

Chapter 2: Existing Conditions

The Existing Conditions chapter of the Airport Master Plan for Rapid City Regional Airport provides the baseline framework to evaluate the airport facility. This chapter will be used to compare the existing facilities to the airport needs determined in future sections of the plan. This will lead to a plan developed for the future of the airport. Background information and data is gathered from various sources and compiled into this chapter and appendices. Please refer to the various appendices referenced within this narrative for more detailed information.

Background

General

Rapid City Regional Airport (FAA ID: RAP), South Dakota's second busiest airport is located in Pennington County in western South Dakota. The airport is a commercial service airport providing scheduled passenger service, overnight cargo, and complete general aviation services. The airport served 41,908 operations, enplaned 263,560 passengers and handled 3.2 million pounds of landed freight and mail in Federal fiscal year 2013.

Location

Rapid City is located in western South Dakota, the county seat of Pennington County. Rapid City is the second largest municipality within South Dakota and is located on the eastern edge of the Black Hills Range.

Rapid City is approximately 320 miles west of Sioux Falls, South Dakota; 300 miles north-northeast of Denver, Colorado; 280 miles southeast of Billings, Montana; and 220 miles southwest of Bismarck, North Dakota. Rapid City is approximately 25 miles northeast of the Mount Rushmore National Memorial and 40 miles west of Badlands National Park.



The airport is located nine (9) miles east of the Rapid City central business district. South Dakota Highway 44 provides access to the airport. This generally east-west thoroughfare provides direct access to downtown Rapid City. The airport is 4 miles south of Box Elder, South Dakota which is accessible via 8 miles by local roads or 14 miles by State highway and Interstate highway. Currently there is no direct access from Interstate I-90 to the airport.

The airport is in the Rapid City limits, but is not contiguous to the remainder of the City of Rapid City. The airport is subject to city zoning and permitting. The airport receives Aircraft

Rescue and Firefighting and Police services from the City of Rapid City. These services are paid for by the airport solely from airport funds.

Exhibit 1-1: Airport Location Map located in Chapter 1 depicted the airport's location locally and regionally.

Setting

Rapid City Regional Airport is situated in an agricultural area with residential developments in various locations to the west of the airport. Terrain is generally grasslands with low plateaus, ravines, broad valleys and a ridge line to the north of the airport. The airport sits on the top of a plateau, which adds to the ability to have clear approaches, but could possibly restrict the airports ability to grow because developable land is restricted. **Exhibit 2-1- Surrounding Land Use** depicts the airport's local environment.

Climate

Rapid City features a steppe climate, characterized by westerly winds and larger temperature fluctuations than in areas at the same latitude near oceans or seas. As a result, the Rapid City area commonly experiences periods of arid weather in the summer, short spring and autumn seasons and cold and dry winters. Warm "Chinook" winds and frequent sunny days make the Black Hills area the warmest part of the State in the winter. During the summer months, the Black Hills area frequently experiences cooler temperatures than the rest of the State. The prevailing winds in Rapid City are northwest, averaging 11.2 miles per hour. The highest average temperature for July is 87.1 Fahrenheit. The daily average temperature in July is 72.6 Fahrenheit.

The last annual freeze typically occurs in April and the first annual freeze occurs in October. January has the lowest average temperature at 12.9 Fahrenheit. Average annual precipitation is 16.29 inches.

Table 2-1 - Average Weather Conditions

Average Weather Conditions				
Month	High Temperature	Low Temperature	Precipitation (Inches)	Snow (Inches)
January	37.1	12.9	0.3	4.4
February	39.6	15.1	0.4	5.8
March	47.9	22.9	0.9	8.7
April	58.3	31.8	1.8	7.9
May	67.8	42.1	3.2	1.1
June	77.8	51.2	2.5	-
July	87.1	58.1	1.9	-
August	86.4	56.6	1.6	-
September	75.6	46.0	1.3	0.2
October	61.4	34.1	1.4	1.6
November	47.0	22.1	0.5	6.0
December	36.9	13.0	0.4	5.4

Source: National Weather Service

Prevailing winds during the summer are from the south and during the winter the prevailing winds are from the northwest; this is aligned with the airport's runway configuration. The current all-weather combined wind coverage of all runways exceeds FAA minimum recommendations of 95 percent.

