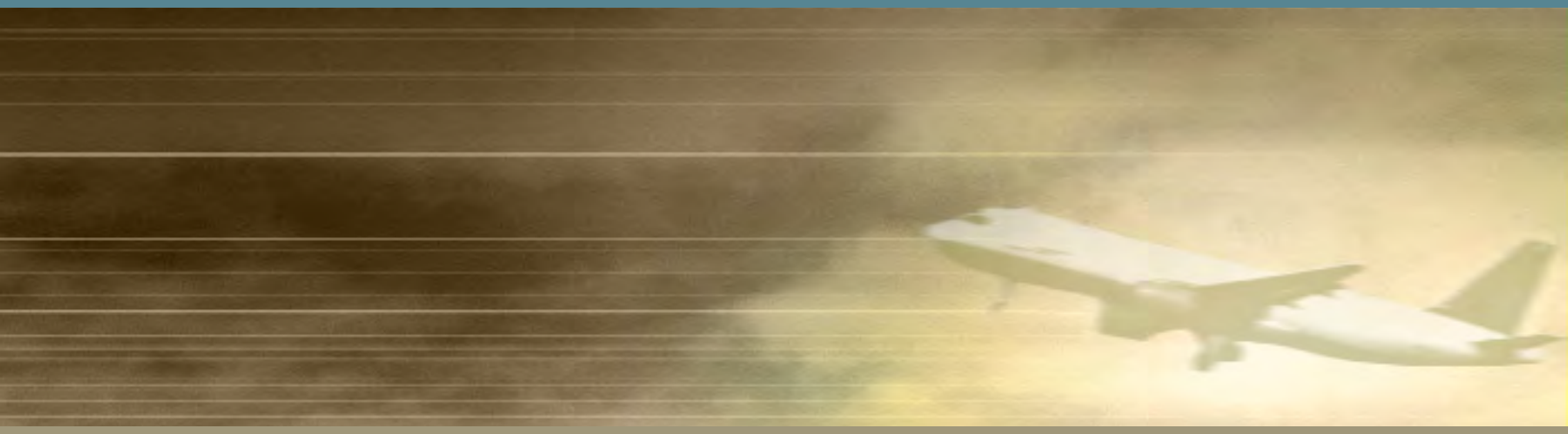
Rapid City Regional Airport

Airport Master Plan
Land Use Compatibility Plan

October 2010



Kadrmas Lee & Jackson
Engineers Surveyors Planners

Rapid City Regional Airport Master Plan

Land Use Compatibility Plan

Prepared for the

Rapid City Regional Airport

Prepared by

Kadrmas, Lee & Jackson

This planning document has been prepared for the Rapid City Regional Airport on behalf of the City of Rapid City and adheres to Federal Aviation Administration (FAA) Advisory Circulars and state and local laws as of October 2010.

Recommendations for this document only identify the preliminary location of safety compatibility zones based on preliminary planning sources and information (U.S. quadrangle maps and aerial photographs). Information and decisions within this document are completed as a collaborative effort of the City of Rapid City, the City of Box Elder, Pennington County, Meade County, the Airport, and others as outlined at the beginning of this document.

The preparation of this document was financed in part through local Passenger Facility Charges (PFC 5-6). The information and reference materials contained herein are intended to be read as a complete document and are for planning purposes only.

Planning Participation List

Company	First Name	Last Name	Title	Project Role
Consultant				
Kadrmas Lee & Jackson	Mike	Mahoney	Project Manager	Drafting Land Use Compatibility Plan & QA/QC
Kadrmas Lee & Jackson	Rick	Ennen	Planner	QA/QC
Kadrmas Lee & Jackson	Jen	Einrem	Planning Engineer	Planning Engineer and QA/QC
Kadrmas Lee & Jackson	Rod	Senn	Planning Engineer	QA/QC
Kadrmas Lee & Jackson	Julie	Hempel	Administrative Assistant I	Formatting, Graphic Design, and QA/QC
Kadrmas Lee & Jackson	Al	Schafer	Planning Technician	CAD and GIS Drafting
Kadrmas Lee & Jackson	Matt	Nisbet	Planner	Drafting Land Use Compatibility Plan
Kadrmas Lee & Jackson	Alexis	Morlok	Planning Engineer	QA/QC
Kadrmas Lee & Jackson	Mason	Short	Planner	QA/QC
Kadrmas Lee & Jackson	Dave	Lepine	Planning Engineer	QA/QC
Airport Management				
Rapid City Regional Airport	Cameron	Humphres	Executive Director	Solicitation for Comments and Review
Rapid City Regional Airport	Jennifer	Eckman	Finance and Administration Manager	Solicitation for Comments and Review
Regional Counties and Municipalities				
City of Rapid City	Marcia	Elkins	Growth Management Department Director	Solicitation for Comments and Review
City of Rapid City	Patsy	Horton	Transportation Planning Coordinator	Solicitation for Comments and Review
Pennington County	Dan	Jennissen	Planning Director	Solicitation for Comments and Review
Pennington County	Lysann	Zeller	Planner III	Planning Meeting Attendee
City of Box Elder	Mike	McMahon	Planning and Zoning Coordinator	Solicitation for Comments and Review
Meade County	Bill	Rich	Meade County Planning, Engineering & GIS	Solicitation for Comments and Review

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APPENDICES

ACRONYM LIST

AC Advisory Circular
AIP Airport Improvement Program
ALP Airport Layout Plan
AOA Air Operations Area
ATC Air Traffic Control

CFR Code of Federal Regulations

DASR Digital Airport Surveillance Radar
dB Decibel
DNE Does Not Exceed
DNH Determination of No Hazard to Air Navigation
DNL Day-Night Average Sound Level
DOD Department of Defense
DOH Determination of Hazard

EBO Exceeds But Okay
EMI Electromagnetic Interference

FAA Federal Aviation Administration
FAR Federal Aviation Regulations

GA General Aviation

IFR Instrument Flight Rules
INM Integrated Noise Model

NNR No Notice is Required
NPH Notice of Presumed Hazard
NTSB National Transportation Safety Board

RCMC Rapid City Municipal Code
RCRA Rapid City Regional Airport
RPZ Runway Protection Zone
RS&H Reynolds, Smith, and Hills, Inc.

SDAC South Dakota Aeronautics Commission

TAF Terminal Area Forecasts

VFR Visual Flight Rules

Chapter 1. Introduction

Plan Purpose

The purpose of this plan is to identify existing and potential hazards and incompatible uses of lands surrounding Rapid City Regional Airport (RCRA) and to recommend reasonable actions to eliminate, mitigate, or prevent hazards and incompatible land uses.

RCRA is owned and operated by the City of Rapid City. The Airport is part of Rapid City, but is surrounded by unincorporated parcels in Pennington County. The Box Elder city limits lie less than a mile north of the Airport property line and Meade County is located approximately 5 miles north of the Airport property line. Consequently, this plan will address lands that are within the planning jurisdiction of the following local governments:

- Rapid City
- Box Elder
- Pennington County
- Meade County

Appendix A contains a jurisdiction map for areas surrounding RCRA.

When airport sponsors accept funds from FAA-administered airport financial assistance programs, they must agree to certain obligations (or assurances). Incorporating this plan into local zoning and land use planning will help RCRA and the City of Rapid City fulfill their contractual obligations to prevent and remove airport hazards and incompatible land uses. **Appendix B** contains FAA Sponsor Assurances, Paragraphs 20 and 21.

South Dakota Codified Law 50-10 enables governmental jurisdictions to create zoning and other controls for purposes of achieving and maintaining airport land use compatibility. Section 50-10-2 declares that an airport hazard endangers the lives and property of users of the airport and of occupants of land in its vicinity or destroys or impairs the utility of the airport. The section states the creation or establishment of an airport hazard is a public nuisance and an injury to the communities and that it is therefore necessary that the creation of airport hazards be prevented. **Appendix C** contains South Dakota Codified Law 50-10, Airport Zoning.

The 2008 RCRA Master Plan Update written by Reynolds, Smith, and Hills, Inc. (RS&H)[1] recommended the additional study of potential hazards and land use compatibility issues for the lands surrounding the airport. This Land Use Compatibility Plan has been prepared by Kadrmas, Lee & Jackson as Phase 2 of the RCRA Master Plan Update to address those issues. The 20-year outlook of the 2008 Master Plan in terms of aviation demand and airport development was used to develop the criteria contained in this Land Use Compatibility Plan for long-term application. Existing city and county planning documents were also considered in the development of this Land Use Compatibility Plan in order to help bring about a mutually compatible plan for RCRA and local governments.

[1] *Rapid City Regional Airport Master Plan Update. Reynolds, Smith, and Hills, Inc., 2008*

Airport Compatibility and Hazard Issues

Four types of airport compatibility and hazard issues need be considered in order to achieve land use compatibility:

- Airspace
- Safety
- Wildlife Attractants
- Noise

A brief and general description of each of these issues is provided below based primarily on criteria developed by FAA. Each issue is explained in terms of the basic objective to be met, the measurement of risk, and criteria that can be used to establish land use compatibility policies. Chapter 2 contains the specific assessment of RCRA in light of the land use compatibility issues and Chapter 3 provides recommendations to improve land use compatibility in areas surrounding RCRA.

