10-2014

Wiscasset Municipal Airport Master Plan Update

Stantec

Wiscasset Municipal Airport

Wiscasset, Maine

Airport Master Plan Update

AIP No. 3-23-0049-15-2010

October 2014

FINAL

Stantec

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Section 1 - Introduction

This document is an update of the Wiscasset Municipal Airport Master Plan. The Airport is located in Lincoln County, town of Wiscasset, Maine. This update replaces the last update prepared in February 2001. The purpose of this Airport Master Plan Update (AMPU) is to analyze the need for additional aircraft parking space and hangar development. Another purpose is to evaluate the existing runway length to determine if an extension is needed and to analyze existing approaches to both runway ends.

This AMPU project is financed by the Federal Aviation Administration (FAA), the Maine Department of Transportation (MaineDOT), and the town of Wiscasset through a planning grant under the Airport Improvement Program (AIP) of the FAA Reauthorization Act of 1994 (AIP Project No. 3-23-0049-15-2010).

TERMS, ABBREVIATIONS, AND DEFINITIONS

Appendix 1 contains terms, abbreviations, and definitions used throughout this document.

AIRPORT MASTER PLANNING PROCESS

Airport master planning is the systematic means that is used to develop and enhance an airport. An AMPU identifies a logical, organized approach for meeting both existing and future airport demands. The following defines the steps involved in completing an AMPU.

- **Public Involvement** – Public participation is an important function in developing the AMPU. Information provided by the public has the benefit of tailoring the airport-planning process specifically to the needs of the airport and local community. A Planning Advisory Committee (PAC) will be organized by the town of Wiscasset to include volunteers with various perspectives regarding Wiscasset Municipal Airport. The role of this committee is to provide input for the planning process of this AMPU. There will be four PAC meetings at various milestones during this project. A public informational meeting will be held at the end of the AMPU.
- **Inventory of Existing Conditions** – The inventory of existing conditions is a review of existing facilities at the airport. This data is used throughout this AMPU.
- **Aviation Forecasts** – Forecasts of aviation demand are prepared for the short term (zero to five years), intermediate term (six to 10 years), and long term (11 to 20 years). Forecasts are developed to define the magnitude of change that can be reasonably expected to occur over time.
- **Demand/Capacity Analysis and Facility Requirements** – This step in the AMPU will determine the capacity of existing facilities and compare those capacities to the forecasted

demand. This analysis is used to determine facility requirements needed in the short-, intermediate-, and long-term time periods.

- **Alternatives Development** – This step in the AMPU will identify and evaluate reasonable development alternatives that meet the demand levels determined in the facility requirements analysis. Alternatives will be developed that are constructible, environmentally practical, and financially feasible.
- **Environmental Evaluation** – This section will provide an understanding of the environmental requirements associated with recommended projects proposed in the AMPU.
- **Airport Layout Plan (ALP)** – One of the key products of an AMPU is a set of drawings that provides a graphic representation of the proposed projects for the airport. The ALP will identify all proposed projects throughout the long term.
- **Implementation Schedule** – The implementation schedule will identify the proposed development at the airport resulting from recommendations presented in this AMPU. Estimates of development costs by time period are included in the implementation schedule. Environmental requirements associated with recommended projects proposed in the AMPU also are included in the implementation schedule.

PROJECT FOCUS

There are several key areas of focus addressed in this update. One focus of this AMPU is to provide for safe and efficient airport operations. A second focus will address the need for additional hangar space at the airport. The south side of the airport will be evaluated for potential development. Property acquisition also will be addressed. In addition, the existing runway will be analyzed to determine if an extension is needed throughout the planning period. Financial costs for expenses and revenue also will be discussed regarding maximizing revenue.

PRODUCT OF THE MASTER PLANNING PROCESS

The products of this master planning process will include the following deliverables:

- **Technical Report** – The technical report contains the results of the analyses conducted during the development of the master plan. Individual Sections will be produced to facilitate review and coordination with the FAA, MAINEDOT, PAC, and the airport. At the conclusion of the study, the individual Sections will be merged into the final technical report.
- **ALP Drawing Set** – The ALP will contain a graphical representation of the proposed development in the master plan and will be produced as a separate set of full-sized drawings. In addition, the ALP set will be included in this report in reduced form.

COMPREHENSIVE PLAN

The 1998 Comprehensive Plan prepared by the town of Wiscasset identifies goals, policies, and strategies for a 10 year period of time. The goals represent an ideal that the town would like to reach in the future. Policies are more specific directives that should be followed to achieve the goals. Strategies are actions to be taken to implement the policies and achieve the goals.

The town has listed four goals associated with the economy including the following:

- Promote an economic climate that increases job opportunities and overall economic well-being.
- Encourage the development of good jobs in and around Wiscasset as well as a diversified economic base and commercial use of the harbor and airport.
- Move toward a tax base of light industry, commercial, and residential uses.
- Develop tourism, industry, business, homes, and services while protecting the historic and rural character of the town.

The policy for airport/rail under the economy section is to assure that the airport and rail line serve as net financial contributors to the town. Specific strategies for the airport include land for aviation businesses, airport fees, and airport expansion. These strategies are broken down further as follows:

- Land for aviation businesses – Permit development of town-owned land adjacent to the airport runway for aviation-related businesses.
- Airport fees – Increase revenues to the town from the fixed base operator (FBO) through marketing aimed at increasing utilization of the airport.
- Airport expansion – Prepare a zoning standard that will enable future expansion of the airport at a scale appropriate to Wiscasset.

The town has listed two goals associated with natural resources including the following:

- Protect and manage the quality of Wiscasset's water resources including wetlands, Gardiner Pond, streams, and the Sheepscot River.
- Protect Wiscasset's other natural resources including but not limited to wildlife, fisheries habitat, farm and forest land, and scenic resources.

The town has listed four goals associated with transportation including the following:

- Establish an efficient, safe, and environmentally sensitive road system that supports the community and the economy, while protecting Wiscasset’s key assets.

- Cooperate with neighboring communities on transportation issues that transcend town borders.
- Diversify transportation options.
- Promote a planning program that improves and maintains the town's infrastructure including roads and sidewalks.

The policy for airport under the transportation section is to diversify transportation options. Airport strategies include developing a zoning ordinance that will protect existing and future development of the airport and to planning for and seeking funds to lengthen the runway, building a commuter/freight station near the airport, encouraging aviation service businesses near the airport, increasing hangar space, expand apron, and constructing a new terminal building.[1]

This AMPU will support the goals, policies, and strategies of the Comprehensive Plan to the maximum extent possible.

[1] 1998 Comprehensive Plan, Town of Wiscasset.

Section 3 – Forecasts of Aviation Demand

GENERAL

Forecasts of future levels of aviation activity are the basis for effective decisions in airport planning. These projections are used to determine the need for new or improved facilities. In general, forecasts should be realistic, based upon the latest available data, be supported by information in the study, and provide an adequate justification for airport planning and development. This planning process will eventually result in various facility development recommendations tied to the demand projected within respective forecast periods.

In all likelihood, activity growth will not occur as projected. There undoubtedly will be peaks and valleys over the next 20 years that the planning process depicts in a linear fashion. Therefore, the facility development recommendations may have to be adjusted accordingly. Slower than projected growth may delay or even negate the need for recommendations, especially for those in outlying years. Naturally, the opposite may hold true for faster than projected growth.

This update started with the preparation of a reliable activity baseline, which was accomplished in Section 2. The next step will be a review of factors affecting aviation activity, followed by discussion of other local, regional, and national aviation and related forecasts, and a review of various forecast methodologies. A forecast range will then be developed and compared to other forecasts for reasonableness.

FORECAST ELEMENTS

To establish the demands likely to be placed on Wiscasset Municipal Airport, forecasts will include all relevant aviation demand elements, including both the type and level of aviation activity expected at the airport over the 20-year planning period. The specific activity elements to be forecasted include:

- Based aircraft
- Operations
- Peak activity
- Critical aircraft
- Fuel sales
- ARC and RDC

AVIATION FORECAST PERIODS

Forecasts in this plan were prepared for short-, intermediate-, and long-term periods. The short-term (2014 through 2018) forecasts are used to justify near-term development and support operational planning and environmental improvement programs. Intermediate-term forecasts

(2019-2023) are typically used in planning capital improvements and long-term forecasts (2024-2033 years) are used in general planning.

PREVIOUS AVIATION FORECASTS

Applicable forecasts prepared specifically for Wiscasset Municipal Airport are reviewed in this section. This includes three different forecast sources prepared by the FAA, as well as forecasts from the last master plan. In addition, forecasts from the Maine Aviation System Plan (MASPU) are presented. The primary focus of forecast review will be on general aviation activity (this includes private, corporate, air taxi and charter aircraft and operations).

FAA FORECASTS

Three different forecast sources prepared by the FAA are reviewed in this section. The first is from the annual update of the National Integrated Plan of Airport Systems (NPIAS) prepared earlier this year for the period 2011-2015. This particular document is primarily used as a tool for capital budgeting to determine required funding through the AIP. The second document, FAA Aviation/Aerospace Forecasts 2010-2030, is also updated annually by the FAA and represents a national overview of projected activity levels. It is especially useful in projecting the changes in fleet mix at both commercial service and general aviation airports. The third forecast source prepared by the FAA is the Terminal Area Forecast (TAF). This effort is more site-specific than the other two documents in terms of based aircraft and operations for an individual airport. The FAA sources are briefly discussed below.

NATIONAL PLAN OF INTEGRATED AIRPORT SYSTEMS (NPIAS)

The NPIAS data was compiled in 2009 and is used by the FAA in administering the AIP. The report estimates an increase of 5% over the next five years for AIP eligible infrastructure development for all segments of civil aviation with the exception of large hubs and new airports. The NPIAS supports the goals identified in the FAA Flight Plan for safety and capacity by identifying airport improvements to achieve those goals. It is anticipated that 57% of the development will be used to rehabilitate existing infrastructure and 43% will be used to accommodate growth and travel including more passengers, cargo and activity, and larger aircraft.

General aviation encompasses a diverse range of commercial and recreational uses. General aviation airports are comprised of 84% of the total NPIAS airports and 28% of the total development included in the NPIAS report. Development estimates at general aviation airports increased 17% due to the focus of bringing these airports to the recommended design standards and the expanded eligibility for AIP funding for hangars, fuel facilities, and other items contained in Vision 100-Century of Aviation Reauthorization Act. The availability of non-primary entitlement funding has allowed the inclusion of lower priority items to be funded under the AIP.

The downturn in the economy has dampened prospects for the general aviation industry in the near term; however, the long-term outlook remains favorable. Growth in business aviation demand in the long term will be a direct result of the world economy. The number of general aviation hours flown through the year 2030 is anticipated to increase an average of 2.5% a year.

Total operations in the general aviation market have been declining since 2000 at an annual rate of 3.9%. This decline is attributed to economic conditions and high fuel prices in the later part of the decade.

The general aviation industry started declining in 2008 with the onset of the economic downturn. The weakening became even greater in 2009 with record declines by several measures of activity. United States manufacturers of general aviation aircraft delivered 48.9% fewer aircraft in 2009 than in 2008. This was the second consecutive year of decline in shipments that was preceded by four years of sustained growth. Turbojets and turboprops were down 46.2% and 16.5%, respectively. Single-engine piston deliveries decreased by 56% and multi-engine piston aircraft deliveries decreased by 62.6%.

Over the past several years, the demand for business jet aircraft has grown. This growth has been driven by new product offerings, the introduction of very light jets, and increasing foreign demand. Fractional ownership is considered to be an important factor in determining the growth of business jet operations. Fractional ownership occurs when a corporation or individual purchases an interest in an aircraft and pays a fixed fee for operations and maintenance. Forecasts for very light jets include 400 new aircraft to enter the United States fleet over the next three years with an average of 216 aircraft a year for the balance of the forecast period. Very light jets are able to operate at smaller airports with shorter runways.

Fractional, corporate, and on-demand charter flights have become a practical alternative to travel on commercial flights due to increasing flight delays at some airports and corporate safety/security concerns for corporate staff. Despite the impact of the recession, forecasts for the business jet market anticipate robust growth in the long term and predict business usage of general aviation aircraft will expand at a faster rate than personal/recreational use.

The general aviation fleet is anticipated to increase at an average annual rate of 0.9% over the 21-year forecast period. The turbine-powered fleet is anticipated to increase at an average annual rate of 3% with the turbine jet portion increasing at an annual rate of 4.2%.

The FAA published the final rule for sport aircraft in 2004 which establishes new light-sport aircraft categories and allows aircraft manufacturers to build and sell completed aircraft without obtaining type and production certificates. These aircraft will be built to industry consensus standards, which in turn will reduce development costs and subsequent aircraft acquisition costs. Specific conditions will be placed on the design of the aircraft to limit them to slower and simpler

performance aircraft. This will reduce the training time for new pilots and offer more flexibility in the type of aircraft a pilot will be able to operate. This is viewed by many individuals in the general aviation industry as a revolutionary change in the regulation of recreational aircraft. The FAA anticipates there to be 16,300 of these aircraft in the national fleet by 2030.

Data contained in the NPIAS is based on individual airport master plans and capital improvement plans. State system plans also are used as a data source for the NPIAS.

FAA AEROSPACE FORECASTS

The FAA forecasts the fleet mix and hours flown for single-engine and multi-engine piston aircraft, turboprops, turbojets, rotorcraft, sport, experiment, and other miscellaneous aircraft types such as gliders or balloons. The General Aviation and Air Taxi Activity and Avionics Survey are used as a baseline for estimating fleet size, hours flown, and utilization. The FAA Aerospace Forecasts includes the period from 2009 through 2025 and uses 2007 statistics as it is the latest available from the General Aviation and Air Taxi Activity and Avionics Survey.

Current forecasts assume that business use of general aviation aircraft will increase more rapidly than personal/sport use. The active general aviation fleet is anticipated to increase at an average annual rate of 1.0% over the forecast period. The turbine powered fleet including rotorcraft is anticipated to increase at an average annual rate of 3.2% with the turbine jet fleet increasing at an average annual rate of 4.8%.

The piston powered aircraft is anticipated to increase at an average annual rate of 0.1%; however, this increase is not anticipated until 2013. Single-engine piston aircraft are anticipated to grow at an average annual rate of 0.1% and multi-engine piston aircraft are anticipated to decrease at an average annual rate of 1.0%.

The number of general aviation hours flown is anticipated to increase by an average annual rate of 1.8%. This increase reflects increased flying by business and corporate aircraft as well as small annual percentage increases in utilization rates for piston aircraft. Hours flown by turbine aircraft including rotorcraft are anticipated to increase an average annual rate of 3.6% and piston powered aircraft are anticipated to increase at an average annual rate of 0.4%. Jet aircraft are anticipated to increase at an average annual rate of 5.2% resulting mainly from the increasing size of the business jet fleet including increases in the fractional ownership fleet.

The number of active general aviation pilots is anticipated to increase at an average annual rate of 0.5%. The number of student pilots is forecast to increase at an average annual rate of 0.4%. It is anticipated that a total of 20,600 sport pilots will be certified by the end of the forecast period. The number of private pilots is anticipated to remain steady over the forecast period.

TERMINAL AIRPORT FORECASTS

The FAA TAF for Wiscasset Municipal Airport was reviewed and determined to be of little consequence to this update. The data provided is minimal and would have no impact on forecasted changes.

MAINE SYSTEMS PLAN FORECASTS

MaineDOT completed the MASPU in 2001, which is now 13 years old and out of date and is of no value to this update.

LOCAL AVIATION FORECASTS

The 2001 AMPU identified a 3.6% annual growth rate for based aircraft and a 2.1% annual growth rate for operations. As illustrated in Figure 3.1, based aircraft actually increased by about 48% during the period from 2000 through 2013, or 3.7% per year (31 to 48 aircraft). During the same period, operations increased by 44%, or 3.4% per year (7,500 to 10,800). In both aircraft and operations, the airport exceeded the 2001 projections. During the same period, fuel sales at KIWI increased by 112%, from 19,600 to 41,600 gallons (see Figure 2.11).

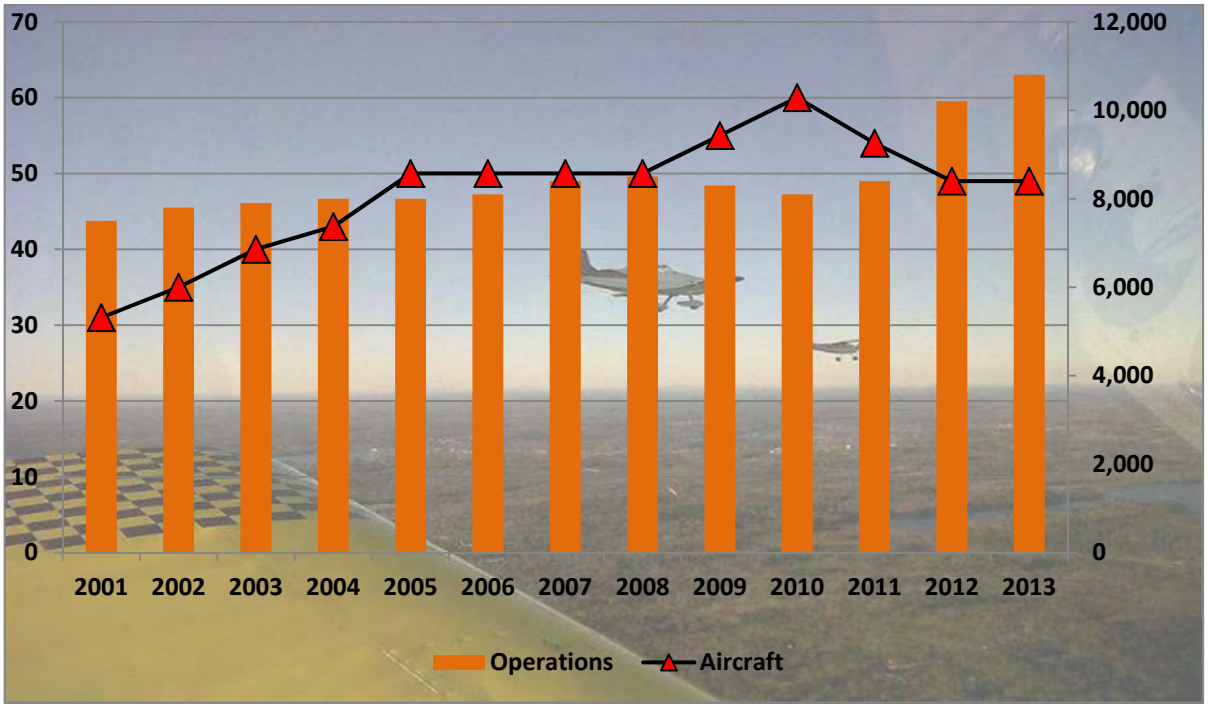


Figure 3.1 – Growth Rate of Based Aircraft and Operations (2001-2013)

FORECAST METHODOLOGY

The forecasts in this study are prepared using a combination of trend analysis and professional judgment based on the history of the airport and trends in general aviation. The base year for these forecasts is 2013 as this is the last full year data was available. Historical aviation trends over time will be used to project future aviation activity levels.

WISCASSET MUNICIPAL AIRPORT FORECASTS

Historic performance for Wiscasset Municipal Airport during the past 10 years is important for determining general aviation activity in the future. Contrary to national trends, the trend since the last update in 2001 through 2013 has been one of growth in terms of based aircraft, operations, and airport development. As noted earlier, based aircraft have increased in numbers from a seasonally adjusted 31 in 2001 to 48 at the end of 2013. Operations increased by 44% from 7,500 in 2001 to 10,800 in 2013. And most notably, and as a reflection of the number of aircraft and operations, the number of hangar units has increased from four in 2001 to 32 at the end of 2013, with one additional hangar construction starting in the spring of 2014.

Rising fuel prices and aircraft costs over the past decade have reduced the number of recreational activity nationwide, but not at Wiscasset. As discussed in Section 2, fuel sales have steadily increased. Also as discussed in Section 2, the population in Lincoln County increased by 2.5% and the medium household income was up by over 23%. Both population and income had a higher growth rate than the state, and the income grew slightly faster than the national average.

The airport was selected in 2010 as the summer home for the Texas Flying Legends Museum, a Houston, Texas based organization. The organization will use the airport during the summer each year, basing a variety of World War II aircraft on the field, with pilot and maintenance crew support. This new opportunity, along with the projected rapid growth of the region is considered to be the key factors in determining forecasts and facility requirements at the airport in the future.

The airport's historic growth and county changes in income and population are positive indicators that the airport should continue to not only flourish, but continue to grow. In addition, the airport has strong community and political support and is well received by the aviation community. All of these factors suggest based aircraft and operations, and all other corresponding factors will continue to grow.

