

Chapter 1: Introduction

Purpose and Scope

The information presented in this report represent the study findings for the 2014 Rapid City Regional Airport Master Plan Update prepared for the City of Rapid City. Airport Master Plans are prepared in accordance with Federal Aviation Administration (FAA) Advisory Circular (AC) 150/5070-6B, *Airport Master Plans*. The development plans determined from this project will be considered in the National Plan for Integrated Airport Systems (NPIAS) as it is managed by the FAA. This project is funded by the Rapid City Regional Airport with the intent to seek partial reimbursement from the Federal Aviation Administration (FAA) through a grant and thus complies with Federal requirements.

This Airport Master Plan Update for the Rapid City Regional Airport will serve as an updated guide for identifying future development necessary to accommodate existing and future aviation demand. The airport's current and forecast safety, capacity and compatibility needs are addressed in this study. Many projects have been completed and new planning considerations have developed since the previous Master Plan study in 2008.



The scope of the study was developed by the Rapid City Regional Airport and Kadrmaz, Lee & Jackson (KLJ) in cooperation with FAA and state officials to identify the specific needs and objectives of the airport owner. The scope includes work tasks with the purpose of documenting existing conditions, forecasting future aviation activity levels, identifying future facility requirements, formulating and evaluating airfield alternatives, and preparing implementation plans. Recommendations will be made for improvements that are triggered by safety requirements or demand thresholds.

The project received notice to proceed in January 2014. The baseline project data is from inventory efforts completed in March 2014. Baseline airport operational data is from Federal fiscal year 2013 (October 2012 - September 2013). The Federal fiscal year time period aligns directly with the FAA Terminal Area Forecast. Discrepancies in historical data will be noted throughout the document.

The Airport Layout Plan for this Master Plan was adopted by the Rapid City Regional Airport on September 22, 2015.

Airport Master Plan Format

The required and recommended contents of Airport Master Plans are detailed per FAA standards. Effective airport master plans are based on the analysis of significant amounts of data, and many airport master plans typically present not only the planning conclusions, but all data and accompanying analysis in considerable detail.

This Master Plan presents extensive data to support the plan in a series of appendices. As the reader moves through the narrative descriptions, there are frequent references to specific appendices to provide additional details and information. In addition, internet hyperlinks are included to reference documents that are current as of the time of this report.

