet, and the outer width ranges from 450 feet to 1,750 feet. As with the length of the RPZ, the inner and outer widths are dependent on the runway category and approach type.

The outer trapezoidal area of the RPZ is referred to as the Controlled Activity Area. Land use in this area is federally restricted. However, the FAA can review and approve certain land uses such as parking lots.

Runway Safety Area

The RSA shown in Exhibit 2-16 (in Chapter 2) is a rectangular two-dimensional area surrounding the runway. RSAs should be cleared, graded, properly drained, and free of potentially hazardous surface variations. RSAs should also support snow removal, aircraft rescue and fire fighting (ARFF) equipment, or an aircraft that overshoots the runway, without causing damage to that aircraft. Taxiways also have similar safety area requirements. The actual size of an RSA is dependant upon the FAA classification of the runway (A-I, B-II, C-II, etc). This surface ranges from 120 feet to 500 feet in width and from 240 feet to 1,000 feet in length beyond each end of the runway.

Runway Object Free Area

This area is a grounded, two dimensional space that surrounds the runway. It is also where all aboveground objects must be removed unless fixed by their function, such as runway lights. FAA standards prohibit objects and parked aircraft from being located within the runway OFA. Taxiways also have OFAs.

The RSA and OFA are almost always contained within airport property. The RPZ, however, can extend beyond airport property. Therefore, from an off-airport land use compatibility planning perspective, the critical safety zone identified by the design standards is the RPZ. The FAA recommends that, whenever possible, the entire RPZ be owned by the airport and be clear of all obstructions if practicable.

7.7 Noise and Land Use Compatibility

Exhibit 7-2 shows the location of potentially sensitive land uses near the Airport on a draft city zoning map. Residential uses are particularly sensitive to noise. As depicted on the draft zoning map, residential uses (in brown/tan) are adjacent to the Airport on the north and west sides. Medium density residential is zoned to the northwest. Low density residential is zoned directly north of the Airport with smaller pockets of medium density residential. Zoning maps represent not only current development but areas slated for future development. Increasing noise at the Airport may increase noise off the Airport into some of the nearby neighborhoods.

Other noise-sensitive land uses are highlighted on Exhibit 7-2. These include a school, churches, senior centers, various businesses, and a museum. Payette Lake and the surrounding recreational area may also experience some higher levels of noise.

Mitigation of noise impacts is a common practice in communities that support airports. Effective mitigation activities could include but are not limited to:

- Encouragement of aircraft operators from landing and taking off over residential or other noise sensitive areas during certain times of the day and night.
- Development of aircraft operational procedures for approach, departure and ground operations that lessen the noise impact in the vicinity of the Airport.

Noise exposure contours have been developed for MYL for existing and future conditions (2012) assuming airfield improvements by that time, specifically a 6,500 foot runway. Aircraft noise at airports is measured by day-night sound level (DNL). This measurement considers how loud a noise is and when it occurs. Noise made at night is rated as having a greater impact because people are more sensitive to it. Noise is a function not only of the level and when it happens but also of land uses around the airport. Loud noise in an industrial area may not be a problem, but next to residential areas it may be. The FAA has defined the 65 DNL level as a significant level where adverse sound impacts can occur.

Exhibit 7-2. Potentially Sensitive Land Uses

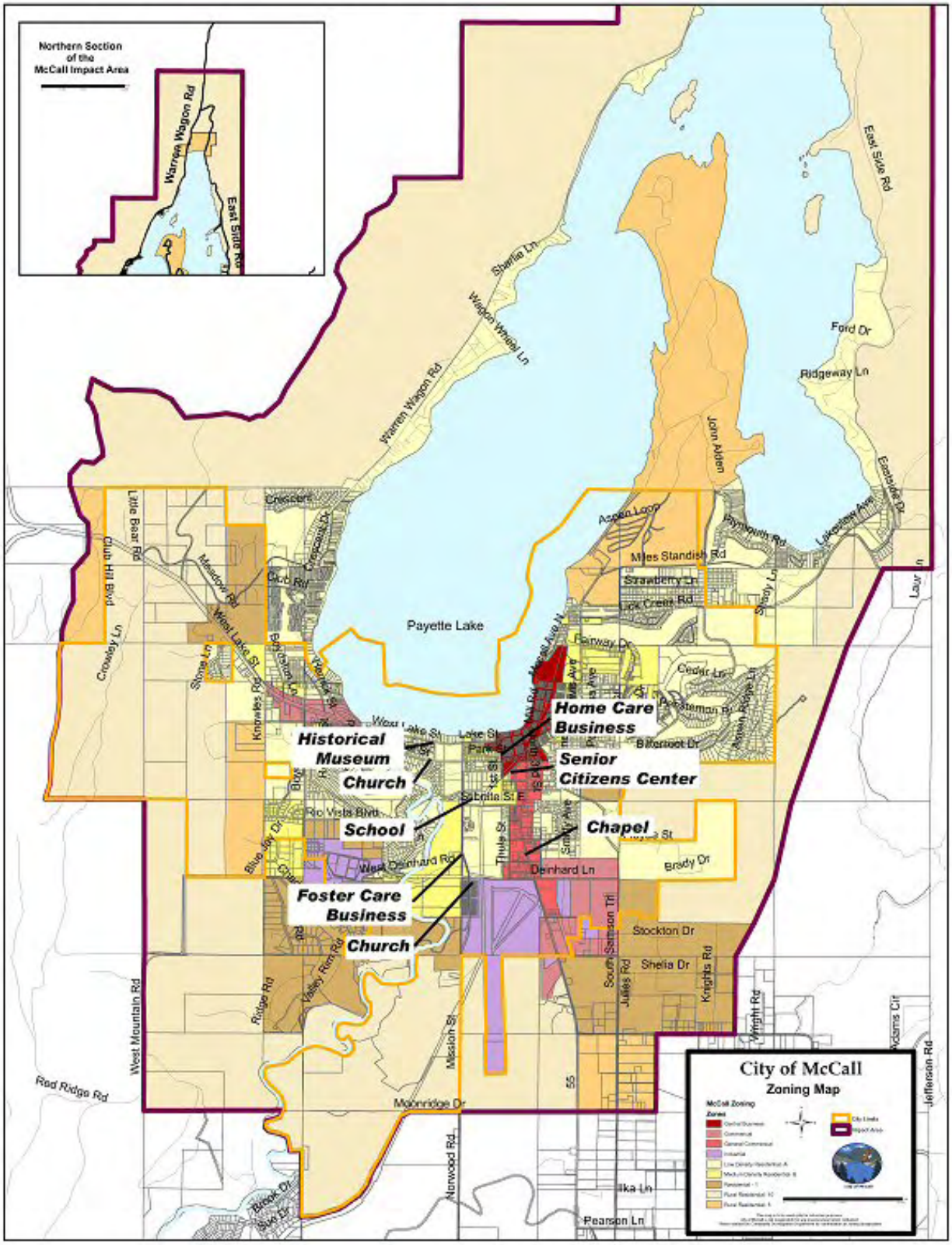


Exhibit 7-3 shows the areas within the 65 DNL and greater noise exposure contour for existing conditions and a five-year projection, respectively. This analysis assumes the runways will be utilized in the future as they are now and reflects the relocation of the runway ends, as recommended in this study. The analysis includes input from the FBO and aircraft operators at the airport.

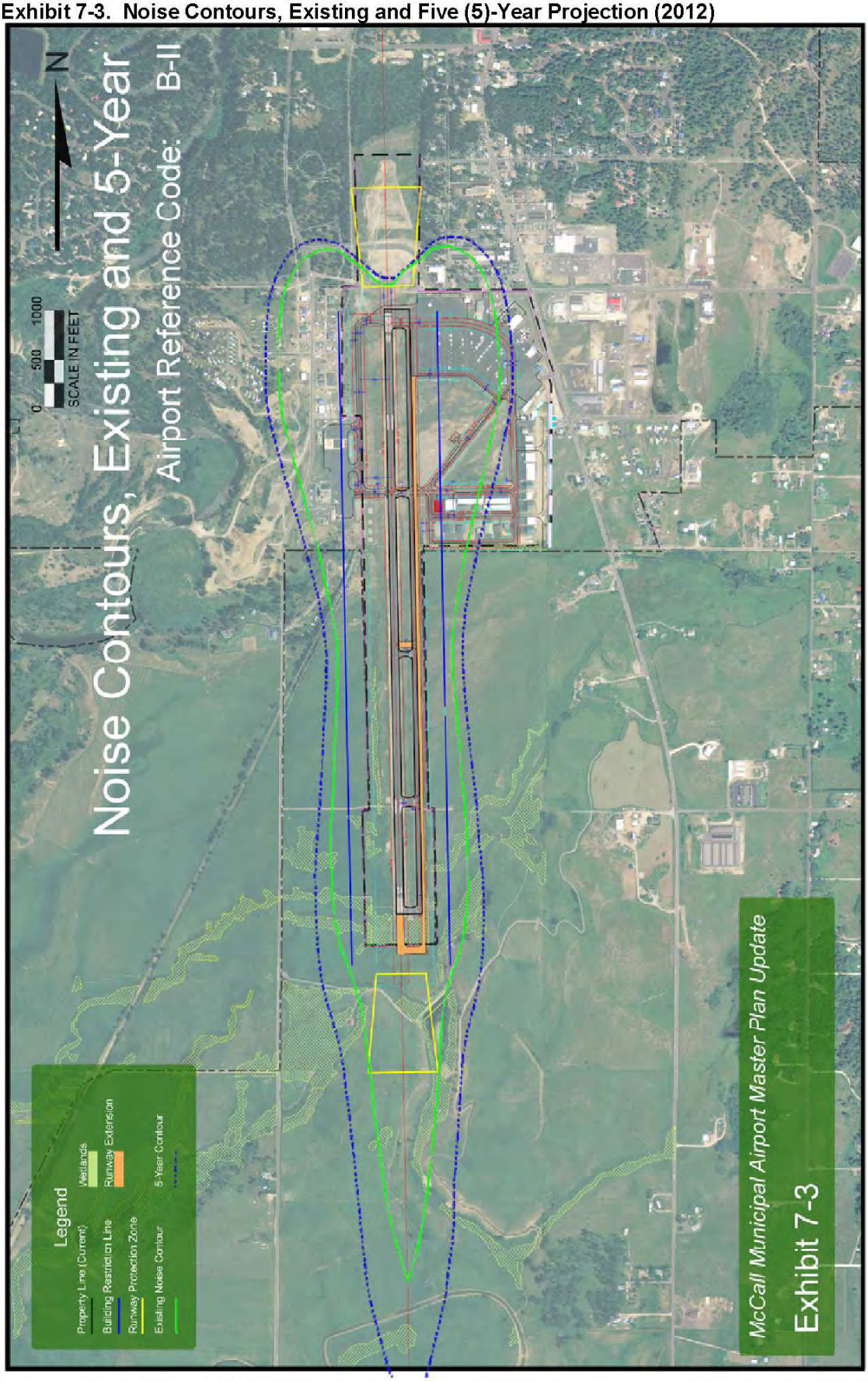
Table 7-1. Noise Measurements For Selected Aircraft shows the decibel readings during takeoff and landing for aircraft that currently use, or are expected to use, the McCall Municipal Airport in the future. The McDonnell Douglas DC-9 and Boeing 737-400 aircraft are shown for comparison purposes only, due to the familiarity many readers may have with those aircraft that serve larger markets (these are typical mainline air carrier airplanes). Table 7-1, shows that aircraft likely to be used by regional air carriers to serve MYL, if it is to get air service, have noise signatures that are less than most business jet aircraft that currently use MYL. These regional air carrier aircraft could include the Beech 1900/1900c, Bombardier Q200/Q400, and the Embraer 120/145.

Table 7-1. Noise Measurements for Selected Aircraft

Manufacturer	Aircraft Model	Engine	[1/] Departure dBA	[1/] Approach dBA
Cessna	150	0-200-A	56.0	59.0
Cessna	177RG	IO-360-A1B6	65.0	62.0
Beech	300/300C King Air	PT6A-60A	64.7	75.9
Beech	1900/1900C	PT6A-65B	66.5	77.0
Bombardier	DHC-8 201/202	PW123	66.4	81.2
Bombardier	DHC-8-400 (Q400)	PW 150A	61.0	81.6
Bombardier	BD-700-1A10 (Global Express)	BR700-710-A2-20	74.6	83.2
Cessna	Citation II (550)	JT15D-4	67.4	79.8
Cessna	Citation III (650)	TFE731-3B-100S	69.3	84.8
Gulfstream	Gulfstream IIB/GIII	SPEY MK511-8	82.8	82.5
Gulfstream	Gulfstream V	BR700-710A1-10	68.0	82.0
Canadair	Challenger CL-600	ALF-502L	67.5	81.7
Embraer	EMB-120 Brasilia	PW115	63.2	81.8
Embraer	EMB-145ER	AE3007A	65.9	82.9
Learjet	Learjet 45	TFE731-20R-1B	60.7	81.5
Piper	Cheyenne	TPE-331-14	57.0	78.5
Boeing	B-737-400	CFM56-3C-1	77.2	90.7
Boeing Business Jet	B-737-700	CFM56-7B26	73.6	86.9
McDonnell Douglas	DC-09-50	JT8D-15	88.4	92.0

[1/] Estimated maximum A-weighted sound level measured in accordance with Part-36 Appendix-C- (From FAA AC 36-3H; April 25, 2002)

Exhibit 7-3. Noise Contours, Existing and Five (5)-Year Projection (2012)



7.8 Recommendations

Land use controls and development plans are some of the best ways to protect an airport while still allowing development near the airport. This process, if approached correctly, can save the community large sums of money by avoiding the purchase of unnecessary property beyond the airport's needs just to keep it from being developed in a manner incompatible with the airport.

In recognition of the importance of land use controls around airports, primarily for safety but also in recognition of the protection of the investment that the government has put into the airport, the Federal Aviation Administration (FAA) has promulgated airport sponsor grant assurances. When an airport sponsor (owner) accepts an Airport Improvement Program (AIP) grant, the sponsor agrees to many conditions (assurances) in accepting that grant. Two of these assurances are presented below:

> ***Assurance 20, Hazard Removal and Mitigation****: The airport owner will take appropriate action to assure that such terminal airspace as is required to protect instrument and visual operations to the airport (including established minimum flight altitudes) will be adequately cleared and protected by removing, lowering, relocating, marking, or lighting or otherwise mitigating existing airport hazards and by preventing the establishment or creation of future airport hazards.*

> ***Assurance 21, Compatible Land Use:*** *The airport owner will take appropriate action, including the adoption of zoning laws, to the extent reasonable, to restrict the use of land adjacent to or in the immediate vicinity of the airport to activities and purposes compatible with normal airport operations, including the landing and takeoff of aircraft.*

In summary, the grant assurances are in place to ensure that through the process of zoning, future uses of land at and around the airport are compatible with airport operations, as well as to protect and preserve the airport, the public investment in the airport, and prevent noise impacts to adjacent communities.

Zoning objectives aim to prevent the following incompatible uses with regard to compatibility with airport noise, public safety, and airspace protection:

- Residential and other noise-sensitive uses.
- Congregations of people in approach and departure areas to protect people and property on the ground.
- Man-made and natural structures that can interfere with airport-related activities.
- Uses that may generate light emissions that interfere with airport-related activities.
- Uses of land on the airport that interfere with areas needed for aviation-related activities.
- Wildlife attractants such as landfills and certain types of agricultural uses.

The above review of the grant assurances that the City of McCall is obligated to adhere to leads this chapter on land use compatibility to specific recommendations for the City to follow regarding the City's Comprehensive Plan, a Coordinated Local Land Use Plan, Zoning, and Land Acquisition. These recommendations are as follows:

- **Improve the Comprehensive Plan**: Include language that defines the airport's goals and addresses airport-related compatibility issues, such as safety, noise, access, height zoning, and economic development. Perform periodic updates, in coordination with airport master plan updates. Designate areas around the airport for compatible industry and business parks. No future residential or other noise-sensitive land uses should be permitted in safety zones or within the existing or future 65 DNL noise contours. In addition, the runway protection zone on the south end of Runway 16/34 should be recommended for additional land use controls (per FAA AC 150/5300-13 CHG 10)[1]; including working with Valley County to adopt zoning that offers some protection. It makes sense for the City and County to work together to develop an airport overlay district (which could be incorporated into their respective zoning codes) to provide protection based on the noise and safely issues defined in the 65 DNL noise contour and the RPZ.

- **Coordinate Local Land Use Planning:** Use extra-territorial zoning to limit future land use incompatibilities and/or establish a joint zoning airport board with Valley County. A joint referral/comment process between the City and the County would be a big step in coordinating land use planning. This will become even more important as the County and City both grow, and would help ensure coordinated development throughout the area.