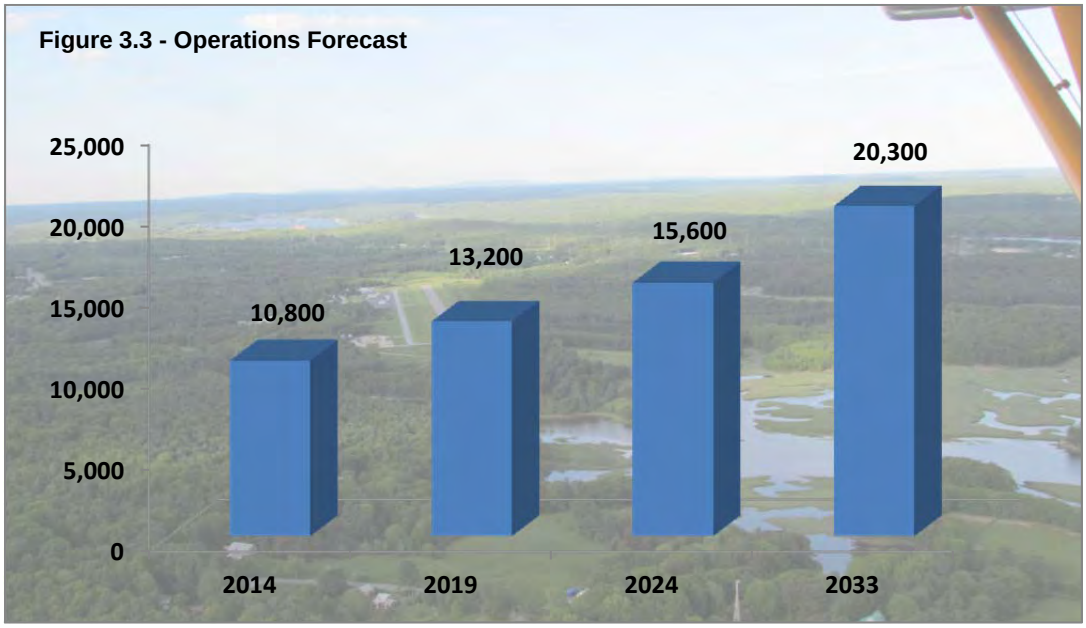
The projected growth rate for Wiscasset over the course of the next 10-20 years is 4.4% per year for based aircraft and operations. The design aircraft may not change appreciably because of the runway length, however it is anticipated that as the business and tourism community expands in the region, in particularly the area between Wiscasset and Boothbay Harbor, the number of air taxi operations will also increase, including the use of small business and private jets.

Based Aircraft Forecasts

The number of based aircraft is expected to reflect seasonal patterns of increased activity in the summer months, reflecting an overall growth from about 48 aircraft (on average today) to as many as 90 aircraft during peak periods in 2033. This change represents an 87% increase over the 20-year period, averaging about 4.4% per year.

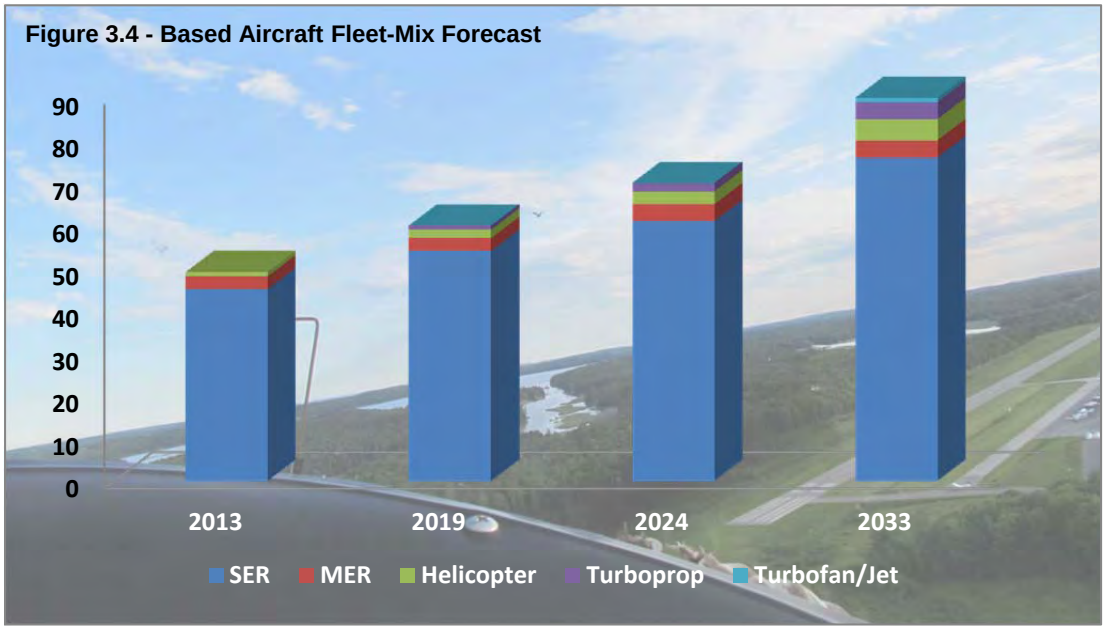
Operations Forecasts

All things being equal, operations should increase at the same rate as based aircraft, about 4.4% per year. However, the volatility of the price of aviation fuel and insurance costs makes this a difficult assessment. As shown in Figure 3.2, the operations to based aircraft (OBA) ratio took a nose dive in the early 2000, leveled off in the latter part of the last decade, and have started showing signs of recovery. The uptick is likely due to the availability of favorable market price of fuel at Wiscasset. There's no reason to believe that this upward trend will continue if the airport continues to offer fuel at below market prices. Thus a 4.4% increase in operations is realistic. This would result in approximately 20,300 operations per year in 2033. Figure 3.3 presents operations forecasts for the next 20 years.



Fleet Mix Forecasts

The existing annually adjusted aircraft fleet mix consists of 92% (45) single engine, 6% (3) multiengine, and 2% (1) helicopter. This ratio is anticipated to change slightly over the next 20 years with the introduction of one or two additional helicopters and several turboprop aircraft. There are no indications that any turbojet/jet aircraft will be added to the based aircraft fleet as long as the runway remains at its current 3,400 foot length. For planning purposes the forecasted fleet mix will reflect the data shown in Figure 3.4.



DESIGN AIRCRAFT

As discussed in Section 2, the current design aircraft is the Beech 200 King Air. Because of the clear local and regional growth, and availability of Jet fuel at Wiscasset, the move upward to larger business jet is inevitable. This is anticipated to slowly change to a small business jet, something similar to the Cessna CJ2 shown in Figure 3.5. The CJ2's dimensions are


Figure 3.5 – Cessna Citation CJ2

- Wingspan: 49'-10"
- Length: 47'-8"
- Height: 14'-0"
- MGTOW: 12,500
- Approach Speed: 118 knots (136 mph)
- Airport Reference Code: B-II

AIRPORT AND RUNWAY REFERENCE CODES

The current ARC is B-II and the RFC for both runway ends is B-II-4000. Even with the anticipated change in the design aircraft, the ARC will remain B-II.

PEAK-HOUR FORECASTS

Peak-hour (PH) operations are calculated to help determine facility requirements such as itinerant aircraft parking and passenger and pilot terminal spatial needs. The months of July and August are typically the busiest period for Wiscasset Municipal Airport.

We know from earlier analysis (Figure 2.5) that the peak month at KIWI is July with 21% of annual operations. Thus calculating the Peak Month Average Day (PMAD) is 1/30th of PM. Peak Hour (PH) is assumed to be 20% of PMAD.

- PM = Total Operations * 21%
- PMAD = PM/30
- PH = PMAD * 20%

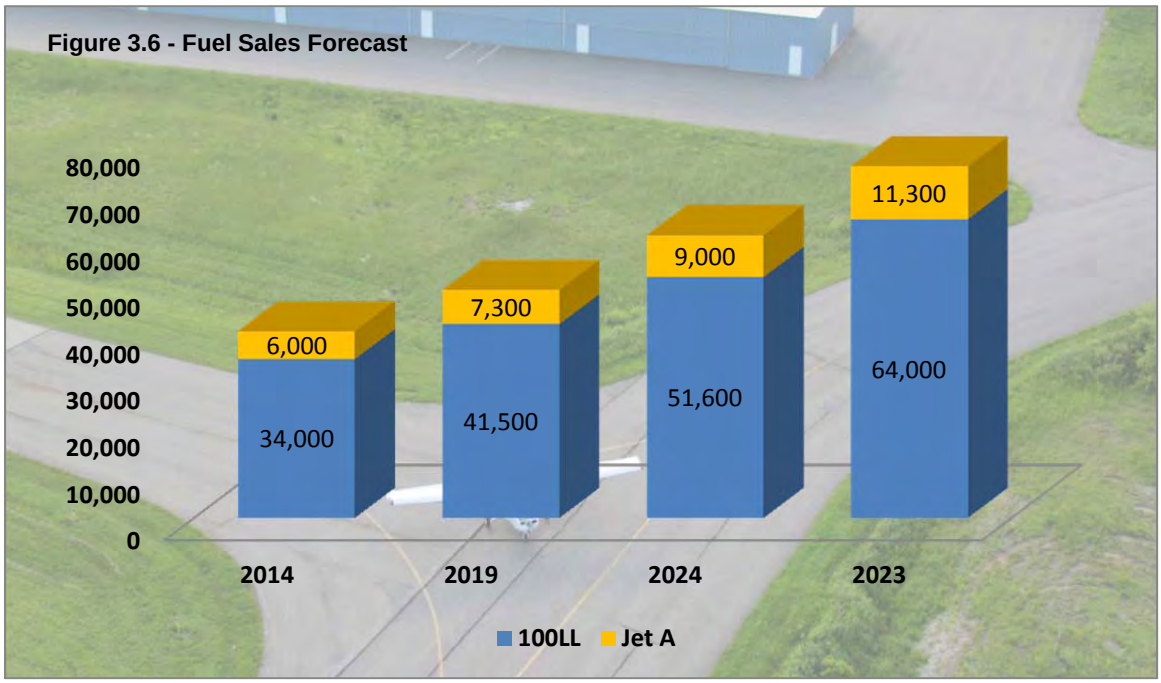
Table 3.1 uses the above calculations to determine the PH forecasts for the next 20 years.

Fuel Sales Forecasts

Forecasts are anticipated to increase at the same rate as based aircraft at an annual rate of 4.4% throughout the 20-year planning period, based off of the average sales during the past two year, which was 41,000 gallons. Of the 41,000 gallons, 15% was Jet A and the remaining 85% was 100LL. The same percentages will be carried forward throughout the planning years. Figure 3.6 identifies the preferred fuel sales forecasts.

Table 3.1 – Peak Hour Forecast

Analysis	2014	2019	2024	2033
Operations	10,800	13,175	15,550	20,300
PM	2,268	2,767	3,266	4,263
PMAD	76	92	109	142
PH	15	18	22	28



Summary

Table 3.2 is a summary of the preferred forecasts for Wiscasset Municipal Airport.

Table 3.2 – Forecast Summary

Element	2014	2019	2024	2033
Design Aircraft	King Air 200	King Air 200	King Air 200	Cessna CJ2
ARC	B-II	B-II B-II B-II		
Based Aircraft				
SER	45	54	61	76
MER	3	3 4 4		
Helicopter	1	2 3 5		
Turboprop	0	1 2 4		
Turbojet/Jet	0	0 0 1		
Total	49	60	69	90
Operations				
Local	5,400	6,600	7,800	10,150
Itinerant	5,400	6,600	7,800	10,150
Total	10,800	13,200	15,600	20,300
Peaking Operations				
PM	2,268	2,767	3,266	4,263
PMAD	76	92	109	142
PH	15	18	22	28
Fuel Sales				
Jet A	6,000	7,300	9,000	11,300
100LL	34,000	41,500	51,000	64,000
Total	40,000	48,800	60,000	75,300

Section 2 – Existing Conditions

GENERAL

The first step in the airport master planning process involves gathering information about the airport and its environment. An inventory of existing conditions provides a foundation for the subsequent Sections in this AMPU.

Information was gathered from several sources, including the following:

- 2001 Wiscasset Municipal Airport Master Plan Update
- Airport Layout Plan, including changes since the last update
- 1993 Airport Property Map, Exhibit A
- Maine Aviation System Plan Update
- Regional transportation plans
- Town of Wiscasset Comprehensive Plan
- FAA Form 5010, Airport Master Record
- FAA activity forecasts
- Local ordinances/maps
- Environmental documentation regarding airport property or the immediate vicinity
- Site visits and interviews with town employees, including the airport manager
- Various documents and information from the airport manager and other sources, including input from the Airport Board, Planning Advisory Committee, and Board of Selectman

The inventory of existing conditions includes information pertaining to location and access, historic airport projects, population and socioeconomic information, airport activity, airspace, protected imaginary surfaces, airside and landside facilities, environmental conditions, and a financial review of current revenue and expenses.

The existing inventory information gathered for this portion of the AMPU, to the extent possible, is current as of November 2014.

HISTORIC ACTIVITY

Table 2.1 on the next page identifies past projects completed at the Wiscasset Municipal Airport. This list provides valuable insight into the types and timing of major capital projects undertaken with federal and in many cases, state funding grants.

Table 2.1 – Airport Capital Improvement and Planning Projects

Year	Project	Grant Number
1985	Airport Master Plan Update	3-23-0049-001-1985
1990	Acquire miscellaneous land	3-23-0049-002-1990
1994	Conduct airport master plan study and remove obstructions	3-23-0049-003-1994
1995	Remove obstructions	3-23-0049-004-1995
1996	Expand apron, improve airport drainage, and construct taxiway	3-23-0049-005-1996
1997	Improve runway safety area	3-23-0049-006-1997
1999	Airport Master Plan Update	3-23-0049-007-1999
2001	Acquire land for taxiway extension	3-23-0049-008-2001
2003	Extend taxiway (design)	3-23-0049-009-2003
2005	Extend taxiway (Phase I)	3-23-0049-010-2005
2006	Extend taxiway (Phase II)	3-23-0049-011-2006
2007	Light obstructions and rehabilitate airport beacons	3-23-0049-012-2007
2009	Purchase snow removal equipment building	3-23-0049-013-2009
2009	Construct snow removal equipment building	3-23-0049-014-2009
2010	Airport Master Plan Update	3-23-0049-015-2010
2013	Environmental Assessment	3-23-0049-016-2013

Source: FAA Grant History Report, FAA New England Airport's Division, July 2013

AIRPORT SETTING

The Wiscasset Municipal Airport (KIWI[2]) is located within the municipal boundaries of the town of Wiscasset, Maine, in the county of Lincoln. The airport is located on Chewonki Neck Road, south of Route 144 and east of U.S. Route 1. KIWI is approximately 50 miles east of Portland and 10 miles east of Bath, Maine and can be accessed by U.S. Route 1 and state highways 27, 144, and 218. The airport is approximately four miles west of the village (central business district). The airport's deeded property, which was acquired over a number of years starting in 1958, covers approximately 257 acres.

[2] KIWI is the international identifier for the airport; IWI is the FAA identifier for domestic purposes.

AIRPORT LAYOUT

Sheet 2 in Appendix 2 shows the existing airport layout plan.

As shown on the current airport layout plan (Appendix 2) and discussed to a limited extent on FAA Form 5010-1, Figure 2.1, the airport consists of a single runway, 7-25, oriented northeast-southwest and a full-length parallel taxiway setback 240 feet from the runway centerline. Airport facilities, which are all located on the airport's north side include a single large aircraft parking apron, laid out with in-pavement tie down anchors, two 12-bay T-hangars, eight privately owned conventional hangars, an aircraft maintenance hangar, a combination terminal building/hangar, and a fairly new snow removal equipment building constructed in 2009. The airport infrastructure and each of these facilities will be discussed in more detail in this report.

LAND OWNERSHIP

As shown on the airport property map (Appendix 2), the airport has 257.36 acres of land deeded as airport property in both fee simple[3] and through seven easements. The vast amount of this property, 246 acres is contiguous and used for both aviation operations and clear areas around the airport. The town does own a small 1.38 acre parcel of land (parcel #15 on Figure 2.4) in neighboring Edgecombe (5 mile east), which was originally purchased and maintained in support of the airport's non-directional radio beacon (NDB). The NDB was decommissioned in 2010 and the FAA issued a land release shortly thereafter. The land remains unused and the NDB equipment and shelter are still on the property. In addition, the airport has control of the following seven easements:

- A 0.14 acre avigation easement[4] (Parcel #14) collocated with the NDB property in Edgecombe (Parcel #13)
- Three separate and collocated avigation easements on the corner of Chewonki Neck Road and Route 144. These include a 5.0 acre, 1.2 acre, and 0.14 acre easements (Parcels #5, #17 and #18 respectively).
- A 0.52 acre hazard beacon easement (Parcel #11) in the town of Woolwich, which contains a single hazard beacon used to illuminate Whale Back Ridge, an obstruction in the FAR Part 77 Horizontal Surface.
- A 2.77 acre avigation easement over the Chewonki Campground (Parcel #12).

[3]The greatest possible estate in land, wherein the owner has the right to use it, exclusively possess it, commit waste upon it, dispose of it by deed or will, and take its fruits.

[4] Avigation easement is an easement or right of overflight in the airspace above or in the vicinity of a particular property. It also includes the right to create such noise or other effects as may result from the lawful operation of aircraft in such airspace and the right to remove any obstructions to such overflight.

U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL AVIATION ADMINISTRATION

AIRPORT MASTER RECORD

PRINT DATE: 12/03/2013
AFD EFF 10/17/2013
Form Approved OMB 2120-0015

>1 ASSOC CITY:	WISCASSET	4 STATE: ME	LOC ID: IWI	FAA SITE NR: 08424 *A	
>2 AIRPORT NAME:	WISCASSET		5 COUNTY: LINCOLN ME		
3 CBD TO AIRPORT (NM): 03 SW		6 REGION/ADO: ANE/NONE	7 SECT AERO CHT: NEW YORK		

GENERAL

10 OWNERSHIP:	PU
>11 OWNER:	TOWN OF WISCASSET
>12 ADDRESS:	51 BATH RD WISCASSET, ME 04578
>13 PHONE NR:	207-882-8200
>14 MANAGER:	ERVIN DECK
>15 ADDRESS:	96 CHEWONKI NECK ROAD, 51 WISCASSET, ME 04578
>16 PHONE NR:	207-882-5475
>17 ATTENDANCE SCHEDULE:	
ALL ALL	0800-1700
18 AIRPORT USE:	PUBLIC
19 ARPT LAT:	43-57-41.1000N ESTIMATED
20 ARPT LONG:	069-42-45.2000W
21 ARPT ELEV:	70.2 SURVEYED
22 ACREAGE:	196
>23 RIGHT TRAFFIC:	25
>24 NON-COMM LANDING:	NO
25 NPIAS/FED AGREEMENTS:	NGY
>26 FAR 139 INDEX:	

SERVICES

>70 FUEL:	100LL A
>71 AIRFRAME RPRS:	MAJOR
>72 PWR PLANT RPRS:	MINOR
>73 BOTTLE OXYGEN:	NONE
>74 BULK OXYGEN:	NONE
75 TSNT STORAGE:	HGR, TIE
76 OTHER SERVICES:	INSTR, RNTL

FACILITIES

>80 ARPT BCN:	CG
>81 ARPT LGT SKED:	SEE RMK
>82 UNICOM:	122.800
>83 WIND INDICATOR:	YES-L
84 SEGMENTED CIRCLE:	YES
85 CONTROL TWR:	NONE
86 FSS:	BANGOR
87 FSS ON ARPT:	NO
88 FSS PHONE NR:	
89 TOLL FREE NR:	1-800-WX-BRIEF

BASED AIRCRAFT

90 SINGLE ENG:	34
91 MULTI ENG:	2
92 JET:	0
TOTAL:	36
93 HELICOPTERS:	1
94 GLIDERS:	0
95 MILITARY:	0
96 ULTRA-LIGHT:	0

OPERATIONS

100 AIR CARRIER:	0
102 AIR TAXI:	306
103 G A LOCAL:	4,274
104 G A ITNRNT:	2,099
105 MILITARY:	45
TOTAL:	6,724
OPERATIONS FOR 12 MONTHS ENDING	08/11/2011

RUNWAY DATA

>30 RUNWAY IDENT:	**07/25**			
>31 LENGTH:	3,397			
>32 WIDTH:	75			
>33 SURF TYPE-COND:	ASPH-G			
>34 SURF TREATMENT:				
35 GROSS WT: SW	22.0			
36 (IN THSDS) DW				
37 DTW				
38 DDTW				
>39 PCN:				
LIGHTING/APCH AIDS				
>40 EDGE INTENSITY:	MED			
>42 RWY MARK TYPE-COND:	NPI - F / NPI - F	- / -	- / -	- / -
>43 VGSI:	P4R / P4L	/	/	/
44 THR CROSSING HGT:	40 / 40	/	/	/
45 VISUAL GLIDE ANGLE:	4.00 / 3.50	/	/	/
>46 CNTRLN-TDZ:	N - N / N - N	- / -	- / -	- / -
>47 RVR-RVV:	- N / - N	- / -	- / -	- / -
>48 REIL:	N / Y	/	/	/
>49 APCH LIGHTS:	/	/	/	/
OBSTRUCTION DATA				
50 FAR 77 CATEGORY:	B(V) / B(V)	/	/	/
>51 DISPLACED THR:	/	/	/	/
>52 CTLG OBSTN:	TREES / TREES	/	/	/
>53 OBSTN MARKED/LGTD:	L /	/	/	/
>54 HGT ABOVE RWY END:	60 / 70	/	/	/
>55 DIST FROM RWY END:	201 / 1,440	/	/	/
>56 CNTRLN OFFSET:	240R / 0B	/	/	/
57 OBSTN CLNC SLOPE:	0:1 / 17:1	/	/	/
58 CLOSE-IN OBSTN:	N / Y	/	/	/
DECLARED DISTANCES				
>60 TAKE OFF RUN AVBL (TORA):	/	/	/	/
>61 TAKE OFF DIST AVBL (TODA):	/	/	/	/
>62 ACLT STOP DIST AVBL (ASDA):	/	/	/	/
>63 LNDG DIST AVBL (LDA):	/	/	/	/

(>) ARPT MGR PLEASE ADVISE FSS IN ITEM 86 WHEN CHANGES OCCUR TO ITEMS PRECEDED BY >

>110 REMARKS:

A 016 207-504-2357 (CELL) - EMERGENCY ONLY.
A 042 RWY 07 MARKINGS FADED.
A 042 RWY 07 1 MARKINGS AND CENTERLINE FADED.
A 042 RWY 25 MARKINGS FADED.
A 058 RWY 25 8 FT TREE, 40 FT OUT, 140 FT LEFT; +2 FT BRUSH AND WEEDS 0-150 FT FM THLD 105-125 FT RIGHT.
A 070 24 HR CREDIT CARD FUEL OPN.
A 081 RWY APT ACTVT MIRL RY 07/25; PAPI RYS 07 & 25; REIL RY 25 - CTAF.
A 110-003 NOISE SENSITIVE AREA SOUTHEAST OFF END OF RY 07. ARPT HAS NOISE ABATEMENT PROCEDURES CTC AMGR 207-882-5475.
A 110-004 DEER AND WILDLIFE ON & INVOF ARPT.