Airspace

The airspace objective is to avoid any development that increases risks of aircraft accidents or measurably reduces the operational utility of airports. Types of development that may impair airports from meeting this objective include tall structures, such as radio towers and wind turbines, and visual or electronic interference such as bright lights near runways or airborne emissions from industrial plants. The risk of accidents involving airspace obstructions can be lowered through the efforts of the FAA to evaluate and manage airspace and through the communities' control over the creation of obstructing structures.

The definition of airspace requirements is primarily accomplished through standards established in Title 14 of the Code of Federal Regulations (CFR). More specifically, 14 CFR Part 77 – Objects Affecting Navigable Airspace.

The standards established in Part 77 relate to the size of the largest aircraft using the runway, the approach type, and the minimum visibility under which the runway can still be used by aircraft.

Part 77.13 states that any person/organization who intends to sponsor any of the following construction or alterations must notify the Administrator of the FAA:

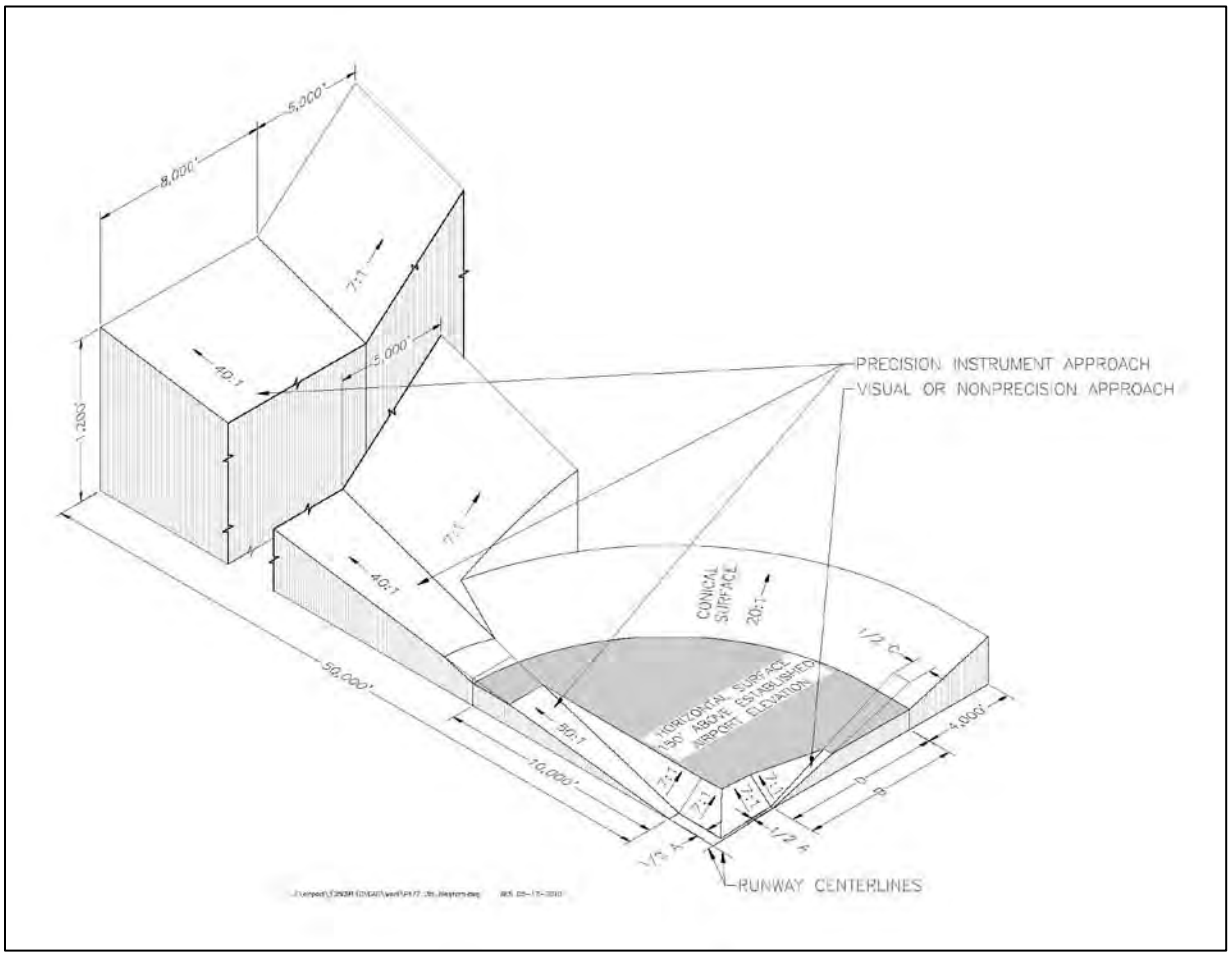
- Any construction or alteration exceeding 200 feet above ground level
- Any construction or alteration within 20,000 feet of a public use or military airport, which exceeds a 100:1 surface from any point on the runway of each airport with at least one runway more than 3,200 feet
- When requested by the FAA

- Any construction or alteration located on a public use airport or heliport regardless of height or location.

Proponents of structures proposed near airports may be required to file FAA Form 7460-1 with the FAA for evaluation and FAA Form 7460-2 when construction is completed. Both of these forms can now be filed electronically through the FAA website at http://oeaaa.faa.gov.

Part 77 standards appear in the form of three dimensional surfaces as illustrated on **Exhibit 1: Part 77 Standards**.

Exhibit 1: Part 77 Standards



In analyzing 7460-1 forms, the FAA considers several types of airspace impacts: (1) imaginary surface penetration, (2) operational impacts, and (3) electromagnetic interference.

Imaginary Surfaces – If a Part 77 imaginary surface would be penetrated by a constructed object, the FAA then performs an extended study to determine whether the object poses an operational problem for the relevant airport. If the penetration does not pose an operational impact, it may be determined not to be a hazard.

Operational Impacts – The dozens of daily flights arriving and departing airports like RCRA are possible because of complex protocols known as Visual Flight Rules (VFR) and Instrument Flight Rules (IFR). Operational impacts are those that affect VFR and IFR operations. Examples of measurable operational impacts include increasing the minimum flight altitude in a specific area, increasing the minimum climb gradient for airport departure, diverting air traffic away from an obstacle, or increasing the minimum descent altitude at the obstacle location for airport arrivals.

Electromagnetic Interference –Electromagnetic Interference (EMI) is any electromagnetic disturbance that interrupts, obstructs, or otherwise degrades or limits the effective performance of electronics and electrical equipment like Digital Airport Surveillance Radar (DASR) used by Air Traffic Control (ATC) or air defense radar. One source of EMI that is becoming more prevalent, especially in the Great Plains states, is wind turbines. Wind turbines can create clutter interference with the sensitive radars used by the FAA, DOD, and other agencies. Aircraft can be temporarily lost, misidentified, shadowed by the radar signature of wind turbines. ATC radar interference is generally limited to wind turbines that are within line of sight of the radar. A 2006 Department of Defense (DOD) report titled "*The Effect of Windmill Farms on Military Readiness"* identifies issues with air defense radar. DOD's report concludes that the only way to prevent signal degradation of air defense radar is to keep wind turbines out of the radar's line of sight.[2]

Airspace Analysis and Regulations

For projects filed with the FAA through Form 7460-1, an initial aeronautical study is undertaken within the appropriate FAA office, which will issue one of the determinations detailed below. The determinations are direct excerpts from Chapter 7 of FAA Order JO 7400.2G Procedures for Handling Airspace Matters.

> ". . . Determinations shall be issued as follows:
>
> a. *Issue a 'Does Not Exceed' (automated DNE letter) determination if the structure does not exceed obstruction standards, does not have substantial adverse physical or electromagnetic interference effect upon navigable airspace or air navigation facilities, and would not be a hazard to air navigation.*
>
> *NOTE: A determination indicating that No Notice is Required (NNR) is no longer authorized.*
>
> b. *Issue an 'Exceeds But Okay' (automated EBO letter) determination if the structure exceeds obstruction standards, but does not result in a substantial adverse effect, circularization was not necessary, and meets one of the following conditions:*
>
> 1. *The structure is temporary;*
> 2. *The structure is existing; or*
> 3. *The structure involves an alteration with no physical increase in height or change of location such as a proposed decrease in height or proposed side mount.*

2 Source: The Effect of Windmill Farms on Military Readiness, Report to the Congressional Defense Committees. Department of Defense, 2006.