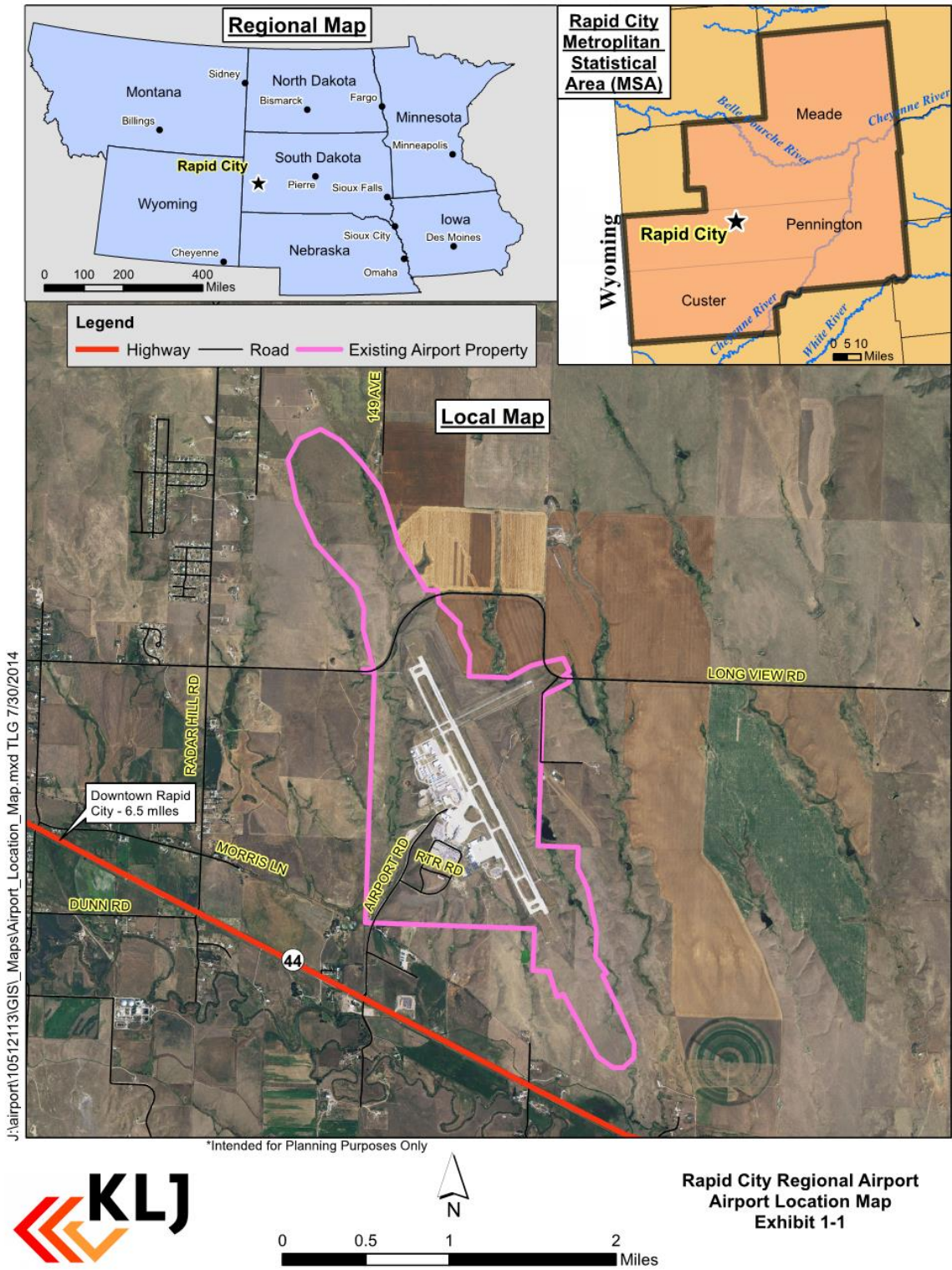
Background

Rapid City Regional Airport has been owned and operated by the City of Rapid City since 1950 when it was first established. Prior to the current location, the municipal airport was collocated at the Rapid City Army Air Base, now recognized as Ellsworth Air Force Base. The airport now encompasses 1,655 acres of land. The airport is located nine miles east of the Rapid City central business district. See **Exhibit 1-1: Airport Location Map**.

Since 1950, Rapid City Regional Airport has expanded to accommodate the aviation needs of the community, and has helped support the social and economic vitality of the City of Rapid City and the Black Hills region. The City is a regional commercial and business hub within an agricultural and tourism region of the country. Rapid City, first known as a hay camp, was laid out as a town in 1876 and has grown from a six block area to a community of nearly 70,000 people. Unemployment rate in Rapid City has historically been lower than the statewide and national figures. Health care, retail and financial trade sectors make up the majority of employers in the Rapid City area. Growth in tourism, travel related to Ellsworth AFB, and thriving local businesses in health care, financial, and agricultural-related businesses are seen locally as significant contributors to increased airport use and passenger enplanements.

Rapid City Regional Airport is the second largest airport in the state of South Dakota serving four domestic airlines flying to nine non-stop destinations. The airport enplaned 263,560 passengers in Federal Fiscal Year 2013 making the airport classified as a non-hub primary commercial service airport by FAA. The terminal building was constructed in 1989 and renovated in 2013 to accommodate growing passenger demands.

Exhibit 1-1 – Airport Location Map



Planning Considerations

Planning considerations for an airport master plan are features, elements or events that should be evaluated because they have the potential to affect the airport facility over the long term.