- **Zoning:** The first step in airport zoning is the development of a current Airport Layout Plan (ALP), which is being developed as part of this master plan process. The ALP depicts land which the airport should own in fee (preferred), as well as land for which easements may be needed (if acquisition is not feasible). The airspace drawings show obstructions to navigation and indicate areas that may need to be regulated to prevent obstructions from being built or may show where the removal of an obstruction is necessary. The FAR Part 77 imaginary surfaces should be protected through height limitations on development both on and around the airport, especially in the approach areas and departure areas of the runways. The FAA has developed an advisory circular for this purpose titled "*A Model Zoning Ordinance to Limit the Height of Objects Around Airports*" (AC 150/5190-4A), a copy of which is found in **Appendix C**.

  It is recommended that the Airport Zoning ordinance be updated to reflect future expansion of the airport as outlined in this master plan, and to protect land around the airport and minimize

[1] *a. While it is desirable to clear all objects from the RPZ, some uses are permitted, provided they do not attract wildlife, are outside of the Runway OFZ, and do not interfere with navigational aids. Automobile parking facilities, although discouraged, may be permitted, provided the parking facilities and any associated appurtenances, in addition to meeting all of the preceding conditions, are located outside of the object free area extension. Fuel storage facilities should not be located in the RPZ.*

b. Land uses prohibited from the RPZ are residences and places of public assembly. (Churches, schools, hospitals, office buildings, shopping centers, and other uses with similar concentrations of persons typify places of public assembly.) Fuel storage facilities should not be located in the RPZ.

incompatible land uses in light of growth trends and the proximity of the airport to the city of McCall. The airport zoning ordinance should clarify airport zones because of the three-dimensionality of airport zoning and general complexity of land regulation around an airport. In that vein, a distinction should be made between zones and surfaces in the ordinance. That is, "zones" are on the ground and "surfaces" are in the air. When regulating land uses, zones apply; when regulating height, surfaces apply. A plan drawing and isometric drawing of the zones should be included to illustrate to readers where the zones are located. As described above, the airport zoning ordinance should incorporate the new FAR Part 77 airspace surfaces depicted on the updated ALP.

- **Real Estate Disclosure:** Disclosure of the airport location and potential noise impacts from the airport is becoming increasingly common in residential property sales. Many states have legislation in place that requires real estate agents and developers to disclose the location and traffic patterns of the airport in any real estate transactions. With the rapid development in and around the City of McCall and the McCall Municipal Airport, it is highly recommended that the City enact a disclosure policy requiring all future real estate transactions include "disclosure" related to the airport.

- **Avigation Easement:** A common land use control technique, as mentioned above, is an avigation easement. Fee simple ownership by the airport is the preferred method to provide land use compatibility. However, if agreement with the owner cannot be achieved or funding for outright purchase is not available, the airport owner can attempt to purchase avigation easements or development rights to the properties. This option gives the airport the right to ensure the compatible development of the land while leaving the property owner with all other rights of ownership. The right-of-flight is the essence of an avigation easement. Therefore, it is imperative that the appraisal reflects the specific easement estate proposed for acquisition.

- **Land Acquisition:** Purchase (in fee simple) lands as recommended in Chapter 6, *Alternative Airport Concepts*, and as shown on the Airport Layout Plan.

This chapter describes a recommended Capital Improvement Plan for the McCall Municipal Airport and the available sources of funding for the Plan. It also provides a brief review of potential areas in which revenues could be enhanced to help support implementation of the Plan. First, it is important to understand the traditional means by which airport improvements are funded. The following section will discuss this issue. The recommended CIP and project descriptions follow.

8.1 Traditional Funding Sources

It is assumed that costs associated with implementation of the Airport's CIP will be funded from a variety of sources. Typical sources of funds for airport improvement projects, which are described below, include the following:

- Federal Grant Funding
- State of Idaho Funding
- Local Funding
- Private Funding

8.1.1 Federal Grant Funding

Federal participation in airport capital development is based on the Airport Improvement Program (AIP) as re-authorized in 2003. This analysis assumes that the AIP, or some version of it, will continue into the future without major changes. Within the AIP, McCall has access to General Aviation Entitlement Funds (NPE), General Aviation State Apportionment Funds (ST), and AIP Discretionary Funds (DI).

Since 2001, the NPE program has provided small General Aviation Airports up to $150,000 a year in the form of an entitlement for eligible projects. This program has given airports such as MYL the opportunity to enhance the facility via maintenance and small capital improvement projects. These funds could also be accumulated for up to a three year period to fund somewhat larger projects. The following development plan assumes the continuation of the NPE program throughout the planning period.

FAA State Apportionment (ST) funding is formulated for each of the 50 states. In essence, State Apportionment funding is a discretionary pot of money that all eligible, Non-Primary airports in Idaho compete for. Currently there are 32 such airports in Idaho that compete for an average of $4 million of State Apportionment annually. State Apportionment funding is typically reserved for large scale, high priority projects such as runway reconstruction, runway extensions, parallel taxiway construction, and aircraft parking apron projects to name a few. It is anticipated that State Apportionment funding will be necessary to complete some of the projects included in the proposed development plan. There is a lot of competition for these funds and as a result it is necessary to schedule projects with the FAA several years in advance. Typically maximum annual grant amounts are around $1 million. The airport's CIP is the vehicle used by the FAA to prioritize and schedule projects.

FAA Discretionary (DI) funding is typically reserved for the very expensive, highest priority projects at commercial service airports and large General Aviation Reliever airports. Such projects and airports compete for Discretionary funds on a national and regional basis. While discretionary funds are not typically available for general aviation airports, projects such as Runway Safety Area improvements have the highest priority on the national level. Discretionary funding at MYL for Runway Safety Area improvements as well as taxiway relocation is anticipated; however, the funds may only become available over a period of several grant years. This will require phased construction of improvements.

Projects that are eligible for FAA AIP funding were determined based on guidelines contained in FAA Order 5100.38A, *Airport Improvement Handbook*. As a general rule, only those airport projects that are related to non-revenue producing facilities, such as airfield construction, public areas of a terminal building, and land acquisition, are eligible for federal funding. Under most circumstances, projects that qualify for AIP funding are currently eligible for up to 95% of total project costs. It should be noted that the 95% federal participation was associated with the last AIP reauthorization legislation. Prior to that participation was limited to 90%, it may return to 90% participation after September 30, 2007 as the current legislation expires. New legislation is being drafted; however, it is unlikely that the outcome of that legislation will be known prior to October 1, 2007. The CIP assumes the participation level will return to the 90% level thereby requiring a 10% local match.

The current AIP legislation also provides entitlement funds for airports with scheduled commercial service. Under the AIP program, each primary airport is apportioned no less than $1,000,000 per year; with an airport's annual entitlement funds under the current program determined according to a particular formula. McCall Municipal Airport does not currently qualify for this pool of money, but would if it became a FAR Part 139 airport with at least 10,000 annual passenger enplanements (boarding's) for two consecutive years. Since scheduled passenger airline service is considered speculative in this master plan analysis, it is assumed that no funding from this source will be available. It must also be made clear that if air service is established, and the activity exceeds the 10,000 annual enplanement threshold, entitlement funds will not be available for two years.

8.1.2 State of Idaho Funding

State funds are those typically available from state agency sources. In regard to airport funding, nearly all states have an Aeronautics office or Division as part of the various Departments of Transportation. These agencies typically have funding sources available to local communities. It is very common for local communities to utilize the available state funding for local match requirements of the AIP grants as well as airport improvement projects not eligible for FAA funding.

The Idaho Transportation Department – Division of Aeronautics (ITD-Aeronautics) does offer funding assistance via its Idaho Airport Aid Program (IAAP). IAAP funding is derived from a tax on aviation gas and jet fuel. Currently the IAAP is the only source of State of Idaho funding dedicated to airports. Per Idaho Administrative Procedures Act (IDAPA) 39, Title 04, Chapter 04, IAAP funding allocation priorities include preservation and acquisition of existing landing facilities in danger of being lost, aircraft landing projects, aircraft landing development, aircraft operations safety, federal funding match and other projects which protect prior public investment.

While discretionary in nature, a priority of the IAAP in recent years has been to assist airport sponsors by providing half (2.5%) of their AIP grant local match requirement. Per ITD-Aeronautics, it is anticipated that this priority will continue for the foreseeable future. During prior AIP program authorizations when the local match requirement has been 10%, the IAAP program has also tried to provide half of this amount. Their ability to do this has been stretched as the total amount of the FAA apportionment for Idaho has increased. Actual match contribution has varied from year to year; as a result it can not be automatically assumed that one-half of the local match will come from State funds. The CIP does however make this assumption based on the desired policy. The McCall Airport is eligible to participate in the IAAP program and has received such assistance in the past. It is important to note that IAAP funding is not guaranteed. It is recommended that the City of McCall maintain contact with ITD-Aeronautics to monitor the availability of funding annually throughout the planning period. This is especially critical when establishing project specific budgets. Additionally, whereas the Federal fiscal year cycle is from October 1 to September 30 of a given year, the State Aeronautics fiscal year cycle is from July 1 to June 30.

8.1.3 Local Funding

Traditionally, local funding has included City of McCall funds, both revenues generated from airport operations and funds from the city general fund to support local match requirements. The local funding commitments and sources are determined during the City of McCall's annual budget process. At commercial service airports a Passenger Facility Charge or PFC becomes available and would be an additional local funding source once passenger service is established and enplanements meet minimum funding requirements.

8.1.4 Private Funding

Historically, conventional and T-hangar development projects at most Airports have been implemented by private individuals or businesses funding the construction of hangar facilities on

lands leased to those parties by the Airport. This has been the practice at MYL and it is anticipated that this practice will continue on property currently owned by the airport.

The preferred approach to airport development is construction of facilities on land owned by the airport and leased back to the party(s) developing the facilities, i.e. private hangars or FBO operations. Terminal buildings servicing commercial air carrier operations are normally built with airport and AIP funds. However, this is only the case at airports with established commercial service. In the case of MYL however, it may be necessary to enter into some form of public-private partnership to provide aviation support facilities, i.e. hangars, terminal, and on land adjacent to the airport not owned by the City of McCall. This situation is due to the high land value associated with the adjacent suitable development property and the need for extension of City of McCall infrastructure not considered AIP eligible. Acquisition of development land is a low priority in the FAA grant process; therefore, the City of McCall might be required to finance the purchase of the land. The FAA will reimburse the Sponsor for prior land acquisitions at some later date but only if funds are not required for higher priority projects. Due to the magnitude of the land value it is considered prohibitively expensive for the City of McCall to finance the acquisition. The public–private approach is considered a "through-the-fence" operation and must be carefully considered and managed in such a way as to assure compliance with FAA grant assurances. Construction of a terminal complex to attract air carrier service will also require local funds and/or significant private funding. Once air service is established, future facility expansion can access AIP grant funds.

8.2 Capital Improvement Plan

The Capital Improvement Plan (CIP) for McCall Municipal Airport developed as part of this Master Plan Update focuses on a 10-year period in lieu of a 20-year period. Funding limitation may in reality dictate that this plan takes longer than 10 years to implement. Aggressive financial support by private interests may in fact accelerate aspects of the plan. In either case, projections of Capital Improvements beyond those contained in this 10-year plan are considered speculative at best. This CIP was developed based on facility requirements determined in the previous chapters. The Federal Aviation Administration (FAA) maintains a database of projects that typically includes those planned at an airport during the forthcoming 5-year period (5-year CIP).

The CIP identifies improvement projects that can be reasonably predicted to be needed or desired at the Airport over the specified planning period, estimates the order of implementation (or priority) of the projects included in the plan, and estimates the total costs and funding sources for projects. It is important to note that as the CIP progresses from projects planned in the 0- to 5-year period to projects planned in more distant years, the plan becomes less reliable. The Airport should update their CIP annually to reflect changes at the Airport, completion of projects, availability of funds, changes in priorities, and changes in the aviation industry or AIP program. The primary focus should be on maintaining an accurate plan for the forthcoming 3- to 5-year time period. This is essential to coordinate both Federal and local funding programs so funds are available in a timely manner. Proper analysis and preparation of local share budget requirements

and a thorough understanding of cash flow requirements is critical to timely project implementation, in many instances, it is necessary for local funds to be available to accomplish initial project formulation tasks. These pre-project expenditures are ultimately reimbursed once AIP funds become available.

The CIP and its corresponding cost estimates are presented in **Table 8-1.** While accurate for master planning purposes, actual projects costs will vary to some degree from these planning estimates as detailed project design and subsequent engineering estimates are developed. Costs, as shown in Table 8-1, represent current year (2007) dollars. Costs include a 25% allowance for engineering design and construction administration costs, where applicable. FAA/AIP participation is identified as 90% for the years 2008 and beyond.

Table 8-2. Other Possible Long-Term Improvements (2018-2025), is added to describe additional projects that may need to be accomplished over the 20-year planning period if the airport were to develop at a faster rate than is currently anticipated.

Each project was analyzed for AIP grant funding eligibility and a preliminary funding scenario was developed for each project from Federal, State, City and private funding sources. The total cost of the CIP over the next 10 years, as shown in Table 8-1, is estimated to be approximately $76.5 M. The order of the projects (at least those in the first several years) is based largely on those projects that represent the highest priority in terms of compliance with critical FAA design standards, i.e., runway safety area and object free areas. Projects of this type are given high priority for Federal grant funds. The FAA is normally highly supportive of assisting in the implementation of those types of projects, subject to actual funding available on a year-to-year basis.

The CIP also recognizes the reality that unlimited funds are not always available to complete large capital projects in their entirety in one fiscal year. As a result, projects are “phased” in accordance with prior experience with historic funding scenarios for larger projects. Additionally, it must be recognized that the acquisition of AIP funds, particularly those in the “discretionary” category, is very competitive. With the exception of Runway Safety Area (RSA) related improvements, MYL, as a small general aviation airport, will be at a competitive disadvantage. As previously mentioned, the approach to this CIP is to focus on completion of the most critical Runway Safety Area improvements and design standard deficiencies relating to existing users in the first five years. This period should also integrate some additional capacity for aircraft parking and storage, i.e. hangars. The ability to accomplish the above will be driven by both AIP fund availability and the City of McCall’s willingness to match AIP grant funds.

Table 8-1. Proposed 10-Year (2008-2017) Capital Improvement Program

Proposed 10 Year (2008-2017) FAA Capital Improvement Program					
Project Description (by Funding Year in Priority Order) (a)	**Federal Funds (b)**	**State Funds (c)**	**Local Funds (d)**	**Total $ (e)**	**Notes**
2008					
1. Environmental Assessment (EA)	243,000	2,500	2,500	248,000	RSA, Taxiway Relocations, Land
2009					
1. Relocate Parallel Taxiway, (Phase I)	1,980,000	110,000	110,000	2,200,000	2,300' at North End
				2,448,000	
2010					
1. Extend Runway (400')/RSA Improvements	2,250,000	125,000	125,000	2,500,000	DGC Standards
2. Construct Apron (Phase I)/Remove Diag.T/W	1,899,000	105,500	105,500	2,110,000	Replace/Expand Apron
3. Acquire Land					
a. Parcel 1, 47 ac.	4,700,000	235,000	235,000	5,170,000	R/W, RSA and OFA, T/W OFA
b. Parcel 2, 18 ac.	1,620,000	90,000	90,000	1,800,000	Runway Protection Zone
c. Parcel 3, 10 ac.	900,000	50,000	50,000	1,000,000	Phase II, R/W RPZ
				12,580,000	
2011					
1. Widen/Overlay Runway 16-34	1,800,000	100,000	100,000	2,000,000	DGC Standards
2. Construct Perimeter Fence	450,000	25,000	25,000	500,000	Fence OFA at a Minimum
3. Drainage Modifications/Wetlands Mitigation	450,000	25,000	25,000	500,000	
				3,000,000	
2012					
1. Relocate Parallel T/W (Phase II)/Ext. Parallel T/W	3,807,000	211,500	211,500	4,230,000	Completes Relocation (4,700')
2. Rehabilitate Existing Apron	315,000	17,500	17,500	350,000	Reconstruct Apron
3. Rehabilitate Existing Taxiways	67,500	3,750	3,750	75,000	Seal Coat and Marking
				4,655,000	
2013					
1. Construct Hangar T/W's/Taxilanes (2 ea.)	315,000	17,500	17,500	350,000	Hangar Development Exist. Prop.
2. Construct Apron (Phase II)	1,350,000	75,000	75,000	1,500,000	Expand Aircraft Parking
				1,850,000	
SUBTOTAL (2008-2013)	**22,146,500**	**1,193,250**	**1,193,250**	**24,533,000**	

Proposed 10 Year (2008-2017) FAA Capital Improvement Program

Project Description (by Funding Year in Priority Order) (a)	Federal Funds (b)	State Funds (c)	Other (d)	Total $ (e)	Notes
2014					
1. Acquire Snow Removal Equipment (SRE)	360,000	20,000	20,000	400,000	
2. Construct SRE Storage/Maintenance Building	450,000	25,000	25,000	500,000	
3. Update Airport Master Plan	270,000	15,000	15,000	300,000	
				1,200,000	
2015					
1. Acquire Land (120ac.)	8,437,500	468,750	468,750	9,375,000	Development Land - East Side
2. Environmental Assessment (EA)	225,000	12,500	12,500	250,000	R/W and T/W Extension/Development
				9,625,000	
2016					
1. Extend Runway 16-34 (500')	5,400,000	300,000	300,000	6,000,000	To 7000' Length
2. Wetlands, Drainage Issues*					Wetlands, Pond, Irrigation Canal
3. Construct Terminal Complex	13,500,000	7,500,000	7,500,000	28,500,000	Building, Apron, Access Road, Utilities
4. Perimeter Fence	900,000	5,000	5,000	910,000	Development Area
				35,410,000	
2017					
1. Construct Apron	2,160,000	120,000	120,000	2,400,000	New Aircraft Parking Area in SE Area
2. Construct Taxiways/Taxilanes	450,000	25,000	25,000	500,000	New Hangar Development Area
3. Acquire Snow Removal Equipment	360,000	20,000	20,000	400,000	
4. Acquire land (20 ac.)	1,800,000	100,000	100,000	2,000,000	Development Land - West Side
5. Perimeter Fence	450,000	2,500	2,500	455,000	
				5,755,000	
SUBTOTAL (2013-2017)	**34,762,500**	**8,613,750**	**8,613,750**	**51,990,000**	
TOTAL (2008-2017)	**56,909,000**	**9,807,000**	**9,807,000**	**76,523,000**	

Notes: 1. Items listed are FAA/AIP eligible. Excludes required utility extension and infrastructure improvements.