NOTE: The significant difference between an EBO determination and a 'Determination of No Hazard to Air Navigation' (DNH) is that the EBO determination does not allow for petition rights.

c. *Issue a 'Notice of Presumed Hazard' (automated NPH letter) if the structure exceeds obstruction standards and/or has an adverse effect upon navigable airspace or air navigation facilities and resolution or further study is necessary to fully determine the extent of the adverse effect. The NPH facilitates negotiation and is useful in preserving navigable airspace. Normally the FAA should not automatically initiate further study (including circularization) without a request to do so by the sponsor. The intent of the NPH is to inform the sponsor of the initial findings and to attempt resolution. If the sponsor fails to contact the FAA after receiving the notice, terminate the case. No further action by the FAA is required unless the sponsor re-files. If negotiation is successful, and resolution is achieved, or further study is completed, an appropriate subsequent determination should be issued.*

d. *Issue a 'Determination of No Hazard' (DNH) if the structure exceeds obstruction standards but does not result in a substantial adverse effect.*

e. *Issue a 'Determination of Hazard' (DOH) if the structure would have or has a substantial adverse effect; negotiations with the sponsor have been unsuccessful in eliminating the substantial adverse effect; and the affected aeronautical operations and/or procedures cannot be adjusted to accommodate the structure without resulting in a substantial adverse effect. The obstruction evaluation may or may not have been circularized. [3]"*

It is important to acknowledge that the FAA's role is limited to evaluating the aeronautical effects of proposed structures; the FAA has no legal authority to stop the construction of any proposed structure. It is the responsibility of local governments with jurisdiction to plan and control development. Notwithstanding, the FAA does not relieve airport sponsors of their contractual obligation to prevent and remove hazards to air navigation.

In addition to federal requirements, the State of South Dakota has height requirements set forth in South Dakota Codified Laws § 50-9-1 and § 50-9-7. The laws require that an Aeronautical Hazard Application be filed with the South Dakota Aeronautics Commission (SDAC) in certain circumstances. The laws are paraphrased below:

- § 50-9-1 No person, firm, corporation, limited liability company, or association may erect anywhere in this state a building, structure, or tower of any kind over two hundred feet in height above the terrain, without first filing with the SDAC a notice and application showing the location and dimensions of the building, structure, or tower, and procuring a permit approving the location from the SDAC.

- § 50-9-7 Before any person or entity may construct or alter any structure within two miles from the nearest boundary of any public airport at a height that exceeds a 50:1 slope from the nearest boundary of the airport, they shall first file an application with and obtain the approval of the SDAC to enter upon and complete such construction or alteration.

A copy of South Dakota Codified Laws § 50-9-1 and § 50-9-7 can be found in **Appendix C**.

[3] *Source: Chapter 7 of FAA Order JO 7400.2G Procedures for Handling Airspace Matters.*

Safety

The safety objective is to minimize risks to persons on the ground and aircraft occupants that may be associated with aircraft accidents. Assessing the risks of aircraft accidents and creating policies to address those risks is challenging, because aircraft accidents are rare and the specific circumstances of an accident are nearly impossible to predict.

National Transportation Safety Board (NTSB) data gathered between 1990 and 2000 indicate that approximately 95 percent of all aircraft accidents happen either on or near airports. This data also shows that most aircraft accidents occur during the approach or departure phases of flight. Approach accidents for multiengine aircraft, including jets, typically occur within 500 feet of both sides of the runway centerline and within 2,200 feet from the runway threshold. Departure accidents are usually widely scattered in the vicinity of the runway.

Communities typically use FAA airport design standards and safety compatibility guidelines developed by state aeronautical agencies to formulate safety policies. A good source for safety compatibility guidelines is the California Airport Land Use Planning Handbook. The guidelines in that document have been used as the foundation for the land use compatibility planning at many communities in the western states and several state aeronautical agencies have adapted it for use in developing their own airport land use planning handbooks. The method used in these handbooks involves the creation of as many as six safety compatibility zones that encompass airport owned property and lands surrounding the airport. Each safety compatibility zone is assigned compatible development criteria involving acceptable and prohibited land uses and acceptable maximum development densities. The development criteria for each safety zone are directly related to noise levels and the risk of aircraft accidents within that zone.

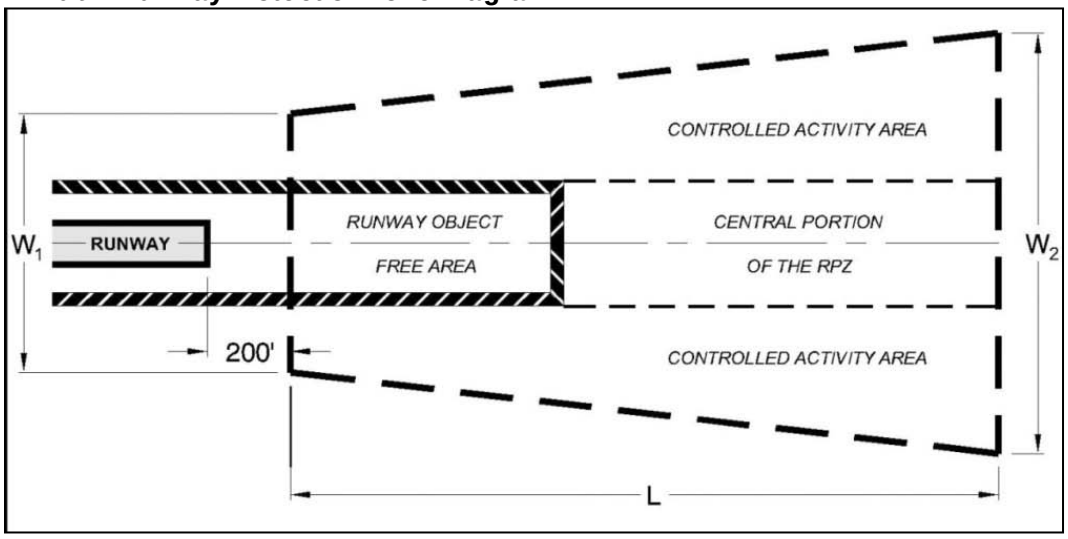
FAA airport design standards, as contained in Advisory Circular (AC) 150/5300-13, define the dimensions and provide land use policy for Runway Protection Zones (RPZ). RPZs form the inner approach area near the runway threshold. According to the FAA, the property the RPZs encompass should be controlled by the airport sponsor, so that no residences or places of public assembly exist in RPZs. Places of public assembly include churches, hospitals, schools, office buildings, shopping malls, and other uses with similar concentrations of people. FAA recommends that airport sponsors acquire all the land within RPZs. **Table 1: Dimensional Requirements for Runway Protection Zones** provides the RPZ dimensions associated with different runway design standards. **Exhibit 2: Runway Protection Zone Diagram** provides a graphic of the RPZ dimensions.

Table 1: Dimensional Requirements for Runway Protection Zones

Approach Visibility Minimums[1]	Facilities Expected to Serve	Dimensions			
		Length L feet (meters)	Inner Width W_1 feet (meters)	Outer Width W_2 feet (meters)	RPZ acres
Visual and not lower than 1 mile (1,600 m)	Small aircraft exclusively	1,000 (300)	250 (75)	450 (135)	8.035
	Aircraft Approach Categories A & B	1,000 (300)	500 (150)	700 (210)	13.770
	Aircraft Approach Categories C & D	1,700 (510)	500 (150)	1,010 (303)	29.465
Not lower than ¾-mile (1.200 m)	All aircraft	1,700 (510)	1,000 (300)	1,510 (453)	48.978
Lower than ¾-mile (1,200 m)	All aircraft	2,500 (750)	1,000 (300)	1,750 (525)	78.914

[1] The RPZ dimensional standards are for the runway end with the specified approach visibility minimums. The departure RPZ dimensional standards are equal to or less than the approach RPZ dimensional standards. When an RPZ begins other than 200 feet (60m) beyond the runway end, separate approach and departure RPZs should be provided. Refer to Appendix 14 for approach and departure RPZs.
Source: FAA AC 150/5300-13 Change 15, Airport Design Standards

Exhibit 2: Runway Protection Zone Diagram[4]



[4] *Source: FAA AC 150/5300-13*

Runway Protection Zones (RPZ) at RCRA – The RPZs for both ends of Runway 5-23 begin 200 feet beyond the runway ends, have an inner width (W1) of 250 feet, a length of 1,000 feet, and an outer width (W2) of 450 feet.