111 INSPECTOR: (C) 112 LAST INSP: 08/11/2011 113 LAST INFO REQ:

Figure 2.1, FAA Master Record, Form 5010-1, dated 12/3/2013.
Source: GCR and Associates.

ACTIVITY

Activity at the airport is collected since the last update to be used to develop forecasts of aviation activity. Based aircraft and operations data was obtained from the *Terminal Area Forecasts*. It should be noted that Wiscasset is a non-towered airport and does not have accurate operational data. Normally, estimating annual flight operations at non-towered general aviation airports such as KIWI is an imprecise exercise subject to a range of multipliers and it's very common to have disparity between operations estimates and the number of operations detected if an actual count is done. However, in the summer of 2013, the airport installed the General Audio Recording Device (GARD). GARD monitors the airport's Unicom frequency (122.8) and records and saves transmissions to a computer hard drive. A GARD software algorithm analyzes communications and plots operations in a spreadsheet format, which provides airport management with an accurate operations count by the event, hour, day, week, etc. This operational data was used to the operational activity at the airport.

BASED AIRCRAFT

Based aircraft include any aircraft that considers Wiscasset Municipal Airport as its "home" airport. The number of based aircraft is considerably higher in the summer months during peak activity for the airport. Figure 2.2 on the next page identifies the number of based aircraft since 2001. It is important to note that Wiscasset experiences seasonal fluctuations, with based aircraft numbering as high as 75 in the summer and 30-40 in the winter, averaging 48 in 2013. Figure 2.3 shows the seasonal fluctuation during calendar year 2013. In addition, the number of based aircraft has declined about 10% since the opening of the Brunswick Executive Airport (former Naval Air Station Brunswick) located 15 miles southwest of KIWI.

FLEET MIX BASED AIRCRAFT

As shown in Figures 2.2 and 2.3, the fleet mix of aircraft based at Wiscasset is primarily single engine reciprocating (SER) type aircraft, with a few multiengine reciprocating (MER) and one helicopter. There are no turboprops or jet aircraft based at KIWI on an annual basis, however, several turboprops and an occasional jet do spend the summer at the airport. The number of aircraft calling KIWI home steadily increased over the period from 2001 to 2010. Then with the transition of the Naval Air Station Brunswick from military to civil, some aircraft owners transferred their assets primarily for convenience, and some for better facilities including availability of a large heated hangar. It is estimated that about 10% of the based aircraft fleet moved to Brunswick Executive Airport (BXM) located approximately 18 miles west of Wiscasset initially, but some have since returned. There is a winter migration to BXM because of their hangar rental availability.

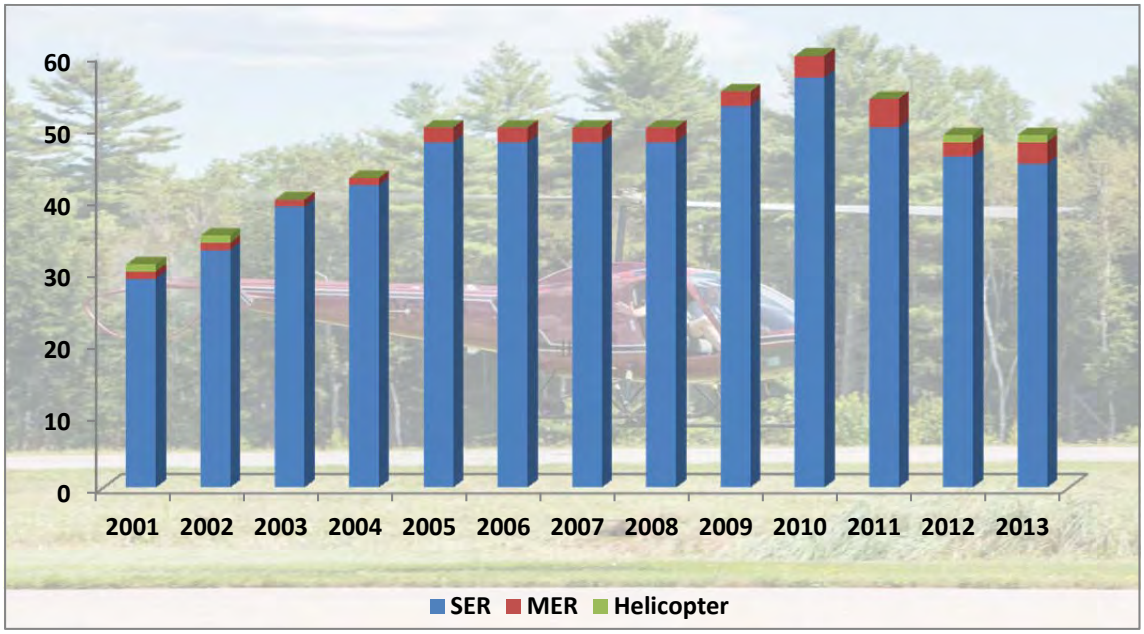


Figure 2.2 - Based Aircraft/Fleet Mix

Legend: SER – Single-engine Reciprocating; MER – Multi-engine Reciprocating

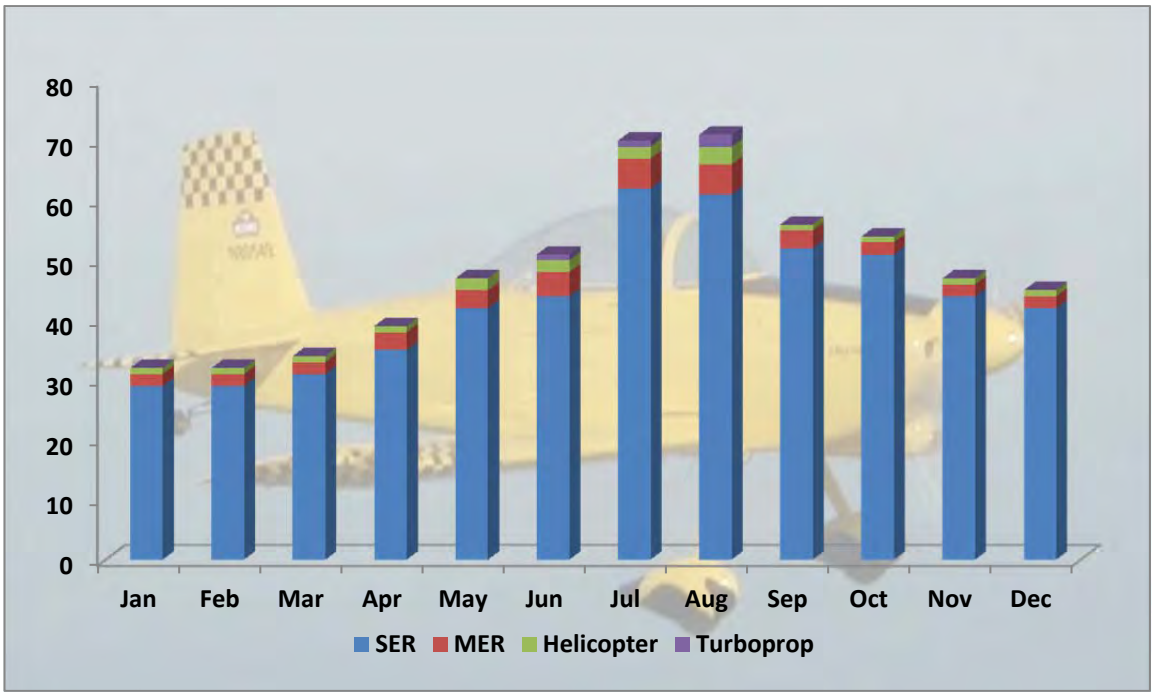


Figure 2.3 – 2014 Monthly Based Aircraft Inventory

Legend: SER – Single-engine Reciprocating; MER – Multi-engine Reciprocating

OPERATIONS

An operation consists of either a takeoff or a landing, and operations data is collected to evaluate capacity issues as well as sizing of facilities, such as aircraft parking aprons and terminal buildings. In addition, operational data if high enough can have an impact on noise and other possible environmental concerns.

As alluded to in the Activity section, counting aircraft operations at non-towered airports until recently has been largely a guessing effort. Historically, airport management calculated the number of operations using a standard planning guideline to determine validity of operational activity at an uncontrolled airport. At the time this calculation suggested total operations based on 300 to 350 per based aircraft, with the higher value based on the availability of a formal flight training program. However, with rising fuel and insurance costs, recreational flying has declined steadily over the past 10-20 years, invalidating this ratio (based aircraft to operation) calculation.

Operations at Wiscasset were thought to be in the range of 10,000 to 15,000 annually, however, with the installation of GARD as described in the Activity section, a more accurate assessment is now possible. Based on data collected from GARD during the period April through October 2014, the number of operations is now accurately defined at about 10,000 annually. Based on this analysis, previous year's data was recalculated to reflect the numbers shown in Figure 2.4 on the next page. The only assumption is the percentage of local versus itinerant operations. Based on observations and fuel sale data, it is assumed that the ratio between the two is 50/50[5]. And as noted earlier, with the town taking over the FBO and offering below market fuel prices, operations at KIWI have risen considerably in the past two year.

[5] Communications with E. Deck, Airport Manager, October 2014.

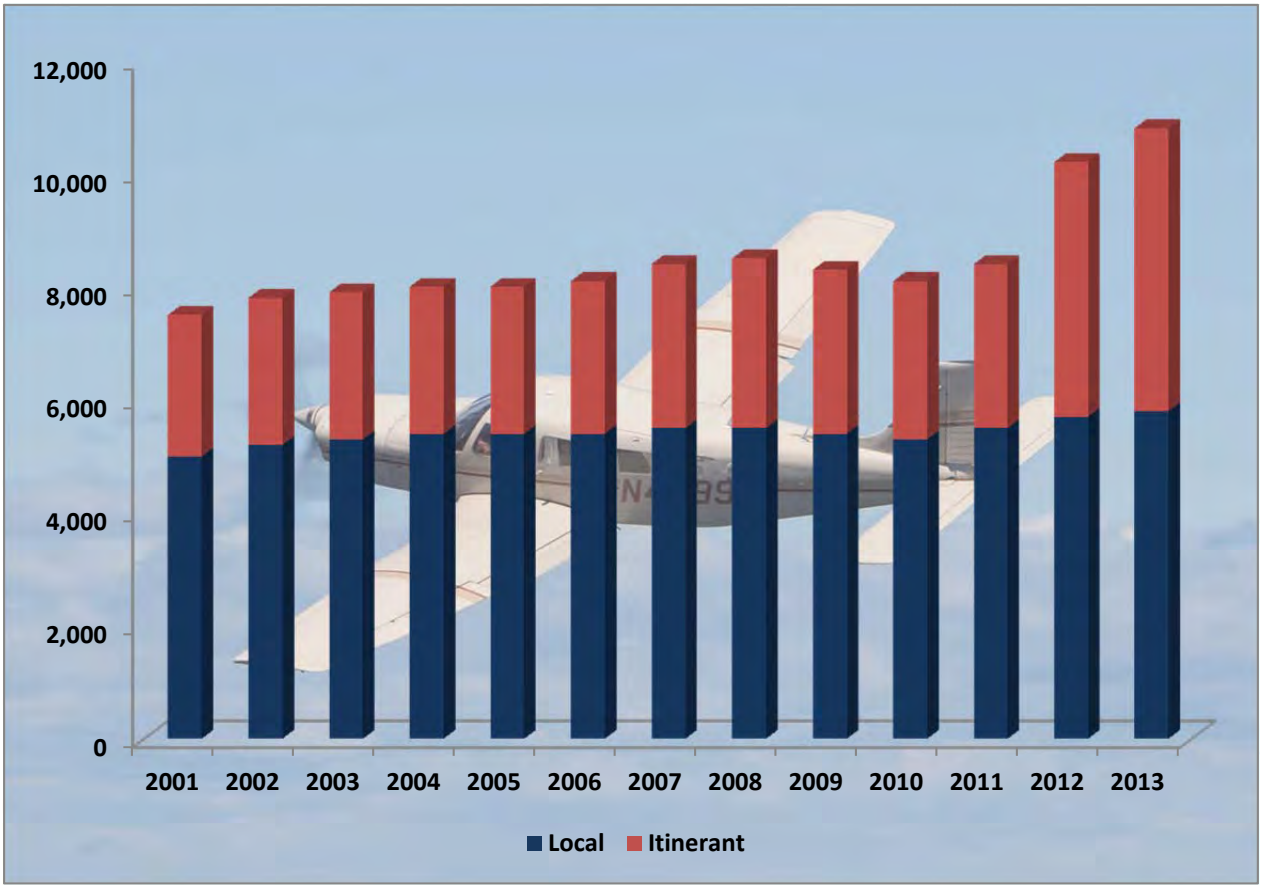


Figure 2.4 - Local v. Itinerant Operations

From data obtained from GARD, as expected, operations peak in the summer months, with July and August being the busiest period of the year. Operations are further classified as either local or itinerant. A local operation is any aircraft arriving or departing from flights within a 20-mile radius of the airport. Itinerant operations are any other operation outside of the 20-mile radius. Until about 2011 local operations were predominant, reaching about 70 percent of total operations. However, in February 2013 the town took over the FBO and fuel sales. With an aggressive marking plan, that included selling fuel at below market prices[6], itinerant operations have soared and now account for about 50% of the total.

[6] The airport evaluates prices at Augusta State, Brunswick Executive, Knox County Regional, Belfast Municipal, Bar Harbor and other airports in the region and then sets the retail price below each of them, normally about $0.50/gallon above wholesale for 100LL and $1.00 above wholesale for Jet A.

PEAK OPERATIONS

Using fuel sale data and operations data from GARD, peak operations occur in the summer months. Fifty-four percent (54%) of KIWI operations occur during the period June through August. Conversely, only three percent (3%) occurs during the winter months December, January and February. Figure 2.5 on the next page shows the seasonal flow of operations at Wiscasset, and as is typical of general aviation airports in northern climates, flying declines during colder months and then peaks during summer periods.

Summer activity is augmented by the Texas Flying Legends Museum, based out of Ellington Field in Houston, Texas. The Legends are a collection of WWII aircraft that selected KIWI as one of their summer homes. Three to four of their aircraft spend the summer months at Wiscasset providing both static display and aerial demonstrations.

AIRPORT DESIGN STANDARDS

There are several key terms used in the planning and design of airports that can have infrastructure implications in terms of geometric design of facilities. These include design aircraft, airport reference code, and runway design code. Each is discussed in the following paragraphs.

DESIGN AIRCRAFT

The design aircraft enables airport planners and engineers to design the airport in such a way as to satisfy the operational requirements of such aircraft and meet national standards for separation and geometric design (safety issues). The "design" aircraft may be a single aircraft or a composite of several different aircraft composed of the most demanding characteristics of each.

The design aircraft is the Beech King Air 200 as shown on Figure 2.6. The 12,500 pound B200 has a 54'-6" wingspan, a tail height of 15'-0", and an approach speed of approximately 95 knots.

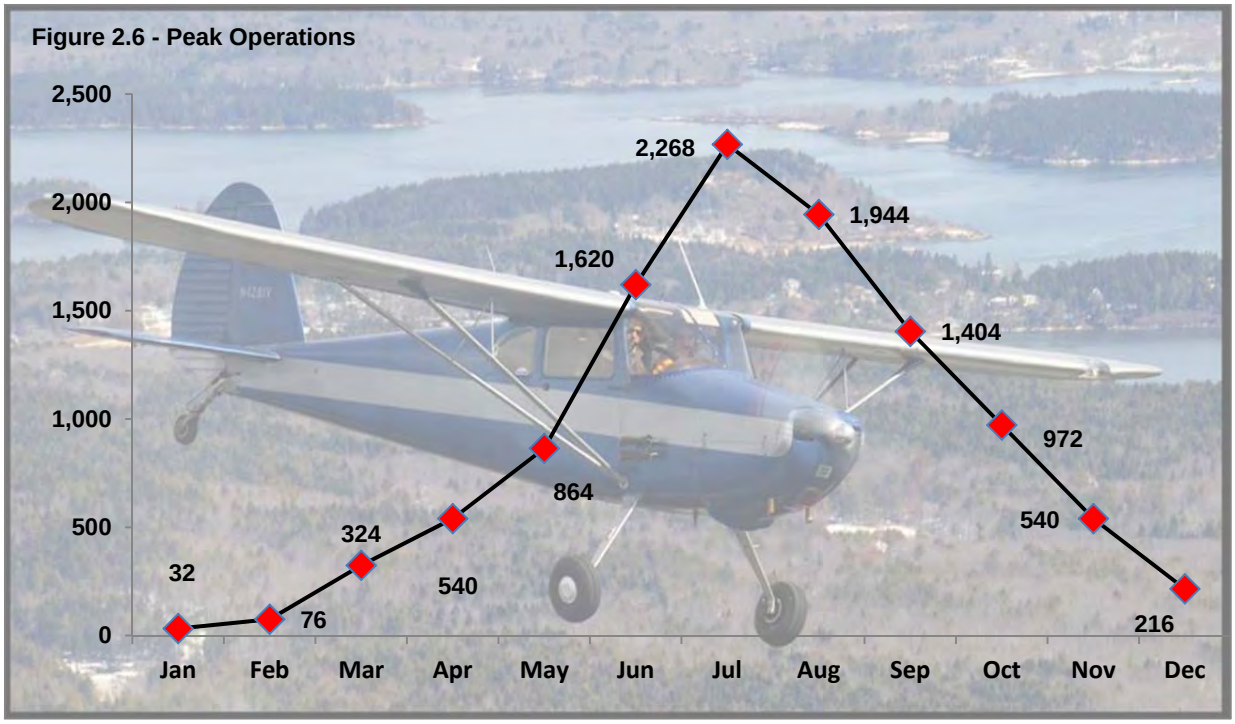


Figure 2.6 - Peak Operations
2,500
2,000
1,500
1,000
500
0
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec
32
76
324
540
864
1,620
2,268
1,944
1,404
972
540
216


Figure 2.7 – King Air 200, KIWI Design Aircraft

RUNWAY DESIGN CODE

The Runway Design Code (RDC) signifies the design standards to which a runway is built. The RDC consists of three components: design aircraft wingspan, approach category, and runway visibility minimums. Airport design first requires selecting the RDC for desired/planned level of service for each runway, and then applying the airport design criteria associated with the RDC.

The RDC has three components: aircraft approach group (category), aircraft design group (wingspan), and the runway visibility minimums (in feet). Thus, the existing RDC at KIWI for both runway ends (07 & 25) is B-II-4000, where B is the aircraft approach category, Roman numeral II is the airplane design group, and 4000 are the runway visibility minimums.

AIRPORT REFERENCE CODE

The Airport Reference Code (ARC) is an airport designation that signifies the airport's highest RDC, minus the third (visibility) component of the RDC. The ARC is used for planning and design only and does not limit the aircraft that may be able to operate safely at the airport.