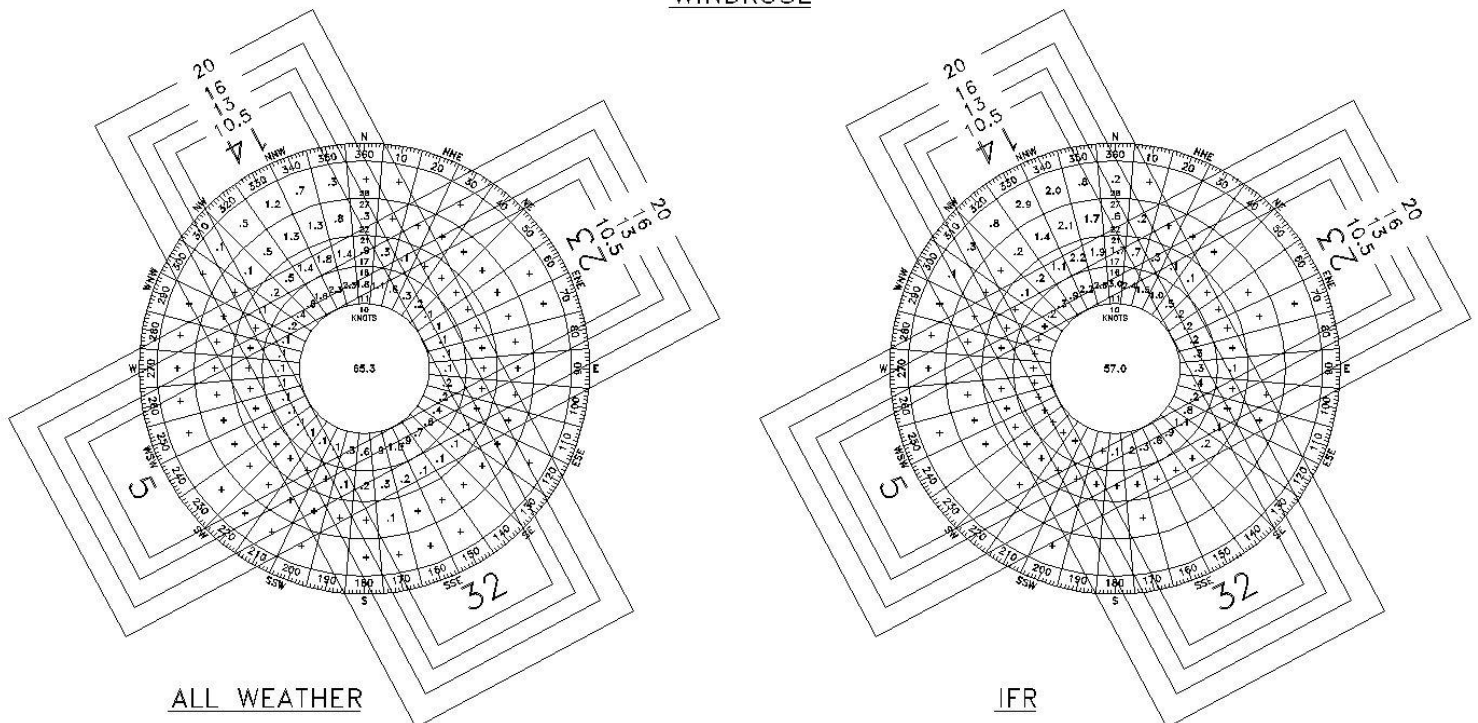
Table 2-2 - Wind Analysis

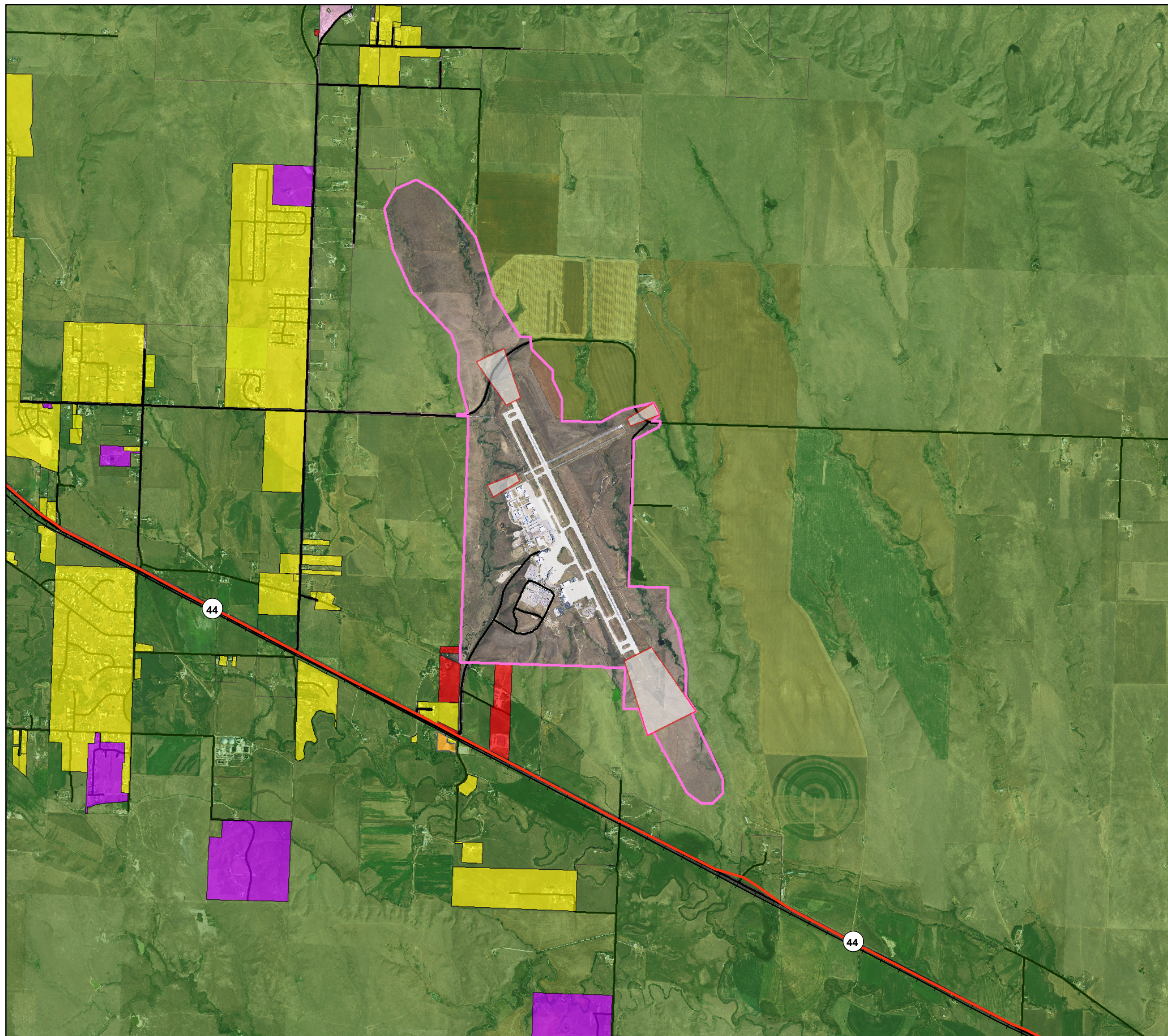
All-Weather Wind Coverage				
Runway	Crosswind Component (Wind Speed)			
	10.5 knots	13.0 knots	16.0 knots	20.0 knots
Runway 14/32	95.97%	98.16%	99.40%	99.82%
Runway 5/23	70.18%	77.24%	85.32%	91.35%
Combined*	98.22%	99.47%	99.88%	99.98%
IFR Wind Coverage				
Runway	Crosswind Component (Wind Speed)			
	10.5 knots	13.0 knots	16.0 knots	20.0 knots
Runway 14/32	93.06%	97.00%	99.16%	99.77%
Runway 5/23	64.33%	71.65%	79.26%	85.69%
Combined*	96.58%	98.81%	99.66%	99.95%

*Combined assumes up to maximum design aircraft crosswind component for each runway

Source: National Climatic Data Center data from Rapid City Regional Airport (2004-2014)

WINDROSE



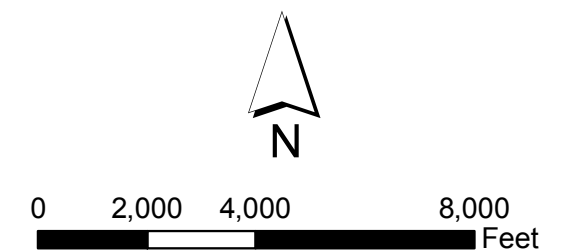


Legend

- Agriculture
- Commercial
- Highway Services
- Industrial
- Planned Unit Development
- Residential

Legend

- Highway
- Railroads
- Roadway
- Airport Property
- FAA Runway Protection Zone



*Intended for Planning Purposes Only



**Rapid City Regional Airport
Land Use Map
Exhibit 2-1**

Demographics

Rapid City has an estimated population of 69,854 as of July 1, 2012¹ The Rapid City region is steadily growing; population in Rapid City has increased at an average annual growth rate of 1.43 percent since 2000. This compares to a South Dakota statewide population growth rate of 0.8 percent.