Previous Master Plan

Since 1991, the Airport has historically completed Master Plan studies or updates every five to seven years. The last Master Plan for Rapid City Regional Airport was completed in 2008 which included a variety of items. The 2008 Master Plan study recommended several improvements including:

Projects Completed

- Relocate the airport rescue and fire fighting facility to provide space for aeronautical uses and ensure compliance with grant assurances.
- Straighten Taxiway A to correct a modification to FAA standards and provide increased aircraft parking.
- Construct a rental car preparation facility.
- Provide additional aircraft parking with new apron.
- Improve terminal facilities including expanded passenger holdrooms, expanded and reconfigured passenger security screening.

Projects In-Process

- Relocate the Northern Great Plains Interagency Dispatch Center to allow for space for aeronautical uses and ensure compliance with grant assurances.

Projects Not Completed

- Replace existing and construct additional T-hangars.
- Construct 30 additional conventional hangars.
- Construct 550 rental car spaces for overflow/storage parking with future expansion for an additional 1,100 vehicles.
- Construct up to 650 additional parking spaces for long term passenger, employee, and rental car parking.
- Relocate airport maintenance facilities to promote space for aeronautical uses.
- Improve terminal facilities to improve checked baggage security screening.
- Extend Runway 32 500 feet to meet the needs of existing users.
- Develop an area dedicated to cargo operations to enhance safety, increase security, and provide for future growth.
- Replace the air traffic control tower to improve airfield visibility.
- Provide for U.S. Forest Service facility growth.
- Plan for extension of the terminal concourse.

While many of the improvements proposed in the 2008 master plan have been constructed, there are others that remain. In addition changes in demand continue to occur which necessitates the need to update the Master Plan study to identify priority projects to meet on-going aviation needs.

Local Considerations

Between 2008 and 2014, the airport has seen many changes that affect airport planning. Some planning considerations from the previous Master Plan are still applicable today.

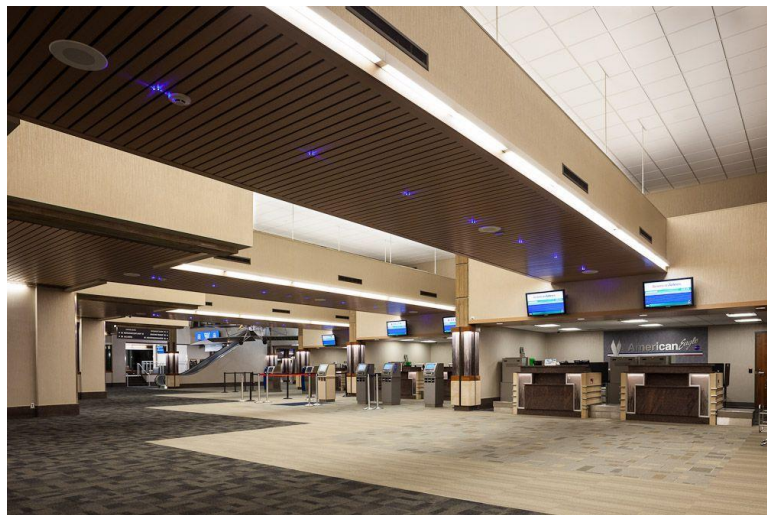
Development Constraints

The airport is in an open area without significant development. The airport is however constrained in that it is situated on a low plateau and any development requires a significant amount of fill. The airport has typically developed only as additional land is made suitable creating, particularly in the general aviation and US Forest Service areas, an amoeba like movement of buildings westward as land slowly is filled.

Passenger Terminal Complex

Rapid City Regional Airport has seen growing passengers as a result of increased demand and additional flights provided by the airlines. As a result, the airport continues to have a need for additional parking particularly during the summer tourist season. In addition, parking for rental cars is also constrained during the summer tourist season. A new rental car quick turn-around facility was completed which also removed some rental car parking. A need for additional parking spaces continues to exist for rental car overflow parking.

The terminal building was remodeled in 2013 with significant improvements for passenger screening, rental car and baggage claim areas and general updating. There remains a need to accommodate space for checked baggage screening. This is currently done behind each ticket counter and the need for an in-line baggage screening system was identified in the 2008 Master Plan. This plan will reexamine



this need with a particular focus on a preferred alternative and implementation timeline.