2. Does not include potential PFC contributions if air service is established.

*Refer to CIP narrative for discussion of issues associated with this line item/

Table 8-2. Other Possible Long-term Improvements (2018-2025)

2018-2025 Other Possible Long-term Improvements					
1. Construct Hangar Access T/Ws/Taxilanes - East and West Sides					
2. Partial Parallel T/W - West Side					
3. Acquire Land (Runway/Parallel T/W Extension), 110 acres					
4. Extend Runway					
5. Extend Parallel Taxiway					
6. Expand Aircraft Parking Apron - East Side					
				0	

An alternative CIP scenario is presented below in **Table 8-3**. This scenario is based on recent discussions (April, 2007) with FAA representatives in the Northwest Mountain Region, Seattle Airports District Office (ADO). It is considered unlikely that the amount of discretionary funds depicted in Table 8-1 can be obtained to fund the significant land purchase plus the construction costs associated with the required runway and taxiway improvement projects. It is also unlikely that discretionary funds will be available to the City of McCall for recommended improvements until FY 2010. In light of this it is recommended that the City of McCall explore alternative scenarios for acquisition of the land required to accomplish the necessary airfield safety improvements (47 acres are needed for the larger runway and taxiway OFA and the increased length of the runway safety area). This acquisition must be completed in advance of the construction season during which the majority of safety improvements are completed. It may be necessary to extend this project into 2011 if discretionary funds are made available over a two-year time period. Such an adjustment will occur as the projects move closer to reality.

Table 8-3. Alternative Capital Improvement Program (2008-2012)

Proposed Alternate 5 Year (2008-2012) FAA Capital Improvement Program					
Project Description (by Funding Year in Priority Order) (a)	**Federal Funds (b)**	**State Funds (c)**	**Local Funds (d)**	**Total $ (e)**	**Notes**
2008					
1. Environmental Assessment (EA)	243,000	2,500	2,500	248,000	RSA, Taxiway Relocation, Land
				248,000	
2009					
1. Construct Apron (Phase I)/Remove Diag. T/W	1,899,000	105,500	105,500	2,110,000	Replace/Expand Aprons
2. Construct Hangar T/W's/Taxilanes (2 ea.)	315,000	17,500	17,500	350,000	Hangar Development Exist. Prop.
3. Relocate Parallel Taxiway, (Phase I)	1,980,000	110,000	110,000	2,200,000	2,300' at North End
4. Acquire Snow Removal Equipment (SRE)	360,000	20,000	20,000	400,000	
5. Construct SRE Storage/Maintenance Building	450,000	25,000	25,000	500,000	
6. Acquire Land*					
a. Parcel 1, 47 ac.				-	R/W, RSA and OFA, T/W OFA
b. Parcel 2, 18 ac.				-	Runway Protection Zone
c. Parcel 3, 10 ac.				-	Phase II, R/W RPZ
7. Construct Perimeter Fence	450,000	25,000	25,000	500,000	Fence OFA at a Minimum
				6,060,000	
2010					
1. Extend Runway (400')/RSA Improvements	2,250,000	125,000	125,000	2,500,000	DGC Standards
2. Widen/Overlay Runway 16-34	1,800,000	100,000	100,000	2,000,000	DGC Standards
3. Relocate Parallel T/W (Phase II)/Ext. Parallel T/W	3,807,000	211,500	211,500	4,230,000	Completes Relocation (4,700')
4. Drainage Modifications/Wetlands Mitigation	450,000	25,000	25,000	500,000	
				9,230,000	
2011					
1. Rehabilitate Existing Apron	315,000	17,500	17,500	350,000	Reconstruct Apron
2. Rehabilitate Existing Taxiways	67,500	3,750	3,750	75,000	Seal Coat and Marking
				425,000	
2012					
1. Construct Apron (Phase II)	1,350,000	75,000	75,000	1,500,000	Expand Aircraft Parking
				1,500,000	
SUBTOTAL (2008-2012)	**15,736,500**	**863,250**	**863,250**	**17,463,000**	

Notes: 1. Items listed are FAA/AIP eligible. Excludes required utility extension and infrastructure improvements.
2. Does not include potential PFC contributions if air service is established.
* Assumes land acquisition will be funded through private investment.

8.3 Capital Improvement Plan - Project Descriptions

This section briefly describes the general scope and purpose for each of the Capital Improvement Projects outlined in Table 8.1. In some instances the paragraph provides additional comment on specific issues or funding requirements relating to project implementation.

2008-1 Environmental Assessment, RSA Improvements/Taxiway Relocation

An environmental assessment (EA) will be required to evaluate the potential environmental effects associated with the required primary airfield improvements. The EA should cover the work associated with runway extension, RSA grading, taxiway relocation and land acquisition. Primary issues associated with the EA will relate to drainage modification, wetland impacts, water rights and irrigation facilities, and possible visual impacts to name several. A significant issue of consideration will be the water storage reservoir (Brown's Pond) located approximately 900 feet south and east of the existing Runway 34 end. This feature will require removal at some future time as it lies in the future RSA and taxiway extension area. The EA can be expected to require 12 to 18 months to complete.

The EA is key to future projects and will take 12 to 18 months to complete. The City is considering different methods of interim financing that will enable the EA to proceed during summer of 2007. One method may include private financing until grant funds are available.

2009-1 Relocate East Parallel Taxiway (North end)

This project provides for the relocation of the north 2,300 feet of the east parallel taxiway. The parallel taxiway will be relocated approximately 200 feet to the east to provide for the 400 feet of clearance between the runway centerline and the taxiway centerline. This is 100 feet wider than what is required to accommodate C-II standards. The additional separation is considered justified in light of the C-III aircraft that use and are expected to use this airport. This project will relocate the segment of the taxiway that is adjacent to the general aviation terminal/infield to allow for that development to proceed. Since this element of work is located in existing airport property, no land acquisition is required prior to commencing work. It will be necessary to coordinate this element of work with the EA process to determine if the EA must be complete prior to proceeding with this project. This is the first phase of parallel taxiway relocation.

2010-1 Extend Runway 34 (400 feet)/RSA Improvement

This project is the construction of an additional 400 feet of runway pavement and corresponding runway safety area to the south end (approach end) of runway 34. This extension is necessary to maintain the current runway length of 6,106 feet due to the loss of 400 feet of pavement on the north end for the larger safety area called for to meet C-II design standards.

2010-2 Construct Apron-Phase I/Remove Diagonal Taxiway

As part of the redevelopment of the general aviation terminal area, the diagonal taxiway is removed and additional apron and tie-downs are constructed. This includes that work as well as the regrading of this entire area for future general aviation development for hangars and taxiways. The work will also include replacement of apron area removed from use by the parallel taxiway relocation and relocation of two heli-pads that are currently located along the diagonal taxiway in the general aviation terminal area. Two new heli-pads may be constructed on the west edge of the reconfigured tie-down area, or placed in another acceptable location to be defined during specific project planning. The exact area of new apron required must be defined in the specific project design phase.

2010-3 Phase 1 – Acquire Land

This initial acquisition of land in the amount of 47 acres is needed to provide the land encompassed in the RSA and OFA for the initial 400 foot runway and parallel taxiway extension and relocation of the existing parallel taxiway. An additional 18 acres is needed to provide for the Runway Protection Zone (RPZ). It is recommended that airports own the land within the RPZ but it is not an absolute requirement. Since this area is needed for a subsequent runway extension to 7,000 feet, it is recommended that the Phase 1 land acquisition include this area as well. Additionally, if the runway is extended the RPZ will also move south and encompass an additional 10 acres. It is also recommended that this area be acquired.

Note: The FAA will not issue a grant for land acquisition until the airport sponsor has a firm legal document that defines the conditions of the sale or following actual closing of the acquisition. As a result of this policy, MYL must pay all costs associated with the appraisal, review appraisal, and purchase negotiation out of airport funds. These expenditures will be reimbursed in the grant. The acquisition process must start at least one year in advance of the time the land is needed for development (or earlier if the acquisition is expected to be difficult or controversial).

2011-1 Widen/Overlay Runway 16-34

This project involves widening Runway 16-34 from its current 75 foot width to the 100 foot width required by the critical C-II aircraft. It is also recommended that a runway overlay be accomplished at the same time since the existing pavement was placed in 1989 (20 years old). It will also be most cost effective to accomplish this work as a combined project.

2011-2 Construct Perimeter Fence

This project involves installation of new perimeter fencing around the new airport boundary created by the acquisition of lands in Item 2009-3.

2011-3 Drainage Modifications/Wetlands Mitigation

This project involves the preliminary work of relocating existing drainage structures and wetlands mitigation in preparation for the first 400 foot extension of Runway 34.

2012-1 Relocate-Phase II/Extend Parallel Taxiway

This project would relocate the remainder of the east side parallel taxiway (4,300') an additional 200 feet from its current location to provide for the 400 foot runway centerline to taxiway centerline distance required to meet ARC C-II standards. It also provides for an additional 400 feet of length on the south end to match the extended runway 16/34 length provided for in Item 2009-1.

2012-2 Rehabilitate/Reconstruct Existing Apron

This project involves reconstruction of a portion of the general aviation apron located north of the hangars located at the southeast edge of the terminal area, and seal coat and marking of portions of the existing apron area.

2012-3 Rehabilitate Existing Taxiways

This project involves seal coat of existing hangar access taxiways and remarking.

2013-1 Construct Hangar Taxiways/Taxilanes

This project involves the construction of taxiways and taxilanes on property currently owned by the airport to allow for hangar development in the general aviation terminal area. This project will also involve the installation of utilities that will not be AIP eligible and must be financed by other than AIP revenues.

2013-2 Phase II – Construct Apron

This project involves construction of additional general aviation aircraft parking on lands currently owned by the airport. This project can be expected to complete development in the existing terminal area.

2014-1 Acquire Snow Removal Equipment

This project includes the acquisition of additional snow removal equipment to replace dated primary equipment and/or provide necessary additions to the current equipment fleet. Additional equipment needs are anticipated as a result of increased pavement surfaces created in preceding years as well as the need to remove snow in a timely manner.

2014-2 Construct Snow Removal Equipment (SRE) Building

Snow removal equipment is currently housed in the administration building and consists of only one bay for equipment storage and maintenance. Most of the snow removal equipment sits outside on a year around basis. Equipment is expensive and is depended upon to keep the airport operational and safe on a year around basis. As such, the major pieces of equipment should be housed indoors to provide for better reliability and better maintenance. A new six (6) bay, 9,600 sq. ft. building as described in chapter five (5) is recommended for construction on the land to be acquired (Item 2009-3) south of the existing general aviation area.

2014-3 Update Airport Master Plan

A master plan update will be needed after the initial improvements are made to the airport, such as: the initial 400 foot runway extension, establishment of appropriate runway safety areas, runway/taxiway separation and hangar, ramp and tie-down improvements to the general aviation area and before undertaking larger and more expensive projects. This study will reconfirm the demand for additional facilities and their timing and provide for any changes that need to be taken into account before moving forward.

2015-1 Acquire Land (120 acres)

Additional land acquisition is necessary for the construction and implementation of long-term improvements to the McCall Municipal Airport. This project includes the acquisition of approximately 120 acres of agricultural ground on the southeast side of the airport. This is land required for a public passenger terminal and additional general aviation growth as described in the preferred alternative.

This element also includes reimbursement for the appraisal and acquisition costs previously incurred by the airport in a prior fiscal year.

2015-2 Environment Assessment – Runway and Taxiway Extension

This environmental assessment will be required for the 500 feet of runway and taxiway added to the approach end of Runway 34. This assessment will also include any area disturbed or needed for the safety areas associated with the runway/taxiway extension.

2016-1 Extend Runway 16-34 (500')

This project will provide a runway length of 7000 feet and also extend the parallel taxiway to the new runway end. This project will require removal of the water storage reservoir (Brown's Pond), if removal was not a component of project 2009-1 or 2011-1.

2016-2 Wetlands, Drainage Issues

This project will include work to mitigate wetlands and relocate drainage/irrigation structures associated with the 500' extension of Runway 34. One major issue associated with this extension is the removal or relocation of Brown's Pond, if not performed during a previous project.

2016-3 Construct Terminal Complex

This project involves construction of an air carrier terminal complex that includes site work, utilities, aircraft parking ramp, automobile parking lot, terminal access road and the provision for other ancillary services needed for a modern terminal.

2016-4 Perimeter Fence

This project will provide perimeter fence around the lands acquired in project 2014-1 and around the area associated with the extended runway and parallel taxiway.

2017-1 Construct Apron

This project will provide additional aircraft tiedown and parking area in the land acquired in project 2014-1.

2017-2 Construct New Hangar Taxiways/Taxilanes

This project will provide for the construction of taxiways and taxilanes on land acquired in project 2015-1 for the new general aviation area south of the current hangar area and south of the new terminal complex.

2017-3 Acquire Snow Removal Equipment

This project will provide additional snow removal equipment required to properly remove snow from the significant additional paved area created by preceding capital improvements.

2017-4 Acquire Land

This project will acquire an additional 21 acres (approximate) of land located on the west side of Runway 16-34 and east of Mission Street. This land will be required for future general aviation hangar development and other aeronautical uses.

2017-5 Perimeter Fence

This project will construct a perimeter fence around the land acquired in project 2017-4.

8.4 Potential Revenue Enhancement

The preceding sections of this chapter have identified and looked at the potential funding sources that airports and their respective communities have at their disposal. These various methods help provide the financial assistance necessary to provide for not only maintenance of a safe airport but to also provide for improvements to that airport to keep up with the demands of the airport users. This section will explore revenue enhancement opportunities that may be available to the management of the McCall Municipal Airport.

It is the airport operator's responsibility to ensure that the airport receives fair and just compensation for the services it provides and for the property and facilities it leases to others whether for private or commercial purposes. This should be done on a annual basis and should compare the airport's cost of providing these respective services, including upgrades for safety and other enhancements, along with comparisons of similar services and fees at competing airports.

Rates and Charges

The first step is to look at the current rates and charges that the airport has established. The following is a list of established rates and charges as well as new items that should be explored:

- hangar and land rental rates,
- infrastructure maintenance and development fee;

- tie-down fees,
- landing fees,
- fuel flowage fees,
- over-night parking.

In the case of MYL, the lease rates for hangars and USFS are adjusted for inflation each year. Other fees have been adjusted in recent years but are not currently on any type of annual adjustment to keep up with inflation or other costs born by the airport. Based on the following information it would seem that a thorough review of all land, hangar, and tie-down fees be assessed to see how they compare not only with each other according to value received, but also how these uses compare to similar uses in the community.

Although the hangar ground rental rates are adjusted yearly, the monthly cost of that ground rental on new hangars is $28.98 per month and the current monthly tie-down rate is $30.00 per month. This does not seem to be an equitable assessment based on value received and should be reviewed.

It would be appropriate to review the land lease rates in view of the cost of land in areas adjacent to the airport. For example, if a lot in the City to park a single-wide mobile home rents for approximately three hundred dollars ($300.00) per month, what should a similar sized lot at the airport with utilities rent for?

It would be appropriate to institute an infrastructure maintenance and development fee for the airport. This could be based on the costs of maintaining and upgrading the airports infrastructure along with the costs of developing new areas or services that benefit airport users as a whole.