Table 2-3 - Population Summary

Population Summary				
Year	Rapid City	Rapid City MSA*	South Dakota	United States
2000	59,607	112,818	754,884	281,421,906
2010	67,969	134,598	814,180	309,326,225
2012 (est.)	69,943	138,781	833,354	313,914,040
Annual Growth Rate	1.43%	1.92%	0.83%	0.91%

*Includes Pennington, Meade and Custer counties as defined by U.S. Census Bureau

Source: U.S. Census Bureau

Economy

The Rapid City area has an economy that is primarily driven by agriculture, tourism, Ellsworth AFB, regional retail and regional medical. The city serves a regional trade area of approximately 460,000 people within a 200 mile radius. Unemployment rate within the Rapid City MSA as of July 2012 was 4.2 percent as compared to the South Dakota statewide rate of 4.2 percent and the United States rate of 8.2 percent. Unemployment rate in Rapid City has historically been lower than the statewide and national figures. Federal government, health care, retail and financial trade sectors make up the majority of employers in the Rapid City area. These industries, along with higher capture rates, have contributed to increased airport passenger activity.

Table 2-4 - Rapid City Major Employers

City of Rapid City Major Employers (2012)		
Employer Name	Industry	No. of Employees
Ellsworth Air Force Base	Government/Military	5,069
Rapid City Regional Hospital	Hospital/Health Care	3,602
Federal Government	Government (various)	2,954
City of Rapid City (includes seasonal workers)	Government (various)	1,906
Rapid City School District	Education	1,692
Wal-Mart/Sam's Club	Retail	1,205
State of South Dakota	Government (various)	1,171
South Dakota Army National Guard	Government/Military	1,025
Pennington County	Government (various)	628
Black Hills Corporation	Manufacturing	555

Source: *Rapid City Economic Development (2012)*

¹ U.S. Census Bureau (2014)

Table 2-5 - Rapid City Area Employment

Employment by Industry - Rapid City (2012)	
Industries	Percent of Total
Educational services, and health care and social assistance	24.90%
Retail trade	12.80%
Arts, entertainment, and recreation, and accommodation and food services	12.30%
Professional, scientific, and management, and administrative and waste management services	8.80%
Finance and insurance, and real estate and rental and leasing	7.80%
Construction	7.00%
Manufacturing	6.50%
Public administration	4.80%
Transportation and warehousing, and utilities	4.00%
Other services, except public administration	3.60%
Wholesale trade	3.30%
Information	2.60%
Agriculture, forestry, fishing and hunting, and mining	1.60%
All Industries	100%

Source: U.S. Census Bureau

Per Capita Personal Income (PCPI) in 2012 for the Rapid City MSA is \$42,669 which is little less than the statewide average of \$45,381 and slightly less than the United States average of \$43,735.

Table 2-6 - Demographic Summary

Demographic Summary (2012)				
Demographic	Rapid City	Rapid City MSA	South Dakota	United States
Unemployment Rate	4.2%	4.5%	4.2%	8.1%
Per Capital Personal Income	-	\$42,669	\$45,381	\$43,735

Source: South Dakota Department of Labor and Regulation, Bureau of Economic Analysis, Bureau of Labor Statistics

Chapter 3: Forecasts contains demographic and socioeconomic data, estimates, and forecasts.

Airport History

A brief history of the airport and its tenants is included in **Appendix F - Airport Background**.

Airport Management

The city of Rapid City owns and operates Rapid City Regional Airport. A five-member board of directors makes policy decisions for execution by Airport staff concerning Airport business affairs. The board members are appointed by the mayor of Rapid City which are confirmed by the Rapid City Common Council. The Airport Board is a semi-autonomous board, which operates the Airport on behalf of Rapid City. They are responsible for the general oversight of the airport. They have the ability to sign contracts on behalf of Rapid City and authorize the

expenditure of funds needed to operate the airport. The Board relies on staff members which include the Executive Director, three Deputy Directors who oversee Operations & Security, Maintenance & Facilities, and Finance & Administration, and various maintenance, operations and administrative personnel, for daily operation of the airport and addressing air service issues. Further information regarding Airport Governing and Management Structures is included in **Appendix F - Airport Background**.

Airport Role & Design

Rapid City Regional Airport provides scheduled passenger service, overnight cargo and complete general aviation services. The airport serves western South Dakota. The airport commonly draws commercial passengers from a catchment area within 125 miles. Competing commercial service airports include Chadron Airport in Chadron, Nebraska (102 miles) and Gillette-Campbell Airport in Gillette, Wyoming (141 miles).

The airport is part of the National Plan of Integrated Airport Systems (NPIAS) as classified by the Federal Aviation Administration (FAA). NPIAS airports are vital to the national air transportation system. According to FAA standards, the airport is classified as a non-hub primary commercial airport enplaning more than 10,000 enplanements but less than 0.05 percent of national total. **Appendix D - Airport Classification** contains more information on this topic with **Appendix E - Airport Funding** providing additional information about the Federal funding programs available to airports. The airport is certificated under FAR Part 139 guidelines as a Class I airport certificated to serve scheduled operations of large air carrier aircraft.

Airports are designed to regularly accommodate aircraft up to certain wingspan, tail height, and approach speed parameters. The last Airport Master Plan prepared for Rapid City Regional Airport in 2008 has a FAA Airport Reference Code (ARC) of C-III for an Airbus A320. The taxiway design group (TDG) for these aircraft is TDG-3. See **Appendix H - Airfield Design** for more details on FAA design classifications.

Airport Operators

Scheduled Passenger Airlines

Rapid City Regional Airport is served by four (4) commercial air carriers and/or their regional subsidiaries; Allegiant, American, Delta, and United. Scheduled direct flights are currently available to nine (9) cities including hub airports where connections may be made to hundreds of destinations worldwide.

Scheduled airlines currently serve the Rapid City Regional Airport with jet and turbo prop aircraft as large as 166 seats (MD-83) and 156 seats (Airbus A319). The airport served 263,560 passengers in Federal fiscal year



2013. A complete flight schedule and aircraft fleet mix from March 2014, July and December 2013 can be found in **Appendix F - Airport Background**. See **Chapter 3 - Forecasts** for more

detailed information on existing and projected scheduled air service activity. The schedule below details the peak month activity (July 2013).