As noted earlier, the design aircraft is a midsize corporate jet, such as the Beech King Air 200 shown in Figure 2.6, and the ARC is B-II.

AIRSIDE FACILITIES

Airside facilities include areas where aircraft maneuver. For purposes of this AMPU, airside facilities include the runway, taxiways, and aircraft-parking apron. Sheet 2 in Appendix 2 identifies existing facilities at the airport.

RUNWAY

Wiscasset Municipal Airport has a single 3,397 foot long by 75 foot wide runway. Runway 7-25 originally was constructed in 1961 and was extended to its current length in 1968. The pavement was originally constructed to 22,000-pound single-wheel load strength. Runway overlays were completed in 1979 and 1998.

The runway has never been reconstructed, and as a result, the pavement is in poor condition with significant cracking. In addition, water is intruding into the pavement, resulting in a collapse of pavement in several areas. The airport has an ongoing maintenance program, with crack sealing work occurring over the past several years.

TAXIWAYS

The airport has three stub taxiways and one full-parallel taxiway. Taxiway 'A' is approximately 3,250 feet long by 35 feet wide and is a full parallel taxiway for Runway 7-25. Taxiways 'B' and 'C' are approximately 250 feet long by 35 feet wide and are stub taxiways connecting the runway to

Taxiway 'A'. Taxiway 'B' is approximately 500 feet long by 35 feet wide and also is a stub taxiway connecting the runway to Taxiway 'A'.. Pavements for all taxiways are in good condition as they were reconstructed in 1996. The taxiways are marked with centerline, lead-in line, and hold lines and are in excellent condition. In addition, there is a taxiway 420 feet long by 40 feet wide that connects Taxiway 'D' to a hangar located off airport property.

AIRCRAFT PARKING APRON

The aircraft-parking apron is approximately 120,000 square feet, not including a single taxilane and is marked to accommodate 34 tie downs for small aircraft. The apron pavement was reconstructed in 1996 and is currently in fair to poor condition with significant cracking.

LANDSIDE FACILITIES

For the purposes of this AMPU, landside facilities include the terminal building, automobile parking lot, and hangars.

TERMINAL BUILDING

The terminal building (Figure 2.7) is approximately 4,900 square feet with electricity, telephone, internet, cable television, sewer, and water. The building originally was constructed in 1970. A waiting area, pilot's lounge, restroom, and FBO office is available on the first floor and office space, restroom, and conference room is available on the second floor. The building can also accommodate hangar space for up to four small aircraft. The building is heated with a forced hot-air heating system and air conditioning is available in the FBO office. The airfield lighting vault is located in the terminal building. The building is in excellent condition and recently underwent extensive remodeling and energy improvements, including a new restroom, interior wall improvements and new floor covering. In addition, the building has all new energy efficient windows and increased insulation.

Figure 2.7 - Terminal Building (December 2013)

AUTOMOBILE PARKING AND ACCESS

The automobile parking lot is approximately 9,000 square feet and can accommodate 24 vehicles including two spaces that conform to Americans with Disabilities (ADA) standards. The automobile parking lot was originally constructed in 1996 and the pavement is in good condition.

A second parking lot is available adjacent to the terminal building and can accommodate approximately nine vehicles.

HANGARS

There are a total of 13 hangars at the airport, both privately and publically owned. With one exception privately owned hangars are on land leased from the town, and in addition, hangar owners pay property taxes to the town on the assessed value of the buildings. The lone exception is Hangar #12, which is located off airport with direct access via an existing through the fence agreement with the town.

Two of the 13 hangars, two are 12-bay T-hangar units, nine are privately owned conventional hangars varying in size from 1,500 to 3,000 square feet, one is adjoined to the terminal building and one is a standalone building used for aircraft maintenance and storage.

Table 2.1 lists each of the hangars, which are numbered as shown on Figure 2.9 (East Terminal Area) and Figure 2.10 (West Terminal Area) (next page).

Figure 2.9 – Buildings/Hangars in East Terminal Area

Figure 2.10 – Buildings/Hangars in West Terminal Area

Table 2.1 – Building/Hangar Inventory

Building No.	Type	Ownership	Utilities	Notes
1	Conventional	Public (Town of Wiscasset)	E, W, S, T, H, I	Combined with terminal building
2	Conventional	Public (Town of Wiscasset)	E, W, S, T, H	Aircraft maintenance hangar
3	SRE Building	Public (Town of Wiscasset)	E, W, S, H	Snow removal equipment building
A1-12	12-Unit T-hangar	Private	E	Condominium Association
B1-12	12-Unit T-hangar	Private	E	Condominium Association
C1	Conventional	Private	E	
C2	Conventional	Private	E, H	
C3	Conventional	Private	E, H, I	
C4	Conventional	Private	E, H	
C5	Conventional	Private	E, H	
C6	Conventional	Private	E, H	
C7	Conventional	Private	E, H, W, S	
C8	Conventional	Private	E, H	
D1	Conventional	Private	E, W,S.	

Notes: E-Electricity; W-Water; S-Sewer; T-Telephone; H-Heat; I-Internet

SUPPORT FACILITIES

The following sections discuss other facilities at the Wiscasset Municipal Airport.

FIXED BASE OPERATOR

In February 2012, the town took over running the only FBO on the airport, which provides the following services:

- Fuel and aviation oil
- Hangar space
- Apron/Tie Down Space
- Rental cars (through a third party auto dealer)
- Loaner car
- Lounge with Wi-Fi, coffee, soft drinks, and snacks

NAVIGATION AIDS (NAVAIDS)

There are no electronic navigation aids at the airport. Since the last AMPU, the airport non-direction beacon (NDB), located in Edgecomb, Maine, was decommissioned in 2009.

Portland Approach Control, operating from the Portland Jetport, provides departure and approach control service.

Visual NAVAIDS at the airport include a precision approach path indicator (PAPI)-4L to Runway 25 and a PAPI-4R to Runway 7. The glide slope angle is set at 4° for Runway 7 and 3.5° for Runway 25 and the threshold crossing height for both runways is 40 feet.

Runway end identifier lights (REILs) are located at the end of Runway 25. Runway 7-25 is lit with medium intensity runway lights (MIRLs) and the taxiways are lit with medium intensity taxiway lights (MITLs). Runways 7 and 25 are marked as non-precision approaches. These markings were redone in 2009 and are in fair condition.

There are three obstruction lights, two are located 340 feet southwest of Runway 7 on 70 foot telephone poles, and one is located 600 feet east along Route 144. A hazard beacon is located 6,000 feet north of the airport on Whaleback Ridge in Woolwich, Maine. The hazard beacon was replaced in 2009 with an LED light system. All four lights are depicted on Sheet 7 in Appendix 2.

There is a lighted wind cone with a segmented circle located southeast of Runway 25 and additional wind cones are located midfield and northeast of Runway 7.

The rotating beacon, which was replaced in 2009, is located on top of a 51 foot tower located adjacent to the automobile parking area.

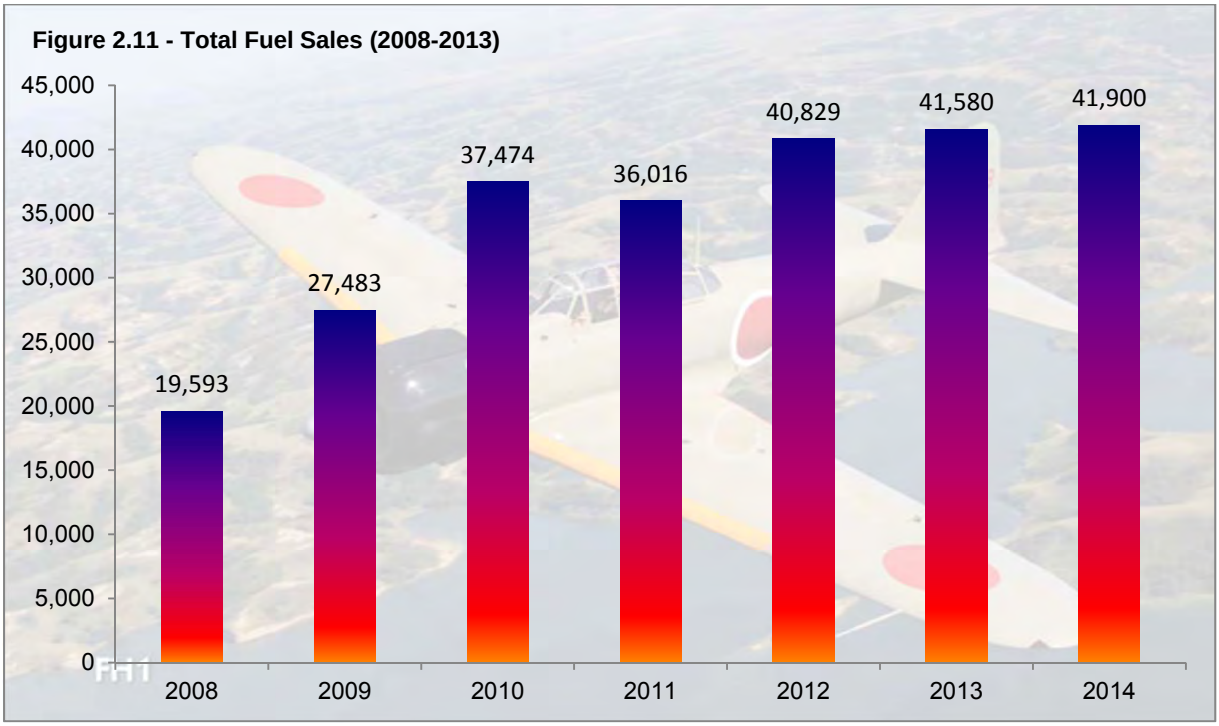
COMMUNICATIONS

Communications at the airport include a common traffic advisory frequency (CTAF) operating at a frequency of 122.8. This frequency also serves as the Unicom frequency for theFBO.

FUELING FACILITIES AND SALES

Wiscasset Municipal Airport has both 100 low lead (LL) aviation gas and Jet A fuel available 24 hours a day through a credit card self-service terminal. Both 100LL and Jet-A fuel are dispensed from two 12,000 gallon above ground tanks. As noted on Figure 2.11, fuel sales have average 39,500 gallons per year since 2010. The airport has an aggressive marketing plan for fuel sales, selling both 100LL and Jet A at prices well below most other airports in the state.

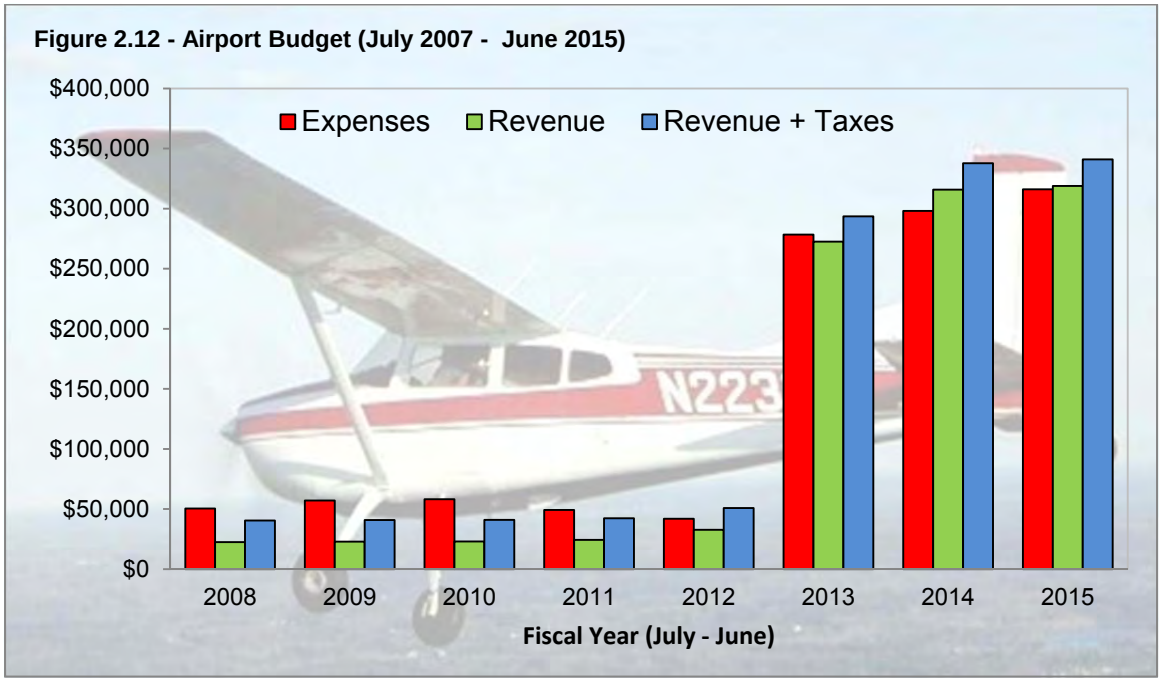
Figure 2.11 - Total Fuel Sales (2008-2013)



FINANCIAL OVERVIEW

Until recently, the Airport's expenses have exceeded revenue, resulting in taxpayer assistance. Figure 2.12 identifies expenses and revenue for the airport since 2008. The fiscal year for Wiscasset is July 1 to June 30. Expenses are based on the budgeted amount and not the actual amount spent. It is important to note that historically, the airport has not produced enough direct aviation revenue to offset the cost of running the facility, which is typical of most general aviation airports. However, when property taxes are added to the equation (for private hangars), the airport has come close to if not exceeding yearly operating expenses. It is also important to note that the

2013-2014 budget was the first time in the airport's history that aviation derived revenue (excluding property taxes) exceeded expenses by about $17,000. The 2015 budget reflects a slightly smaller surplus, but continues to show growth and a positive cash flow for the airport.



AIRPORT SERVICE AREA

There are seven airports located within 30-60 minutes from the airport. A 30-minute driving time has been designated as the service area for general aviation airports. A 60-minute driving time has been designated as the service area for regional/commuter commercial-service airports. These airports include Augusta State Airport and Knox County Regional Airport. A 90-minute driving time has been designated as the service area for commercial-service airports with major/national service, such as Portland International Jetport. The Brunswick Executive Airport opened in April 2011, and is about 20 minutes driving time from Wiscasset Municipal Airport. Figure 2.13 identifies the National Plan of Integrated Airport System (NPIAS) airports in the region along with their approximate air mile distance from Wiscasset.

INSTRUMENT PROCEDURES

Wiscasset is served by instrument approach and departure service through Portland Approach Control and Boston Air Traffic Control Center. Both Runway 7 and 25 have instrument approach procedures (IAP) provided by GPS. The RNAV (GPS) 7 procedure (Figure 2.14) has a 560 foot minimum descent altitude (MDA) with minimums of 500 foot ceiling and 1 mile visibility. The RNAV (GPS) Runway 25 procedure (Figure 2.15) has a slightly higher MDA of 580 feet with

minimums of 600 feet and 1 mile. In both cases, circling is authorized to the opposite runway end, but with slightly higher minimums.