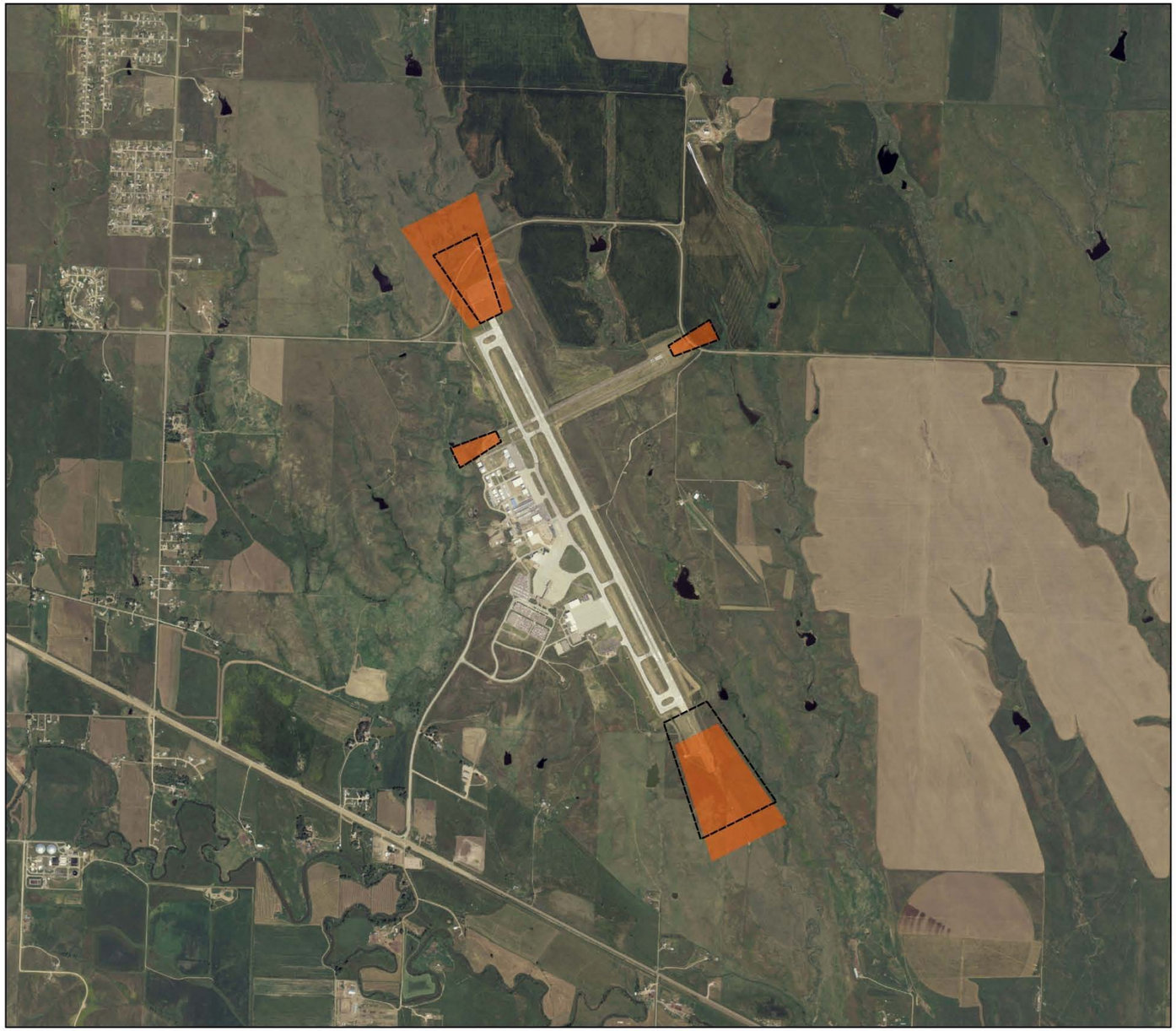
The existing RPZ for Runway 14 begins 200 feet beyond the runway end, has an inner width of 500 feet, a length of 1,700 feet, and an outer width of 1,010 feet. However, the 2008 RCRA Master Plan Update[5] proposes adding a precision approach to Runway 14, which requires the future RPZ to have an inner width of 1,000 feet, a length of 2,500 feet, and an outer width of 1,750 feet. The future RPZ proposed for Runway 14 was utilized for this Land Use Compatibility Plan.

The existing and future RPZ for Runway 32 begins 200 feet beyond the runway end, has an inner width of 1,000 feet, a length of 2,500 feet, and an outer width of 1,750 feet. For the purposes of this Land Use Compatibility Plan, the future end of Runway 32 depicted in the 2008 RCRA Master Plan Update, which shows a 500-foot runway extension, was utilized.

Rapid City Regional Airport's existing RPZs and the proposed RPZs utilized for land use planning purposes are shown on **Exhibit 3: RCRA Runway Protection Zones**.

[5] *Rapid City Regional Airport Master Plan Update. Reynolds, Smith, and Hills, Inc., 2008*

Exhibit 3: RCRA Runway Protection Zones



Rapid City Regional Airport
Rapid City, South Dakota

Runway Protection Zones
Overlaid on Aerial Photo

Legend
- Existing Runway Protection Zone
- Proposed Runway Protection Zone

N

0 1,000 2,000 4,000 Feet

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Wildlife Attractants

The wildlife objective is to minimize risks associated with wildlife activities, particularly birds, in the vicinity of an airport. Minimizing wildlife risks helps reduce aircraft damage costs and increases safety for aircraft occupants and persons on the ground. FAA statistics indicate that the number of aircraft bird strikes reported in the U.S. quadrupled from 1990 to 2007, rising from 1,738 per year to 7,286. Additionally, over 5,000 bird strikes were reported by the U.S. Air Force in 2007. At least 219 people have been killed world-wide as a result of bird strikes since 1988 and the cost to USA civil aviation is estimated at over $600 million per year. Approximately 80 percent of all bird strikes occur while aircraft are operating at altitudes less than 1,000 feet above ground level, which is typical for aircraft operating within an airport traffic pattern.

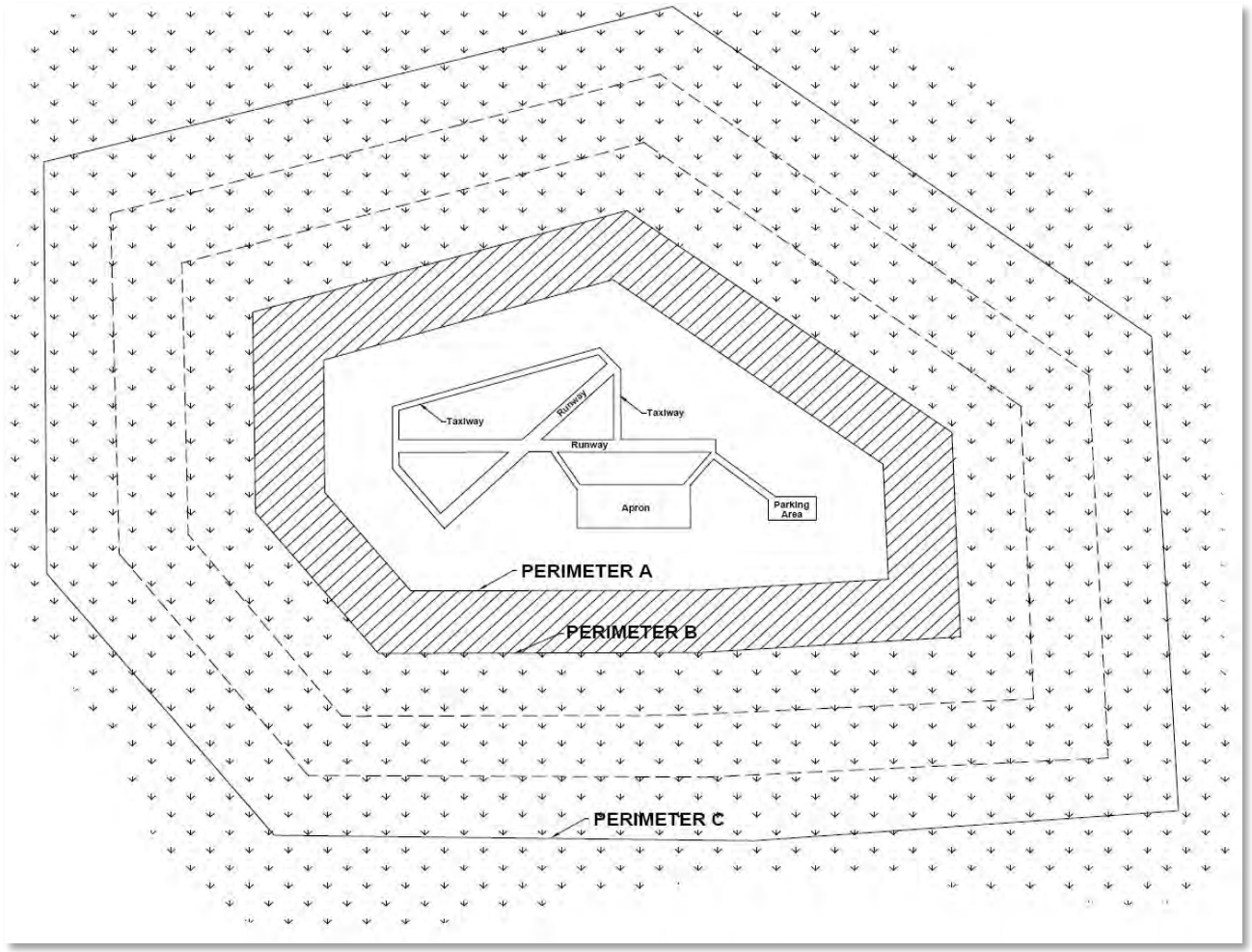
FAA AC 150/5200-33B, Hazardous Wildlife Attractants On or Near Airports, recommends the wildlife attractants be located at least 10,000 feet away from the Air Operations Area (AOA) for turbine-powered aircraft. A copy of FAA AC 150/5200-33B is located in **Appendix D**. For all airports, the FAA recommends a distance of 5 statute miles between the furthest edges of the airport's AOA and the hazardous wildlife attractant if the attractant could cause hazardous wildlife movement into or across the approach or departure airspace. **Table 2: Hazardous Wildlife Attractants On or Near Airports** lists examples of items not recommended within 10,000 feet and 5 miles of the AOA.