Table 2-7 - Scheduled Airline Flights

Rapid City Regional Airport -Scheduled Airline Service			
Airline	Destination	Frequency	Aircraft Type (Seats)
Allegiant Airlines	Las Vegas	1 to 2/week	MD-80 (166 seats)
Allegiant Airlines	Phoenix/Mesa	2 to 3/week	MD-80 (166 seats)
American Airlines	Dallas/Ft. Worth	2/day	ERJ-145/CRJ200 (50 seats)
American Airlines	Chicago O'Hare*	1/day (seasonal)	ERJ-145 (50 seats)
Delta Airlines	Minneapolis/St. Paul	4 to 5/day	CRJ200/CRJ900/MD90/A320 (50, 76, 160, and 180 seats)
Delta Airlines	Salt Lake City	1 to 2/day	CRJ200
Delta Airlines	Atlanta*	1/day (seasonal)	CRJ900 (90 seats)
United Airlines	Chicago O'Hare*	3/day (seasonal)	ERJ-145 (50 seats)
United Airlines	Denver	5 to 6/day	ERJ-145/Q400 (50 and 74 seats)
United Airlines	Houston Intercontinental*	1/day (seasonal)	ERJ-145 (50 seats)

*Indicates seasonal destination, **Frequency changes on weekends

Source: Rapid City Regional Airport

Scheduled Cargo Carriers

Two (2) cargo carriers have facilities at the Rapid City Regional Airport; FedEx (Empire Airways) and UPS (Encore). FedEx feeder aircraft is the ATR-42 aircraft. UPS feeder aircraft include Fairchild Metroliner III, and Cessna 404/402 twin engine aircraft. The airport handled over 3.2 million pounds of cargo in 2012. Details of the existing conditions and future for these activities are included in **Appendix I - General Aviation & Other Uses**.



Army National Guard

South Dakota Army National Guard (SDARNG) operates a facility located directly southeast of the terminal complex of the airport. The mission of the SNARNG at the airport is medical transport and air cargo transport. The SDARNG facilities consists of a large apron (33,000 square yards), a fuel farm and three (3) buildings. Details of the existing conditions and future for these activities are included in **Appendix I - General Aviation & Other Uses**.

United States Forest Service Air Tanker Base

The United States Forest Service (USFS) operates a facility directly southeast of the SDARNG. The current layout is a loop system, which is only able to load one aircraft at a time. The USFS is anticipating MD-87 Tankers as early as the summer of 2014 which cannot be accommodated in the current configuration. USFS also has a need to be able to park aircraft for storage but the only space available is the GA apron area, which is located far north. Details of the existing conditions and future for these activities are included in **Appendix I - General Aviation & Other Uses**.

General Aviation

General Aviation comprises the remainder of the use of the Rapid City Regional Airport. In general the airport is home to one Fixed-Base Operator (FBO) WestJet Air Center, and nine Specialized Aviation Service Operators (SASO) L&D Aero Services, Rapid Fuel, Advanced AeroTechnologies, VisionAir, Dale Aviation, Fugro Geospatial, Black Hills Life Flight, Great Plains Aircraft Restoration and Rapid Avionics. Details of the existing conditions and future for these activities are included in **Appendix I - General Aviation & Other Uses**.

According to the local Rapid City Air Traffic Control Tower (ATCT) staff, general aviation airport operations are increasing with the majority of growth in turboprop and turbojet corporate aircraft. The airport has a small flight school, which is operated by VisionAir. This Rapid City flight school operates a Cessna 152.

Existing Facilities

An inventory of Rapid City Regional Airport facilities was performed to establish a baseline for determining required future improvements. As discussed in the following sections, airport facilities are grouped into three categories: airside facilities, airspace and navigation aids (NAVAIDs) and landside facilities.

Land

As of the 2014 the Rapid City Airport owns approximately 1,655 acres of property fee simple. In September 2003 the airport was annexed by the City of Rapid City. It was annexed as a non-contiguous area. Even though the action by the City of Rapid City took place in 2003, it was not until a change in state legislation, approved in 2005, that the annexation was officially completed.

Airside Facilities

Airside facilities are those that are necessary for aircraft surface movement, such as runways, taxiways, aprons and associated lighting, marking and signage systems. A map depicting existing airport airside components is included in **Exhibit 2-2: Airside Facilities Map**. Information on design codes is contained in **Appendix H - Airfield Design** and information related to pavement is contained in **Appendix G - Airfield Pavements**.

Runway 14/32

Runway 14/32, the longest runway at Rapid City Regional Airport, is 8,701 feet long and 150 feet wide. The runway is designed to meet FAA Runway Design Code (RDC) C-III design

standards. The runway pavement surface is concrete and grooved to promote drainage. The pavement is designed to accommodate regular use of up to 140,000 pound aircraft in a single wheel main landing gear configuration, 190,000 pound aircraft in a double-wheel main landing gear configuration and 300,000 pound aircraft in a double tandem main landing gear wheel and strut configuration. The runway's Pavement Classification Number is 65 R/C/W/T². A 200 foot long blast pad is located beyond each runway end for jet blast erosion protection. Runway end 32 is designed to accommodate precision instrument approaches.

Runway 5/23

Runway 5/23 is the general aviation runway with dimensions of 3,601 feet long and 75 feet wide. The runway is designed to meet FAA Runway Design Code (RDC) B-I (Small) design standards. The runway pavement surface is asphalt. The pavement is designed to accommodate up to 12,500 pound aircraft in a single wheel configuration. Both runway ends are designed to accommodate non-precision instrument approaches.