An example of this would be in the area of safety and security. The installation and maintenance of access gates to restrict airport access for safety and provide better airport security is costly. Additionally, as MYL grows, and as recommended in this master plan, a drivers training program will need to be instituted to satisfy FAA safety issues regarding private vehicles driving on the airport and the conflicts that presents to aircraft operations. This fee could be based on the size of a tenant's hangar, the leased area they occupy, the number or size of aircraft they hangar or some combination of these items. It is becoming common for airports to charge development fees because of the initial costs of land preparation for hangar or tie-down use. Some of these costs include: excavation, base material, grading, drainage, utilities, taxiway/taxilane preparation and installation, airport access, and engineering fees.

The current tie-down fee of thirty dollars ($30.00) per month could be increased to reflect the value of keeping that land available for that particular use. It could bring in more revenue if it was dedicated to a commercial use of some type needed at the airport. A variable rate reflecting a discount for paying up front for the full year should also be looked at as valuable to both the customer and the airport.

A graduated landing fee should be explored to reflect the true cost of the size and type of aircraft that use the airport. The faster and heavier jets cause a disproportionately higher cost to the airport. A sliding scale of $1.05 per pound for 5,000 to 14,999 Max Gross takeoff weight; $2.15 for

15,000 to 29,999; and $3.30 for all aircraft over 30,000 lbs. Also the airport may establish a minimum landing fee for all revenue flights. This same type of scale could be used to establish overnight parking fees.

Commercial Use Fees

The McCall Municipal Airport provides economic opportunities for several businesses. These businesses depend on the airport to provide a safe and efficient operation in order to attract potential customers to their respective businesses. The following are sources of income that the airport should consider if they are not already being charged:

- A percentage of gross sales of services offered by FBOs, flight schools, aircraft maintenance and avionics shops, and other similar types of aviation businesses,
- Rental car fees, and
- Vending machines.

Fixed base operators, flight schools, aircraft maintenance and avionics shops, and other airport businesses offer many services to the customer as part of their respective businesses. In most locations these businesses are charged a percentage of their gross sales by the airport for the privilege of conducting business at the airport. The percentage owed is for all commercial sales from that business, no matter what the product is. This would include but not be limited to: in-flight catering, aircraft cleaning, retail sales of aeronautical charts, clothing, sun glasses, and other aviation accessories.

Rental car fees should be charged for both on- and off-airport rental car businesses. The percentage of gross sales varies from location to location and also whether the rental car company is on- or off-airport, with on-airport rental car businesses usually paying more. The industry standard at this time is around 10% of gross sales. However, a higher rate in the 15% range should be explored based on the cost of providing services.

Special Events

McCall Family Fly-In and other community events with an airport tie-in should generate both goodwill and revenue for the airport. Additional airport events should be considered that would generate revenue such as static displays of vintage and military aircraft or possibly an air show. Air shows have more liability associated with them and would need to be thoroughly examined to determine if they will generate more income than they cost as well as for suitability to the area. There is always a trade-off with community events regarding the support of an event(s) versus the amount charged. Attendees at an airport event may already be buying additional services from businesses at the airport and therefore already benefiting the airport in some manner.

Passenger Facility Charges

Passenger Facility Charges (PFCs) will become a revenue source for MYL if air service is successfully established at MYL. PFCs are considered local monies, as it is essentially a head-tax on commercial passengers that an airport owner can choose to levy. PFC collection is authorized under the enabling legislation included in the *Aviation Safety and Capacity Expansion Act* of 1990 and 14 CFR Part 158 of the Federal Aviation Regulations, *Passenger Facility Charge Program*. PFCs are collected from enplaning passengers at the Airport and these funds are used to finance all or portions of capital improvements that are identified by the Airport and approved by FAA. To be eligible for PFC funding, a project must preserve or enhance safety, security, or capacity of the national air transportation system, reduce or mitigate airport noise from an airport, or provide opportunities for enhanced competition between or among air carriers. At the present time, airport owners can collect a maximum of $4.50 per passenger using this source of funds. Consideration is being given to the AIP reauthorization process of raising this to as much as $7.50 per passenger.

Expenses

The airport, as part of a public body, is eligible to purchase supplies and equipment on state and federal contracts in most cases. The Federal Surplus Equipment Program has many avenues for procurement of used government equipment, mostly military, ranging from computers to fire fighting vehicles and heavy equipment. The savings can be substantial, especially on big ticket items such as airport vehicles and other large equipment.

Additional items would be a review of yearly maintenance costs to see if there are any tasks that airport personnel can do more economically than having it outsourced, and the reverse would be something that takes airport personnel an inordinate amount of time and wages to complete that could be done more economically if contracted. Such an item would be airfield painting, and there may be many others.

Appendix A

Runway Length Recommendations

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 engineer 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 sub-groups based on a selected percentage of the total fleet to be accommodated and a load factor at which the plane 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

Category	Runway Length by Temperature (F)					
	60	65	70	75	80	85
Small Aircraft <10 Pax	5,560	5,700	5,830	5,970	6,110	6,240
Small Aircraft >10 Pax	5,560	5,700	5,830	5,970	6,110	6,240
Large Aircraft under 60,000 lbs						
75% of fleet at 60% load	6,040	6,150	6,260	6,380	6,510	6,860
75% of fleet at 90% load	8,430	8,470	8,510	8,600	8,730	8,780
100% of fleet at 60% load	7,560	7,830	8,160	8,540	8,980	9,690
100% of fleet at 90% load	9,400	9,600	9,800	10,110	10,860	11,180
Aircraft over 60,000 lbs (dry Rwy)	6,770	6,770	6,770	6,770	6,770	6,770
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-II'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 revenues to the FBO and the city of McCall.

Table 5-4
Runway Length Requirements for Specific Aircraft by Temperature
McCall Municipal Airport Master Plan

Aircraft Type	Takeoff Weight (lbs)	Runway Length (in feet) By Temperature Gradient					
		60	65	70	75	80	85
Cessna 177	2,500	2,377	2,451	2,525	2,607	2,695	2,783
Cessna 182	2,950	2,291	2,364	2,436	2,150	2,600	2,685
Cessna 310	5,500	5,354	5,467	5,581	5,701	5,826	5,952
Aero Commander 680E	7,700	2,167	2,190	2,214	2,242	2,273	2,305
Aero Commander 560A	6,000	2,428	2,538	2,648	2,770	2,902	3,034
Aero Commander 560E	6,500	3,820	3,990	4,160	4,340	4,529	4,717
Beechcraft 65 Queen Air	7,700	3,987	4,025	4,062	4,103	4,147	4,191
Beechcraft B200	12,500	4,133	4,181	4,228	4,292	4,370	4,449
Beechcraft B200	11,000	3,845	3,908	3,970	4,033	4,096	4,159
Beechcraft B100	11,500	4,956	5,034	5,113	5,192	5,270	5,349
Beechcraft B100	10,000	4,306	4,384	4,463	4,533	4,598	4,659
Dassault Falcon 10	14,000	3,345	3,408	3,470	3,525	3,572	3,619
Dassault Falcon 10	16,000	3,956	4,034	4,113	4,175	4,222	4,269
Dassault Falcon 10	18,740	5,589	5,715	5,841	5,933	5,966	6,059
Dassault Falcon 20	18,000	3,264	3,319	3,374	3,433	3,496	3,559
Dassault Falcon 20	26,000	5,650	5,792	5,933	**6,200**	**6,577**	**6,954**
Dassault Falcon 200	20,000	3,522	3,554	3.585	3,625	3,672	3,719
Dassault Falcon 200	26,000	4,345	4,408	4,470	4,533	4,596	4,659
Dassault Falcon 200	30,650	6,801	7,084	7,367	——	——	——
Dassault Falcon 50	22,000	3,245	3,308	3,370	3,417	3,448	3,480
Dassault Falcon 50	30,000	3,706	3,784	3,863	3,950	4,044	4,139
Dassault Falcon 50	37,480	5,589	5,715	5,841	6,017	6,237	6,457
Dassault Falcon 900	45,500	**6,867**	**6,961**	**7,056**	**7,142**	**7,220**	7,299
Dassault Falcon 900	34,000	3,806	3,884	3,963	4,033	4,096	4,159
Dassault Falcon 900	28,000	3,033	3,081	3,128	3,179	3,234	3,289
Gulfstream II	62,000	6,862	7,019	7,176	7,375	7,611	7,846
Gulfstream II	50,000	4,628	4,738	4,848	4,925	4,972	5,019
Gulfstream III	69,700	7,323	7,496	7,669	7,825	7,966	8,108

Table 5-4 (Continued)
Runway Length Requirements for Specific Aircraft by Temperature
McCall Municipal Airport Master Plan

Aircraft Type	Takeoff Weight (lbs)	Runway Length (in feet) By Temperature Gradient					
		60	65	70	75	80	85
Gulfstream III	58,000	5,178	5,288	5,398	5,500	5,594	5,689
Gulfstream III	50,000	3,967	4,061	4,156	4,233	4,396	4,359
Gulfstream IV	73,600	**9,112**	**9,269**	**9,426**	**9,583**	**9,740**	**9,898**
Gulfstream IV	65,000	**6,534**	**6,723**	**6,911**	**7,067**	**7,192**	**7,318**
Gulfstream IV	63,000	6,112	**6,269**	**6,426**	**6,567**	**6,692**	**6,816**
Gulfstream IV	55,000	4,328	4,438	4,584	4,850	4,744	4,839
Learjet 23	12,000	**6,412**	**6,569**	**6,726**	**6,917**	**7,137**	**7,357**
Learjet 23	10,500	4,506	4,584	4,863	4,750	4,844	4,939
Learjet 24B	13,500	4,667	4,761	4,856	4,942	5.020	5,099
Learjet 24B	12,000	3,756	3,834	3,913	3,983	4,046	4,109
Learjet 25 B/C	15,000	5,912	6,069	**6,226**	**6,417**	**6,637**	**6,857**
Learjet 25 B/C	12,000	3,600	3,600	3,600	3,675	3,816	3,958
Learjet 25 D/F	15,000	6,122	**6,154**	**6,185**	**6,333**	**6,585**	**6,838**
Learjet 25 D/F	12,000	3,756	3,834	3,913	3,992	4,070	4,149
Learjet 28/29	15,000	4,325	4,396	4,467	4,542	4,620	4,699
Learjet 28/29	13,000	3,606	3,684	3,763	3,833	3,896	3,959
Learjet 31	10,000	3,678	3,748	3,813	3,881	3,948	4,018
Learjet 31	14,000	4,219	4,302	4,386	4,489	4,552	4,636
Learjet 31	16,500	5,547	5,698	5,849	6,000	**6,151**	**6,302**
Learjet 55C	21,500	**7,607**	**7,761**	**7,916**	**8,071**	**8,225**	**8,380**
Learjet 55C	17,000	4,623	4,714	4,806	4,897	4,989	5,080
Lockheed Jetstar	42,000	**10,023**	**10,338**	**10,652**	**10,958**	**11,257**	**11,556**
Lockheed Jetstar	34,000	**6,300**	**6,442**	**6,583**	**6,717**	**6,842**	**6,968**
Lockheed Jetstar II	44,500	4,892	4,915	4,939	4,958	4,974	4,990
Lockheed Jetstar II	36,000	4,692	4,715	4,739	4,758	4,774	4,790
Merlin IVC	12,500	4,257	4,290	4,314	4,354	4.409	4,464
Merlin IVC	16,000	5,856	5,934	6,013	6,092	**6,170**	**6,249**
Metro III	12,500	4,233	4,281	4,328	4,375	4,422	4,469
Metro III	16,000	**6,167**	**6,261**	**6,356**	**6,433**	**6,496**	**6,559**
Metro II SA226-TC	12,500	4,078	4,188	4,298	4.400	4,494	4,589
Metro II SA226-TC	10,500	2,664	2,719	2,774	2,842	2,920	2,989
Metro II SA226-TC	8,500	2,058	2,106	2,153	2,200	2,247	2,294
Saab 340B	30,000	**6,745**	**6,949**	**7,154**	**7,346**	**7,527**	**7,707**
Saab 340B	25,000	4,292	4,386	4,481	4,579	4,681	4,783
Saab Fairchild SF 340A	28,000	**6,350**	**6,492**	**6,633**	**6,792**	**6,964**	**7,137**
Saab Fairchild SF 340A	25,000	4,767	4,861	4,956	5,075	5,216	5,358
IAI Westwind 1124	22,850	**6,484**	**6,814**	**7,145**	—	—	—
IAI Westwind 1124	21,000	5,217	5,311	5,406	5,533	5,690	5,848
IAI Westwind 1124	18,000	3,995	4,058	4,120	4,175	4,222	4,269

Table 5-4 (Continued)
Runway Length Requirements for Specific Aircraft by Temperature
McCall Municipal Airport Master Plan

Aircraft Type	Takeoff Weight (lbs)	Runway Length (in feet) By Temperature Gradient					
		60	65	70	75	80	85
IAI Westwind 1124A	23,500	**6,868**	**7,245**	**7,622**	**7,833**	**7,896**	**7,959**
IAI Westwind 1124A	21,000	5,267	5,361	5,456	5,550	5,644	5.739
IAI Westwind 1124A	18,000	3,995	4,058	4,120	4,192	4,270	4,349
Westwind Astra	24,650	**8,262**	**8,419**	**8,576**	**8,708**	**8,818**	**8,928**
Westwind Astra	23,000	**6,506**	**6,584**	**6,663**	**6,750**	**6,844**	**6,939**
Westwind Astra	20,000	5,056	5,134	5,213	5,283	5,346	5,409
Embraer EMB-120	25,353	**6,378**	**6,488**	**6,598**	**6,712**	**6,830**	**6,948**
Embraer EMB-120	24,000	5,556	5,634	5,713	5,792	5,870	5,949
Cessna 425	8,600	4,903	4,964	5,025	5,089	5,155	5,222
Cessna 425	8,200	4,768	4,827	4,885	4,947	5,010	5,074
Cessna 441	9,850	4,710	4,774	4,837	4,903	4,971	5,040
Cessna 441	7,800	4,128	4,182	4,237	4.293	4,351	4.409
Cessna 340A	5,990	4,321	4,373	4,425	4,478	4,532	4,586
Cessna 340A	5,000	2,839	2,875	2,911	2,947	2,983	3,019
Cessna 402C	6,850	4,711	4,764	4,818	4,874	4,932	4,990
Cessna 402C	5,500	2,854	2,892	2,930	2,965	2,998	3,031
Cessna 414 C	6,750	5,320	5,384	5,447	5,513	5,581	5,649
Cessna 414C	5,700	3,609	3,652	3,694	3.738	3,782	3,827
Cessna 421C	7,450	4,555	4,611	4,667	4,724	4,781	4,839
Cessna 421C	6,200	2,977	3,015	3,052	3,090	3,127	3,165
Sabreliner NA-265-65	19,000	5,939	6,065	**6,191**	**6,317"**	**6,442**	**6,568**
Sabreliner NA-265-80	19,000	5,850	5,992	6,133	**6,317**	**6,537**	**6,757**
SabrelinerNA-265-80A/SC12	25,500	**7,673**	**7,846**	**8,019**	**8,183**	**8,340**	**8,498**
SabrelinerNA-265-80A/SC12	20,000	4,681	4,759	4,838	4,921	5,007	5,094
Sabreliner NA-265-40	18,650	**6,612**	**6,769**	**6,926**	**7,108**	**7,313**	**7,517**
Sabreliner NA-265-60	20,000	**7,584**	**7,773**	**7,961**	**8,162**	**8,375**	**8,587**
Cessna Citation I/SP	11,850	4,001	4,070	4,139	4,208	4,277	4,345
Cessna Citation I/SP	10,000	2,869	2,917	2,964	3,012	3,060	3,108

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 MetroIII, 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

Appendix B

Part 139

PART 139—CERTIFICATION OF AIRPORTS

Subpart A—General

Subpart B—Certification

Subpart C—Airport Certification Manual

Subpart D—Operations

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:

(1) Class I airports—6 months after June 9, 2004.

(2) Class II, III, and IV airports—12 months after June 9, 2004.

§ 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

Manual elements	Airport certificate class			
	Class I	Class II	Class III	Class IV
1. Lines of succession of airport operational responsibility	X	X	X	X
1. Lines of succession of airport operational responsibility	X	X	X	X
2. Each current exemption issued to the airport from the requirements of this part	X	X	X	X
3. Any limitations imposed by the Administrator	X	X	X	X
4. A grid map or other means of identifying locations and terrain features on and around the airport that are significant to emergency operations	X	X	X	X
5. The location of each obstruction required to be lighted or marked within the airport's area of authority	X	X	X	X
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	X	X	X	X
7. Procedures for avoidance of interruption or failure during construction work of utilities serving facilities or NAVAIDS that support air carrier operations	X	X	X	
8. A description of the system for maintaining records, as required under § 139.301	X	X	X	X
9. A description of personnel training, as required under § 139.303	X	X	X	X
10. Procedures for maintaining the paved areas, as required under § 139.305	X	X	X	X
11. Procedures for maintaining the unpaved areas, as required under § 139.307	X	X	X	X
12. Procedures for maintaining the safety areas, as required under § 139.309	X	X	X	X
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	X	X	X	X
14. A description of, and procedures for maintaining, the marking, signs, and lighting systems, as required under § 139.311	X	X	X	X
15. A snow and ice control plan, as required under § 139.313	X	X	X	
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	X	X	X	X

REQUIRED AIRPORT CERTIFICATION MANUAL ELEMENTS

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

§ 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, as specified under § 139.329.