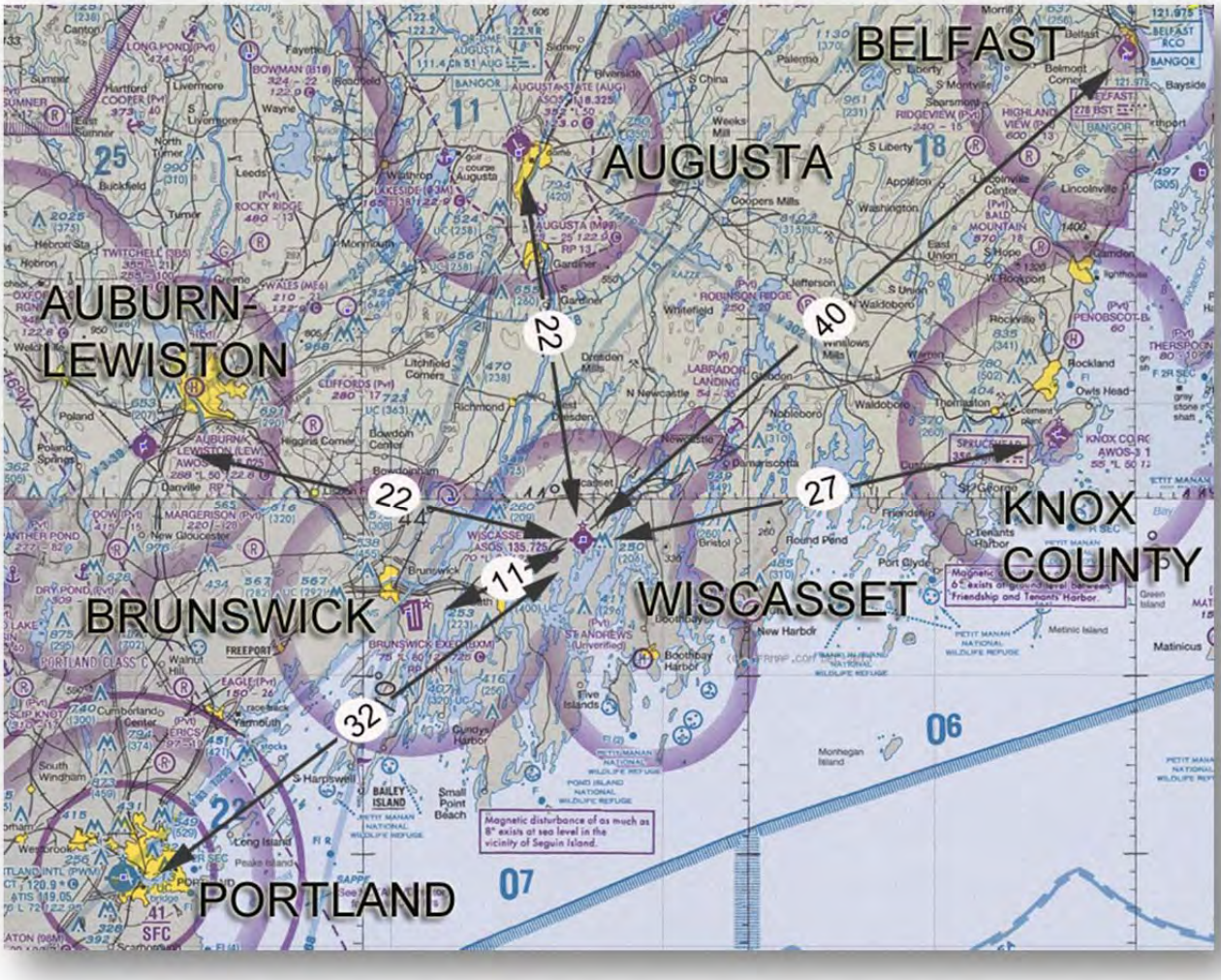


Figure 2.13 – Regional Airports

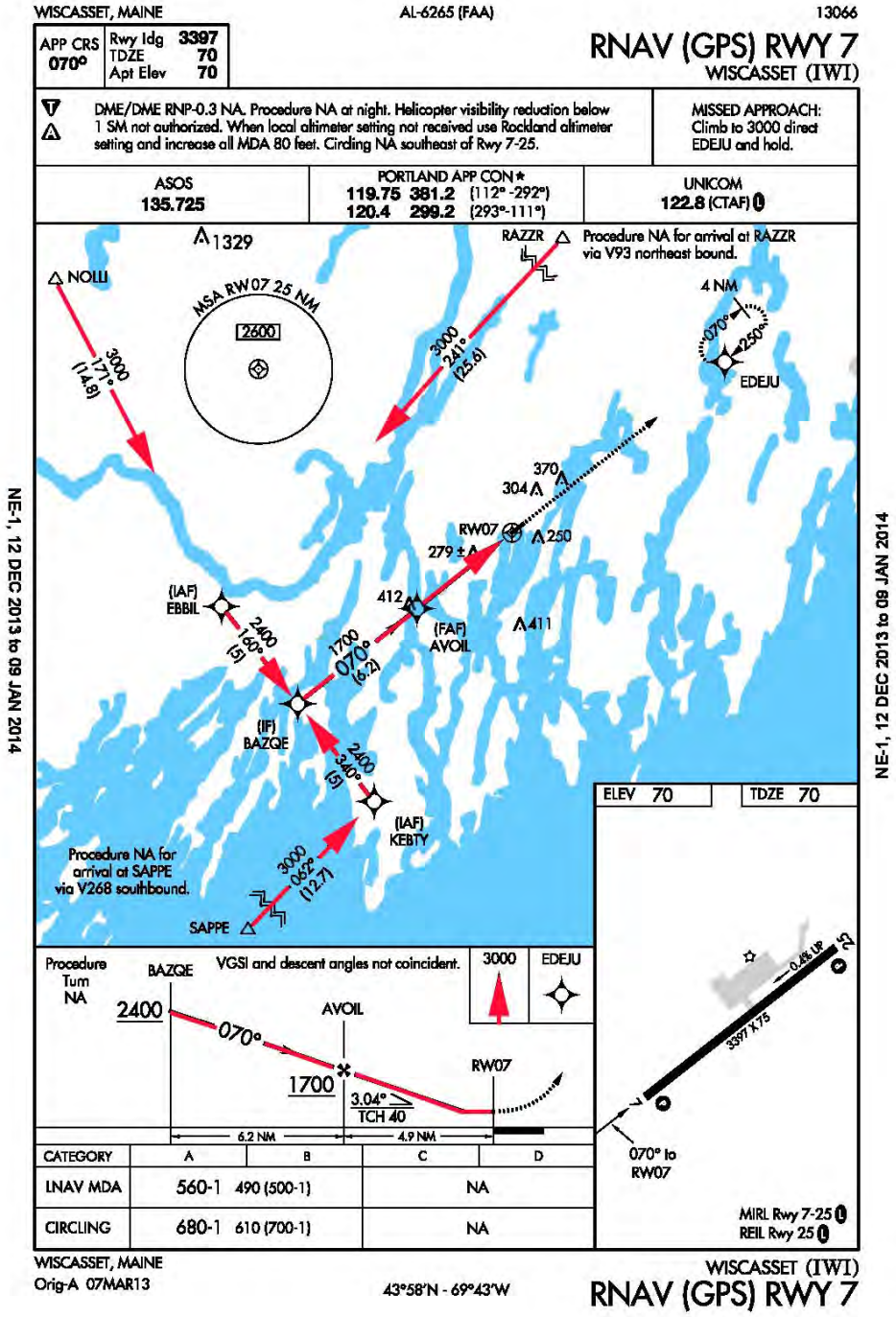


Figure 2.14 – IAP Runway 07

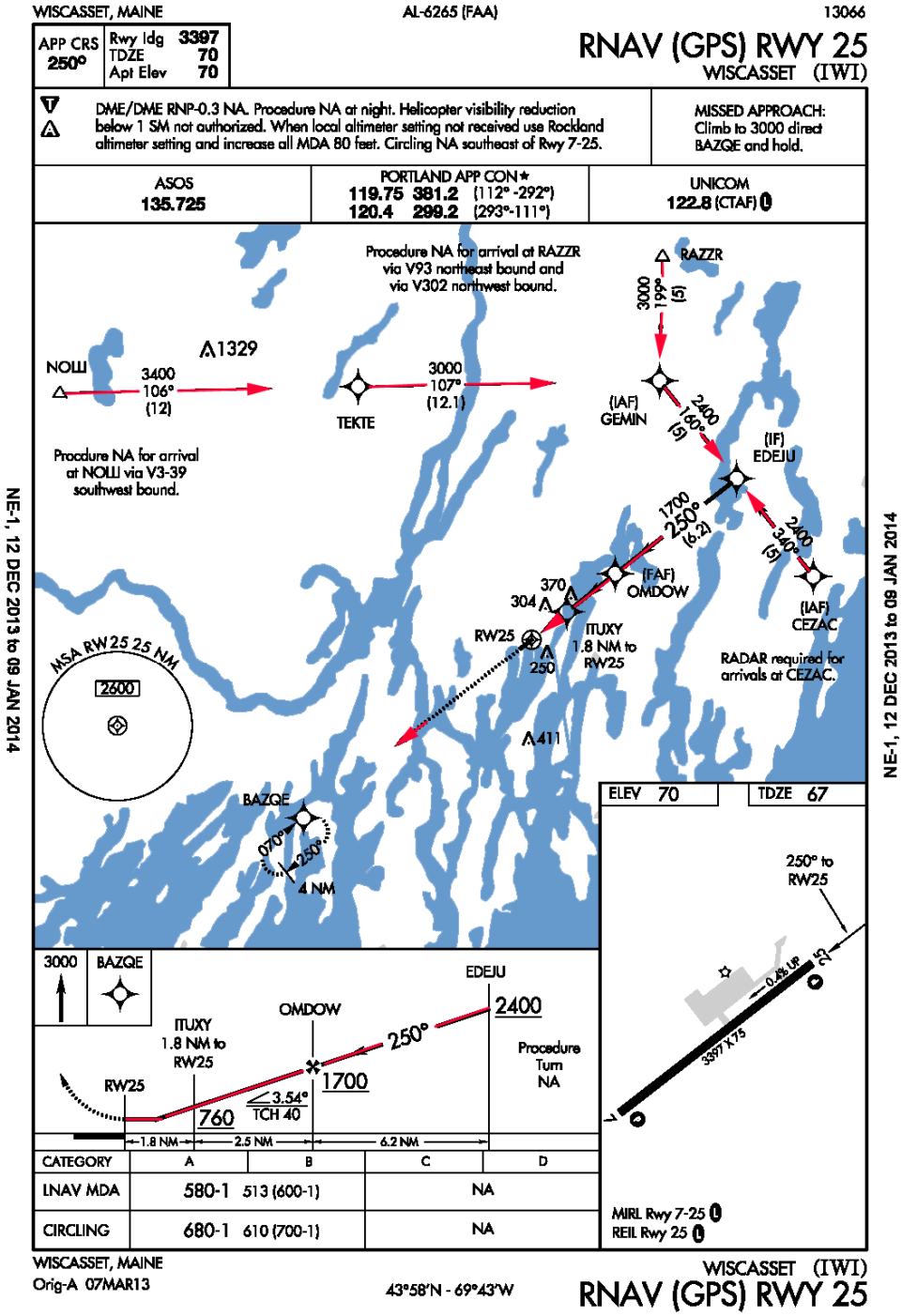


Figure 2.15 – IAP Runway 25

SOCIOECONOMIC DATA

Socioeconomic characteristics such as population and economic conditions provide insights concerning an area's historic and future growth. Moreover, socioeconomic characteristics usually have a positive relationship to aviation activity and are often useful tools in preparing estimates of future airport activity. For an airport master plan, socioeconomic characteristics are collected and examined to derive an understanding of the dynamics of growth within the geographic area served by the airport. This information is typically used in forecasting aviation demand.

As of 2010, the total Maine population was 1,328,361, which grew 4.19% since 2000, and the Lincoln County Population was 34,457, a growth of 2.5% during the same period. The state's population growth rate is much lower than the national average rate of 9.71%, and the County's growth rate is lower than the state average of 4.19%.

Maine's median household income was $45,815 in 2010 and grew by 23.03% since 2000. The income growth rate is higher than the national average rate of 19.17%. In Lincoln County, the median household income was $47,678 in 2010 and grew by 23.24% since 2000. The income growth rate is about the same as the state average rate of 23.03% and is higher than the national average rate of 19.17%.

ENVIRONMENTAL OVERVIEW

The following narrative presents an analysis and inventory of environmental resources occurring on and within the vicinity of the airport. The purpose of this inventory and analysis is to provide preliminary information concerning these resources in an effort to define and identify critical resources to be considered prior to the implementation of proposed airport planning recommendations.

AIRPORT ENVIRONMENT

Airport property is comprised of approximately 257 acres (247 in fee simple and an additional 10 acres in easement). Northern regions of airport property consist primarily of paved runway, taxiway and apron surfaces, aircraft hangars and a terminal building. Land adjacent to airport infrastructure is comprised of regularly mowed meadow. Southern regions of airport property consist of mature coniferous and mixed hardwood forest habitat.

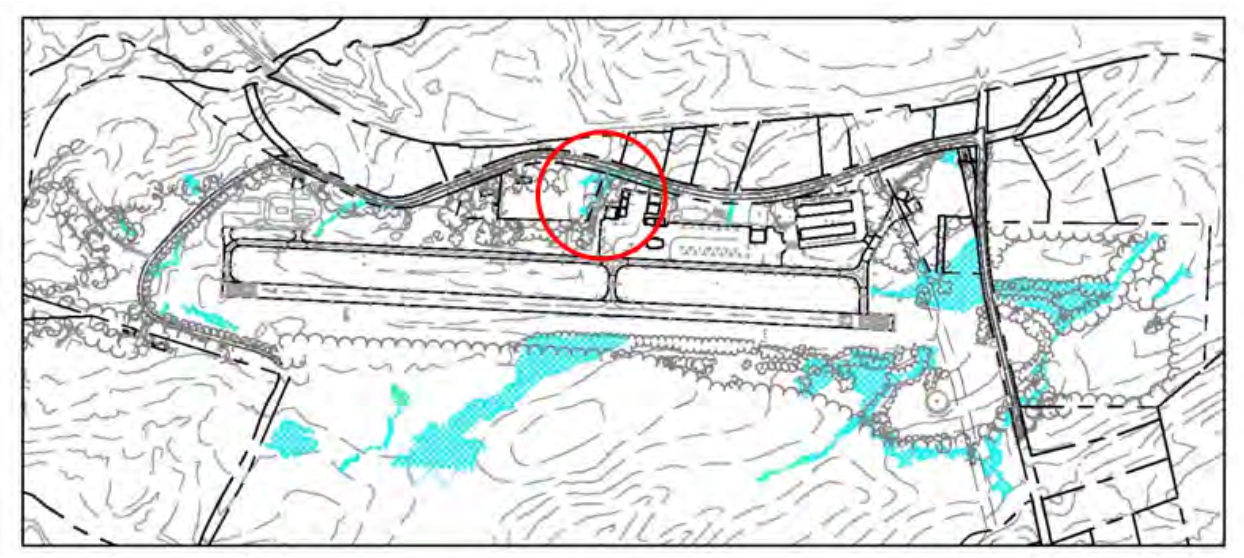


Figure 2.16 – Wetlands

WETLANDS

Wetlands are present at various locations on the airfield, as shown on Figure 2.16. Emergent and wet-meadow wetlands associated with local drainage regimens occur in isolated areas north, east and west of Runway 7-25. Forested wetlands are the dominant wetland type located south of the runway. In December 2009, at the request of the Town Code Enforcement Officer, MaineDEP issued a statement indicating that the area noted by the circle on Figure 2.16 had an open emergent section (less than 20,000 square feet) and as a result would not have any setbacks from future development[7].

WATER RESOURCES

Montsweag Brook abuts the western extent of airport property. The southern region of airport property is bound, in part, by Chewonki Creek. These two tidal resources drain to the Back River, which discharges to the Kennebec and Sheepscot Rivers.

WILDLIFE

Airport property provides habitat to a number of species common within the mid-coast region. White-tailed deer and wild turkey are frequently observed on airport grounds. Coyote also utilize the area. Raptors including red-tailed hawks prey on rodents and other small mammals found in

[7] MaineDEP, Bureau of Land and Water Quality, Field Determination #8277 dated 12/29/2009.

the open fields of the airport. Seagulls also congregate on airfield pavement and turf areas at various times of the year.

LAND USE

Wiscasset Municipal Airport is located in the Rural District and subject to zoning regulations established in Article VI (Zoning) of the *Town of Wiscasset Ordinances, November 2008 Edition*. The Town's ordinances do not include an airport zoning district nor do they regulate activities within proximity to the airport. Permitted uses within the Rural District include those uses permitted within the Resource Protection, Residential or Business Districts as well as "any other building or use, unrestricted." Zoning districts abutting airport property include the Shoreland Residential District located to the west of the airfield and the Shoreland Resource Protection District located to the south of the airport. In 1998, an eight acre parcel of airport property was designated as conservation area. The conservation area, located in the south-central region of airport property, abuts Chewonki Creek. Future development of land within the conservation area is prohibited.

Residential development along Chewonki Neck Road located to the north and west of airport property is sparse. The Chewonki Campground, a 50-acre public campground is located approximately 1,000 feet southwest of the Runway 7 threshold. The Chewonki Foundation's Center for Environmental Education is located on Chewonki Neck Road approximately two miles south of the airport.

The airport's land use map is Sheet 8 of 8 in Appendix 2.

PROTECTED AIRSPACE

Three different and unique protected airspace surfaces were analyzed as part of this AMPU. These include FAR Part 77 surfaces[8], Terminal Instrument Procedures (TERPS)[9], and Threshold Siting Surface (TSS)[10]. Each is discussed in the following paragraphs.

FAR PART 77

FAR Part 77 serves as Federal statute dealing with objects that affect navigable airspace, and contains six subparts with specific functions. For the purposes of this discussion, only Subpart C is relative. Subpart C specifies the standards for classifying objects as obstructions to air navigation. These standards apply to the use of navigable airspace by aircraft and to existing navigation facilities, and among other things, it provides protection of airspace for civil airports and for flight

[8] 14 CFR Part 77, Safe, Efficient Use, and Preservation of the Navigable Airspace.
[9] FAA Order 8260.3, United States Standard for Terminal Instrument Procedures.
[10] FAA Advisory Circular 5300.13A.

procedures. Part 77.25 defines the various civil airport imaginary surfaces, the dimensions of which are dependent on runway and approach types (utility, visual, non-precision, and precision). Therefore, the runway and approach types must be established first. Until circa 1990, Runway 7-25 was visual runway; however, with development of the non-precision IAPs, the runway became a non-precision runway. This change resulted in a change in the size of the primary and approach surfaces. The airport imaginary surfaces at Wiscasset are:

- **Primary Surface.** The primary surface is an imaginary planar surface centered along and at the elevation of the runway centerline. The width of this primary surface is 500 feet, extending beyond each end of the runway by 200 feet.

- **Approach Surface**. The approach surfaces are centered on the extended runway centerline, beginning 200 feet from the runway ends. Approach surfaces are trapezoid in shape, and at Wiscasset, the inner width is 500 feet, outer width of 2,000 feet, and length of 5,000 feet. These dimensions are based on Runway 7-25 being classified as a utility runway. Approach surfaces rise outward and upward at a slope of 20 feet (horizontal) to 1 foot (vertical).[11]

- **Transitional Surfaces**. Transitional surfaces rise outward and upward at a slope of 7 feet (horizontal) to 1 foot (vertical), and terminate where the surfaces are 150 feet above the airport elevation of 71.4 feet MSL.

- **Horizontal Surface**. The horizontal surface extends 5,000 feet from the ends of the primary surface at 150 feet above the airport's elevation.

- **Conical Surface**. A conical surface begins at the edge of the horizontal surface, rising outward and upward at a slope of 20 feet (horizontal) to 1 foot (vertical) for an additional 4,000 feet.

THRESHOLD SITING SURFACE (TSS)

TSS includes a set of criteria that determines whether or not an object and a runway threshold or departure end would be compatible, based on the object's height and proximity to the end of the runway, and the type of runway and flight procedures authorized for the runway. These criteria

[11] It is important to note that until approximately 15 years ago, Runway 7 was a visual runway and had a 250 foot wide approach surface at the threshold. With development of the RNAV (GPS) procedure to that runway end, the surface was widened to 500 feet.

function to ensure the areas immediately around the ends of runways are clear of obstacles for approaching and departing aircraft.

At Wiscasset, the TSS inner width is 400 feet, the outer width is 3,800 feet, and the length is 10,000 feet, which extends outward at a slope of 20:1 (20 feet horizontal to 1 foot vertical).

TERPS VISUAL AREA SURFACE

The final approach segment of any TERPS approach is the segment in which alignment and descent for landing are accomplished. The final approach segment considered for obstacle clearance begins at the Final Approach Fix (FAF) and ends at the runway or missed approach point, whichever is encountered last. Final approach may be made to a runway for a straight-in landing or to an airport for a circling approach. The visual area begins 200 feet from the runway threshold at the threshold elevation and extends 10,000 feet along the track of the runway centerline extended at a 20:1 slope. The beginning width of the visual area is 4,500 feet (200 feet either side of the runway centerline). The sides splay outward relative to the runway centerline. The width of the area at any distance "d" from its origins is calculated using the following formula: 1/2W = (0.15d) + 200 (where ½@ = perpendicular distance from the runway centerline to the edge of the area. Thus, at Wiscasset, the width is 3,160 feet.

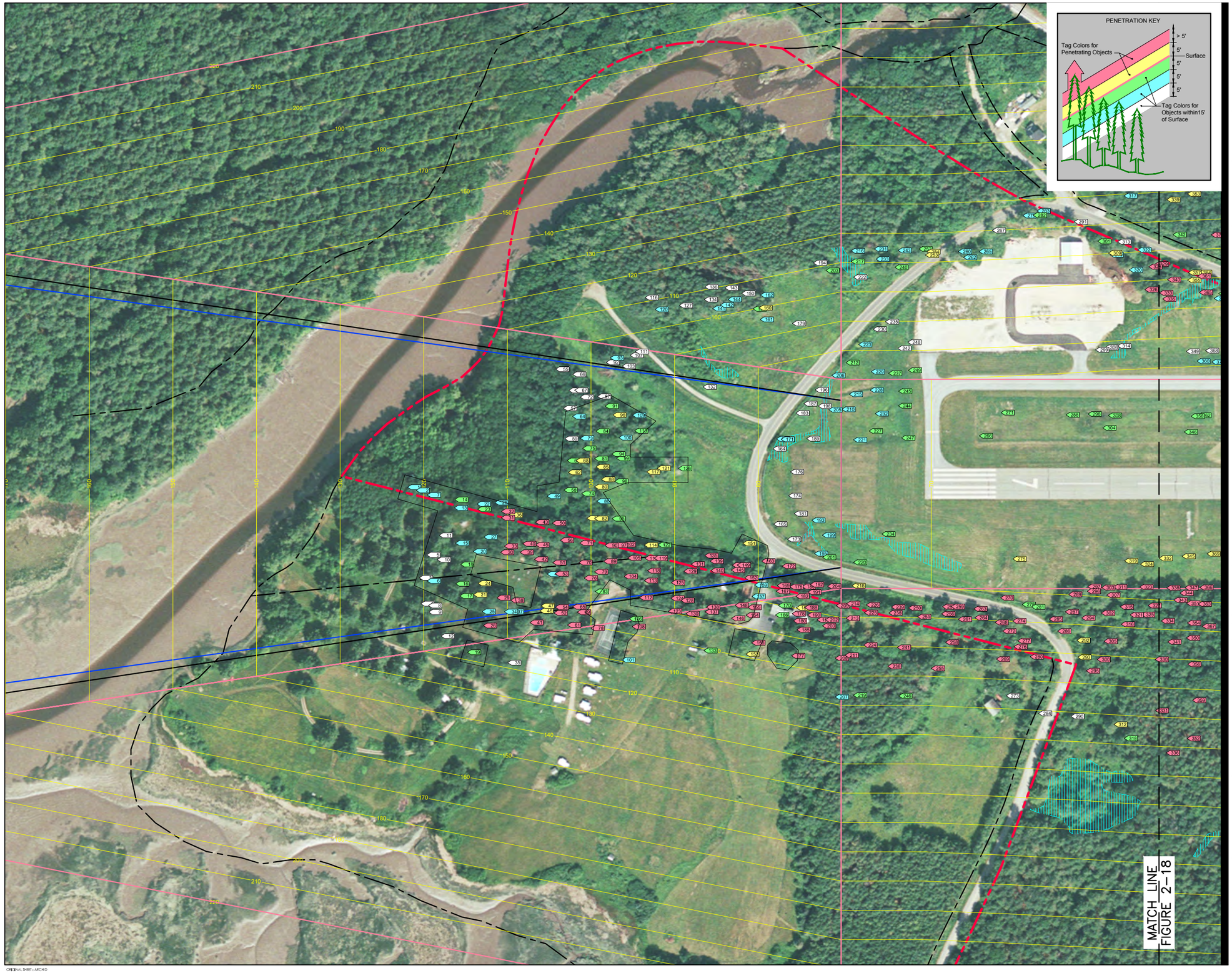
OBSTRUCTION ANALYSIS

In assessment each of the previous three surfaces (Part 77, TERPS, and TSS), it was determined that the FAR Part 77 surfaces are the most restrictive, and are used in evaluated obstructions (the other two areas, TERPS and TSS lie within the Part 77 approach surface). Appendix 3 contains three sheets that divide the airport into three sections, identify obstructions to the FAR Part 77 surfaces. As noted, the airport has considerable penetrations to the Part 77 approach and transitional surfaces. The level of penetration can be determined by the Penetration Key on each of the three figures.

Runway 7 (Figure 2-17) - Most of the obstructions on the Runway 7 end are occurring off airport on the Chewonki Campground. It should be noted that the airport does have a small avigation easement on this property, but the easement does not fully contain all obstructions. As noted earlier, the size of the Part 77 approach surface increased when the current non-precision procedure was developed.

Middle (Figure 2-18) – Obstructions in this area are largely contained in the transitional surfaces on the north and south side of the runway.

Runway 25 (Figure 2-19) - This area contains obstructions in the transitional surfaces (north and south side of the runway) as well as some obstructions in the Runway 25 approach surface.