Table 2-8 - Runway Facility Summary

Runway Facility Summary		
Component	Runway 14/32	Runway 5/23
Runway Length (feet)	8,701	3,601
Runway Width (feet)	150	75
Runway Surface Material	Concrete	Asphalt
Runway Surface Treatment	Grooved	
Runway Pavement Strength (lbs.)		
Single Wheel	140,000	12,500
Double Wheel	190,000	-
Double Tandem Wheel	300,000	-
Pavement Classification Number (PCN)	65/R/C/W/T ³	15/F/C/X/T ⁴

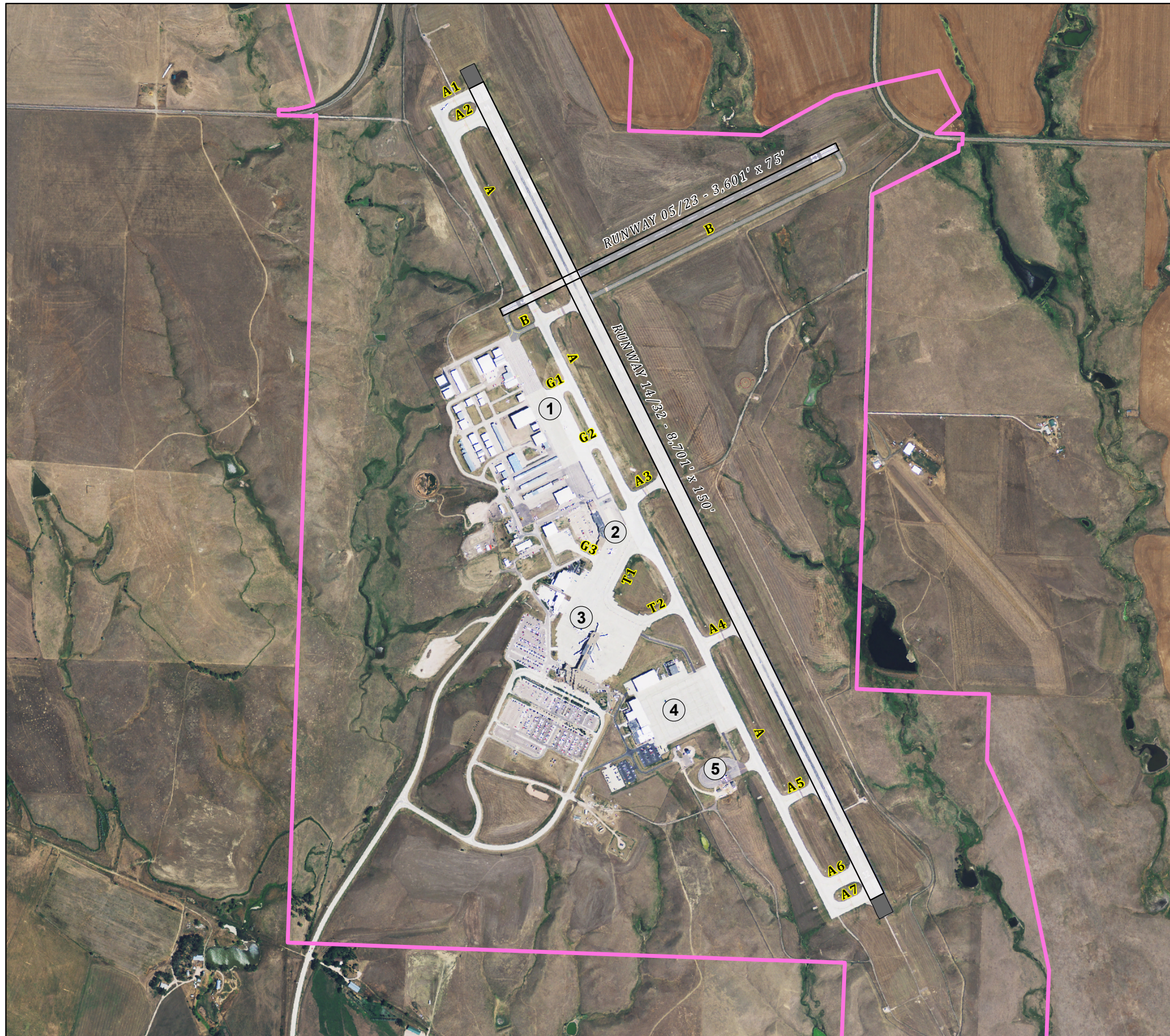
R = Rigid Concrete Pavement, F = Flexible Pavement, C = Subgrade Category (Low Strength), W = Unrestricted Tire Pressure, X = Tire Pressure 182 psi to 254 psi, T = Technical Analysis

Source: [Airnav.com](http://airnav.com), FAA Airport Master Record Form 5010 Report, Airport Management records

² R = Rigid Pavement, C = Low Subgrade Strength, W = No maximum tire pressure limit, T = Technical Evaluation

³ The calculations are based on a mixture of aircraft including: MD-83 (500 Annual Departures), CRJ-200 (2,000 Annual Departures), ERJ-145 (2,500 Annual Departures) and A319/A320 (150 Annual Departures)

⁴ The calculations are based on a mixture of aircraft including PC-12 (3,500 Annual Departures), Citation VI/VII (24,500 Annual Departures)

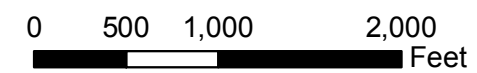


Legend

Existing Airport Property

Rapid City Airport Aprons

1. General Aviation
2. Cargo
3. Air Carrier
4. South Dakota Air National Guard (SDARNG)
5. US Forest Service (USFS)



*Intended for Planning Purposes Only



**Rapid City Regional Airport
Airsides Facility Map
Exhibit 2-2**

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Taxiways

Rapid City Regional Airport is served by a system of taxiways to facilitate the movement of aircraft from the runway environment to other airport facilities including hangars, parking aprons and hangars. Locations are identified in **Exhibit 2-3**. The parallel taxiway is labeled A to Runway 14/32 and Taxiway B the parallel taxiway to Runway 5/23. Connecting taxiways for Taxiway A are labeled A1 through A7.

Aprons and Taxilanes

There is one commercial service apron and one contiguous general aviation apron at Rapid City Regional Airport. Locations are identified in **Exhibit 2-2**. Apron areas serve the loading, unloading and parking needs for commercial airlines, air cargo, general aviation and military operators.

The air carrier apron serves commercial aircraft around the terminal building located west of Runway 14/32 along Taxiway A. There are two entrance taxiways providing access to all seven gates at the terminal concourse and a total of 9 aircraft parking stand positions. The apron is approximately 40,000 square yards in size with a concrete surface with the pavement strength the same as the runways. Sufficient area is available for ground support vehicles to serve parked aircraft. There is limited parking designated for aircraft de-icing and irregular operations.

The general aviation apron runs along the remainder of Taxiway A and is comprised of approximately 66,000 square yards in size primarily consisting of a concrete surface and a pavement strength the same as the runways.

Pavement Condition

Airport pavements are basic infrastructure components at airports. Airfield pavements should be maintained in a safe and operable condition for aircraft operations. Current Pavement Condition information and further details about the airport's pavement can be found in **Appendix G - Airfield Pavements**.