Air Cargo

Air cargo is currently handled at two separate locations, one near the old terminal building and the other on the north end of the general aviation apron. The old terminal building is being removed (2014-15) and a new location must be identified for air cargo to allow this

area to be redeveloped. There would be benefits from identifying a principle location for air cargo and providing good airside and landside access.

Army National Guard and US Forest Service

The South Dakota Army National Guard (SDARNG) and U.S. Forest Service (USFS) each occupy space immediately to the south of the airline terminal. The mission of the National Guard facilities at the airport have not changed, however the facility has recently completed a Master Plan and any planned facilities need to be incorporated into the airport planning efforts.

The USFS operates an air tanker base at the airport and currently can only fill one aircraft at a time with a first in, first out loop taxiway. The USFS is seeing changes in their fleet mix which will necessitate a change in facilities to accommodate increased aircraft sizes.



Community Growth

The City of Rapid City and surrounding area is projected to continue to grow at a steady rate of about 2 percent per year. This increase in population and business growth will likely translate into additional demand for the passenger terminal, air cargo, general aviation and support facilities at the Rapid City Regional Airport. Updated facility requirements are necessary for the airport to continue to grow to meet these community aviation needs.

A graphical representation of the planning considerations for this Master Plan study is shown on **Exhibit 1-2 - Planning Considerations Map**.

Planning Objectives

With the completed Master Plan projects, continued increase in activity, and constraints on airport development, the Rapid City Regional Airport authorized an update to the Master Plan. The Airport contracted with KLJ to prepare an update to the Airport Master Plan to examine options for the airport to address the planning considerations, including developing and analyzing alternatives and recommending a course of action.

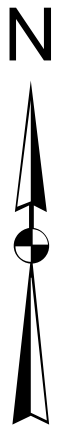
Based on the background and planning considerations, the planning objectives for this study identify the methods used to meet the airport development goals outlined by the Rapid City Regional Airport. The objectives are identified as follows:

- General Aviation Development - functionality & expansion alternatives
- Cargo Needs - functionality & optimal location for aircraft and vehicles
- Evaluate non-aeronautical development on airport property
- Runway Length & Alternatives when Primary Runway is out of service
- Passenger Terminal Building Needs
 - Inline baggage screening
 - Review Terminal Apron Size
 - Deicing Facility Implications
- Public Automobile Parking Needs
- US Forest Service Aerial Firefighting Base - functionality & expansion alternatives
- Relocation of Airport Road in General Aviation area
- Evaluate Snow Removal Equipment & Maintenance Facilities
- Siting options for Air Traffic Control Tower
- Update Land Use Compatibility
- Coordinate Master Plan with City and City Comprehensive Plan



Legend

- Existing Airport Easements
- Existing Airport Property
- Existing Runway Protection Zone



0 250 500 1,000
Feet

*Intended for Planning Purposes Only

**Rapid City Regional Airport
Planning Considerations Map
Exhibit 1-2**



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The Master Plan will also consider the following objectives as the process is undertaken:

- Review financial options for funding the Airport Capital Improvement Plan.
- Justify the proposed development through the technical, economic, and environmental investigation of concepts and alternatives.
- Provide an Airport Layout Plan identifying existing and proposed airport development.
- Establish a realistic schedule for the implementation of the development proposed in the plan, particularly the short-term capital improvement program.
- Propose an achievable financial plan to support the implementation schedule.
- Identify subsequent environmental evaluations that may be required before a proposed project is approved.