Exhibit 4: Wildlife Hazard Separation Distances provides an example illustration of recommended separation distances for wildlife attractants.

Table 2: Hazardous Wildlife Attractants On or Near Airports

Land Use Guidance as Related to Wildlife Attractants
Typically not recommended within 10,000 feet of airports using turbine-powered aircraft:
1. New landfills (prohibited within 6 statute miles of airports)
2. Underwater waste discharges
3. Storm water management facilities (unless modified/designed so as to minimize attractiveness to wildlife)
4. Wastewater treatment facilities
5. Artificial marshes, stock ponds, and recreational lakes
6. Wastewater discharge and sludge disposal
7. Wetlands that attract wildlife
8. Dredge spoil containment areas (if they contain materials that would attract wildlife)
9. Agricultural crops (may be grown within 10,000 feet - follow separation distances in "Minimum Distances Between Certain Airport Features and Any On Airport Agricultural Crops")
10. Confined livestock operations (feedlots, dairy operations, hog/chicken production facilities, etc)
11. Aquaculture (unless they can show it does not pose a bird hazard)
12. Golf courses (allowed if they develop a program to reduce wildlife attractiveness)
Typically not recommended within 5 mile radius of airport:
1. Any items listed above if they would cause wildlife movement across approach/departure surface
2. New wastewater treatment facilities
3. New golf courses
4. New Landfills
Typically compatible with airports:
1. Enclosed trash transfer stations
2. Composting operations (yard waste; does not include food/municipal solid waste)
3. Recycling centers
4. Construction and demolition debris facilities
5. Fly ash disposal
Source: FAA AC 150/5200-33B

Exhibit 4: Wildlife Hazard Separation Distances[6]



PERIMETER A: For airports serving piston-powered aircraft, hazardous wildlife attractants must be 5,000 feet from the nearest air operations area.

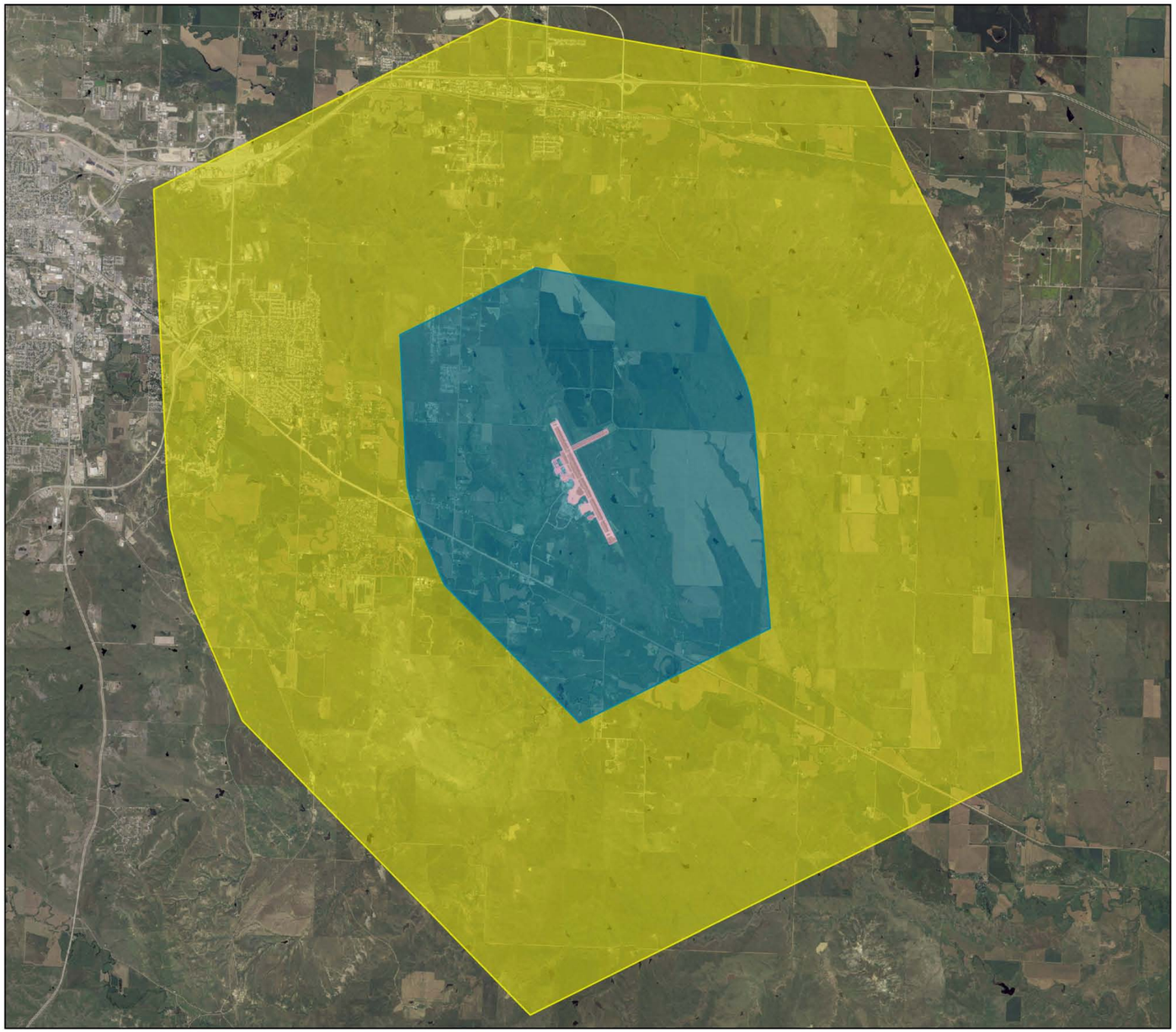
PERIMETER B: For airports serving turbine-powered aircraft, hazardous wildlife attractants must be 10,000 feet from the nearest air operations area.

PERIMETER C: 5-mile range to protect approach, departure and circling airspace.

Exhibit 5: Wildlife Attractant Zones displays the recommended 10,000 foot and 5-mile separation zones at RCRA.

[6] *Source: FAA AC 150/5200-33B*

Exhibit 5: Wildlife Attractant Zones



Rapid City Regional Airport
Rapid City, South Dakota

Wildlife Attractant Zones
Overlaid on Aerial Photo

Legend
- Aircraft Operations Area
- Wildlife Critical Zone (10,000 feet)
- Wildlife General Zone (5 miles)

N

Miles
0 0.625 1.25 2.5

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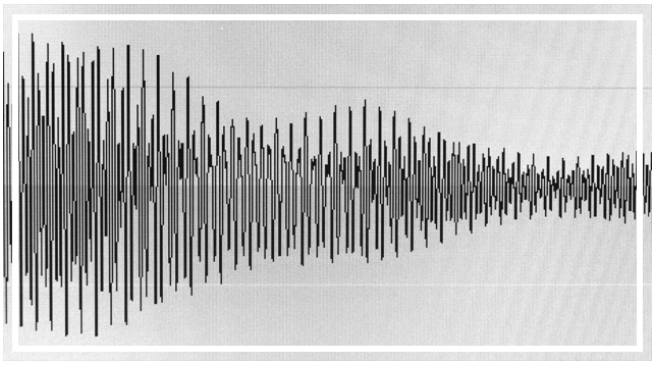
The FAA recommends that public-use airport sponsors implement the standards and practices contained in AC 150/5200-33B, Hazardous Wildlife Attractants On or Near Airports. Holders of Airport Operating Certificates issued under Title 14 CFR Part 139 Subpart D, Certification of Airports, may use the standards, practices, and recommendations contained in this AC to comply with the wildlife hazard management requirements of Part 139. Airports that have received federal grant-in-aid assistance must use these standards. The FAA also recommends the guidance in this AC for land-use planners, operators of non-certificated airports, and developers of projects, facilities, and activities on or near airports.

RCRA services commercial airline operations under the authority of an Airport Operating Certificate issued under Part 139 which requires RCRA to comply with wildlife hazard management requirements of Part 139. Compliance would normally be satisfied through implementation of the standards and practices contained in AC 150/5200-33B.