(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 paragraph (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) One vehicle carrying 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.

(e) 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 be equipped with two-way voice radio communications that provide for contact with at least—

(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

protecting—all NAVAIDS on its airport against vandalism and theft; and

(c) Prevent, insofar as it is within the airport's authority, interruption of visual and electronic signals of NAVAIDS.

§ 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)(l) 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 C

Draft Zoning Ordinance

DRAFT AIRPORT ZONING ORDINANCE

for

McCall Municipal Airport

McCall, Idaho

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Exhibits

TITLE AND INTRODUCTION

McCall Municipal Airport Zoning Ordinance
Created by: Mead & Hunt, Inc. 2006

An ordinance regulating and restricting the height of structures and objects of natural growth, and regulating the use of property in the vicinity of the McCall Municipal Airport by creating the appropriate zones and establishing the boundaries thereof; providing for changes in the restrictions of such zones; defining certain terms used herein; referring to the McCall Municipal Airport zoning map which is incorporated in and made a part of this ordinance; providing for enforcement; and imposing penalties.

SECTION 1: AUTHORITY

This ordinance is authorized Article 12, Section 2 of the *Constitution of Idaho*, and Title 67, Chapter 65 of the *Idaho Code*, which empower the City to exercise the police power and to enact a Zoning Ordinance and to provide for its administration, enforcement and amendment. This Title may be cited and referred to as the Airport Zoning Ordinance for the City of McCall.

SECTION 2: PURPOSE AND AUTHORITY

The *[INSERT*] hereby finds and declares that:

A. The McCall Municipal Airport is an essential public facility.

B. An airport hazard endangers the lives and property of users of the McCall Municipal Airport, and property or occupants of land in its vicinity; and also if of the obstructive type, in effect reduces the size of the area available for the landing, takeoff, and maneuvering of aircraft, thus tending to destroy or impair the utility of McCall Municipal Airport and the public investment therein.

C. The existence, creation or establishment of an airport hazard is a public nuisance and an injury to the region served by the McCall Municipal Airport.

D. For the protection of the public health, safety, order, convenience, prosperity, and general welfare, and for the promotion of the most appropriate use of land, it is necessary to prevent the creation or establishment of airport hazards and incompatible land uses.

E. The prevention of these airport hazards and incompatible land uses should be accomplished, to the extent legally possible, by the exercise of the police power without compensation.

F. The prevention of the creation or establishment of airport hazards and incompatible land uses, and the elimination, removal, alteration, mitigation, or marking and lighting of existing airport hazards are public purposes for which political subdivisions may raise and expend public funds.

SECTION 3: SHORT TITLE

This Ordinance shall be known as the "McCall Municipal Airport Zoning Ordinance" as is referred to as "this Ordinance" within the following sections. Those sections of land affected by this Ordinance are indicated in Exhibits A this Ordinance.

SECTION 4: APPLICABILITY

This Ordinance shall apply only to those parcels of land shown on the Airport Zoning Map, which is attached to this Ordinance as Exhibit A.

SECTION 5: DEFINITIONS

As used in this Ordinance, unless the context otherwise requires:

"AIRPORT ZONE" means the three- or two-dimensional zones established in relation to the airport which include the: Primary Zone, Horizontal Zone, Conical Zone, Approach Zone and the Transitional Zone established in Section 6 of this Ordinance.

"*AIRPORT*" means the McCall Municipal Airport located in Sections sixteen (16), twenty-one (21) and twenty-eight (28), T18N; R3E, adjacent to the south edge of the city of McCall.

"*AIRPORT ELEVATION*" means the established elevation of the highest point on the usable landing area, which elevation is established to be 5,021 feet above mean sea level.

"*AIRPORT HAZARD"* means any structure, tree, or use of land which obstructs the air space required for, or is otherwise hazardous to, the flight of aircraft in landing or taking off at the airport; and any use of land which is hazardous to persons or property because of its proximity to the airport.

"AIRPORT SPONSOR" means the municipality or authority of the airport allowed to apply for and receive grants.

"AIRPORT ZONING PERMIT" means a permit allowing new development or alteration or expansion of a nonconforming use, as requires under Section 10 of this Ordinance.

"*COMMISSIONER*" means the Commissioner of the Idaho Department of Transportation.

"CONFORMING USE" means any structure, tree, object of natural growth, or use of land that complies with all applicable provisions of this Ordinance or any amendment to this ordinance.

"FAA" stands for the Federal Aviation Administration

"*HEIGHT*," for the purpose of determining the height limits in all zones set forth in this Ordinance and shown on the Official Zoning Map, height shall be measured as the highest point of a structure, tree or other object of natural growth, measured from the mean sea elevation unless otherwise specified.

"ID/DOT" stands for the Idaho Department of Transportation, Division of Aeronautics
"IMAGINARY SURFACES" mean an inclined or horizontal plane as defined by Federal Aviation Regulation Part 77 in space and/or on the ground that are established in relation to the airport and its runways as the basis for regulating obstructions to air travel. They include the Primary Surface, Transitional Surface, Horizontal surface, Conical Surface and Approach Surface. They are the basis upon which air space zones are established in this Ordinance. *See* definition of "Airport Zone".

"INCOMPATIBLE LAND USE" means a use of land within an airport zone that adversely affects the airport or is adversely affected by the airport.

"*NONCONFORMING USE*" means any pre-existing, legally established structure, tree, object of natural growth, or use of land that does not comply with one or more provisions of this Ordinance or any amendment to this Ordinance.

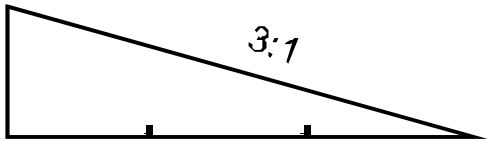
"OBSTRUCTION" means any structure, tree, plant or other object of natural growth that penetrates an imaginary surface.

"PERFORMANCE STANDARD" means a zoning standard that permits land uses based on the use's compliance with a particular set of standards of operation, rather than based on the particular type of use at issue. Performance standards in this Ordinance provide specific criteria limiting glare, dust, smoke emissions, and heat, fire or explosion hazards associated with any use of land subject to this Ordinance. Performance standards are imposed on uses in addition to other general zoning regulations, such as specific use restrictions.

"PRACTICAL DIFFICULTY OR UNNECESSARY HARDSHIP" means the property in question cannot be put to a reasonable use if used under conditions allowed by this Ordinance, and the plight of the landowner is due to circumstances unique to the property and not created by the landowner, and the variance, if granted, will not be contrary to the purpose and intent of this Ordinance. Economic considerations alone shall not constitute a "practical difficulty or unnecessary hardship" if reasonable use for the property exists under the terms of this Ordinance.

"PUBLIC AIRPORT" means any airport, whether privately or publicly owned, the public use of which for aeronautical purposes is invited, permitted, or tolerated by the owner or person having the right of access and control.

RUNWAY" means any existing or planned paved surface or turf covered area of the airport which is specifically designated and used or planned to be used for the landing and/or taking off of aircraft.
"SLOPE" means an incline from the horizontal expressed in an arithmetic ratio of horizontal magnitude to vertical magnitude. *For Example*: Slope = 3:1, which is the same as 3 feet horizontal to 1 foot vertical.



"*STRUCTURE*" means an object anchored, constructed, attached, erected, located, placed, piled, or installed by a person(s), either on the ground or in a water body, either movable or immovable, and either temporary or permanent. The term "Structure" includes, but is not limited to, antennae, buildings, cranes, fences, overhead transmission lines, patios and decks, human-made ponds, signs and sign structures, smokestacks, towers, utility poles, wires, and anything attached to any of the foregoing either temporarily or permanently.

"SUBSTANTIALLY ALTER OR ALTERED" means an addition to the footprint of a building or structure, or an addition to the existing maximum height of a building or structure, or a change in use of land, building, or structure.

"*TRAVERSE WAYS*," means roads, railroads, trails, waterways, or any other avenue of surface transportation.

"*TREE*" means any object of natural growth.

"WATER IMPOUNDMENT" means wastewater treatment settling ponds, surface mining ponds, detention and retention ponds, artificial lakes and ponds, and similar water features. A new water impoundment includes an expansion of an existing water impoundment except where such expansion was previously authorized by land use action approved prior to the effective date of this Ordinance.

"*WATER SURFACES*" for the purpose of this ordinance, shall have the same meaning as land for the establishment of protected zones.

"WILDLIFE ATTRACTANTS" means any human-made structure, land use practice, or human-made or natural geographic feature that can attract or sustain hazardous wildlife within the landing or departure airspace of the airport's air operations area. These attractants include, but are not limited to, architectural features, landscaping, waste disposal sites, wastewater treatment facilities, agriculture and aquaculture activities, surface mining, or wetlands.

"*WILDLIFE HAZARDS"* means species of wildlife (birds, mammals, reptiles), including feral animals and domesticated animals not under the control, that are associated with aircraft strike problems, are capable of causing structural damage to airport facilities, or act as attractants to other wildlife that pose a strike hazard.

"ZONING ADMINISTRATOR" means the public official in each affected local unit of government as set forth in Section 8 of this Ordinance.

SECTION 6: AIRPORT ZONING

6.1 Establishment of Airport Zones

In order to carry out the purpose of this Ordinance, as set in Section 2, the following airport zones are hereby established: Primary Zone, Horizontal Zone, Conical Zone, Approach Zone and Transitional Zone, and whose locations and dimensions are depicted on Exhibit A. These zones exist as imaginary surfaces in the airspace around the airport and as corresponding two-dimensional areas on the ground. The imaginary surface slopes restrict the height of structures to help prevent obstructions to aircraft and the areas on the ground restrict land uses to promote compatible land uses with the airport.

A. Primary Zone

(1) All that land which lies directly under an imaginary primary surface longitudinally centered on a runway and extending 200 feet beyond the end of Runway 16-34

(2) The elevation of any point on the primary surface is the same as the elevation of the nearest point on the runway centerline

(3) The width of the primary surface is 500 feet for Runway 16-34.

(4) The primary surface for each end of a runway has the same arithmetical value. The value shall be the highest determined for either end of the runway.

B. Horizontal Zone

All that land which lies directly under an imaginary horizontal surface 150 feet above the established airport elevation, or a height of 5,171 feet above mean sea level, the perimeter of which is constructed by swinging arcs of specified radii from the center of each end of the primary surface of each runway and connecting the adjacent arcs by lines tangent to those arcs. The radius of each arc is 5,000 feet for Runway 16-34.

(1) When a 5,000 foot arc is encompassed by tangents connecting two 10,000 foot arcs, the 5,000 foot arc must be disregarded I the construction of the perimeter of the horizontal surface.

(2) The radius of the arc for each end of the runway has the same arithmetical value. The value shall be the highest determined for either end of the runway.

C. Conical Zone

All that land which lies directly under an imaginary conical surface extending upward and outward from the periphery of the horizontal surface at a slope of 20:1 for a horizontal distance of 4,000 feet as measured outward from the periphery of the horizontal surface.

D. Approach Zone

(1) All that land which lies directly under an imaginary approach surface longitudinally centered on the extended centerline at each end of a runway.

(2) The inner edge of the approach surface is at the same width and elevation as, and coincides with, the end of the primary surface.

(3) The approach surface inclines upward and outward at a slope of:

a. 34:1 for Runways 16 and 34 for a horizontal distance of 10,000 feet.

(4) The approach surface expands uniformly to a width of:
   a. 3,500 feet for Runways 16 and 34 at a distance of 10,000 feet to the periphery of the conical surface.

E. Transitional Zone
   (1) All that land which lies directly under an imaginary surface extending upward and outward at right angles to the runway centerline and centerline extended at a slope of 7:1. The transitional surfaces incline upward and outward from the sides of the primary surfaces and from the sides of the approach surfaces until they intersect the horizontal surface or the conical surface.

   (2) Transitional surfaces for those portions of the precision instrument approach surface that project through and beyond the limits of the conical surface, extend a distance of 5,000 feet measured horizontally from the edge of the precision instrument approach surface and at right angles to the extended precision instrument runway centerline.

6.2 Prohibition of Airspace Obstructions

A. Applicability
All existing and new uses and development permitted shall comply with the height limitations and the prohibition of air space obstructions stated in this Section 6.2.

B. General Height Restrictions
Except as otherwise provided in this Ordinance, and except as necessary and incidental to airport operations, no structure or tree shall be constructed, altered, maintained, or allowed to grow in any airport zone created in Section 6.1 so as to project above any of the imaginary surfaces in the airspace described in Section 6.1. Where an area is covered by more than one height limitation according to this Section, the more restrictive limitation shall apply.

C. Other Height Exceptions and Variances
Other height exceptions or variances may be permitted only when supported in writing by the airport sponsor, ID/DOT, and the FAA. Applications for height variances shall follow the procedures for other variances stated in Section 11 of this Ordinance, and shall be subject to such conditions and terms as recommended by ID/DOT and the FAA.

D. Conflicting Regulations
When the height limitations of the applicable zone district are more restrictive than those of this Ordinance, the applicable zone district height limitations shall apply and control.

E. Determining Height Limits for Objects Traveling on Traverse Ways
For the purpose of determining height limits as set forth in this Ordinance, ground elevation shall be increased in height by 17 feet for interstate highways; 15 feet for all other public roadways; 10 feet or the height of the highest mobile object that would normally traverse the road, whichever is greater, for private roads; 23 feet for railroads; and for waterways and all other traverse ways not

previously mentioned, an amount equal to the height of the highest mobile object that would normally traverse it.

F. Limits on Applicability of Air Space Height Restrictions

The air space obstruction height zoning restrictions set forth in this Section shall apply for a distance not to exceed one and one half (1½) miles beyond the perimeter of the airport boundary and in that portion of an airport hazard area under the approach zone for a distance not exceeding two (2) miles from the airport boundary.

6.3 Airport Compatibility Land Use Standards

A. General Performance Standards Applicable to All Uses in All Airport Zones

(1) Applicability

a. The general performance standards in this subsection shall apply to all activities and uses of land located in one or more of the airport zones established in Section 6.1

(2) General Performance Standards

Subject to all times to the height restrictions set forth in Section 6.2 , all uses made of any land in any of the zones defined in Section 6.1 shall comply with all of the following performance standards, as applicable.

a. Outdoor lighting

No use shall project lighting directly onto an existing runway or taxiway or into existing airport approach surfaces except where necessary for safe and convenient air travel. Lighting for new or expanded industrial, commercial, or recreational uses shall incorporate shielding in their designs to reflect light away from airport approach surfaces. No use shall imitate airport lighting or impede the ability of pilots to distinguish between airport lighting and other lighting.

b. Glare

No glare producing materials, including but not limited to unpainted metal or reflective glass, shall be used on the exterior of structures located with an approach surface or on nearby lands where glare could impede a pilot's vision.

c. Industrial Emissions

No agricultural, industrial, mining or similar use, or expansion of an existing agricultural, industrial, mining or similar use, shall, as part of its regular operations, cause emissions of smoke, dust, or steam that could obscure visibility within airport approach surfaces, except upon demonstration, supported by substantial evidence, that mitigation measures imposed as approval conditions will reduce the potential for safety risk or incompatibility with airport operations to an insignificant level. The review authority shall impose such conditions as necessary to ensure that the use does not obscure visibility.

d. Communications Facilities and Electrical Interference

i. No use shall cause or create electrical interference with navigational signals or radio communications operated on the airport or operated between an airport and aircraft. Proposals for the location of new or expanded radio, radio-telephone and television transmission facilities and electrical transmission lines shall be coordinated with ID/DOT and the FAA prior to approval.

ii. Approval of cellular and other telephone or radio communication towers on leased property located within an airport zone established according to Section 6 of this Ordinance shall be conditioned to require their removal within ninety (90) days following the expiration of the lease agreement. A bond or other security shall be required to ensure this result.

e. Water impoundments and Wildlife Attractants

i. Any use or activity that would result in the establishment or expansion of a water impoundment shall comply with the requirements of this subsection. This subsection shall not apply to:

- Stormwater management basins established by the airport
- Wetland mitigation, creation, enhancement or restoration projects located out the approach surface, provided they are located, designed, and maintained in perpetuity to avoid creating a wildlife hazard or increasing hazardous movements of birds across runways or approach surfaces.

ii. No new or expanded water impoundments of one-quarter (¼) acres in size or larger are permitted:

- Within an approach surface and within 5,000 feet from the end or edge of a runway; or
- On land owned by the airport sponsor that is necessary for airport operations

iii. The establishment of a new water impoundment one-quarter (¼) acre in size or larger outside the limit stated in subsection e.ii. above, but within 50,000 feet of the end or edge of a runway and within an approach surface, is allowed only with the prior approval of an airport zoning permit (see Section 10) and subject to the following conditions:

- The McCall City Council shall be the final decision-making body on the airport zoning permit application rather than the zoning administrator.