Master Plan Process

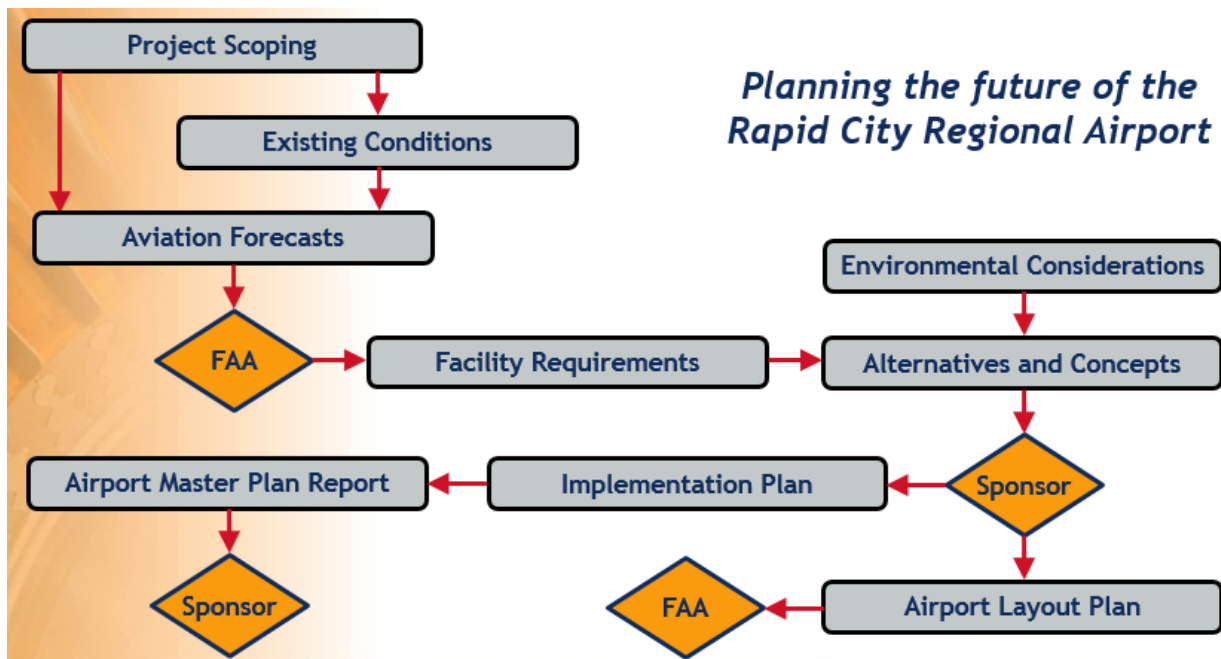
Guidelines for completing a Master Plan are set forth in FAA Advisory Circular 150/5070-6B. Each master plan study scope and level of effort is customized to fit each individual airport's needs and address critical issues. The recommendations made in the study allow airports to address key issues to allow for safety, capacity and compatibility to meet airport demands and community needs. Plans are flexible to provide demand-driven triggers for improvements.

The Airport Master Planning process involves several coordinated steps. The master plan study for Rapid City Regional Airport consists of the following elements:

- **Pre-Planning** - Airport development concerns are identified and planning objectives prepared to address these issues. An overall vision for the study is formulated that will guide the process.
- **Inventory of Existing Conditions** - Overview of airport setting, infrastructure and assets which includes airside, landside and support facilities; airspace, navigational aids and airport access.
- **Forecast of Aviation Demand** - Using established forecasting methods, estimate current and project future airport activity for general aviation, air cargo, and passenger enplanements.
- **Demand/Capacity Analysis and Facility Requirements** - Compare the existing capacity with the future demand and identify the facility requirements to satisfy the aviation safety, capacity and compatibility needs.
- **Alternatives Development and Evaluation** - Identify and evaluate options considering both on-airport and off-airport impacts consistent with the study goals and objectives. A preferred alternative is selected.
- **Environmental Overview** - Provide an overview of anticipated environmental impacts as part of the development of alternatives.
- **Implementation Plan** - Provide a comprehensive plan for implementation of the preferred alternative including project triggers, sequencing, and cost estimates.
- **Land Use Compatibility** - Complete a comprehensive review of land surrounding the airport for potential uses that are incompatible with safe airport operations and provide mitigation recommendations.

- **Airport Layout Plan** - Document the existing and planned airport facilities through a set of drawings approved by the airport sponsor, state and FAA.
- **Stakeholder and Public Involvement** - Prepare and execute a plan to engage important airport stakeholder and the public throughout the study to gather their input and address their concerns.