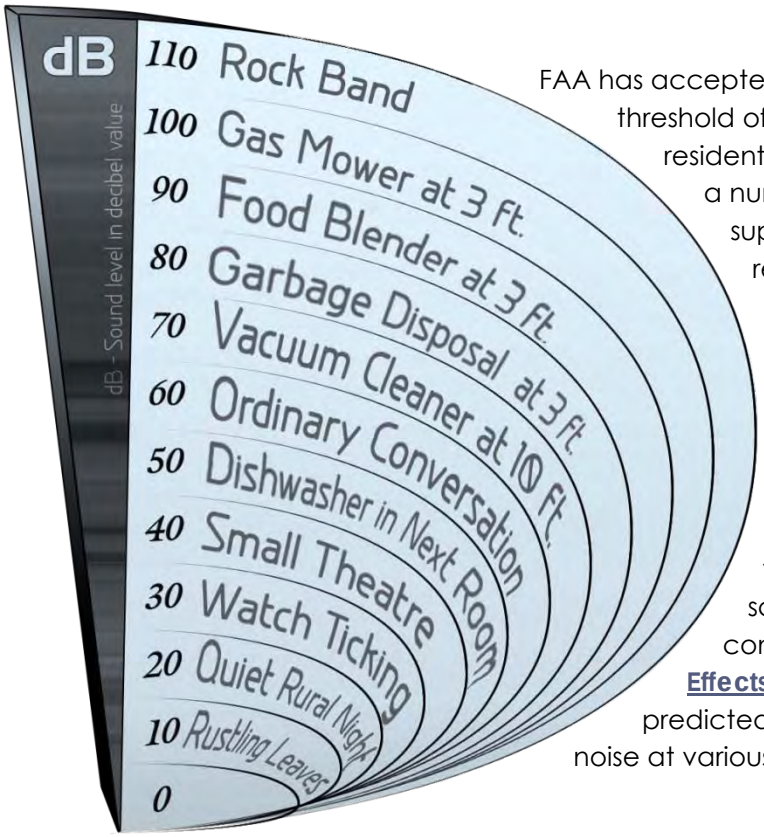
Noise

The noise objective is to minimize the number of people exposed to high levels of aircraft noise capable of disrupting noise-sensitive activities. Noise emitted from aircraft can affect the well-being of persons living or working near an airport. While there are several effects of aircraft noise upon people, the most common is annoyance. Annoyance can be defined as the overall adverse reaction of people to noise. Other effects of aircraft noise include sleep disturbance and speech interference.



Noise analysis for airports is typically conducted using Integrated Noise Model (INM) software. The noise measurement recommended by FAA for use in the analysis of aircraft noise is the Day-Night Average Sound Level (DNL). The DNL is defined as the average annual weighted sound level produced by aircraft at a location during a 24-hour period. An additional 10 decibel (dB) weight is applied to aircraft noise occurring between 10 p.m. and 7 a.m., when aircraft noise is more likely to create an annoyance. The FAA has determined that a significant noise impact would occur if a detailed noise analysis indicates an action would result in an increase of 1.5 dBs or greater within the 65 dB DNL contour over a noise sensitive area. **Exhibit 6: Common Sounds and Their Associated Decibel Levels** provides examples of many common sounds and graphs their associated dB levels.

Exhibit 6: Common Sounds and Their Associated Decibel Levels



FAA has accepted a maximum of 65 dB DNL as the threshold of concern for noise impacts over residential areas. However, there have been a number of instances where FAA has supported local policies to restrict new residential development to not exceed 60 dB DNL, particularly in rural or less developed areas that are not already subjected to high levels of urban noise, e.g., vehicle traffic or industrial activity. Note that local noise policies commonly define separate thresholds for various types of land uses, e.g., schools, hospitals, industrial complexes, etc.) **Table 3: Community Effects and Reactions to Noise** provides predicted community effects and reactions to noise at various DNL thresholds.

Table 3: Community Effects and Reactions to Noise

Day-Night Average Sound Level (Decibels)	Effects [1]			
	Hearing Loss (Qualitative Description)	Annoyance [2] (Percentage of Population Highly Annoyed)[3]	Average Community Reaction [4]	General Community Attitude Toward Area
≥75	May begin to occur	37%	Very Severe	Noise is likely to be the most important of all adverse aspects of the community environment.
70	Will not likely occur	22%	Severe	Noise is one of the most important aspects of the community environment.
65	Will not occur	12%	Significant	Noise is one of the most important aspects of the community environment.
60	Will not occur	7%	Moderate to Slight	Noise may be considered an adverse aspect of the community environment.
≤55	Will not occur	3%		Noise considered no more important than various other environmental factors.

1. All data is drawn from National Academy of Science 1977 report Guidelines for Preparing Environmental Impact Statements on Noise, Report of Working Group 69 on Evaluation of Environmental Impact of Noise.

2. A summary measure of the general adverse reaction of people to living in noisy environments that cause speech interference; sleep disturbance; desire for tranquil environment; and the inability to use the telephone, radio, or television satisfactorily.

3. The percentage of people reporting annoyance to lesser extents is higher in each case. An unknown small percentage of people will report being "highly annoyed" even in the quietest surroundings. One reason is the difficulty all people have in integrating annoyance over a very long time. USAF Update with 400 points (Finegold et al. 1992)

4. Attitudes or other non-acoustic factors can modify this. Noise at low levels can still be an important problem, particularly when it intrudes into a quiet environment.

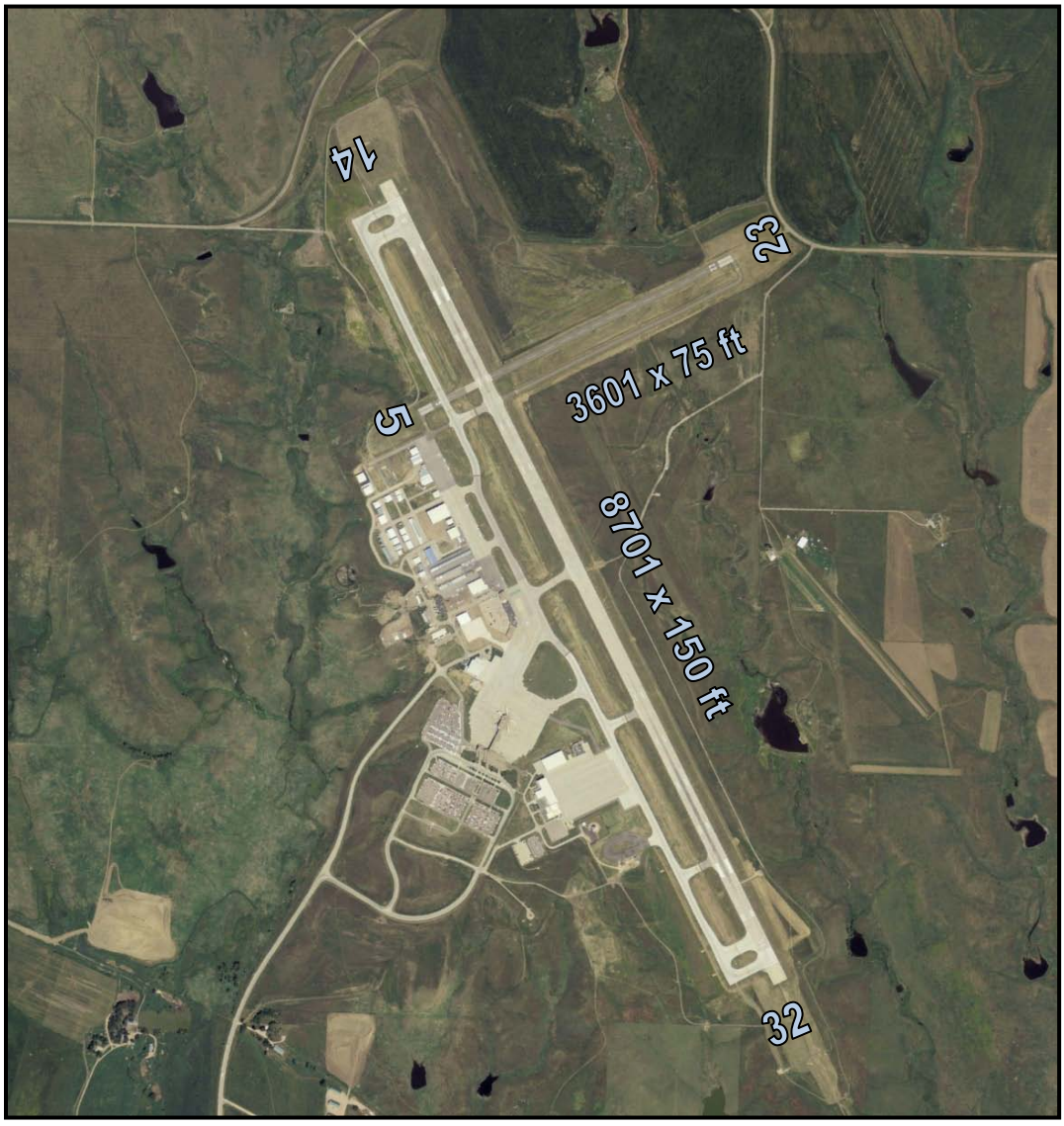
NOTE: Research implicates noise as a factor producing stress-related health effects such as heart disease, high blood pressure and stroke, ulcers and other digestive disorders. The relationships between noise and these effects, however, have not as yet been conclusively demonstrated. (Thompson 1981; Thompson et al. 1989; CHABA 1981; CHABA 1982; Hattis et al. 1980; and U.S. EPA 1981.