ORIGINAL SHEET - ARCH D

Stantec

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Consultants

- AIRPORT PROPERTY LINE
- ABUTTER PROPERTY LINE
- FAR PART 77 AIRSPACE SURFACE
- 20:1 TERPS SURFACE
- 20:1 THRESHOLD SITING SURFACE
- 570 AIRSPACE SURFACE CONTOUR
- 185 FAR PART 77 OBSTRUCTION ID TAG
- WETLAND BOUNDARY

0 100' 200'

Revision		By	Appd.	YY.MM.DD
Issued		By	Appd.	YY.MM.DD
File Name:	LRK Dwn.	JEB Chkd.	JEB Dsgn.	11.03.21 YY.MM.DD

Permit-Seal

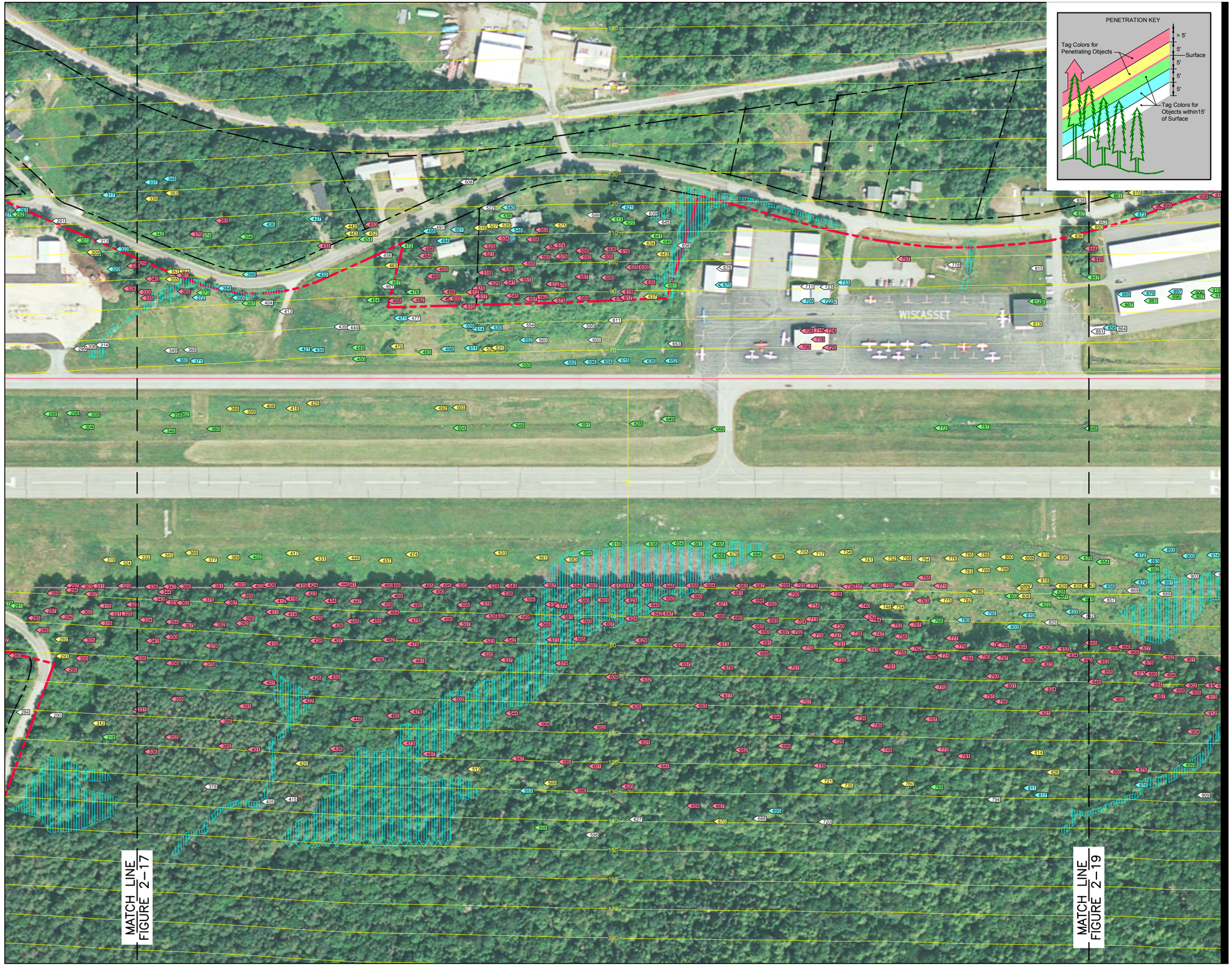
Client/Project
WISCASSET MUNICIPAL AIRPORT

AIRPORT MASTER PLAN UPDATE

WISCASSET, MAINE

Title
FAR PART 77
NON-PRECISION 20:1 APPROACH
ANALYSIS TO RUNWAY 7

Project No.	Scale	
195210458	AS SHOWN	
Figure No.	Sheet	Revision
2-17	of	0



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- 20:1 TERPS SURFACE
- 20:1 THRESHOLD SITING SURFACE
- 570 AIRSPACE SURFACE CONTOUR
- 1856 FAR PART 77 OBSTRUCTION ID TAG
- WETLAND BOUNDARY

0 100' 200'

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Client/Project
WISCASSET MUNICIPAL AIRPORT

AIRPORT MASTER PLAN UPDATE

WISCASSET, MAINE

Title
FAR PART 77
500' PRIMARY SURFACE
ANALYSIS TO RUNWAY 7-25

Project No.	Scale	
195210458	AS SHOWN	
Figure No.	Sheet	Revision
2-18	of	0

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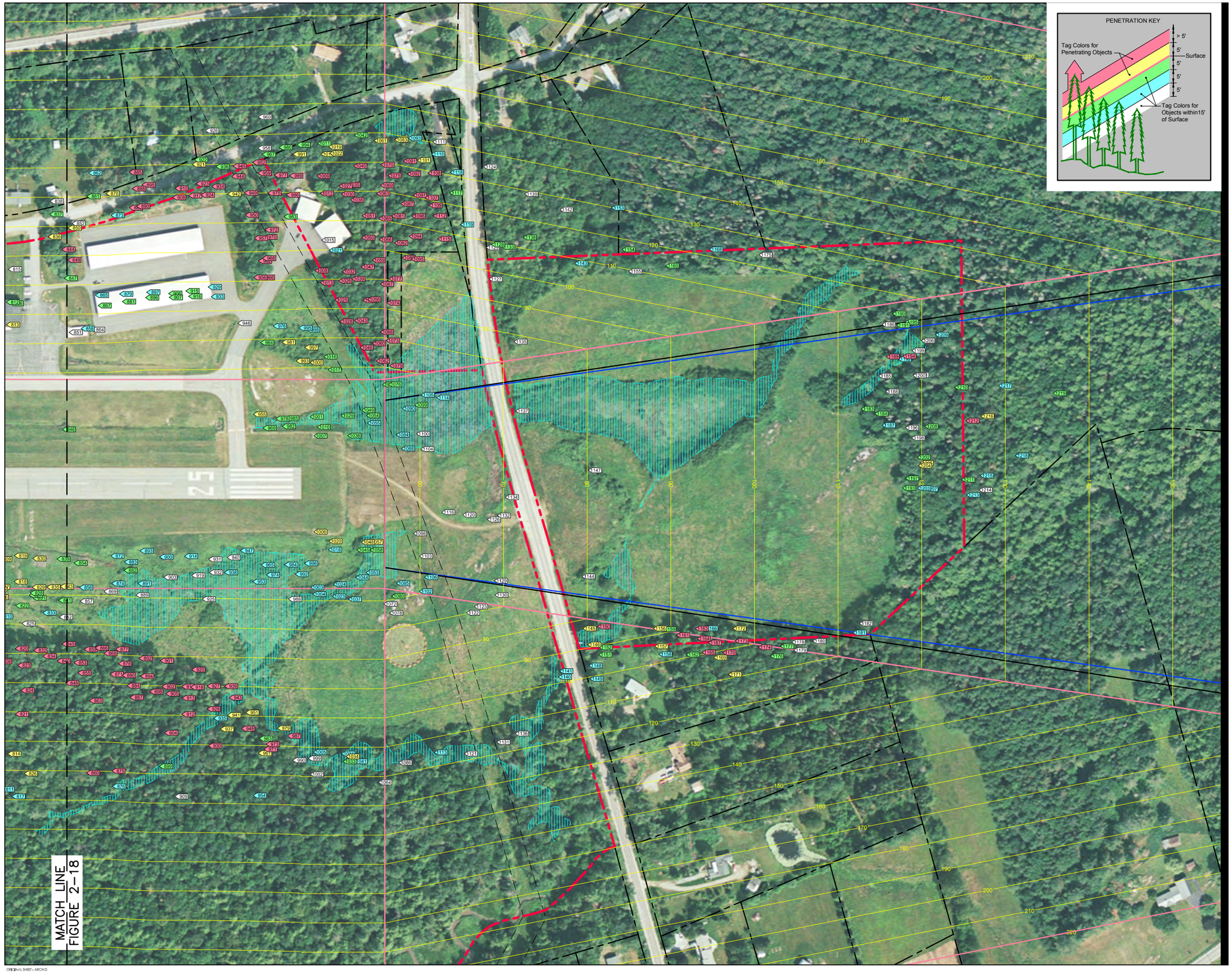

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AIRPORT PROPERTY LINE
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20:1 TERPS SURFACE
20:1 THRESHOLD SITING SURFACE
570 AIRSPACE SURFACE CONTOUR
1351 FAR PART 77 OBSTRUCTION ID TAG
WETLAND BOUNDARY

0 100' 200'

Revision	By	Appd.	YY.MM.DD

Issued	By	Appd.	YY.MM.DD

File Name:	LRK			
	Dwn.	Chkd.	Dsgn.	YY.MM.DD

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Client/Project
WISCASSET MUNICIPAL AIRPORT

AIRPORT MASTER PLAN UPDATE

WISCASSET, MAINE

Title
FAR PART 77
NON-PRECISION 20:1 APPROACH
ANALYSIS TO RUNWAY 25

Project No.	Scale	
195210458	AS SHOWN	
Figure No.	Sheet	Revision
2-19	of	0

Section 4 – Facility Requirements

AIRSIDE CAPACITY AND FACILITY REQUIREMENTS

This Section investigates the capacity of the airport, its ability to meet current demand, and the facilities required to meet forecasted needs as established in Section 3. The objective of this analysis is to determine the adequacy of existing facilities and determine improvements needed to satisfy future requirements.

Facility requirements include issues related to capacity and demand as well as the FAA design standards, safety, and services for airport users.

The airside and landside capacity needs are determined by comparing the capacity of the existing facilities to forecasted demand. Additional facilities are recommended in cases where demand exceeds capacity. The time frame for assessing development needs will be broken down into three periods: short (zero-five years), intermediate (six-10 years), and long term (11-20 years).

The following discusses capacity and requirements for airside facilities.

RUNWAY REQUIREMENTS

The existing runway is examined with respect to dimensional criteria, length, and width.

RUNWAY LENGTH AND WIDTH ANALYSIS

The length of the runway is a function of many factors including design aircraft, physical characteristics of aircraft at time of flight, weather conditions, and runway conditions. The required width of the runway is a function of the approach minimums, aircraft approach category, and aircraft design group.

Runway Length

The existing runway length is 3,397 feet long. The proposed runway length was evaluated using a standard FAA process to determine general runway length based on a wide variety of generic aircraft including existing and forecasted aircraft that use the Wiscasset Municipal Airport. In addition, the required runway length was analyzed using specific aircraft performance data for the existing and forecasted aircraft.

An analysis using FAA Design Software indicates that the runway at Wiscasset Municipal Airport will support a wide range of small general aviation aircraft, including up to 95% of all "small" aircraft. Small aircraft are defined as those aircraft with a maximum gross takeoff weight of 12,500 pounds or less. Other aircraft are classified as either “large” or “heavy” and include the B-25

Mitchell to be used by the Texas Flying Legends, which is 21,120 pounds. Table 4.1 identifies the recommended runway lengths based on the FAA Airport Design software.

Table 4.1 – Runway Length Analysis (Generic Aircraft Assessment)

Aircraft Size and Approach Speed	Runway Length (feet)
Small airplanes with approach speed of less than 30 knots	300
Small airplanes with approach speed of less than 50 knots	810
Small airplanes with less than 10 passenger seats	
75% of these small airplanes	2,400
95% of these small airplanes	2,950
100% of these small airplanes	3,500
Small airplanes with 10 or more passenger seats	4,070
Large airplanes of 60,000 pounds or less	
75% of these large airplanes at 60% useful load	4,730
75% of these large airplanes at 90% useful load	6,060
100% of these large airplanes at 60% useful load	5,160
100% of these large airplanes at 90% useful load	7,490

Note: Based on airport elevation of 71.4' MSL; mean daily maximum temperature of 78°F, and a maximum difference of runway centerline elevation of 14.5 feet.

Source: FAA Airport Design, Version 4.2D

An assessment was also conducted using specific aircraft operating requirements for aircraft that currently use the airport and are forecasted to use the airport. The takeoff and landing runway length requirements are identified in Table 4.2.

Table 4.2 – Runway Length Analysis (Aircraft Specific)

Aircraft	Landing Length		Takeoff Length	
	ISA	KIWI	ISA	KIWI
Cessna 172 Skyhawk	1,200	1,418	1,100	1,307
Piper PA 32 Saratoga	1,760	2,360	1,612	1,874
Pilatus PC12	2,579	2,943	2,845	3,238
Beech King Air 200	2,579	2943	2,845	1,307
Cessna Citation CJ2	3,420	3,874	2,980	3390

Based on this analysis, it is recommended that the runway be considered for an approximate 600 foot extension for a total runway length of 4,000 feet to accommodate the aircraft proposed to use the Wiscasset Municipal Airport. This possible extension will be further studied in Section 5, Alternatives Development, to determine the feasibility of extending the runway. A recommendation will be made based on the results of the findings.

Geometric Standards

The runway width and clearance standard dimensions are listed in Table 4.3. This data is based on an ARC of B-II.

Table 4.3 – Runway/Airport Dimensional Standards

Standard	Measurement (feet)
Runway Width	75
Runway Centerline to Parallel Taxiway Centerline	240
Runway Centerline to Edge of Aircraft Parking	250
Runway Shoulder Width	10
Runway Safety Area (RSA) Width	150
RSA Length Beyond Runway End	300
Runway Object Free Area (OFA) Width	500
Runway OFA Length Beyond Runway End	300
Runway Obstacle Free Zone (OFZ) Width	400
Runway OFZ Length Beyond Runway End	200
Runway OFZ Inner Approach Width	400
Runway Protection Zone (RPZ) Runway End Width	500
RPZ Outer Width	700
RPZ Length	1,000

Source: FAA AC 150/5300-13A, Airport Design

It should be noted that the airport does not currently own a large portion of the land within the RPZ to Runway 7. "The RPZ function is to enhance the protection of people and property on the ground. Where practical, airport owners should own the property under the runway approach and departure areas to at least the limits of the RPZ. It is desirable to clear the entire RPZ of all above-ground objects. Where this is impractical, airport owners, as a minimum, should maintain the RPZ clear of all facilities supporting incompatible activities."[12]

[12] FAA Advisory Circular 150/5300-13A.

A portion of Chewonki Campground is located within the RPZ to Runway 7. A campground is considered to be an incompatible use as this creates a place for public assembly and a safety issue to both the people on the ground and pilots and passengers flying over the campground within the RPZ.

TAXIWAY REQUIREMENTS

The taxiway was extended to a full parallel taxiway since the last AMPU. Other than a change in signage, there are no further improvements needed to meet capacity requirements. The stub taxiways should also be renamed.

LIGHTING REQUIREMENTS

The airport needs the following lighting upgrades and replacements.

- **Runway Lights**. The current system was installed during the 1968 runway extension and is now 44 years old. The system suffers from occasional cable failures and needs frequent light unit replacements. In addition, the lights are a combination of halogen and incandescent bulbs. The airport would like to consider either LED (wired) or LED solar lights.
- **Taxiway Lights**. The taxiway lighting system is in excellent condition, but may need replacement and/or upgrading during the 20 year planning period.
- **Runway End Identifier Lights (REIL)**. Only Runway 25 is equipped with REILS, however both runway ends are served by an instrument approach procedure. REILS for Runway 7 should be a high priority, and should be installed when the runway lights are replaced.
- **Obstruction Lights**. The airport has three obstruction lights; two on the Chewonki Campground and one along Route 144 (see Navaids). The lights are L-810 low intensity units and are subject to frequent outages. Given the location and height of the two poles on the Campground, and because of an agreement with Central Maine Power, who has the sole responsibility of replacement, coordination and repairs is time consuming. The airport feels that changing these to LED units would provide better and more reliable service.
- **Signage**. Taxiway signs need to change to reflect the proper taxiway designations.

LANDSIDE REQUIREMENTS

AIRCRAFT PARKING APRON REQUIREMENTS

Currently, 80% of the based aircraft are located in hangars with the remaining 20% parking on the aircraft parking apron. Planning guidelines typically assumes that 25% of proposed based aircraft will use the aircraft parking apron and 50% of all itinerant aircraft will use the aircraft parking apron. Table 4.4 identifies the itinerant aircraft apron requirements.

Table 4.4 – Itinerant Aircraft Apron Requirements

Condition	2014	2019	2024	2033
PMAD (50% of total)	38	46	55	71
Peak-day operational demand (110% PMAD)	42	51	60	78
50% of peak-day operational demand	8	10	12	16
75% of peak-day itinerant aircraft	14	18	21	27
Itinerant aircraft-parking apron area (3,500 square feet)	**51,205**	**61,985**	**73,439**	**95,673**

Table 4-5 identifies the apron requirements for based aircraft, which assumes that 90% of based aircraft will continue to park inside hangars.

Table 4.5 – Based Aircraft Apron Requirements

Condition	2014	2019	2024	2033
Based Aircraft	49	60	69	90
Percent of Based Aircraft Using Apron	20%	20%	20%	20%
Based Aircraft on Apron	10	12	14	18
Apron Size (at 3,240 SF per aircraft)	**32,400**	**38,880**	**45,360**	**58,320**

Table 4-6 identifies the total apron requirements needed throughout the 20-year planning period.

Table 4.6 – Itinerant Aircraft Apron Requirements

Condition	2014	2019	2024	2033
a. Itinerant Needs	51,205	61,985	73,439	95,673
b. Based Aircraft Needs	32,400	38,880	45,360	58,320
c. Total Apron Requirements (a+b)	83,605	100,865	118,799	153,993
d. Existing Apron Size	120,000	120,000	120,000	120,000
e. Surplus (Deficit) (d-c)	**36,395**	**19,135**	**1,201**	**(33,993)**

HANGAR REQUIREMENTS

Currently, there are 44 based aircraft, on average) parked in hangars, which comprises 90% of the total based aircraft. As discussed previously, the assumption is that the number of based aircraft in hangars will remain high, close to the 90% mark. Table 4-7 identifies hangar requirements at the airport throughout the 20-year planning period.

Table 4.7 Hangar Requirements

Condition	2014	2019	2024	2033
a. Based Aircraft	49	60	69	90
b. Percent of Aircraft Hangared	80%	80%	80%	80%
c. Based Aircraft in Hangars	40	48	55	72
d. Existing Hangar Space	44	44	44	44
e. Surplus (Deficit) (d-c)	**4**	**(4)**	**(11)**	**(28)**

AUTOMOBILE PARKING

Automobile parking space is based on industry guidelines of 1.3 parking spaces per PH passenger/pilot enplanements. The airport currently has 24 automobile parking spaces with two spaces meeting ADA requirements. Table 4.8 identifies the automobile parking requirements throughout the 20-year planning period.

Table 4.8 – Automobile Parking Requirements

Element	2014	2019	2024	2033
Required automobile parking spaces	18	27	31	42
Existing automobile parking spaces	24	24	24	24
Additional spaces needed – surplus/(deficit)	6	(3)	(7)	(18)

TERMINAL BUILDING

The terminal building requirements used a rule-of-thumb of 50 square feet per PH passenger for computing the gross area needed for passenger processing in a terminal building at a general-aviation airport. Table 4.9 identifies terminal building requirements throughout the 20-year planning period.

Table 4.9 – Terminal Building Requirements (in square feet)

Element	2014	2019	2024	2033
Terminal building requirements	700	1,050	1,200	1,600
Existing terminal building for passenger processing	1,200	1,200	1,200	1,200
Total additional area needed surplus/(deficit)	500	150	0	(400)

FUEL SALES

As noted in Section 3 (see Fuel Sales Forecast), sales are expected to steadily increase from the current annual average of 40,000 gallons to 75,000 gallons, an almost 100% increase. While the current capacity of 12,000 gallons each of both 100LL and Jet A is sufficient to handle demand, the system, which was purchase using airport funds only, is approximately 20 years old. The assumption is the system will be ready for replacement in the next 10 years.

SUMMARY

Table 4.10 identifies a summary of the preferred forecasts for Wiscasset Municipal Airport. The numbers indicate the existing and requirements.