Navigation Aids & Airspace

Navigational aids (NAVAIDs) provide visual and electronic guidance to pilots enabling the airport to safely, efficiently and effectively accommodate arriving and departing flights. Detailed information about the Rapid City Regional Airport NAVIDS can be found in Appendix K Navigational Aids. Airspace is a resource that is necessary to allow flights to safely operate and maneuver in the airport environment. Detailed information about the Airspace surrounding the Rapid City Regional Airport can be found in **Appendix L - Airspace and Instrument Approaches**.

Airspace and Airspace Obstructions

Rapid City Regional Airport airspace is adjacent to Ellsworth Air Force Base airspace. Ellsworth Air Force Base operates under Class D and Class E airspace. Approach/departure control for Rapid City Regional is operated from Ellsworth Air Force Base which is currently open 24 hours a day. The Rapid City Regional Airport Air Traffic Control Tower is operated as

a contract tower by Midwest Air Traffic Control. The tower operates daily from 6:00 am until 10:00 pm. When approach/departure control is open at Ellsworth Air Force Base and/or the Rapid City Regional tower is open, Class D airspace is in effect at Rapid City Regional. When both facilities are closed, Class E airspace is in effect at Rapid City Regional. Appropriateness of which air traffic facility to contact is determined by which controlling facility is open and whether the aircraft is operating on visual flight rules or if the aircraft is on an instrument flight plan. Detailed Airspace and Airspace Obstruction information is included in **Appendix - L Instrument Procedures and Airspace**.

Surrounding Airports

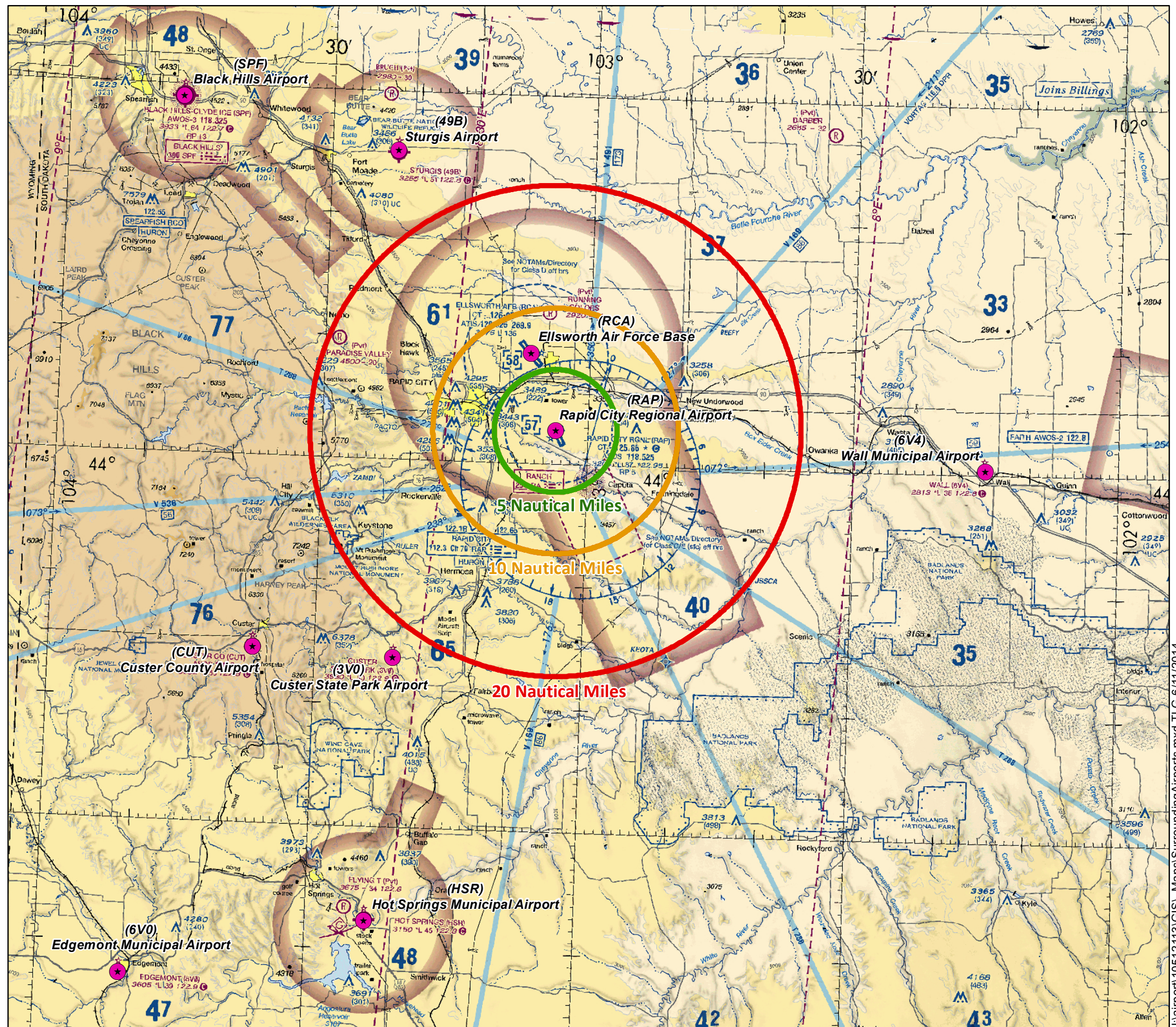
Public use airports within 30 nautical miles of Rapid City Regional Airport were reviewed to provide background into the other area airports. **Exhibit 2-3 - Surrounding Airports** has been prepared to provide a visual indication of these airports.

Table 2-9 - Surrounding Airports

Surrounding Airports					
Airport Name	FAA ID	Location from RAP	Based Aircraft	Instrument Approach	Longest Runway Dimensions
<i>Rapid City Airport</i>	<i>RAP</i>	-	109	Yes/ILS	8,701' x 150'
Ellsworth AFB*	RCA	5 m N	na	Yes/ILS	13,497' x 300'
Sturgis Municipal	49B	40 m NE	25	Yes/GPS	5,100' x 75'
Custer County	CUT	50 m SE	14	No	5,513' x 60'
Custer State Park	3V0	45 m SE	0	No	4,000' x 50'
Black Hills Airport	SPF	57 m NE	72	Yes/GPS	6,401' x 75'
Wall Municipal	6V4	55 m E	13	No	3,500' x 60'

Source: FAA Airport Master Record Form 5010 Report. Note: m = miles; * not for Public Use

Additional information regarding the FAA's classification system, the South Dakota State Aviation System Plan and airport in the region can be found in **Appendix D - Airport Classification**.