- Prior to filing its application, the applicant shall coordinate with the airport sponsor, ID/DOT, the FAA and the Idaho Department of Water Resources and Fish and Game regarding the proposed water impoundment, its short- and long-term potential to significantly increase hazardous movements of birds feeding, watering, or roosting in areas across runways or approach surfaces, and proposed mitigation. As reasonably necessary to determine the potential for significant bird strike hazards, the applicant may be required to submit a bird strike study for these agencys' review and comment.

- An application for an airport zoning permit according to Section 10 shall not be deemed completed for review purposes until the applicant has filed with the City a final bird strike study, as applicable, addressing comments from the airport sponsor ID/DOT, the FAA, or the Idaho Department of Water Resources and Fish and Game. If a bird strike study was not required an application for an airport zoning permit shall not be deemed complete until the applicant submits correspondence or other sufficient proof demonstrating agreement among the

airport sponsor, ID/DOT, the FAA and Idaho Department of Water Resources and Fish and Game that no bird strike study is required and no unmitigated, significant bird strike hazard will result from the approval of the permit.

- In addition to the review criteria stated in Section 10, the City Council shall approve an airport zoning permit for a new water impoundment only if it makes all the following findings:
  - The proposed water impoundment, taking into consideration any proposed or recommended mitigation measures, will not significantly increase the risk of bird strike hazards to air navigation.
  - Proposed mitigation measures are based on accepted technology and industry practices, and have been demonstrated to be effective, reliable over time, and affordable to implement.
  - The applicant has demonstrated an ability to pay for necessary short-term and long-term mitigation measures, and to ensure the perpetual implementation, monitoring, and maintenance of such measures.

f. Fire and Explosion Hazards
No use or structure shall promote concentrations of flammable substances or materials.

g. Other Hazards to Aircraft Operations
In addition to the specific prohibitions stated in this subsection A, no use or structure shall otherwise endanger the landing, taking off, or maneuvering of aircraft.

B. General Limitations Siting Waste Disposal Facilities

(1) No new waste disposal facilities shall be permitted within 10,000 feet of any airport runway used or scheduled for use by turbojet aircraft unless approval is obtained from the FAA and ID/DOT.

(3) No new waste disposal facilities shall be permitted within 5,000 feet of any airport runway used or scheduled for use by piston type aircraft only unless approval is obtained from the FAA.

(4) Expansions of existing land disposal facilities within theses distances shall be permitted only upon demonstration that the facility is designed and will operate so as not to increase the likelihood or bird/aircraft collisions. Timely notice of any proposed expansion shall be provided to the airport sponsor, ID/DOT and the FAA and any approval shall be accompanied by such conditions as are necessary to ensure that an increase in bird/aircraft collisions is not likely to result.

D. Use Restrictions, Permitted and Conditionally Permitted Uses in Airport Zones

(1) Applicability

a. General Rule

This section's land use compatibility standards shall apply to all properties located in a corresponding airport zone.

b. Applicability of Regulations to Properties Located in More than One Airport Zone

If a single parcel is located in more than one zone, the applicable zone use restrictions shall apply only to the portion of the property located in that zone. For example, if a property under single ownership is located half in the Conical Zone and half in Horizontal Zone, the half located in the Conical Zone is subject to the user restrictions applicable to the Conical Zone, and the half located in the Horizontal Zone is subject to the applicable Horizontal Zone use restrictions.

(2) Use Restrictions

Subject at all times to the height restrictions set for in Section 6.2 and subject to the general performance standards and waste disposal facility siting standards contained in this Section 6.3(B), areas in airport zones shall comply with the following use restrictions and permitting requirements:

Table 7-A

Use	Primary	Transitional	Horizontal	Conical	Approach
Accessory Structure, ≤ 1,500 sq. ft	-	A	A	P	A
Agricultural service establishment	-	A	A	A	A
Agricultural structure	-	-	A	P	A
Agricultural use	-	A	P	P	A
Assembly plant (light manufacturing	-	-	C	P	C
Camp	-	-	P	P	-
Cemetery	-	-	P	P	C
Church	-	-	C	P	-
Club, lodge or social hall	-	-	C	P	-
College, University or School	-	-	C	P	-
Conference or convention center	-	-	C	P	-
Single, Two, Multi-Family Dwelling	-	-	A	P	C
Golf Course and country club	-	-	A	P	A
Hospital or clinic	-	-	-	P	-
Hotel, motel, lodge	-	-	A	P	C
Kennel	-	-	P	P	A
Large sale retail business	-	-	P	P	C
Livestock facility, ≤ 300AU	-	-	P	P	C
Manufacturing facility (light)	-	A	C	C	-
Mixed Use	-	-	C	P	C
Mortuary	-	A	P	P	C
Nursery, whole sale (only)	-	A	P	P	A
Nursing facility, skilled	-	A	A	P	A
Office building or use, relating to an approved development	-	C	C	P	C
Office , temporary construction	-	C	C	P	C
Storage building and yard	-	C	P	P	C
Park, public	-	A	C	P	-
Pit, mine, or quarry	-	-	-	C	-
Portable classroom	-	-	-	P	-
Post office or mail delivery service	-	-	A	P	A
Power plant	-	-	-	C	-
Professional offices or buildings	-	C	A	P	C
Public or quasi public use	A	A	A	P	A
Research and development facility	-	A	C	P	C
Restaurant	-	A	A	P	A
Restaurant-formula	-	A	A	P	A
Roadside produce stand	-	A	C	P	P
Sanitary landfill, restricted	-	-	-	-	-
School, public, private, vocational	-	-	-	P	-
Soil or water remediation		C	C	P	C
Stable or riding school, commercial	-	C	C	P	C
Swimming pool, private or public	-	-	C	P	C
Temporary living quarters	-	-	C	P	C
Tower, antennae, wind turbine	-	C	C	C	C
Warehouse facility	-	A	C	P	C
Winery	-	-	A	P	C

- = Not Permitted/ Not Compatible

P = Permitted/Compatible

A= Administrative Permit Required in Accordance with Title 3 Section 3.13.01

C= Conditional Use Permit Required in Accordance with Title 3 Section 3.13.03

SECTION 7: AIRPORT MAP

The airport zones are shown on the McCall Municipal Airport Zoning Map, *[YET TO BE COMPLETED]* and the city of McCall, and dated *[INSERT DATE]*. Such Official Airport Zoning Map as may be amended from time to time, and all notations, references, elevations, data, zone boundaries, and other information thereon, shall be and the same is hereby adopted as part of this Ordinance.

SECTION 8: ADMINISTRATION—BOARD OF ADJUSTMENT AND AIRPORT ZONING ADMINISTRATOR

8.1 Airport Zoning Administrator

It shall be the duty of *[INSERT NAME OF APPROPRIATE ZONING OFFICIAL]* referred to herein as the "Airport Zoning Administrator," to administer and enforce the regulations prescribed in this Ordinance. Applications for permits and variances shall be made to the *[INSERT NAME OF APPROPRIATE ZONING OFFICIAL OR DEPARTMENT]* upon a form furnished by them. Permit applications shall be promptly considered and granted or denied by the Airport Zoning Administrator in accordance with the regulations prescribed in this Ordinance. Variance applications shall be transmitted by the *[INSERT NAME OF APPROPRIATE ZONING OFFICIAL OR DEPARTMENT]* for action by the Board of Adjustment, according to Section 11 of this Ordinance.

8.2 Board of Adjustment

A. Establishment (option 1, appoint existing body as the Board of Adjustment)
The *[INSERT EXISTING BODY AS BOARD]* shall serve as the Board of Adjustment for the McCall Airport Zoning Ordinance.

B. Powers
The Board of Adjustment shall have and exercise the following powers:

(1) Hear and decide appeals from any order, requirement, decision, or determination made by the Airport Zoning Administrator in the enforcement of this Ordinance.

(2) Hear and decide special exceptions to the terms of this Ordinance upon which such Board of Adjustment under such regulations may be required to pass.

(3) Hear and decide specific variances.

C. Procedures

(1) The Board of Adjustment shall adopt rules for its governance and procedure in harmony with the provisions of this Ordinance and Idaho Law. Meetings of the Board of Adjustment shall be held at the call of the chairperson and at such other times as the Board of Adjustment may determine. The chairperson, or in his absence the acting chairperson, may administer oaths and compel the attendance of witnesses. All hearings of the Board of Adjustment shall be public. The Board of Adjustment shall keep minutes of its proceedings showing the vote of each member upon each question or, if absent or failing to vote, indicating such fact, and shall keep records of its examinations and other official actions, all of which shall immediately be filed in the office of the Airport Zoning Administrator and shall be a public record.

(2) The Board of Adjustment shall make written findings of facts and conclusions of law giving the facts upon which it acted and its legal conclusions from such facts in reversing, affirming, or modifying any order, requirement, decision, or determination which comes before it under the provisions of this ordinance.

(3) The concurring vote of a majority of the members of the Board of Adjustment shall be sufficient to reverse any order, requirement, decision, or determination of the Zoning Administrator or to decide in favor of the applicant on any matter upon which it is required to pass under this Ordinance, or to effect any variation in this Ordinance.

SECTION 9: TREATMENT OF NONCONFORMING USES AND STRUCTURES

9.1 General Provisions

A. Regulations not retroactive—Nonconformities Allowed to Continue

The regulations prescribed by this Ordinance shall not be construed to require the removal, lowering, or other changes or alteration of any structure or tree not conforming to the regulations as of the effective date of this Ordinance, or otherwise interfere with the continuance of any nonconforming use.

B. Prior Nonconformities Continue

Any nonconformity created under application of a previous airport zoning ordinance shall continue to be a nonconformity under this Ordinance, and shall be subject to this Section 9's limitations, unless the Airport Zoning Administrator finds that the use, tree, structure, or lot complies with the applicable terms of this Ordinance.

C. Completion of Construction of Alteration Allowed

This Ordinance shall not require any change in the construction, alteration, or intended use of any structure, the construction or alteration of which was begun prior to the effective date of this Ordinance, provided that the construction is diligently pursued and completed within two (2) years of the construction or alteration due date.

D. Determination of Nonconformity Status

The burden of establishing that nonconformity lawfully exists is on the land owner, not on the city of McCall.

9.2 Changes in Tenancy or Ownership

Changes of tenancy, ownership, or management of an existing nonconformity are permitted, and in such cases the nonconforming situation continues to be subject to this Section.

9.3 Repairs and Maintenance

Ordinary repairs and normal maintenance required to keep nonconforming uses, structures, and trees in a safe condition shall be permitted. All ordinary repair and normal maintenance shall be subject to this Section's limitations regarding expansion and enlargement of the nonconforming structure or use.

9.4 Enlargement or Expansion

A. Nonconforming Uses

(1) Structure Enlargement

A structure or portion thereof devoted to a nonconforming use shall not be enlarged, extended, constructed, reconstructed, moved, or structurally altered except to change the use of the structure to one permitted in the applicable airport zone.

(2) Expansion of Nonconforming Uses

a. A nonconforming use shall not be extended to any land or portion of property outside of any buildings that was not used for the nonconforming use when the use was legally established, except when such extension is the direct result of an intervening government action.

b. A nonconforming use shall not be enlarged, expanded, or extended to occupy any parts of the building housing such use that were designed or arranged for such use when the use was legally established.

c. The Board of Adjustment may approve an expansion request only if the expansion satisfies the following criteria:

i. The expansion will not interfere with the operation of conforming uses in the same airport zone or surrounding zones; and

ii. The expansion will cause no greater adverse impacts on surrounding properties, including the airport than did the original nonconforming use.

B. Nonconforming Structures

(1) Any enlargement, alteration, or expansion of a nonconforming structure that increases the height of the structure is prohibited unless the Board of Adjustment grants a variance. Expansions of the structure that comply with applicable height standards, or that decrease the height of the structure are permitted and do not require a variance, provided such expansion meets all other applicable standards in this Ordinance.

(2) The Board of Adjustment may approve an expansion request only if the expansion satisfies the following criteria:

a. The expansion will not interfere with the operation of conforming uses in the same airport zone or surrounding zones; and

b. The expansion will cause no greater adverse impacts on surrounding properties, including the operation of aircraft at the airport than did the original nonconforming use.

9.5 Relocation of a Nonconforming Use

No person shall move a nonconforming use within the same parcel or to another parcel unless the use conforms to the use regulations of the applicable airport zone. This provision shall not apply if the relocation of the nonconforming use is the direct result of government action

9.6 Changes in Use

A nonconforming use may only be changed to a new conforming use.

9.7 Accessory Uses

A. No use that is accessory to a principal nonconforming use shall continue after the nonconforming principal use ceases to exist.

B. No additional accessory use, building, or structure that did not exist when the nonconforming use was legally established shall be established on the site of a nonconforming use.

9.8 Nonconforming Uses or Structures Abandoned or Destroyed

A. Abandonment of Nonconforming Uses-Reestablishment Prohibited

(1) Whenever a nonconforming use is discontinued for a period of three hundred and sixty (360) consecutive days, such use shall not thereafter be reestablished and any future use shall comply with this ordinance.

(2) At such time as any nonconforming, individual mobile home existing on a private lot is removed from such lot or is vacated, the use shall be deemed abandoned and shall not thereafter be returned or occupied except in compliance with this Ordinance.

B. Compliance Required After Abandonment or Destruction

(1) Whenever the Zoning Administrator determines that a nonconforming structure or tree has been abandoned under subsection (a) above, or has been torn down, deteriorated, destroyed, or decayed to the extent of greater than fifty (50) percent of its market value and no building permit has been applied for within three hundred and sixty (360) days of when the property is damaged, any subsequent use of occupancy of the land or premises shall be a conforming use or occupancy, and all reconstruction and repair shall comply with the applicable height limit and all other applicable standards stated in this Ordinance.

(2) Whether application is made for a permit under this subsection or not, the Zoning Administrator may order the owner of the abandoned or partially destroyed nonconforming structure, at his own expense, to lower, remove, reconstruct, or equip the same in the manner necessary to conform to the provisions of this Ordinance. In the event the owner of the nonconforming structure shall neglect of refuse to comply with such order for ten (10) days after receipt of written notice of such order, the Zoning Administrator may, by appropriate legal action, proceed to have the abandoned or partially destroyed nonconforming structure lowered, removed, reconstructed or equipped, and assess the cost and expense thereof against the land on which the structure is or was located.

(3) Unless such an assessment is paid within ninety (90) days from the service of notice thereof on the owner of the land, the sum shall bear interest at the rate of eight (8.0) percent per annum from the date the cost and expense is incurred until paid, and shall be collected in the same manner as are general taxes.

SECTION 10: AIRPORT ZONING PERMITS

10.1 Permits Required

The following activities shall not take place on a lot in any airport zone unless an Airport Zoning Permit shall have been granted by the Zoning Administrator:

A. Existing Structure

Except as specifically provided in Section 10.2, no existing structure shall be substantially altered, changed, rebuilt, repaired, or replaced.

B. New Structure

Except as specifically provided in Section 10.2, no structure shall be newly constructed or otherwise established.

C. Nonconforming Structure—General Rule

A nonconforming structure shall not be expanded, extended, or rebuilt. All permit applications for a nonconforming structure under this subsection shall also comply with the regulations stated in Section 9 of this Ordinance, as applicable.

D. Nonconforming Structure—Reconstruction After Damages or Destruction
An airport zoning permit is required to reconstruct a nonconforming structure or tree that has been damaged by fire or other peril, or otherwise deteriorated or decayed, provided the extent of damage is fifty (50) percent or less of the structure's market value, and a building permit was applied for within three hundred and sixty (360) days of when the structure was damaged. If these conditions are met, the damaged nonconforming structure of tree may be repaired or reconstructed to restore the nonconforming structure or tree to its original condition, including the nonconforming feature or dimension. If these are not met, compliance with Section 9 of this Ordinance is required.

E. Nonconforming Tree
No nonconforming tree shall be allowed to grow higher or be altered, repaired, or replanted.

F. Nonconforming Use
No nonconforming use shall be expanded, extended, changed, reestablished after substantial damage or destruction, or converted to another nonconforming use. All permit applications for a nonconforming use under this subsection shall also comply with the regulations stated in Section 9 of this Ordinance, as applicable.

10.2 Submittal Requirements and Decision

A. Each airport zoning permit application shall indicate the purpose for which the permit is desired, and shall contain sufficient detail to permit the Zoning Administrator to determine the application's compliance with this Ordinance's regulations.

B. The Zoning Administrator shall approve and grant an airport zoning permit only upon finding that the permit application complies with all application regulations in this Ordinance, except those for which a variance is approved according to Section 11.

C. The Zoning Administrator shall not grant a permit that would allow the establishment or creation of an airport hazard, or that would permit a nonconforming use, structure, or tree to become a greater hazard to air navigation or safety to persons or property on the ground than it was on the effective date of this Ordinance, as amended, or than it is when the application for the permit is made.