Table 4.10 – Facility Requirements Summary

Element	Existing	2014	2019	2024	2033
Runway length	3,397 feet	3,397 feet	3,397 feet	3,397 feet	3,397 feet
Runway width	75 feet	75 feet	75 feet	75 feet	75 feet
Aircraft-parking apron	120,000 sf.	83,605 sf.	100,865 sf.	118,799 sf.	153,993 sf.
Hangar requirements	44	40	48	55	72
Auto Parking Spaces	24	18	27	31	42
Terminal building requirements	1,200 sf	700 sf	1,050 sf	1,200 sf	1,600 sf

Section 5 – Development Alternatives

INTRODUCTION

The purpose of this Section is to identify and evaluate reasonable development alternatives for Wiscasset Municipal Airport that not only meet the demand levels outlined in Section 4 but also are constructible, minimize environmental impacts, and are financially feasible. The underlying objective is to meet the identified needs for both capacity and safety requirements for the entire airfield operation and infrastructure. This Section reviews airport land available for future development and evaluates realistic airport layouts that incorporate the recommended facilities identified in Section 4.

ASSUMPTIONS

It is important to address several key assumptions and project needs that were developed in earlier parts of this study before any alternatives can be analyzed. These assumptions are part of the foundation upon which the alternatives are developed.

- The airport will remain a general aviation airport during the entire 20 year planning period.
- The existing types of aircraft using the airport are not expected to change significantly throughout the planning period and the existing mix of operations is forecasted to remain primarily single engine aircraft. However, a slight increase in turboprop and new sports aircraft/very light jets is anticipated as identified in Section 3, Forecasts of Aviation Demand.
- Available runway length meets the needs of a majority of the current fleet and existing critical aircraft; however, a runway extension may be necessary to meet the minimum runway length requirements for aircraft in the future.
- The ARC of B-II will remain the same throughout the 20 year planning period.

DEVELOPMENT ALTERNATIVES ANALYSIS

This subsection identifies alternatives for locating the recommended facility improvements throughout the long term. Improvements identified throughout the 20-year planning period in Section 4 of this AMPU include the following:

- Extend runway by 603 feet for a total of 4,000 feet
- Expand aircraft parking apron by 33,993 square feet
- Identify space for 28 additional hangars
- Expand automobile parking to accommodate 18 additional spaces
- Expand terminal building by 400 square feet

ALTERNATIVES ANALYSIS – LANDSIDE

This section analyzes landside alternatives, primarily options for adding additional apron areas, hangar development, and space for a large hangar/museum complex for the Texas Flying Legends. The following sections discus four alternatives for accommodating proposed landside development at the airport throughout the 20-year planning period.

Common Landside Development Alternatives

There are several options common to the four alternatives. These are discussed first followed by an assessment of each of the four specific alternatives

- **Relocate ASOS** – The ASOS is in a location that does not permit consistent and accurate wind measurement. It is located within the clearing zone recommended by FAA guidelines.[13] This zone extends around the wind sensor 500 feet for objects not greater than 15 feet above the sensor and 1,000 feet for objects 10 feet above the sensor. In both cases, there are multiple obstructions in the form of trees and buildings that violate these parameters. In addition, the location of the ASOS severely limits the development of additional hangars in the apron area adjacent to the system. The Wiscasset ASOS unit is owned and operated by the National Weather Service, and any decisions to move it would have to be addressed through that agency, and may have to be funded 100% through airport funds.

  Proposed development identified on the landside alternatives will only be considered if the airport, FAA, and the National Weather Service confirm that the ASOS is not providing consistent and accurate wind measurement. The ASOS does not need to be relocated in order to accommodate future landside development.

- **Construct Conventional Hangar (Building 18) –** This includes constructing a 35x45 foot conventional hangar (Building 18) to the south of existing Buildings C5-7. This conventional hangar can accommodate two small aircraft. Design and construction of Building 18 is estimated to cost $40,000. –**West Landside Development –** Landside development to the west includes two 50x50 foot conventional hangars (Buildings 14 and 15) and two 50x160 foot T-hangars (Buildings 16 and 17). Buildings 14 and 15 can each accommodate up to two small aircraft and Buildings 16 and 17 can each accommodate up to eight small aircraft. This includes approximately 65,400 square feet of pavement to be used for aircraft taxiing to the hangars. This development is estimated to cost $380,000.

[13] FAA Order 6560.20B, Siting Criteria for Automated Weather Observing Systems (AWOS).

- **Expand Automobile Parking** – The airport has a slight shortage of automobile parking spaces during normal conditions, a problem that is critical during the peak summer months. It is recommended that the area between the main aircraft apron and Chewonki Neck Road should include additional space for automobile parking. The area is slightly different in each alternative and is discussed in more detail in the subsequent sections.
- **Relocate Septic System** – The existing septic system (between Building 1 and the public road) should be removed and reconstructed to allow for expansion of automobile parking.
- **Land Acquisition** – Three properties have been identified to be acquired if the opportunity becomes available including Tax Map U20, Lots 2 and 3 and Tax Map U21, Lot 9A. Acquisition of these properties is estimated to cost $800,000; however, the business property may be eligible for an additional $80,000 due to state regulations for relocating a business. This $80,000 is not eligible for FAA AIP funding and would need to be paid primarily by the airport. Business moving costs and reestablishment expenses should be evaluated prior to moving forward with acquiring the business located on Tax Map U21, Lot 9A in order to determine if the business owner would be entitled to business relocation expenses per state regulations that are not eligible for FAA AIP funding. This property acquisition is recommended in all landside development alternatives.

Landside Development Alternative 1

In addition to the alternatives discussed in the previous section, the following alternatives were examined. Figure 5-1 identifies the development proposed in Alternative 1 including the common features applicable to all alternatives.

NOTE: All landside and airside Alternative plans developed as part of this master plan update are contained in Appendix 4.

A 16,100 square foot building is proposed to be used for the terminal building, FBO, and Texas Flying Legends' Museum. This building is identified on Figure 5-1 as Building 19. It is anticipated that approximately 12,100 square feet will be used for the museum, 2,400 square feet for the FBO, and 1,600 square feet for the terminal building. Design and construction of Building 19 is estimated to cost $2,500,000.

An approximate 10,430 square foot automobile parking area extension has been added adjacent to the proposed Building 19. This area can accommodate 27 vehicles. Design and construction of the automobile parking area extension is estimated to cost $60,000.

The fuel system is shown to be relocated to the west of the terminal building. Removal of the existing fuel farm and construction of a new fuel farm is estimated to cost $350,000.

Landside Development Alternative 2

Figure 5-2 identifies the development proposed in Alternative 2 including the common features applicable to all alternatives.

A proposed 12,250 square foot building is proposed to be used for the Texas Flying Legends' Museum identified as Building 19 located to the west of the proposed maintenance building. Design and construction for Building 19 is estimated to cost $2,000,000.

An approximate 8,260 square foot automobile parking area extension has been added adjacent to the terminal building. This area can accommodate 21 vehicles. The estimated cost for expanding the automobile parking areas is $50,000.

Landside Development Alternative 3

Figure 5-3 identifies the development proposed in Alternative 3 including the common features applicable to all alternatives.

The Texas Flying Legends' Museum is shown to the east of existing hangars and is identified as Building 19. This alternative can only accommodate a 9,600 SF building due to the building restriction line (BRL) and existing infrastructure. This may not be adequate as it is anticipated that the museum requires a 12,000 SF building. Existing conventional hangars shown as Buildings 3 and 4 are proposed to be removed when the museum is constructed. Design and construction for this project is estimated to cost $1,500,000.

The fuel system is identified to be relocated to the west of the proposed maintenance building. Removal of the existing fuel farm and construction of a new fuel farm is estimated to cost $350,000.

An approximate 7,300 square foot automobile parking area extension has been added adjacent to the terminal building. This area can accommodate 19 vehicles. This project is estimated to cost $50,000.

Landside Development Alternative 4

Figure 5-4 identifies the development proposed in Alternative 4 including the common features applicable to all alternatives. Figure 5-4 identifies six 35 x 45 foot conventional hangars to the east

of the terminal building that are identified as Buildings 19-24. These conventional hangars can accommodate two small aircraft each. Design and construction costs for Buildings 19-24 are estimated to cost $200,000.

An approximate 14,400 square foot building is shown to the west of existing hangars and is identified as Building 26. This building is proposed to be used for the FBO and Texas Flying Legends' Museum. Approximately 12,000 square feet is proposed for the museum and 2,400 square feet for the FBO. Design and construction for Building 26 is estimated to cost $2,200,000. An approximate 14,500 square foot automobile parking lot is identified adjacent to this building and can accommodate approximately 35 vehicles.

An approximate 10,430 square foot automobile parking area extension has been added adjacent to the terminal building. This area can accommodate 27 vehicles. Design and construction of the automobile parking area extension is estimated to cost $60,000.

An approximate 10,600 square foot aircraft parking apron is proposed to be used for small transient aircraft and an approximate 109,980 square foot apron to be used for large transient aircraft. This aircraft parking apron is located adjacent to the proposed museum and FBO building. This proposed aircraft parking apron can accommodate 11 small aircraft and three large aircraft. Design and construction of the aircraft parking lot and automobile parking lot is estimated to cost $700,000.

The fuel system is identified to be located adjacent to this proposed apron area. Removal of the existing fuel farm and construction of a new fuel farm is estimated to cost $350,000. A restaurant is identified near the proposed apron, automobile parking, and Building 26. Approximately 2,240 square feet of pavement will be needed for automobile parking, which can accommodate four vehicles. This project is estimated to cost $500,000.

A 60 x 80 foot conventional hangar is shown to the west of the proposed apron and is identified as Building 25. This hangar can accommodate up to two aircraft. Construction of this hangar also will include approximately 9,920 square feet of pavement for aircraft to taxi to the hangar and approximately 2,420 square feet of pavement for an automobile parking lot, which can accommodate five vehicles. Design and construction costs for Building 25 and associated pavement are estimated to cost $100,000.

Summary Landside Development Alternative

Table 5.1 identifies a summary of the landside development alternatives.

Table 5.1 – Landside Development Summary of Costs

Alternative	Project	Estimated Cost
1	Relocate ASOS	Unknown
	Construct Hangars	$420,000
	Expand Auto Parking	$60,000
	Relocate/Reconstruct Septic System	$50,000
	Acquire Land	$800,000
	Construct fuel farm	$350,000
	Construct Museum/FBO/Terminal Building	$2,500,000
2	Relocate ASOS	Unknown
	Construct Hangars	$420,000
	Expand Auto Parking	$50,000
	Relocate/Reconstruct Septic System	$50,000
	Acquire Land	$800,000
	Construct Museum/FBO/Terminal Building	$2,000,000
3	Relocate ASOS	Unknown
	Construct Hangars	$420,000
	Expand Auto Parking	$50,000
	Relocate/Reconstruct Septic System	$50,000
	Construct fuel farm	$350,000
	Construct Museum/FBO/Terminal Building	$1,500,000
4	Relocate ASOS	Unknown
	Construct Hangars	$720,000
	Expand Auto Parking	$60,000
	Relocate/Reconstruct Septic System	$50,000
	Construct Hangars	$700,000
	Construct Aircraft Parking Apron	$700,000
	Construct new fuel farm	$350,000
	Construct Restaurant	$500,000
	Construct Museum/FBO	$2,200,000

Landside Development Alternative 1 does not maximize space on existing airport property for hangar development, which was determined to be one of the primary facilities required throughout the 20-year planning based on the forecasts and facility requirements. Landside Development Alternative 2 does not provide space for the fuel system to be relocated as there is not enough space available for the required buildings without being an obstruction to the FAR Part 77 transitional surface. Landside Development Alternative 3 does not have adequate space for a 12,000 square foot building for the Texas Flying Legends' Museum due to building height restrictions. The building on this alternative is only 9,600 square feet.

Preferred Alternative – Landside

Landside Development Alternative 5 was selected by the Planning Advisory Committee and approved by the town's Board of Selectman as the preferred alternative. This concept allows for the maximum use of available space for hangar development with space for up to 36 aircraft. The other alternatives only provide space for up to 22 aircraft. This alternative also identifies a separate area for the Texas Flying Legends and an aircraft parking apron for both small and large itinerant aircraft. This area are also provides adequate automobile parking for the Texas Flying Legends' Museum and a restaurant. Land acquisition will be needed in order to accommodate this recommended development; however, some of the development can be accomplished prior to purchasing the additional parcels.

Alternatives Analysis – Airside

This section analyzes airside alternatives, including options for extending the runway 603 feet for a total length of 4,000 feet. The following sections discuss four alternatives for accommodating proposed airside development at the airport throughout the 20-year planning period.

Airside Development Alternative 1 – Runway 7 Extension

Figures 5-6 and 5-7 identify a 603 foot extension to Runway 7.

An obstruction analysis was completed for the TERPS 20:1 surface. The TERPS visual area approach surface has an inner width of 400 feet, outer width of 3,160 feet, a length of 10,000 feet, and a 20:1 slope. Vegetative obstructions for Alternative 1 include the following: 1.77 acres on-airport property and 1.39 acres off-airport property for Runway 7 and 0.79 acres on-airport property and 0.29 acres off-airport property for Runway 25. Approximately 0.22 acres of obstructions located on-airport property for Runway 25 are within wetlands. It is important to note that there are existing obstructions to the FAR Part 77, TERPS, and threshold siting surface that will need to be removed regardless of whether the airport moves forward with an extension to the runway.

Chewonki Neck Road will need to be relocated in order to accommodate the 603 foot extension to Runway 7. This alternative will impact the adjacent Chewonki Campground as the runway extension and relocated road will extend off airport property into land owned by the Chewonki Campground. This portion of the Chewonki Campground would need to be acquired in fee simple interest in order to extend Runway 7.

Taxiway 'A' has been extended to the new proposed threshold and the PAPI has been relocated.

Alternative 1 results in approximately 15,000 square-feet of direct fill impacts to freshwater wetlands located to the west of the existing Runway 7 threshold. The majority of fill impacts result from the construction of the runway and taxiway extensions and will occur to wet meadow and scrub-shrub wetlands located on the east side of Chewonki Neck Road. A small pocket of scrub-

shrub wetlands will be impacted by constructing the relocation of Chewonki Neck Road. Proposed wetland impacts will be limited to airport property. National Wetlands Inventory (NWI) maps, Lincoln County soil maps and other resources were utilized to assess the presence of wetlands within proposed off-airport work locations. Field assessments will be required, however, prior to construction to verify the absence of wetlands within newly acquired airport property construction locations.

Based on preliminary calculations of impacts to freshwater wetlands, a Natural Resources Protection Act (NRPA) Tier 2 Freshwater Alteration permit will be required to address 24,583 square-feet of wetland alterations resulting from the proposed Runway 7 and Taxiway 'A' extensions and Chewonki Neck Road relocation (approximately 15,000 square-feet) and Runway 25 obstruction removal (approximately 9,583 square-feet). The NRPA wetlands application is submitted to the Maine Department of Environmental Protection (MDEP) and the U.S. Army Corps of Engineers (ACOE) for review and determination. Additionally, compensatory mitigation will likely be required by MDEP and the ACOE for direct fill impacts as well as wetland alterations resulting from tree removal activities conducted in wetlands. Finally, an amendment to the airport's existing Site Location of Development (SLOD) permit will be required from MDEP to address the construction of new impervious surfaces (pavement) at the airport.

The FAA requires the preparation of an Environmental Assessment (EA) prepared in accordance with FAA Order 5050.4B National Environmental Policy Act (NEPA) Implementing Instructions for Airport Actions to assess potential impacts associated with the implementation of Airside Development Alternative 1. The EA must evaluate a range of development alternatives that best meet the needs of the airport while minimizing environmental impacts to the greatest extent practicable. Although wetland impacts associated with this development alternative are below those impact thresholds typically requiring the need for an EA, runway extension projects are often viewed with contention by the airport's surrounding community. Consequently, the FAA may require the preparation of an EA to provide stakeholders the opportunity to review and provide comment on the project.

Design and construction for this runway extension is estimated to cost $2,500,000.

Airside Development Alternative 2 – Runway 25 Extension

Figures 5-8 and 5-9 identify a 603 foot extension to Runway 25.

An obstruction analysis for the TERPS 20:1 surface also was completed for this alternative using the same dimensions as used in Airside Development Alternative 1. This obstruction analysis is shown on Figure 5.8. Vegetative obstructions for Alternative 2 include the following: 2.04 acres on-airport property and 1.58 acres off-airport property for Runway 7 and 2.44 acres on-airport property and

1.57 acres off-airport property for Runway 25. Approximately 0.35 acres of obstructions located on-airport property to Runway 25 and approximately 0.33 acres to Runway 7 are within wetlands.

State Route 144 will need to be relocated in order to accommodate the 603 foot extension to Runway 25. This alternative will impact property not currently owned by the airport and will need to be acquired in fee simple interest in order to extend the runway and relocate the road.

Alternative 2 results in approximately 110,200 square-feet of direct fill impacts to freshwater wetlands located to the northeast of the existing Runway 25 threshold. Fill impacts will result from the construction of the Taxiway 'A' extension and the State Route 144 relocation. Impacts are proposed within wet meadow and scrub-shrub wetlands located on both the east and west sides of Route 144. Proposed wetland impacts will be limited to airport property. NWI maps, Lincoln County soil maps and other resources were utilized to assess the presence of wetlands within proposed off-airport work locations (i.e. off-airport obstruction removal efforts required to clear the Runway 25 approach). Field assessments will be required, however, prior to construction to verify the presence or absence of wetlands within off-airport obstruction removal locations.

Based on preliminary calculations of impacts to freshwater wetlands, a NRPA Tier 3 Freshwater Alteration permit will be required to address 139,821 square-feet of wetland alterations resulting from the proposed Runway 25 and Taxiway 'A' extensions and Route 144 relocation (approximately 110,200 square-feet), Runway 25 approach obstruction removal (approximately 15,246 square-feet), and Runway 7 approach obstruction removal (approximately 14,375 square-feet). The NRPA wetlands application is submitted to MDEP for review and determination. Additionally, a Section 404 Individual Wetlands Permit will be required from the ACOE due to the size of the project (projects proposing an acre or more of wetland fill typically require an ACOE Individual Permit). Compensatory mitigation will be required by MDEP and the ACOE for direct fill impacts as well as wetland alterations resulting from tree removal activities conducted in wetlands. An amendment to the airport's existing SLOD permit will be required from MDEP to address the construction of new pavement at the airport.

Also, based on the need for an Individual Permit from the ACOE, an EA prepared in accordance with FAA Order 5050.4B *National Environmental Policy Act (NEPA) Implementing Instructions for Airport Actions* will be required to assess wetland and other potential environmental impacts associated with the project. The EA will be prepared prior to conducting environmental permitting efforts and will assess potential impacts to natural resources including items such as, wetlands, wildlife, historic and culturally significant resources, and impacts to abutters resulting from noise. The draft EA will be distributed to environmental regulatory agencies for review and comment and will be made available for public review and comment as well. A final draft that includes public and agency comment will be submitted to FAA for determination. The FAA will either issue a FONSI, indicating the project can move forward with the permitting phase or the FAA will request the preparation of an EIS as discussed in Alternative 1.

Design and construction for this runway extension is estimated to cost $2,750,000.

Airside Development Alternative 3 – Declared Distances

Figures 5-10 and 5-11 identify a 68 foot extension to Runway 25 and a 535 foot extension to Runway 7 for a total of 603 feet.

This will accommodate a 300 foot runway safety area before crossing State Route 144; however, Chewonki Neck Road will need to be relocated in order to accommodate the 535 foot extension to Runway 7.

This alternative includes a 1,240 foot displacement to Runway 7 in order to clear vegetative and manmade obstructions. Declared distances have been evaluated in an effort to maximize runway length available.

An alternate means of enhancing safety allows airport owners to declare what portions of an operational runway are available to satisfy aircraft accelerate-stop and landing distance requirements. The use of declared distances for airport design shall be limited to cases of existing constrained airports where it is impracticable to provide the RSA, the runway object free area, or the runway protection zone in accordance with the design standards. Application of declared distances can partially mitigate the lack of full safety areas by officially informing pilots how much runway is available during takeoffs and landings. The runway available takes into account the lack of a full RSA by reducing the runway length less any safety area deficiency.

In applying declared distances, it is helpful to understand the relationship between airplane certification, aircraft operating rules, airport data, and airport design. Information from Advisory Circular 150/5300-13A is included in the next paragraph for clarification.

Airplane certification provides performance distances known as takeoff decision speed (referred to as V_1), lift-off speed (V_{LOF}), takeoff safety speed (V_2), and stalling speed or the minimum steady flight speed in the landing configuration (V_{SO}). These speeds are established by the manufacturer and confirmed during certification testing for varying climatological conditions, operating weights, etc., and are used to determine takeoff run, takeoff distance, accelerate-stop distances, and landing distance based on unique airport conditions.

Declared distances represent the maximum distances available and suitable for meeting takeoff, rejected takeoff, and landing distances performance requirements for turbine powered aircraft. The declared distances are TORA and TODA, which apply to takeoff; Accelerate Stop Distance Available (ASDA), which applies to a rejected takeoff; and Landing Distance Available (LDA), which applies to landing. A clearway may be included as part of the TODA, and a stopway may be included as part of the ASDA. By treating these distances independently, declared distances is a design methodology

that results in declaring and reporting the TORA, TODA ASDA and LDA for each operational direction.

Terms associated with declared distances include the following.