Exhibit 1-3 - Airport Master Planning Process Flowchart



Source: KLJ

Study Documentation & Approvals

The Master Plan Update was divided into chapters of information to document airport planning data, analysis, findings and recommendation of the study. The chapters included in the narrative report are the following:

- Chapter 1 - Introduction
- Chapter 2 - Existing Conditions
- Chapter 3 - Forecasts
- Chapter 4 - Facility Requirements
- Chapter 5 - Alternatives Development and Evaluation
- Chapter 6 - Implementation

Each narrative report chapter was prepared separately and distributed to the Rapid City Regional Airport staff initially for review. After airport staff review, each draft chapter was made available to key airport stakeholders for input prior to a final review and approval by the Rapid City Regional Airport Board. Each approved final draft chapter was then published on the airport's website for any final public comments.

In addition to the chapters there are a number of appendices¹ in this Master Plan. The list of appendices are as follows:

- Appendix A - Glossary of Terms
- Appendix B - Master Plan Process
- Appendix C - Public Involvement
- Appendix D - Airport Classification
- Appendix E - Airport Funding
- Appendix F - Airport Background
- Appendix G - Airfield Pavements
- Appendix H - Airfield Design
- Appendix I - General Aviation & Other Users
- Appendix J - Support Facilities
- Appendix K - Navigational Aids
- Appendix L - Airspace and Instrument Approaches
- Appendix O - Land Use Compatibility
- Appendix P - Environmental Overview
- Appendix T - Terminal Facilities
- Appendix U - Solid Waste Management Plan

In addition, an Executive Summary report has been prepared at the end of the master plan study to concisely document the recommendations of the study. This document was distributed to airport stakeholders and made available on the airports website.

The Rapid City Regional Airport Board provided master plan study approvals progressively thorough the project during their public meetings. The Airport Layout Plan for this Master Plan Update was adopted by the Rapid City Regional Airport on September 22, 2015. The Airport Layout Plan was submitted to FAA for review and approval on October 9, 2015.

Public Involvement

Public involvement is a key component to the successful development of an Airport Master Plan study. The purpose is to encourage information sharing and feedback from airport stakeholders including the airport owner, airport users/tenants, local government officials, resource agencies, elected and appointed officials and the general public. Public involvement provides valuable input to assist the airport owner in decision making and develop consensus on study conclusions.

Airport focus groups were established to provide input throughout the life of the study. The purpose of establishing focus groups was to facilitate group discussion and feedback from stakeholders groups. The sponsor chose this method over a technical advisory committee

¹ The lettering of appendices is based on a KLJ standard structure for Airport Master Plans and therefore some appendices letters may not be used depending on the specific project.

made up of stakeholder representatives. Focus groups represented the following airport stakeholders:

- General public
- Local Government
- Airport/Airlines/TSA/FAA
- Air Cargo
- General Aviation
- Airfield Tenants
- Terminal Tenants
- South Dakota Army National Guard
- U.S. Forest Service

Focus groups were invited and attended kickoff meetings with the purpose of providing a summary of airport inventory items and planning considerations. These meetings were held on March 12-14, 2014. Members of the focus groups received copies of draft study documentation for review and comment. A call for input was made during the inventory, facility requirements and alternatives stage for more detailed input to assist the Rapid City Regional Airport with decision making.

A Public Open House was held at two points during the master plan study; kickoff (March 13, 2014) and recommendations May 6, 2015. An Open House provided a forum for the Airport to share information on the study and solicit feedback from the public. The public was also invited to Airport Board meetings to provide feedback progressively during this project. Draft documents on the study were posted progressively for public review. An online comment form ran throughout the life of the project for provide the public with another forum to provide comments.

Study meetings with the Airport staff were held at key stages throughout the project to facilitate small group collaboration and feedback on study elements. See **Appendix C - Public Involvement** for copies of public involvement meeting agendas and summaries.

Conclusion

This Airport Master Plan Update study for the Rapid City Regional Airport provides the City of Rapid City with a usable guidance document to assist with decision making with airport capital improvements to meet aviation demands for the foreseeable future. As with any planning study, assumptions made are subject to change due to unpredictable internal and external events. For this reason, this study should be reviewed periodically to verify project scope and triggering events are still valid to meet the airport needs.