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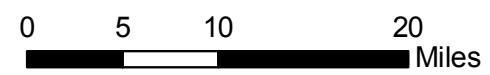
★ Nearby Airports

Rapid City Regional Airport (RAP)

- 111 Based Aircraft
- 8,701 - foot Primary Runway, Runway 32 ILS
- Commercial Service Airport

Ellsworth Air Force Base (RCA)

- 13497-foot Primary Runway, ILS Approaches
- Military Airport



*Intended for Planning Purposes Only



Rapid City Regional Airport
Surrounding Airports Map
Exhibit 2-3

Landside Facilities

Landside facilities consist of areas of the Rapid City Regional Airport necessary for the movement of passengers and automobiles, and parking and storage of aircraft. Examples of these facilities include the passenger terminal building, public parking lots, access roads, hangars and airport support facilities. A map depicting components of the landside facilities is shown on **Exhibit 2-4 - Landside Facilities Map**. The details of the different landside areas are included in several different appendices. These are:

- **Appendix I - General Aviation & Other Uses** - includes general aviation, military, air cargo and other uses.
- **Appendix J - Support Facilities** - includes Aircraft Rescue and Firefighting, Maintenance, Snow Removal, Fueling Facilities and similar items
- **Appendix T - Terminal Facilities** - includes airline terminal, public parking, rental car and similar uses

Passenger Terminal Complex

The passenger terminal complex is located on the west side of the airport and is accessed from South Dakota Highway 44 by Airport Road and Terminal Road. It is located west of Runway 14/32 along the middle portion of this primary runway.

Terminal Building

The terminal building serves multiple functions including general circulation, ticketing, passenger security screening, baggage screening, baggage claim, airport administration, concessions and restrooms. The terminal serves airlines and their regional affiliates; Allegiant Air, American Airlines, Delta Air Lines, and United Airlines.

The passenger terminal consists of a terminal building and one concourse that is approximately 90,000 square feet in size with two levels plus an additional 12,600 square feet in a basement and penthouse area, not accessible to the public. There are currently seven aircraft gates each with a passenger loading bridge. The details of the Terminal Building are included in **Appendix T - Terminal Facilities**.



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- 1. Private Hangar
- 2. SASO Hangar
- 3. SASO Office
- 4. SASO Hangar
- 5. SASO Hangar
- 6. Private Hangar
- 7. FBO Hangar
- 8. FBO Hangar
- 9. SASO Hangar
- 10. SASO Office
- 11. Private Hangar
- 12. Private Hangar
- 13. T-Hangar (SASO)
- 14. Airport Maintenance Shop
- 15. T-Hangar (FBO)
- 16. T-Hangar (Condo)
- 17. T-Hangar (FBO)
- 18. T-Hangar (FBO)
- 19. FBO Hangar and Terminal
- 20. SASO Hangar
- 21. SASO Hangar
- 22. Private Hangar
- 23. Private Hangar
- 24. Airport Maintenance Shop
- 25. Airport Cold Storage Bld.
- 26. Airport Sand Storage Bld.
- 27. Private Hangar
- 28. Private Hangar
- 29. Private Hangar
- 30. Private Hangar

- 31. SASO Hangar
- 32. Private Hangar
- 33. Private Hangar
- 34. Private Hangar
- 35. Private Hangar
- 36. T-Hangar (Private)
- 37. T-Hangar (Private)
- 38. T-Hangar (Private)
- 39. T-Hangar (Condo)
- 40. Vacant
- 41. Vacant
- 42. Vacant
- 43. TSA, Civil Air Patrol
- 44. SASO Hangar
- 45. 'Old' Terminal
- 46. 'Old' Fire Station
- 48. Aviation Fuel
- 49. Fuel Farm
- 50. Air Tanker Base
- 51. Air Traffic Control
- 52. National Guard
- 53. National Guard
- 54. National Guard
- 55. Private Hangar
- 56. T-Hangar (Condo)
- 59. SASO Hangar
- 60. Electrical Vault
- 62. Fire Department
- 70. Car Rental QTA

*Intended for Planning Purposes Only



**Rapid City Regional Airport
Landside Facilities Map
Exhibit 2-4**

Aircraft Storage

Rapid City Regional Airport has 111 reported civil aircraft based at the airport. Aircraft storage facilities consists of large conventional hangars (greater than 8,000 square feet), small conventional hangars (8,000 square feet or less), and T-hangars. The primary aircraft storage area is north of the terminal area. Aircraft storage facilities are detailed in **Appendix I - General Aviation & Other Uses**.

Fuel Facilities

Rapid City Regional Airport has a dedicated fuel farm that accommodates aircraft and automobile fuel. The existing fuel tanks occupy approximately 1,700 square yards of the fuel farm's 7,800 square yards. Aircraft fuel tanks include 100 low lead (100LL) and Jet A fuel tanks owned by the FBO, WestJet. Automobile fuel includes unleaded and diesel fuel tanks owned by the Airport. Further details regarding the fueling capabilities at the airport are found in **Appendix J - Support Facilities**.

Airport Rescue & Fire Fighting

The ARFF facility at Rapid City Regional Airport is located on the terminal apron immediately north of the airline passenger terminal.

The FAR Part 139 index determination for an airport is calculated based on the largest air carrier aircraft in passenger service that conducts an average of five or more daily operations. The Rapid City Regional Airport ARFF facility is required to maintain vehicles, chemicals, and response items in accordance with FAR 139 Index Group B. A complete vehicles inventory list and details about the airport's ARFF capabilities is included in **Appendix J - Support Facilities**.



Airport Maintenance

Rapid City Regional Airport's maintenance facilities are located in the general aviation area and consist of four buildings. There is a total of 22,400 square feet of space including equipment storage, maintenance, offices and materials storage. The airport staff conducts all maintenance at the airport including airfield, buildings, snow and ice control and custodial. A list of the airport's snow and ice control equipment is included in **Table 2-10 Snow and Ice Control Equipment**. Further details about the airport's maintenance buildings and equipment can be found in **Appendix J - Support Facilities**.