- **Takeoff run** - The distance to accelerate from brake release to lift-off, plus safety factors.
- **Takeoff distance** - The distance to accelerate from brake release past lift-off to start of takeoff climb, plus safety factors.
- **Accelerate-stop distance** - The distance to accelerate from brake release to V_1 and then decelerate to a stop, plus safety factors.
- **Landing distance** - The distance from the threshold to complete the approach, touchdown, and decelerate to a stop, plus safety factors.

Aircraft operating rules provide a minimum acceptable level of safety by controlling the airplane maximum operating weights by limiting the airplane's performance distances as follows:

- **Takeoff run** shall not exceed the length of runway.
- **Takeoff distance** shall not exceed the length of runway plus clearway.
- **Accelerate-stop distance** shall not exceed the length of runway plus stopway.
- **Landing distance** shall not exceed the length of runway.

Airport data provides the runway length and/or the following declared distance information for calculating maximum operating weights and/or operating capability.

- **Takeoff run available (TORA)** - The length of runway declared available and suitable for satisfying takeoff run requirements.
- **Takeoff distance available (TODA)** - The TORA plus the length of any remaining runway or clearway beyond the far end of the TORA available for satisfying takeoff distance requirements. The usable TODA length is controlled by obstacles present in the departure area by aircraft performance. As such, the usable TODA length is determined by the aircraft operator before each takeoff and requires knowledge of the location of each controlling obstacle in the departure area. Extending the usable TODA lengths requires the removal of existing objects limiting the usable TODA lengths.
- **Accelerate-stop distance available (ASDA)** - The length of runway plus stopway declared available and suitable for satisfying accelerate-stop distance requirements.
- **Landing distance available (LDA**) - The length of runway declared available and suitable for satisfying landing distance requirements."

Declared distances are identified on Figures 5-10 and 5-11.

Application of declared distances does not improve safety other than to provide some operators with data they are currently not provided (i.e., available runway length because of substandard safety areas). This alternative will have major impacts to operations at the airport. Declared distances for the Runway 7-25 will shorten the usable length by 1,240 feet for aircraft landing on Runway 7 and taking off from Runway 25. This may restrict some aircraft from being able to use the airport in the future.

The location of the displaced threshold was determined based on the point where the displaced threshold siting surface is clear of vegetative and manmade obstructions off airport property. Vegetative obstructions to the TERPS visual area approach surface for Alternative 3 before displacing the threshold include the following: 2.23 acres on-airport property and 1.60 acres off-airport property for Runway 7 and 1.15 acres on-airport property and 0.29 acres off-airport property for Runway 25. Approximately 0.20 acres of obstructions located on-airport property to Runway 25 are within wetlands. Vegetative obstructions to the displaced threshold siting surface with a 1,240 foot displaced threshold include 0.18 acres of obstruction located on-airport property and 0.08 acres of obstructions located off-airport property.

Taxiway 'A' has been extended to the proposed runway ends. The PAPI on both runway ends will need to be relocated as part of this alternative.

Airside Development Alternative 3 results in approximately 16,000 square-feet of direct fill impacts to freshwater wetlands located beyond both existing runway ends. The wetland fill impacts resulting from the construction of the 535' extensions to Runway 7 and Taxiway 'A' and the relocation of Chewonki Neck Road (approximately 15,000 square-feet) are essentially the same as the wetland fill impacts discussed in Airside Development Alternative 1. Alternative 3, however, includes an additional 1,000 square-feet of impacts to scrub-shrub wetlands resulting from the extension of Taxiway 'A' necessary to correspond with the 68' Runway 25 extension. Proposed wetland impacts will be limited to airport property. As with the previous airside development alternatives, field assessments will be required prior to permitting proposed developments to verify the presence or absence of wetlands currently located off airport property.

Similar to the scenario discussed in Airside Development Alternative 1, an EA prepared to assess potential environmental impacts resulting from this airside development alternative will likely be required by FAA.

Based on preliminary calculations of impacts to freshwater wetlands, a NRPA Tier 2 Freshwater Alteration permit will be required to address approximately 24,712 square-feet of wetland alterations resulting from the proposed extensions to Runway 7-25 and Taxiway 'A' extensions and Chewonki Neck Road relocation (approximately 16,000 square-feet) and Runway 25 approach obstruction removal (approximately 8,712 square-feet of vegetation to be removed from forested wetlands at the eastern edge of airport property). The NRPA wetlands application will be

submitted to the MDEP and the ACOE to be reviewed conjointly. Compensatory mitigation will likely be required by regulatory agencies for fill and obstruction removal activities conducted in wetlands. An amendment to the airport's existing SLOD permit will also be required from MDEP to address the construction of new impervious surface at the airport.

Design and construction for this runway extension is estimated to cost $3,000,000.

Airside Development Alternative 4 – Do Nothing Alternative

This alternative assumes no further improvements from a safety and capacity standpoint. This alternative would assume that all pavements at the airport would eventually deteriorate into an unusable condition. This is a violation of FAA grant assurances that require the airport to be maintained and operational. This alternative would result in a significant negative economic impact to the community. Therefore, this is not a preferred alternative for the airport.

Airside Development Alternative 5 – Modified Do Nothing Alternative

This alternative would maintain the runway in good condition at the existing length of 3,397 feet and allow for an improvement to the RSAs off both ends of the runway. The RSA would be improved by adding a stable base material under the topsoil for increased safety in the event of an overrun. Although this alternative would not increase the length of the runway, it will provide additional safety for the B-25 and other aircraft used by the Texas Flying Legends and other airport users.

Preferred Airside Development Alternative

Table 5.2 identifies a summary of the airside development alternatives.

Table 5-2 Airside Development Alternatives Summary

Alternative	Environmental Impacts	Estimated Cost
1	Approximately 15,000 square feet of wetland impacts for runway extension, road relocation, and taxiway extension and 9,583 square feet wetland impacts for Runway 25 obstruction removal. EA required.	$2,500,000
2	Approximately 110,200 square feet of wetland impacts for runway extension, road relocation, and taxiway extension; 15,246 square feet wetland impacts for Runway 25 obstruction removal; and 14,375 square feet wetland impacts for Runway 7 obstruction removal. EA required.	$2,750,000
3	Approximately 16,000 square feet of wetland impacts for runway extension, road relocation, and taxiway extension and 8,712 square feet wetland impacts for Runway 25 obstruction removal. EA required.	$3,000,000

There are significant impacts for all three airside alternatives associated with extending the runway by 603 feet for a total length of 4,000 feet. Alternatives 1 and 3 require relocating Chewonki Neck Road with a portion of the relocated road on land currently owned by Chewonki Campground. Alternative 2 involves relocating State Route 144 with a portion being located off airport property.

Wetland impacts result from the implementation of Airside Development Alternatives 1, 2 and 3. To summarize, each alternative proposes direct wetland fill and alteration impacts resulting from tree clearing in wetlands. All wetland impacts considered occur on airport property, though additional field work is required to substantiate potential impacts of work proposed in parcels to be acquired. Airside Development Alternative 1 proposes approximately 15,000 square-feet of fill impacts to scrub-shrub and wet meadow wetlands and includes approximately 9,583 square-feet of tree removal from forested wetlands located in the eastern region of airport property. Development Alternative 3 proposes approximately 16,000 square-feet of fill impacts to scrub-shrub and wet meadow wetlands and includes approximately 8,712 square-feet of tree removal from forested wetlands located in the eastern region of airport property. Finally, Airside Development Alternative 2 results in approximately 110,200 square-feet of direct fill impacts to freshwater wetlands and requires the removal of approximately 15,246 square feet of vegetation removal from wetlands associated with Runway 25 and 14,375 square feet of vegetation removal from wetlands associated with Runway 7.

These alternatives will require review within the context of an EA in accordance with FAA and NEPA guidelines. Additionally, federal and state environmental permits must be obtained prior to constructing any of the airside development alternatives considered in this Section and compensatory mitigation will be required to address wetland functions and values lost as a result of implementing any of the three alternatives considered.

These impacts need to be weighed against the advantages of having a 4,000 foot runway, which is needed by aircraft that currently use the airport. It has been determined that a runway extension will not be recommended due to the significant impacts associated with extending the runway in either direction.

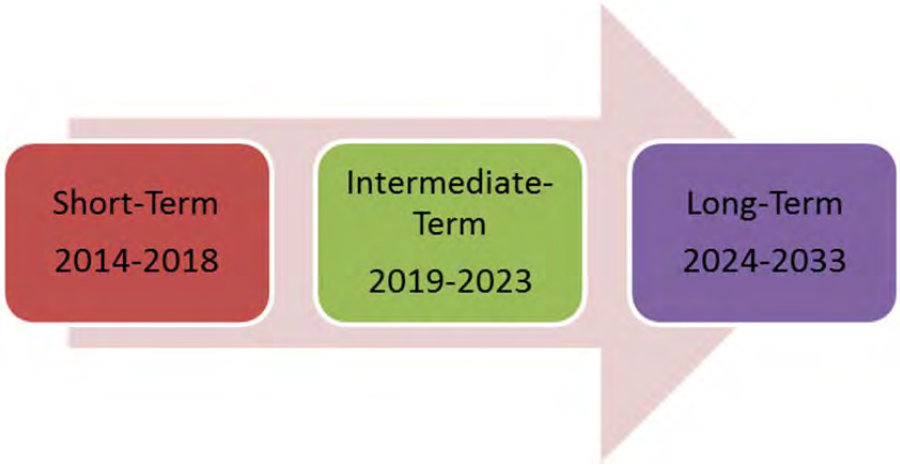
Section 7 – Facilities Implementation Plan

GENERAL

This Section provides a summary description of the recommended improvements and associated costs. The schedule of improvements depends, in large part, on the levels of demand that trigger the need for expansion of existing facilities. The phasing discussion that follows is based on best observations at the time this plan was prepared.

PHASING

Schedules of proposed development at Wiscasset Municipal Airport resulting from recommendations proposed previously in this AMPU and estimates of development costs are discussed in this section. Development items are listed by three periods: short term (zero to five years), intermediate term (six to 10 years), and long term (11 to 20 years).



The short term identifies those projects needed at the airport to satisfy existing demand and to correct any safety deficiencies. The intermediate and long terms identify projects needed to satisfy forecasted future demand levels and act as a "catch-all" for those projects that could not be funded in the short term or whose demand was not realized. It is not recommended that facilities in the intermediate and long terms be designed or constructed until the anticipated demand level develops.

Intermediate- and long-term demands may not occur exactly as the schedule indicates, which may impact the development timetable. Although each period has a designated length, projects identified for one period may overlap with another as demand and funding warrant. It is important to note that this list is dynamic in nature, meaning the order in which projects appear may change for a number of reasons, including a change in airport demand, funding availability, and political disposition. In other words, the town should be prepared to make adjustments as necessary.

The following discussion represents the priority of projects at this time, broken down into the short, intermediate, and long terms.

SHORT TERM

The most significant project facing the airport is the mitigation of obstructions to the airport's protected airspace, with an urgent emphasis on the approach surfaces to both runway ends. An environmental assessment was completed in September 2014[14] with the issuance by the FAA of a Finding of No Significant Impacts (FONSI) and the next step will be the acquisition of avigation easements in order to remove vegetative obstructions to the 20:1 FAR Part 77, TERPS, and threshold siting surfaces. This project is needed in order to correct existing safety deficiencies.

As noted in Section 4, a portion of Chewonki Campground is located within the RPZ and is considered by the FAA to be an incompatible land use due to the safety issues to both pilots and passengers and people on the ground at the campground. This is considered to be an existing safety deficiency that will need to be further evaluated by the FAA.

Runway 7-25 will need to be reconstructed within the short term and was included in the current CIP for the airport in 2014; however, the FAA will not fund this project until obstructions in the approach surfaces are clear. The runway edge lights will be replaced as part of this project, and it is recommended that the lights be LED (wired) or solar LED.

Hangar development is recommended in all planning phases that will occur consistent with demand. This report has identified space to accommodate future hangar development.

INTERMEDIATE TERM

The automobile parking is recommended to be expanded in the intermediate term due to a shortage of automobile parking spaces. The existing septic system will need to be relocated in order to allow the expansion of automobile parking. Approximately 250,000 sf. of pavement is needed for the expansion of automobile parking.

Hangar development is recommended in all planning phases that will occur consistent with demand. This report has identified space to accommodate future hangar development.

LONG TERM

It is recommended that three parcels of land be acquired if the opportunity becomes available in order to accommodate further landside development. These parcels include Tax Map U20, Lots 2 and 3 and Tax Map U21, Lot 9A.

[14] AIP Project No. 3-23-0049-016-2013.

The ASOS may need to be relocated in the long term as its existing location does not permit consistent and accurate wind measurement. This project will require FAA and the National Weather Service confirmation that the ASOS needs to be relocated.

An area to the east of the runway has been reserved for aviation development as needed in the long term and can be used for further hangar development as demand warrants.

COST ESTIMATES

Project cost estimates developed herein are based on construction costs of airport-development projects that were recommended in Section 4 and further refined in Section 5. In addition to construction costs, financial consideration was given to engineering and design, as well as construction items and contingencies not specifically enumerated.

After total project cost estimates were calculated, the respective amounts funded by federal, state, and local or private enterprises were determined based on federal funding-eligibility criteria. Under current legislation, the FAA funds 90 percent of eligible costs through its AIP; the remaining 10 percent is currently divided equally between the MaineDOT and the airport sponsor.

Table 7.1 identifies construction cost estimates based on current dollar values. It should be noted that these costs undoubtedly will rise in the future and will need to be refined once the projects are scheduled in the CIP for the airport.

FINANCIAL OVERVIEW

As discussed in Section 2, Inventory of Existing Facilities, expenses for the airport include items such as grass cutting and snow removal and revenue includes the lease for the FBO, leases for land for hangars, fuel, and miscellaneous items. Although the airport is not currently a self-sustaining department within the town, it is considered a valuable resource to the community. As with any airport, one of its goals is to generate sufficient revenue to offset expenses. Accordingly, a plan to maximize revenue should be set in place.

Table 7.1 - Financial Summary

PROJECT	ESTIMATED COST	CONTINGENCIES & UNPROGRAMMED COSTS	TOTAL ESTIMATED COST	FAA FUNDING	MAINEDOT FUNDING	TOWN OF WISCASSET FUNDING	PRIVATE FUNDING
SHORT TERM (2014-2018)							
Prepare EA	45,000	9,000	54,000	48,600	2,700	2,700	0
Avigation Easement Acquisition	125,000	25,000	150,000	135,000	7,500	7,500	0
Remove Obstructions	250,000	50,000	300,000	270,000	15,000	15,000	0
Purchase New Snow Removal Equipment	300,000	60,000	360,000	324,000	18,000	18,000	0
Reconstruct Runway 7-25 with new edge lighting	1,000,000	200,000	1,200,000	1,080,000	60,000	60,000	0
Construct Runway 07 Paved Overrun	220,000	44,000	264,000	237,600	13,200	13,200	0
Install REILs Runway 7	50,000	10,000	60,000	54,000	3,000	3,000	
Reconstruct Apron	275,000	55,000	330,000	297,000	16,500	16,500	0
Construct Hangars	420,000	84,000	504,000				504,000
Total Short-Term Costs	**$1,965,000**	**$393,000**	**$2,358,000**	**$1,668,600**	**$92,700**	**$92,700**	**$504,000**
INTERMEDIATE TERM (2019 - 2023)							
Expand Automobile Parking	60,000	12,000	72,000	64,800	3,600	3,600	0
Construct New Fuel Farm	350,000	70,000	420,000	378,000	21,000	21,000	0
Construct Hangars	200,000	40,000	240,000				240,000
Total Intermediate-Term Costs	**$410,000**	**$82,000**	**$492,000**	**$442,800**	**$24,600**	**$24,600**	**$240,000**
LONG TERM (2024-2033)							
Relocate ASOS	100,000	20,000	120,000	108,000	6,000	6,000	0
Land Acquisition (Tax Map U20, Lots 2 and 3 and Tax Map U21, Lot 9A)	800,000	160,000	960,000	864,000	48,000	48,000	
Construct Hangars	100,000	20,000	120,000				120,000
Update Airport Master Plan & Prepare Electronic ALP	200,000	40,000	240,000	216,000	12,000	12,000	0
Total Long-Term Costs	**$1,200,000**	**$200,000**	**$1,200,000**	**$972,000**	**$54,000**	**$54,000**	**$120,000**
SUMMARY							
Short Term (2014 - 2018)	1,965,000	393,000	2,358,000	1,668,600	92,700	92,700	504,000
Intermediate Term (2019 - 2023)	410,000	82,000	492,000	442,800	24,600	24,600	240,000
Long Term (2024 - 2033)	1,200,000	200,000	1,200,000	972,000	54,000	54,000	120,000
TOTAL CAPITAL COSTS	**$3,575,000**	**$675,000**	**$4,050,000**	**$3,083,400**	**$171,300**	**$171,300**	**$864,000**

Amounts are in 2014 dollars
Source: Stantec Consulting Services Inc., analysis

RECOMMENDATIONS

Based on observations during the development of this report and routine visits and site knowledge, Stantec offers several recommendations to the Town of Wiscasset and airport management.

1. Maintain a current master plan and ALP. Make written notes and changes to both and implement them in a timely manner.
2. The town should closely monitor airport activity and constantly review demand versus existing capacity to ensure the ACIP is synchronized to both. Planning a larger apron, or other major capital project normally takes several years.
3. Plan ahead fiscally to ensure projects are properly funded at least 1-2 years in advance of actual need. The revenue and expenses are considerably higher than similar airports based on the size, type, and location of the airport. This is primarily because the town manages fuel sales and leases pubic hangar space and rents floor space in the FBO/terminal building. The airport is a municipal facility similar to roads, highways, and schools that serve the public providing facilities and an infrastructure for the benefit to the community. An airport should contribute to the local tax base whenever possible through a revenue offset of its operating budget, including facilities such as hangars. As noted earlier in Section 2, KIWI does contribute to the town's tax base through hangar assessment in the amount of about $20,000 per year.
4. This report indicates that airport will need approximately 28 new hangars within the next 20 years. The town should ensure land lease rates remain competitive, have an inflation escalator clause, and are consistent with FAA policies on their term lengths. The proposed 28 additional hangars could potentially generate an additional $12,000 per year in land lease revenue and another $20,000 in taxes.
5. The town should consider long-term plans, beyond the next 20 years and in doing so should plan to acquire adjacent property when the opportunity presents itself. Four lots have been identified on the ALP. These include the parcels listed in Table 7.2 and depicted on the ALP (see Appendix 2). The cost of acquiring these lots may be eligible for funding from the FAA and MaineDOT through the AIP program. The town should develop minimum standards for the airport. The town, as the airport sponsor of a federally obligated airport has agreed to make available the opportunity to engage in commercial aeronautical activities by persons, firms, or corporations that meet reasonable minimum

Table 7.2 – Proposed Property Acquisition

Map	Lot	Current Owner	Assessed Value
U20	3	Shea, Charles & Faye	$129,300
U20	2	Williams, Stephen	$102,600
U21	9A	Boothbay Region Boatyard	$282,100
U21	7	Reed, Allen & Barbara	$75,600

standards established by the airport sponsor. The town's purpose in imposing standards is to ensure a safe, efficient and adequate level of operation and services is offered to the public. Such standards must be reasonable and not unjustly discriminatory. In exchange for the opportunity to engage in a commercial aeronautical activity, an aeronautical service provider engaged in an aeronautical activity agrees to comply with the minimum standards developed by the town. Compliance with the airport's minimum standards should be made part of all existing and future aeronautical service provider's lease agreements with the town. The FAA suggests that airport sponsors establish reasonable minimum standards that are relevant to the proposed aeronautical activity with the goal of protecting the level and quality of services offered to the public. Once the town has established minimum standards, it should apply them objectively and uniformly to all similarly situated on-airport aeronautical service providers. The failure to do so may result in a violation of the prohibition against exclusive rights and/or a finding of unjust economic discrimination for imposing unreasonable terms and conditions for airport use. Additional information is available in FAA AC 150/5190-7, Minimum Standards for Commercial Aeronautical Activities.

6. Finally, the town should develop an Airport Overlay District (AOD). The AOD is a proposed zoning designation that places additional use restrictions and standards on property located in close proximity to the airport. The boundaries of the AOD are based on recommendations from the FAA and should be shown on the town's official zoning map. The AOD should propose standards include limiting the height of structures within airport approach zones, requiring full cut-off light fixtures for nonresidential uses, requiring airport disclosure statements to accompany land transactions, and limiting incompatible uses and residential densities in close proximity to the airport.

   The AOD's purpose would be to protect and preserve the Wiscasset Municipal Airport and surrounding properties from incompatible land uses and to include the following.

   - Protect and promote the general health, safety, welfare, and economy of the airport area.
   - Promote and encourage aviation related industries and compatible nonresidential uses to locate in close proximity to the airport.
   - Protect the character and stability of existing land uses in the vicinity of the airport.
   - Promote sustainable development patterns that are consistent with the town's comprehensive land use plan and the ALP.