SECTION 11: VARIANCES

11.1 Variances Authorized

Any person desiring to erect or increase the height of any structure, permit the growth of any tree, or use his property not in accordance with the regulations stated in this Ordinance, may apply to the Board of Adjustment for a variance from such regulations.

11.2 Referral to ID/DOT

The Board of Adjustment may refer a variance application to the ID/DOT, Office of Aeronautics, for the Department's review, comments, and recommendation prior to the public hearing on the variance application.

11.3 Variance Requests Process

Reference McCall Code Title 3 Section 3.13.02 through 3.13.026

SECTION 12: ALLOWANCE FOR HAZARD MARKINGS AND LIGHTING

12.1 Nonconforming Uses

The owner of any nonconforming structure or tree is hereby required to permit the installation, operation, and maintenance thereon of such markers and lights, as shall be deemed necessary by the Zoning Administrator, to indicate to the operators of aircraft in the vicinity of the airport the presence of such airport hazards. Such markers and lights shall be installed, operated, and maintained at the expense of the City of McCall.

12.2 Permits and Variances

In the grant of a variance or permit, the Board of Adjustment or Zoning Administrator may require the owner of the structure or tree in question, at his own expense, to install, operate, and maintain thereon such markers and lights as may be necessary to indicate to pilots the presence of an airport hazard. The decision-making body may impose such a condition if it finds that hazard markings and lighting is advisable to further the intent of this Ordinance and is reasonable under the specific circumstances.

SECTION 13: AVIGATION EASEMENTS AND REAL ESTATE DISCLOSURES

13.1 Avigation Easements

The following uses, as a condition of obtaining approval of an airport zoning permit or building permit, shall dedicate an avigation easement to the airport sponsor:

A. New residential, commercial, industrial, institutional or recreational buildings or structures intended for habitation or occupancy by humans or animals, or

B. For expansions of such buildings or structures by the lesser of fifty percent (50%) or one thousand (1,000) square feet.

The avigation easement shall be in a form acceptable to the airport sponsor and shall be signed and recorded in the deed records of the County in which the subject property lies. The avigation easement shall allow unobstructed passage for aircraft and ensure safety and use of the airport for the public. Property owners or their representatives are responsible for providing the recorded instrument prior to issuance of building permits.

13.2 Real Estate Disclosures

The decision-making body may, as a condition of any residential development approval required by this Ordinance, require all residential property owners to disclose the fact of the property's location in an airport zone to all future prospective purchasers of the property. Such disclosure, if required, shall include notice of the potential for adverse noise, overflight, or safety impacts from the property's vicinity to a public airport. See a sample real estate disclosure notice below.

Sample Real Estate Disclosure Notice

NOTICE OF AIRPORT IN VICINITY

This property is presently located in the vicinity of an airport, within what is know as an airport 65 DNL noise contour. This contour demarcates the area where airport noise is significant. For that reason, the property may be subject to some of the annoyances or inconveniences associated with proximity to airport operations (for example: noise, vibration, or odors). Individual sensitivities to those annoyances can vary from person to person. You may wish to consider what airport annoyances, if any, are associated with the property before you complete your purchase and determine whether they are acceptable to you.

SECTION 14: APPEALS

14.1 Right to Appeal

Any person aggrieved, or any taxpayer affected by any decision of the Airport Zoning Administrator made in his administration of this Ordinance, may appeal to the Board of Adjustment. Such appeals may also be made by any governing body of a municipality, county, or airport zoning board alleging that a decision of the Airport Zoning Administrator is an improper application of this Ordinance as it concerns such governing body or board.

14.2 Procedure for Appeals

A. All appeals shall be commenced within thirty (30) days of the Zoning Administrator's decision, by filing with the Zoning Administrator a notice of appeal specifying the grounds for the appeal. The Zoning Administrator shall transmit to the Board of Adjustment all the papers constituting the record upon which the action appealed from was taken. In addition, any person aggrieved, or any taxpayer affected by any decisions of the Zoning Administrator made in the administration of this Ordinance, and who desires to appeal such decision, shall submit an application for a Variance, by certified mail, to the members of the Board of Adjustment.

B. An appeal shall stay all proceedings in furtherance of the action appealed from, unless the Zoning Administrator certifies to the Board of Adjustment after the notice of appeal has been filed with it, that by reason of the facts stated in the certificate a stay would, in the Administrator's opinion, cause imminent peril to life or property. In such case, proceedings shall not be stayed except by order of the Board of Adjustment on notice to the Zoning Administrator and on due cause shown.

C. The Board of Adjustment shall fix a reasonable time for hearing appeals, give public notice and due notice to the parties in interest, and decide the same within a reasonable time. Upon the hearing, any party may appear in person, by agent, or by attorney.

D. The Board of Adjustment may, in conformity with the provisions of this Ordinance, reverse or affirm, in whole or in part, or modify the order, requirement, decision or determination appealed from. The Board may make such order, requirement, decision or determination as may be appropriate under the circumstances and to that end shall have all the powers of the Zoning Administrator.

SECTION 15: JUDICIAL REVIEW

Any person aggrieved, any taxpayer affected by any decision of the Board of Adjustment, or any governing body of a municipality, county, or airport zoning board alleging that a final decision of the Board of Adjustment is illegal, may present to a District Court a verified petition setting forth that the decision or action is illegal, in whole or in part, and specifying the grounds of the illegality. Such petition shall be presented to the court within thirty (30) days after the final decision is filed in the office of the Board of Adjustment. The petitioner must exhaust the remedies provided for in this Ordinance before availing himself of the right to petition a court as provided by this section.

SECTION 16: PENALTIES

Any person who shall construct, establish, substantially change, alter, or repair any existing structure or use, or permit the growth of any tree, in violation of this Ordinance or who, having been granted a permit or variance under the provisions of this Ordinance, shall construct, establish, substantially change, or substantially alter, or repair any existing growth or structure or permit the growth of any tree, contrary to the terms and conditions contained in such permit or variance, shall be guilty of a misdemeanor and shall be punished by a fine of not more than $700, or imprisonment for not more than ninety (90) days, or by both. Each day a violation continues to exist shall constitute a separate offense. The Zoning Administrator may enforce all provisions of this Ordinance through such proceedings for injustice relief and other relief as may be proper under the laws of Idaho and all other applicable law.

SECTION 17: CONFLICTING REGULATIONS

Where there exists a conflict between any of the regulations or limitations prescribed in this Ordinance and any other regulations applicable to the same area, whether the conflict is with respect to the height of structures or trees, the use of land, or any other matter, the more stringent limitation or regulation shall govern and prevail.

SECTION 18: SEVERABILITY

In any case in which the provisions of this Ordinance, although generally reasonable, is held by a court to interfere with the use or enjoyment of a particular structure or parcel of land to such an extent, or to be so onerous in their application to such a structure or parcel of land, as to constitute a taking or deprivation of that property in violation of the constitution of this state or the constitution of the United States, such holding shall not affect the application of this Ordinance as to other structures and parcels of land, and to this end, the provisions of this Ordinance are declared to be severable. Should any section or provision of this Ordinance be declared by the courts to be unconstitutional or invalid, such decision shall not affect the validity of the Ordinance as a whole or any part thereof other than the parts so declared to be unconstitutional or invalid.

SECTION 19: EFFECTIVE DATE

This ordinance shall take effect on the _____ day of _____, 2007.

Passed and adopted after public hearing by the City Council of McCall this _____ day of_____, 2007.

Appendix D

Glossary of Terms

Appendix D

Glossary of Terms Used in Airport Master Planning

ABOVE GROUND LEVEL (AGL): An elevation datum given in feet above ground level.

AIR CARRIER: A person who undertakes directly by lease, or other arrangement, to engage in air transportation. (FAR 1) (Also see Certificated Air Carrier)

AIR CARRIERS: The commercial system of air transportation, consisting of the certificated air carriers, air taxis (including commuters), supplemental air carriers, commercial operators of large aircraft, and air travel clubs. (FAA Census)

AIR ROUTE TRAFFIC CONTROL CENTER (ARTCC): A facility established to provide air traffic control service to aircraft operating on IFR flight plans within controlled airspace, principally during the en route phase of flight. When equipment capabilities and controller workload permit, certain advisory/assistance services may be provided to VFR aircraft. (AIM)

AIR TAXI: A classification of air carriers which directly engage in the air transportation of persons, property, mail, or in any combination of such transportation and which do not directly or indirectly utilize large aircraft (over 30 seats or a maximum payload capacity of more than 7,500 pounds) and do not hold a Certificate of Public Convenience and Necessity or economic authority issued by the Department of Transportation. (Also see commuter air carrier and demand air taxi.) (FAA Census)

AIR TRAFFIC CONTROL (ATC): A service operated by appropriate authority to promote the safe, orderly, and expeditious flow of air traffic. (FAR 1)

AIRCRAFT ACCIDENT: An occurrence associated with the operation of an aircraft which takes place between the time any person boards the aircraft with the intention of flight and all such persons have disembarked, and in which any person suffers death or serious injury, or in which the aircraft receives substantial damage. (NTSB)

AIRCRAFT APPROACH CATEGORY: A grouping of aircraft (Categories A–E) based on 1.3 times their stall speed in their landing configuration at their maximum certificated landing weight. (Airport Design)

AIRCRAFT OPERATION: The airborne movement of aircraft in controlled or non-controlled airport terminal areas and about given en route fixes or at other points where counts can be made. There are two types of operations — local and itinerant. (FAA Stats)

AIRCRAFT PARKING LINE LIMIT (APL): A line established by the airport authorities beyond which no part of a parked aircraft should protrude. (Airport Design)

AIR/FIRE ATTACK BASE: An established on-airport base of operations for the purposes of aerial suppression of large-scale fires by specially-modified aircraft. Typically, such aircraft are operated by the California Department of Forestry and/or the U.S. Forest Service.

AIRPLANE DESIGN GROUP: A grouping of airplanes (Groups I–V) based on wingspan. (Airport Design)

AIRPORT: An area of land or water that is used or intended to be used for the landing and takeoff of aircraft, and includes its buildings and facilities, if any. (FAR 1)

AIRPORT ELEVATION: The highest point of an airport's usable runways, measured in feet above mean sea level. (AIM)

AIRPORT HAZARD: Any structure or natural object located on or in the vicinity of a public airport, or any use of land near such airport, that obstructs the airspace required for the flight of aircraft in landing or taking off at the airport or is otherwise hazardous to aircraft landing, taking off, or taxiing at the airport. (Airport Design)

AIRPORT LAND USE COMMISSION (ALUC): A commission established in accordance with the California State Aeronautics Act in each county having an airport operated for the benefit of the general public. The purpose of each ALUC is "to assist local agencies in ensuring compatibility land uses in the vicinity of all new airports and in the vicinity of existing airports to the extent that the land in the vicinity of those airports is not already devoted to incompatible uses." An ALUC need not be created if an alternative process, as specified by the statutes, is established to accomplish the same purpose. (California Public Utilities Code, Section 21670 et seq.)

AIRPORT LAYOUT PLAN (ALP): A scale drawing of existing and proposed airport facilities, their location on the airport, and the pertinent clearance and dimensional information required to demonstrate conformance with applicable standards.

AIRPORT REFERENCE CODE (ARC): A coding system used to relate airport design criteria to the operational and physical characteristics of the airplanes intended to operate at the airport. (Airport Design)

AIRPORT REFERENCE POINT (ARP): A point established on an airport, having equal relationship to all existing and proposed landing and takeoff areas, and used to geographically locate the airport and for other planning purposes. (Airport Design)

AIRPORT TRAFFIC CONTROL TOWER (ATCT): A terminal facility that uses air/ground communications, visual signaling, and other devices to provide ATC services to aircraft operating in the vicinity of an airport or on the movement area. (AIM)

AIRWAY/FEDERAL AIRWAY: A Class E airspace area established in the form of a corridor, the centerline of which is defined by radio navigational aids. (AIM)

ALERT AREA: A special use airspace which may contain a high volume of pilot training activities or an unusual type of aerial activity, neither of which is hazardous to aircraft. (AIM)

APPROACH LIGHT SYSTEM (ALS): An airport lighting system which provides visual guidance to landing aircraft by radiating light beams in a directional pattern by which the pilot aligns the aircraft with the extended runway centerline during a final approach to landing. Among the specific types of systems are:

- **LDIN—**Lead-in Light System.
- **MALSR—**Medium-intensity Approach Light System with Runway Alignment Indicator Lights.
- **ODALS—**Omnidirectional Approach Light System, a combination of LDIN and REILS.
- **SSALR—**Simplified Short Approach Light System with Runway Alignment Indicator Lights. (AIM)

APPROACH SPEED: The recommended speed contained in aircraft manuals used by pilots when making an approach to landing. This speed will vary for different segments of an approach as well as for aircraft weight and configuration. (AIM)

AUTOMATED WEATHER OBSERVING SYSTEM (AWOS): Airport electronic equipment which automatically measures meteorological parameters, reduces and analyzes the data via computer, and broadcasts weather information which can be received on aircraft radios in some applications, via telephone.

AUTOMATIC DIRECTION FINDER (ADF): An aircraft radio navigation system which senses and indicates the direction to a L/MF nondirectional radio beacon (NDB) ground transmitter. (AIM)

AUTOMATIC TERMINAL INFORMATION SERVICE (ATIS): The continuous broadcast of recorded non-control information in selected terminal areas. (AIM)

BACK COURSE APPROACH: A non-precision instrument approach utilizing the rearward projection of the ILS localizer beam.

BALANCED FIELD LENGTH: The runway length at which the distance required for a given aircraft to abort a takeoff and stop on the runway (accelerate-stop distance) equals the distance required to continue the takeoff and reach a height of 35 feet above the runway end (accelerate-go distance).

BASED AIRCRAFT: Aircraft stationed at an airport on a long-term basis.

BUILDING RESTRICTION LINE (BRL): A line which identifies suitable building area locations on airports.

CEILING: Height above the earth's surface to the lowest layer of clouds or obscuring phenomena that is reported as "broken", "overcast", or "obscuration" and is not classified as "thin" or "partial". (AIM)

CERTIFICATED ROUTE AIR CARRIER: An air carrier holding a Certificate of Public Convenience and Necessity issued by the Department of Transportation authorizing the performance of scheduled service over specified routes, and a limited amount of nonscheduled service. (FAA Census)

CIRCLING APPROACH/CIRCLE-TO-LAND MANEUVER: A maneuver initiated by the pilot to align the aircraft with a runway for landing when a straight-in landing from an instrument approach is not possible or is not desirable. (AIM)

COMMERCIAL OPERATOR: A person who, for compensation or hire, engages in the carriage by aircraft in air commerce of persons or property, other than as an air carrier. (FAR 1)

COMPASS LOCATOR: A low power, low or medium frequency (L/MF) radio beacon installed at the site of the outer or middle marker of an instrument landing system (ILS). (AIM)

COMPASS ROSE: A circle, graduated in degrees, printed on some charts or marked on the ground at an airport. It is used as a reference to either true or magnetic direction. (AIM)

COMMUNITY NOISE EQUIVALENT LEVEL (CNEL): The noise rating adopted by the State of California for measurement of airport noise. It represents the average daytime noise level during a 24-hour day, measured in decibels and adjusted to an equivalent level to account for the lower tolerance of people to noise during evening and nighttime periods.

COMMUTER AIR CARRIER: An air taxi operator which performs at least five round trips per week between two or more points and publishes flight schedules which specify the times, days of the week and places between which such flights are performed. (FAA Census)

CONTROLLED AIRSPACE: A generic term that covers the different classifications of airspace (Class A, Class B, Class C, Class D and Class E airspace) and defines dimensions within which air traffic control service is provided to IFR flights and to VFR flights in accordance with the airspace classification. Controlled airspace in the United States is designated as follows:

- **Class A—**Generally, that airspace from 18,000 feet MSL up to and including 60,000 feet MSL (Flight Level 600), including the airspace overlying the waters within 12 nautical miles of the coast of the 48 contiguous states and Alaska. Unless otherwise authorized, all persons must operate their aircraft under IFR.