Table 2-10 – Snow and Ice Control Equipment

Make/Model	Unit No.	Plow Size (feet)	Broom Size (feet)	Rotary Plow (tons/hour)	Year
Runway/Taxiway Plows					
Oshkosh 4x4 w/Sand Spreader and Liquid Deicer	5	14	-	-	1996
Oshkosh 4x4 w/Sand Spreader, Under Body Scraper and Liquid Deicer	19	24	-	-	2001
Mack 4x4	21	18	-	-	1984
Oshkosh 4x4	41	17	-	-	1996
Apron Plows					
Michigan Loader	12	20	-	-	2001
Dresser Motor Grader	16	12	-	-	1992
Brooms/Blowers/Other					
Oshkosh 4x4	20	-	20	-	1996
Flush Truck - Liquid Deicer	22	-	-	-	2008
Oshkosh Snow Blaster 4x4	6	-	-	5000	2010
Oshkosh 4x4	15	-	20	-	2001

Source: (Rapid City Regional Airport Snow and Ice Control Plan) 10/31/2013

Ground Access, Parking & Circulation

Access is addressed in three different areas. These include access to and from the airport, access on publicly available roads on the airport, and access inside the airfield fence for maintenance and operations at the airport. Each of these areas are addressed with information and diagrams in **Appendix J - Support Facilities**.

Land Use Compatibility

Compatible land uses are defined as those uses that can coexist with a nearby airport without either constraining the safe and efficient operation of the airport or exposing people working or living nearby to unacceptable levels of noise or safety hazards. Incompatible land use is a large issue facing airports today, often resulting in conflicts between airports and communities. Typical airport land use compatibility elements include:

- FAA land use compatibility within designated day-night average sound level (DNL) noise exposure contours to avoid significant impacts to activities on the ground.
- FAA airspace standards for airport safety and operational capability.
- FAA land use compatibility near runway ends associated with the Runway Protection Zone (RPZ) for the safety of people and property on the ground.
- State or local airport land use standards, if applicable.
- FAA wildlife hazard mitigation plans for aircraft operational safety.

Airports have a responsibility to constantly work together with local governments to identify, control and prevent the creation of potential incompatibilities. This section is an introduction to this topic; a more comprehensive evaluation in relation to existing and planned airport development is prepared in **Appendix O - Land Use Compatibility**.

Existing Land Uses

The existing land uses within the airport environs is depicted on a map in **Exhibit 2-1**. Rapid City Regional Airport is primarily surrounded by agricultural and rural residential uses. There are no incompatible land uses near the airport with the exception that land to the northeast of the airport currently attracts waterfowl. These waterfowl move regularly east to west from food sources to habitat and cross the airport in the process.

Adjacent Private Airport

One unique land use on the east side of the airport is a private use airport, Dan's Airfield (FAA Identifier 4SD4). The proximity of the airport does require the ATCT to coordinate any activity from this airport with activity at Rapid City Regional Airport. This coordination and future recommendations are addressed in Chapter 4, page 4-10 related to Runway Use.

Airport Zoning

City of Rapid City

The City of Rapid City added Chapter 17.58 - Airport Zoning District to the Rapid City Municipal Code (RCMC) effective November 11, 2005. The Chapter establishes zoning authority over the Airport Zoning District, which encompasses the airport property. In Chapter 17.58, an Airport Encroachment Area and Height Regulations section are established in reference to Part 77, but do not adequately define the restrictions. In addition, the terminology used in RCMC Chapter 17.58 and Part 77 do not exactly match. The zones and height restrictions referred to in RCMC Chapter 17.58 are defined by the imaginary surfaces in Part 77, as shown in the comparison below.

Comparison	
Rapid City Municipal Code Chapter 17.58	14 CFR Part 77.25
Runway Area Zones	Primary Surface
Approach Departure Zones	Approach Surface
Transition Zones	Transitional Surface
Horizontal Zone	Horizontal Surface
Conical Zone	Conical Surface

Pennington County

Pennington County has zoning authority over the area surrounding and abutting the Airport property. Airspace protection is provided for Rapid City Regional Airport in Section 301 of the Pennington County Zoning Ordinance. Section 301 establishes zones and height limitations consistent with FAR Part 77.19; exempts existing non-conforming uses; establishes a variance approval process; and allows appeals to the Board of Adjustment, followed by judicial review.

There are four areas of concern with the existing language of Pennington County Zoning Ordinance Section 301 as follows:

1. Subsection D.10 states:

“Nothing in this Ordinance shall be construed as prohibiting the construction or maintenance of any structure, or growth of any tree, to a height up to fifty (50) feet above the surface of the land.”

Due to local topography, especially north of Rapid City Regional Airport, it is possible that a structure less than 50 feet tall could present a hazard to air navigation to the airport users. Also, this subsection appears to contradict the language in subsection G.1.

2. Although Section 301 requires a County Permit for uses in the defined zones (except structures and trees less than 50 feet high that wouldn't extend above zone height limits), it does not mention the federal requirement to file FAA Form 7460-1 before construction, if the construction meets certain criteria outlined in Part 77⁵. Procedurally, the County may require an applicant to file FAA Form 7460-1 and receive a response from the FAA before the County issues a permit, but including that requirement in the Ordinance would strengthen the County's position and avoid applicant consternation and misunderstanding of the process.

3. Subsection C refers to a Rapid City Airport Zoning Map consisting of two sheets dated October 15, 2003. That map should be updated to incorporate the Part 77 surfaces detailed in the most recent ALP. The Part 77 surface maps which will be updated as a part of this Airport Master Plan could be utilized for that purpose.

4. Subsection D.7 and D.8 incorrectly apply an airport elevation of 100 feet above mean sea level. This should be 3,204 feet above mean sea level.

City of Box Elder

The City of Box Elder has recently adopted zoning specific to Ellsworth Air Force Base with some portions referencing Rapid City Regional Airport. Section seven of the city's planning and zoning regulations provides airspace and land use restrictions.

⁵ Persons failing to comply with the provisions of Part 77 are subject to Civil Penalty under Section 902 of the Federal Aviation Act of 1958, as amended and pursuant to 49 U.S.C. Section 46301(a). Examples of times when a structure proponent is required to file Notice of Construction (Form 7460-1)

- Structures Exceeding 200 feet above ground level
- Structures Within 20,000 feet of public/military airport, that exceed 100:1 surface from any point on the runway
- Everything located on an airport

Environmental Overview

The purpose of this section is to provide a general overview of environmental features which should be considered in the alternatives analysis. The intent is not to perform detailed analysis, but rather to assemble readily available information in a systematic manner. A review of National Environmental Policy Act (NEPA) criteria relative to development alternatives considered and the NEPA approval process is discussed in **Chapter 7 - Environmental Review**.

Conclusion

The information collected and documented in this Existing Conditions chapter provides a baseline foundation to update the Rapid City Regional Airport long range plan. This information will feed into future sections including developing aviation activity forecasts and determining how facilities will meet the projected airport needs.