Chapter 2. Airport Conditions

Existing Conditions

The existing layout of the facilities at Rapid City Regional Airport is shown on **Exhibit 7: RCRA Layout**. All operations conducted by commercial airlines and large jet aircraft use Runway 14-32 due to its 8701-foot length and instrument approach capabilities. Runway 5-23 is used by smaller aircraft. The 2008 RCRA Master Plan Update[7] shows a proposed 500-foot extension of Runway 14-32 to the south, resulting in an ultimate runway length of 9,200 feet. For planning purposes, the 500-foot extension to Runway 14-32 was incorporated into this Land Use Compatibility Plan.

Exhibit 7: Existing RCRA Layout



[7] *Rapid City Regional Airport Master Plan Update. Reynolds, Smith, and Hills, Inc., 2008*

Airport Operations

RCRA currently receives scheduled passenger service from Delta Airlines (including service from their affiliates Northwest, Skywest/Delta Connection, Compass, Mesaba, and Pinnacle) to Minneapolis and Salt Lake City, United Airlines (including their affiliates Skywest/United Express, Mesa Airlines and ExpressJet) to Denver and Chicago, American Airlines via their affillliate American Eagle to Chicago and Dallas/ Ft. Worth and Allegiant Airlines to Las Vegas and Phoenix.

RCRA is currently served daily by several different regional jets through Delta, United, and American. Allegiant provides service three times each week and utilizes a MD 83. The current service fleet consists of the following aircraft types:

- Embraer ERJ 140 (44 seats)
- Embraer ERJ 145 (50 seats)
- Bombardier CRJ 100/200 (50 seats)
- Bombardier CRJ 700 (70 seats)
- Bombardier CRJ 900 (76 seats)
- McDonnell-Douglas MD-83 (150 seats)

Historically, RCRA has been served by several different airline aircraft types, varying by demand and time of year. Because the type of aircraft an airline utilizes can change overnight, it is anticipated that the following common airline aircraft types could return to service at RCRA, since they have operated at the Airport in the past and are still in the fleet of airlines currently operating at RCRA:

- Boeing 737-300 (126 Seats)
- McDonnell-Douglas DC9-30, 40, and 50 (100 to 125 Seats)
- Airbus A319/A320 (124/148 seats)
- Bombardier Dash 8-200 and Q400 (37 to 70 seats)

For the past 20 years, the number of airline operations at RCRA has fluctuated between 15,000 and 18,000 operations, with the last 5 years showing moderate declines as airlines moved aggressively to balance demand and capacity. The FAA Terminal Area Forecast (TAF) reports the last full year of data as 2008 with 15,570 commercial service operations. For the foreseeable future, commercial service operations will likely remain within the historical range;

for 2025, the 2008 RCRA Master Plan Update[8] forecasts 16,834 commercial service operations and the FAA TAF forecasts 17,926 operations.

The 2008 RCRA Master Plan Update forecasts the number of General Aviation (GA) aircraft based at RCRA to increase from 117 in 2005 to 173 in 2025. GA operations have declined from 70,000 in 1980 to 25,000 in 2008. The 2008 RCRA Master Plan Update concludes that the anticipated increase in based aircraft will provide a steady increase in GA operations up to 46,900 in 2025. However, the TAF indicates that GA operations will remain relatively flat and will still be approximately 26,800 in 2025.

Military aircraft operate at RCRA. These operations involve rotary wing and fixed wing aircraft used for training and transport activities. Those operations currently total about 2,600 annually and are forecasted to increase slightly to about 3,000 annual operations.

A summary of the aviation forecasts from the 2008 RCRA Master Plan Update is provided in **Table 4: Forecasts Summary**. A copy of the 2009 FAA TAF report is located in **Appendix D**.

[8] *Rapid City Regional Airport Master Plan Update. Reynolds, Smith, and Hills, Inc., 2008*

Table 4: Forecasts Summary

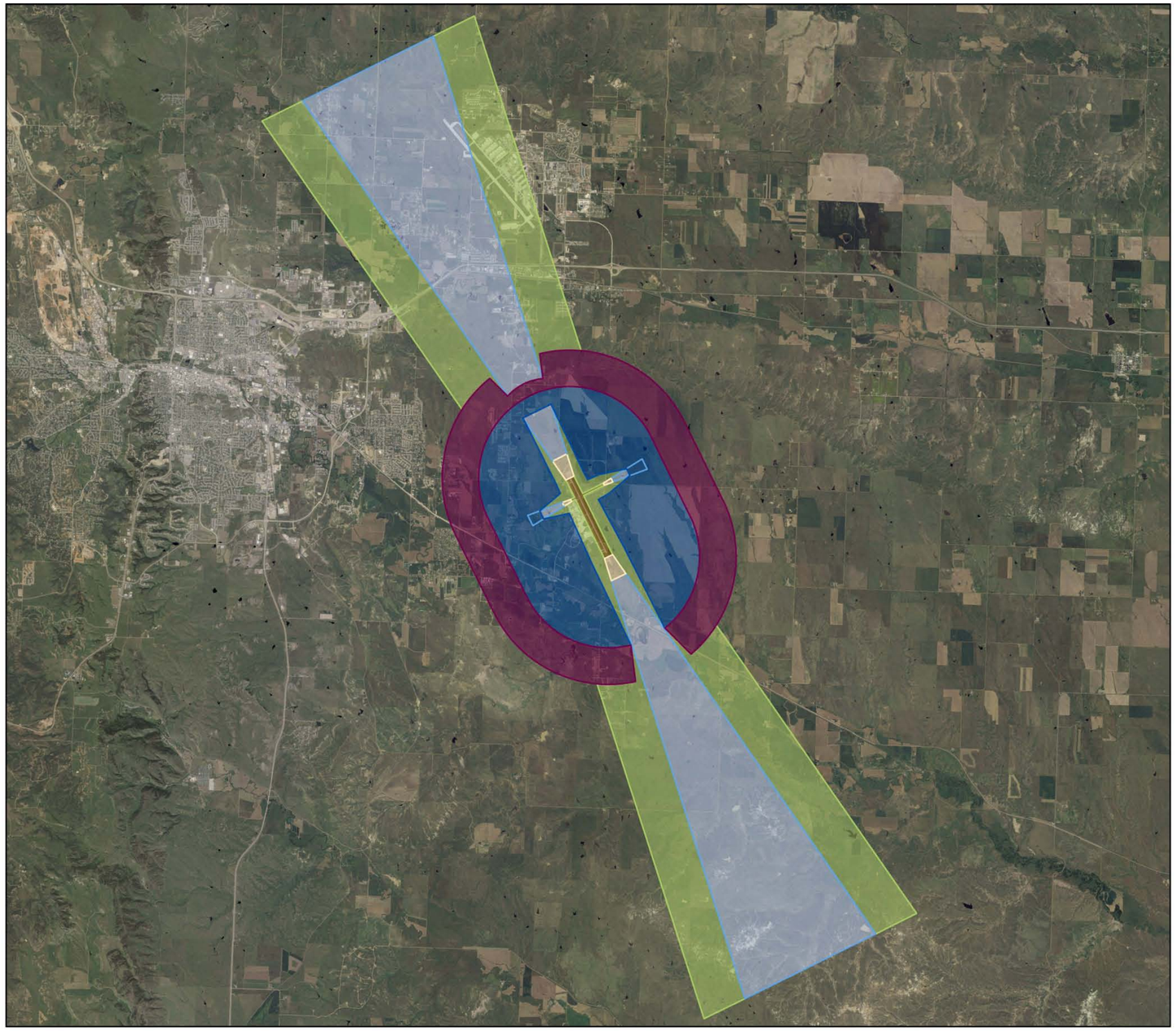
	2005	2010	2015	2025
Enplanements				
Airline Enplanements	252,109	284,414	320,594	407,743
Based Aircraft				
Total Based Aircraft	**117**	**129**	**144**	**173**
Local Operations				
General Aviation	11,129	11,996	12,907	14,943
Military	1,748	1,748	1,748	1,748
Total Local Operations	**12,877**	**13,744**	**14,655**	**16,691**
Itinerant Operations				
General Aviation	21,985	24,826	27,749	31,957
Commuter	12,336	12,474	12,613	12,895
Military	2,885	2,885	2,885	2,885
Airline	3,144	3,326	3,519	3,939
Total Itinerant Operations	**40,350**	**43,511**	**46,766**	**51,676**
Total Operations	**53,227**	**57,255**	**61,421**	**68,367**

Source: Rapid City Regional Airport Master Plan Update. Reynolds, Smith, and Hills, Inc., 2008

Airspace Structure

FAR Part 77 airspace surfaces with the proposed 500-foot extension of Runway 14-32 are shown in **Exhibit 8: RCRA Part 77 Airspace Surfaces**. Additional exhibits located in **Appendix D** detail RCRA's Part 77 surfaces along with height contours for the Part 77 surfaces and terrain surrounding RCRA.