- **Class B—**Generally, that airspace from the surface to 10,000 feet MSL surrounding the nation's busiest airports in terms of airport operations or passenger enplanements. The configuration of each Class B airspace area is individually tailored and consists of a surface area and two or more layers (some Class B airspaces areas resemble upside-down wedding cakes), and is designed to contain all published instrument procedures once an aircraft enters the airspace. An ATC clearance is required for all aircraft to operate in the area, and all aircraft that are so cleared receive separation services within the airspace. The cloud clearance requirement for VFR operations is "clear of clouds".
- **Class C—**Generally, that airspace from the surface to 4,000 feet above the airport elevation (charted in MSL) surrounding those airports that have an operational control tower, are serviced by radar approach control, and that have a certain number of IFR operations or passenger enplanements. Although the configuration of each Class C airspace area is individually tailored, the airspace usually consists of a surface area with a 5 nm radius, and an outer area with a 10 nm radius that extends from 1,200 feet to 4,000 feet above the airport elevation. Each person must establish two-way radio communications with the ATC facility providing air traffic services prior to entering the airspace and thereafter maintain those communications while within the airspace. VFR aircraft are only separated from IFR aircraft within the airspace.
- **Class D—**Generally, that airspace from the surface to 2,500 feet above the airport elevation (chartered in MSL) surrounding those airports that have an operational control tower. The configuration of each Class D airspace area is individually tailored and when instrument procedures are published, the airspace will normally be designed to contain the procedures. Arrival extensions for instrument approach procedures may be Class D or Class E airspace. Unless otherwise authorized, each person must establish two-way radio communications with the ATC facility providing air traffic services prior to entering the airspace and thereafter maintain those communications while in the airspace. No separation services are provided to VFR aircraft.
- **Class E—**Generally, if the airspace is not Class A, Class B, Class C, or Class D, and it is controlled airspace, it is Class E airspace. Class E airspace extends upward from either the surface or a designated altitude to the overlying or adjacent controlled airspace. When designated as a surface area, the airspace will be configured to contain all instrument procedures. Also in this class are Federal airways, airspace beginning at either 700 or 1,200 feet AGL used to transition to/from the terminal or en route environment, en route domestic, and offshore airspace areas designated below 18,000 feet MSL. Unless designated at a lower altitude, Class E airspace begins at 14,500 MSL over the United States, including that airspace overlying the waters within 12 nautical miles of the coast of the 48 contiguous States and Alaska. Class E airspace does not include the airspace 18,000 feet MSL or above.

DEMAND AIR TAXI: Use of an aircraft operating under Federal Aviation Regulations, Part 135, passenger and cargo operations, including charter and excluding commuter air carrier. (FAA Census)

DISPLACED THRESHOLD: A threshold that is located at a point on the runway other than the designated beginning of the runway. (AIM)

DISTANCE MEASURING EQUIPMENT (DME): Equipment (airborne and ground) used to measure, in nautical miles, the slant range distance of an aircraft from the DME navigational aid. (AIM)

FAR PART 77: The part of the Federal Aviation Regulations that deals with objects affecting navigable airspace.

FAR PART 77 SURFACES: Imaginary surfaces established with relation to each runway of an airport. There are five types of surfaces: (1) primary; (2) approach; (3) transitional; (4) horizontal; and (5) conical.

FEDERAL AVIATION ADMINISTRATION (FAA): The United States government agency that is responsible for insuring the safe and efficient use of the nation's airspace.

FIXED BASE OPERATOR (FBO): A business operating at an airport that provides aircraft services to the general public, including but not limited to sale of fuel and oil; aircraft sales, rental, maintenance, and repair; parking and tiedown or storage of aircraft; flight training; air taxi/charter operations; and specialty

services, such as instrument and avionics maintenance, painting, overhaul, aerial application, aerial photography, aerial hoists, or pipeline patrol.

FLIGHT SERVICE STATION (FSS): FAA facilities which provide pilot briefings on weather, airports, altitudes, routes, and other flight planning information.

FRACTIONAL OWNERSHIP: A company or individual buys, or leases, a fractional interest in one aircraft just as they might acquire a partial interest in one condo unit. They can use their own aircraft or another similar or identical aircraft a certain number of hours or days per year. The economics of each situation differs depending on the number of people who will use the aircraft, the value of their time to the company, and the dollars saved in airline tickets, hotels, etc.

GENERAL AVIATION: That portion of civil aviation which encompasses all facets of aviation except air carriers. (FAA Stats)

GENERIC VISUAL GLIDE SLOPE INDICATOR (GVGI): A generic term for the group of airport visual landing aids which includes Visual Approach Slope Indicators (VASI), Precision Approach Path Indicators (PAPI), and Pulsed Light Approach Slope Indicators (PLASI). When FAA funding pays for this equipment, whichever type receives the lowest bid price will be installed unless the airport owner wishes to pay the difference for a more expensive unit.

GLIDE SLOPE: An electronic signal radiated by a component of an ILS to provide descent path guidance to approaching aircraft.

GLOBAL POSITIONING SYSTEM (GPS): A relatively new navigational system which utilizes a network of satellites to determine a positional fix almost anywhere on or above the earth. Developed and operated by the U.S. Department of Defense, GPS has been made available to the civilian sector for surface, marine, and aerial navigational use. For aviation purposes, the current form of GPS guidance provides en route aerial navigation and selected types of nonprecision instrument approaches. Eventual application of GPS as the principal system of navigational guidance throughout the world is anticipated.

HELIPAD: A small, designated area, usually with a prepared surface, on a heliport, airport, landing/takeoff area, apron/ramp, or movement area used for takeoff, landing, or parking of helicopters. (AIM)

INSTRUMENT APPROACH PROCEDURE: A series of predetermined maneuvers for the orderly transfer of an aircraft under instrument flight conditions from the beginning of the initial approach to a landing or to a point from which a landing may be made visually. It is prescribed and approved for a specific airport by competent authority. (AIM)

INSTRUMENT FLIGHT RULES (IFR): Rules governing the procedures for conducting instrument flight. Also term used by pilots and controllers to indicate a type of flight plan. (AIM)

INSTRUMENT LANDING SYSTEM (ILS): A precision instrument approach system which normally consists of the following electronic components and visual aids: (1) Localizer; (2) Glide Slope; (3) Outer Marker; (4) Middle Marker; (5) Approach Lights. (AIM)

INSTRUMENT OPERATION: An aircraft operation in accordance with an IFR flight plan or an operation where IFR separation between aircraft is provided by a terminal control facility. (FAA ATA)

INSTRUMENT RUNWAY: A runway equipped with electronic and visual navigation aids for which a precision or non-precision approach procedure having straight-in landing minimums has been approved. (AIM)

ITINERANT OPERATION: An arrival or departure performed by an aircraft from or to a point beyond the local airport area.

LARGE AIRCRAFT: An aircraft of more than 12,500 pounds maximum certificated takeoff weight. (FAR 1)

LIMITED REMOTE COMMUNICATIONS OUTLET (LRCO): An unmanned, remote air/ground communications facility which may be associated with a VOR. It is capable only of receiving communications and relies on a VOR or a remote transmitter for full capability.

LOCALIZER (LOC): The component of an ILS which provides course guidance to the runway. (AIM)

LOCAL OPERATION: An arrival or departure performed by an aircraft: (1) operating in the traffic pattern, (2) known to be departing or arriving from flight in local practice areas, or (3) executing practice instrument approaches at the airport. (FAA ATA)

LORAN: An electronic ground-based navigational system established primarily for marine use but used extensively for VFR and limited IFR air navigation.

MARKER BEACON (MB): The component of an ILS which informs pilots, both aurally and visually, that they are at a significant point on the approach course.

MEAN SEA LEVEL (MSL): An elevation datum given in feet from mean sea level.

MEDIUM-INTENSITY APPROACH LIGHTING SYSTEM (MALS): The MALS is a configuration of steady-burning lights arranged symmetrically about and along the extended runway centerline. MALS may also be installed with sequenced flashers — in this case, the system is referred to as MALSF.

MILITARY OPERATIONS AREA (MOA): A type of special use airspace of defined vertical and lateral dimensions established outside of Class A airspace to separate/segregate certain military activities from IFR traffic and to identify for VFR traffic where these activities are conducted. (AIM)

MINIMUM DESCENT ALTITUDE (MDA): The lowest altitude, expressed in feet above mean sea level, to which descent is authorized on final approach or during circle-to-land maneuvering in execution of a standard instrument approach procedure where no electronic glide slope is provided. (FAR 1)

MISSED APPROACH: A maneuver conducted by a pilot when an instrument approach cannot be completed to a landing. (AIM)

NAVIGATIONAL AID/NAVAID: Any visual or electronic device airborne or on the surface which provides point-to-point guidance information or position data to aircraft in flight. (AIM)

NONDIRECTIONAL BEACON (NDB): A 4 MF or UHF radio beacon transmitting nondirectional signals whereby the pilot of an aircraft equipped with direction finding equipment can determine his bearing to or from the radio beacon and "home" on or track to or from the station. (AIM)

NONPRECISION APPROACH PROCEDURE: A standard instrument approach procedure in which no electronic glide slope is provided. (FAR 1)

NONPRECISION INSTRUMENT RUNWAY: A runway with an instrument approach procedure utilizing air navigation facilities, with only horizontal guidance, or area-type navigation equipment for which a straight-in nonprecision instrument approach procedure has been approved or planned, and no precision approach facility or procedure is planned. (Airport Design)

OBJECT FREE AREA (OFA): A surface surrounding runways, taxiways, and taxilanes which should be clear of parked airplanes and objects except for objects that need to be located in the OFA for air navigation or aircraft ground maneuvering purposes. (Airport Design)

OBSTACLE: An existing object, object of natural growth, or terrain at a fixed geographical location, or which may be expected at a fixed location within a prescribed area, with reference to which vertical clearance is or must be provided during flight operation. (AIM)

OBSTACLE FREE ZONE (OFZ): A defined volume of airspace above and adjacent to a runway and its approach lighting system if one exists, free of all fixed objects except FAA-approved frangible aeronautical equipment and clear of vehicles and aircraft in the proximity of an airplane conducting an approach, missed approach, landing, takeoff, or departure.

OBSTRUCTION: An object/obstacle, including a mobile object, exceeding the obstruction standards specified in FAR Part 77, Subpart C. (AIM)

OUTER MARKER: A marker beacon at or near the glide slope intercept position of an ILS approach. (AIM)

PRECISION APPROACH PATH INDICATOR (PAPI): An airport visual landing aid similar to a VASI, but which has light units installed in a single row rather than two rows.

PRECISION APPROACH PROCEDURE: A standard instrument approach procedure in which an electronic glide slope is provided, such as an ILS or PAR. (FAR 1)

PRECISION INSTRUMENT RUNWAY: A runway with an instrument approach procedure utilizing an instrument landing system (ILS), microwave landing system (MLS), or precision approach radar (PAR). (Airport Design)

RELOCATED THRESHOLD: The portion of pavement behind a relocated threshold that is not available for takeoff and landing. It may be available for taxiing and aircraft. (Airport Design)

REMOTE COMMUNICATIONS AIR/GROUND FACILITY (RCAG): An unmanned VHF/UHF transmitter/receiver facility which is used to expand ARTCC air/ground communications coverage and to facilitate direct contact between pilots and controllers. (AIM)

REMOTE COMMUNICATIONS OUTLET (RCO) AND REMOTE TRANSMITTER/ RECEIVER (RTR): An unmanned communications facility remotely controlled by air traffic personnel. RCO's serve FSS's. RTR's serve terminal ATC facilities. (AIM)

RESTRICTED AREA: Designated airspace within which the flight of aircraft, while not wholly prohibited, is subject to restriction. (FAR 1)

RUNWAY CLEAR ZONE: A term previously used to describe the runway protection zone.

RUNWAY EDGE LIGHTS: Lights used to define the lateral limits of a runway. Specific types include:

- **HIRL—**High-Intensity Runway Lights.
- **MIRL—**Medium-Intensity Runway Lights.

RUNWAY END IDENTIFIER LIGHTS (REIL): Two synchronized flashing lights, one on each side of the runway threshold, which provide a pilot with a rapid and positive visual identification of the approach end of a particular runway. (AIM)

RUNWAY PROTECTION ZONE (RPZ): A trapezoidal shaped area at the end of a runway, the function of which is to enhance the protection of people and property on the ground through airport owner control of the land. The RPZ usually begins at the end of each primary surface and is centered upon the extended runway centerline. (Airport Design)

RUNWAY SAFETY AREA (RSA): A defined surface surrounding the runway prepared or suitable for reducing the risk of damage to airplanes in the even of an undershoot, overshoot, or excursion from the runway. (Airport Design)

SMALL AIRCRAFT: An aircraft of 12,500 pounds or less maximum certificated takeoff weight. (FAR 1)

SPECIAL USE AIRSPACE: Airspace of defined horizontal and vertical dimensions identified by an area on the surface of the earth wherein activities must be confined because of their nature and/or wherein limitations may be imposed upon aircraft operations that are not a part of those activities. (AIM)

STANDARD INSTRUMENT DEPARTURE (SID): A preplanned instrument flight rules (IFR) air traffic control departure procedure printed for pilot use in graphic and/or textual form. SID's provide transition from the terminal to the appropriate en route structure. (AIM)

STANDARD TERMINAL ARRIVAL ROUTE (STAR): A preplanned instrument flight rule (IFR) air traffic control arrival route published for pilot use in graphic and/or textual form. STARs provide transition from the en route structure to an outer fix or an instrument approach fix/arrival waypoint in the terminal area. (AIM)

STOPWAY: An area beyond the takeoff runway, no less wide than the runway and centered upon the extended centerline of the runway, able to support the airplane during an aborted takeoff, without causing structural damage to the airplane, and designated by the airport authorities for use in decelerating the airplane during an aborted takeoff. (FAR 1)

STRAIGHT-IN INSTRUMENT APPROACH — IFR: An instrument approach wherein final approach is begun without first having executed a procedure turn; it is not necessarily completed with a straight-in landing or made to straight-in landing weather minimums. (AIM)

TAXILANE: The portion of the aircraft parking area used for access between taxiways, aircraft parking positions, hangars, storage facilities, etc. (Airport Design)

TAXIWAY: A defined path, from one part of an airport to another, selected or prepared for the taxiing of aircraft. (Airport Design)

TERMINAL INSTRUMENT PROCEDURES (TERPS): Procedures for instrument approach and departure of aircraft to and from civil and military airports. There are four types of terminal instrument procedures: precision approach, nonprecision approach, circling, and departure.

TERMINAL RADAR SERVICE AREA (TRSA): Airspace surrounding designated airports wherein ATC provides radar vectoring, sequencing, and separation on a full-time basis for all IFR and participating VFR aircraft. (AIM)

THRESHOLD: The beginning of that portion of the runway usable for landing. (AIM)

TOUCH-AND-GO: An operation by an aircraft that lands and departs on a runway without stopping or exiting the runway. A touch-and-go is defined as two operations. (AIM)

TRAFFIC PATTERN: The traffic flow that is prescribed for aircraft landing at, taxiing on, or taking off from an airport. The components of a typical traffic pattern are upwind leg, crosswind leg, downwind leg, base leg, and final approach. (AIM)

TRANSIENT AIRCRAFT: Aircraft not based at the airport.

TRANSMISSOMETER: An apparatus used to determine visibility by measuring the transmission of light through the atmosphere. (AIM)

UNCONTROLLED AIRSPACE: Now known as Class G airspace. Class G airspace is that portion of the airspace that has not been designated as Class A, Class B, Class C, Class D, and Class E airspace.

UNICOM (Aeronautical Advisory Station): A nongovernment air/ground radio communication facility which may provide airport information at certain airports. (AIM)

VERY-HIGH-FREQUENCY OMNIDIRECTIONAL RANGE (VOR): The standard navigational aid used throughout the airway system to provide bearing information to aircraft. When combined with Distance

Measuring Equipment (DME) or Tactical Air Navigation (TACAN) the facility, called VOR-DME or VORTAC, provides distance as well as bearing information.

VISUAL APPROACH SLOPE INDICATOR (VASI): An airport landing aid which provides a pilot with visual descent (approach slope) guidance while on approach to landing. Also see PAPI.

VISUAL FLIGHT RULES (VFR): Rules that govern the procedures for conducting flight under visual conditions. The term "VFR" is also used by pilots and controllers to indicate type of flight plan. (AIM)

VISUAL GLIDE SLOPE INDICATOR (VGSI): A generic term for the group of airport visual landing aids which includes Visual Approach Slope Indicators (VASI), Precision Approach Path Indicators (PAPI), and Pulsed Light Approach Slope Indicators (PLASI). When FAA funding pays for this equipment, whichever type receives the lowest bid price will be installed unless the airport owner wishes to pay the difference for a more expensive unit.

VISUAL RUNWAY: A runway intended solely for the operation of aircraft using visual approach procedures, with no straight-in instrument approach procedure and no instrument designation indicated on an FAA-approved airport layout plan. (Airport Design)

WARNING AREA: A type of special use airspace which may contain hazards to nonparticipating aircraft in international airspace. (AIM)

SOURCES

FAR 1: Federal Aviation Regulations Part 1, Definitions and Abbreviations. (1993)

AIM: Airman's Information Manual, Pilot/Controller Glossary. (1993)

Airport Design: Federal Aviation Administration. *Airport Design*. Advisory Circular 150/5300-13, Change 11. (2007)

FAA ATA: Federal Aviation Administration. *Air Traffic Activity*. (1986)

FAA Census: Federal Aviation Administration. *Census of U.S. Civil Aircraft*. (1986)

FAA Stats: Federal Aviation Administration. *Statistical Handbook of Aviation*. (1984)

NTSB: National Transportation Safety Board. *U.S. NTSB 830-3.* (1989)

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