Exhibit 8: RCRA Part 77 Airspace Surfaces



Rapid City Regional Airport
Rapid City, South Dakota

Proposed Part 77 Airspace
Overlaid on Aerial Photo

Legend

Proposed Part 77 Airspace

- APPROACH SURFACE
- CONICAL SURFACE
- HORIZONTAL SURFACE
- TRANSITIONAL SURFACE
- RUNWAY PROTECTION ZONE
- PRIMARY SURFACE

N

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Engineers Surveyors Planners

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Existing Airspace Zoning and Jurisdiction

The following describes the existing zoning for the airspace areas around the Airport and within each of the jurisdictions that are under the airspace.

Existing Rapid City Airspace Zoning

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 RCRA property. In Chapter 17.58, an Airport Encroachment Area and Height Regulations section are established in reference to Part 77.25, but do not adequately define the restrictions. In addition, the terminology used in RCMC Chapter 17.58 and Part 77.25 do not exactly match. The zones and height restrictions referred to in RCMC Chapter 17.58 are defined by the imaginary surfaces in Part 77.25, as shown in the chart below.

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

The language of RCMC Chapter 17.58 can be found in **Appendix E**.

Existing Pennington County Airspace Zoning

Pennington County has zoning authority over the area surrounding and abutting the Airport property. Airspace protection is provided for RCRA in Section 301 of the Pennington County Zoning Ordinance. Section 301 – Airport Height and Hazard Zoning is located in **Appendix E**. Section 301 establishes zones and height limitations consistent with FAR Part 77.25; exempts existing non-conforming uses; establishes a variance approval process; and allows appeals to the Board of Adjustment, followed by judicial review.

There are concerns with the existing language of Section 301:

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 RCRA, it is possible that a structure less than 50 feet tall could present a hazard to air navigation to the RCRA 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 77[9],. 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 located in **Appendix D** 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.

Existing Box Elder and Meade County Airspace Zoning

At this time, the City of Box Elder and Meade County have not adopted airspace zoning. However, they are currently working with the Ellsworth Air Force Base task force to protect the airspace serving the airbase.

Residential Density Zoning

The area northwest of the Airport is developing as residential space. Appropriate zoning for density, population, height, and noise impacts must be maintained in this area. The area east of the airport may eventually develop as residential and appropriate densities should be zoned for this area.

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[9] *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 ft of public/military airport, that exceed 100:1 surface from any point on the runway*
- *Everything located on an airport*

Wind Turbine Restrictions

Rapid City and Box Elder have enacted ordinances that place restrictions on wind turbines, or "wind energy conversion systems" as they are referred to in RCMC Chapter 17.50.215 and "wind energy systems" as they are referred to in City of Box Elder Ordinance #478. Both ordinances are located in **Appendix F** . Among other restrictions, the ordinances detail height and setback requirements, and mandate that interference with electromagnetic devices be mitigated. RCMC Chapter 17.50.215 also prohibits the commercial sale of power. The ordinance reads:

"B. Commercial sale of power prohibited. Any wind energy conversion system shall be used only for the purpose of generating power for the property on which the wind energy conversion system is located, or for the purpose of transmitting power to the electrical grid of an electric utility company through an approved interconnection."

Pennington County has placed restrictions on wind turbines by designating them a conditional use. It is up to the Pennington County Planning Commission to determine whether or not a conditional use such as a wind turbine should be allowed.

Meade County has enacted an ordinance which requires sponsors of "Wind Generator Facilities" to file a permit application. The restrictions on the facilities depend on whether they are "commercial", "rural", or "small residential". A copy of the ordinance, Wind Generator Ordinance 32, can be found in **Appendix F**.

The existing restrictions on wind turbine development may not provide sufficient protections for the airspace surrounding RCRA. Therefore, recommendations for improving airspace protection through wind turbine development restrictions are detailed in Chapter 3 of this study.

Safety

The City of Rapid City has annexed the Airport property encompassed by RCRA and designated it the 'Airport Zoning District'. RCMC Chapter 17.58 currently provides land use restrictions for the district. The land use restrictions include permitted uses, conditional uses, and other use regulations. RCMC Chapter 17.58 can be found in **Appendix E**.

Outside of height restrictions, Pennington County ordinances provide few land use restrictions that specifically protect RCRA. The City of Box Elder and Meade County provide no land use restrictions which specifically protect RCRA.

It is recommended that additional land use restrictions be implemented for the area surrounding Rapid City Regional Airport. Proposed land use restrictions for the area surrounding RCRA are detailed in the subsequent chapter.

Wildlife

Wildlife, particularly birds, is of concern for aircraft operating within the central migration flyway in which RCRA is located. Activity by migrating birds is especially intense during spring and fall migration periods and extra vigilance to monitor bird numbers and movements is required of pilots, the RCRA FAA Air Traffic Control (ATC) Tower, and approach/departure radar operators located at Ellsworth Air Force Base.

RCRA is operated according to the requirements of a 2003 Wildlife Hazard Management Plan. This plan was prepared using data on actual wildlife activity recorded in a Wildlife Hazard Assessment prepared by the USDA Wildlife Services. It is important to note that the Wildlife Hazard Assessment and Wildlife Hazard Management Plan focused on wildlife activity within RCRA property, whereas land use compatibility, the subject of the present effort, deals primarily with land surrounding the Airport. Where land use compatibility is addressed in the Wildlife Hazard Management Plan, the action specified is that the Airport Director would be vigilant of development proposals that may cause the attraction of wildlife activity near the Airport.

Table 2: Hazardous Wildlife Attractants On or Near Airports from Chapter 1 lists the types of facilities and activities that are not considered compatible with airport operations because they typically attract wildlife of concern to aircraft safety.

On Airport Potential Wildlife Attractants

The 2003 RCRA Wildlife Hazard Management Plan details some potential wildlife attractants located on the airfield and provides methods to remove or mitigate those hazards. Some examples of potential wildlife attractants located on RCRA's airfield include a natural spring, two small marsh areas, and several drainage ditches adjacent to runways and taxiways.

Off Airport Potential Wildlife Attractants

There are existing facilities and activities near RCRA that may be considered incompatible with airport operations; wetlands and agricultural crops that could attract wildlife currently exist within 10,000 feet of the Airport.

Some land uses noticed or proposed near the Airport that are typically identified as a wildlife hazard include:

- Wetlands and stock ponds around Airport property
- Drainage area for Rapid Creek south of the Airport (approximately 5,700 feet from Runway 32)
- Waste water treatment plant (approximately 12,700 feet from Runway 32)

- Potential golf course and housing development along Rapid Creek south of the Airport
- Planting of corn and other incompatible row crops next to Airport property

A determination as to whether or not a land use is a hazard will need to be made through a wildlife study conducted by a qualified wildlife hazard biologist. The wildlife study would outline what mitigation efforts are recommended.

Noise

The 2008 RCRA Master Plan Update[10] included an aircraft noise analysis to identify the existing and projected future noise exposure levels in the airport vicinity. Noise contours were prepared for the years 2005 and 2025. **Appendix G** contains the 2005 and 2025 noise contour maps developed by RS&H.

As shown on the maps, the total area included within the noise contours is expected to stay relatively stable over time. Even though aircraft operations are expected to increase, the introduction of quieter, more technologically advanced aircraft that replace older aircraft now in use will result in noise impacts remaining constant or decreasing. In both cases, the 65 decibel (dB) Day-Night Average Sound Level (DNL) contour remains on existing RCRA property or property over which the airport has an easement. RCRA can ensure that development which would be incompatible with noise levels will not occur.

[10] *Rapid City Regional Airport Master Plan Update. Reynolds, Smith, and Hills, Inc., 2008*

Chapter 3. Compatibility Guidelines

Introduction

This chapter contains guidelines Rapid City, Pennington County, Meade County, and Box Elder may use to establish additional policies governing the planning and development of lands surrounding Rapid City Regional Airport (RCRA). The approach used in this effort is to identify a best scenario for airport land use compatibility and then balance that best scenario with existing and planned land uses surrounding the Airport. A comparison of existing zoning ordinances and recommended changes to those ordinances is also presented. **Appendix I** details recommendations specific to each planning jurisdiction.

Airport sponsors can take a number of proactive steps to facilitate airport land use compatibility. Below are some suggestions:

- Ensure land use restrictions for all surrounding jurisdictions are in place and reflect the Airport's current and future operational levels.
- Assist surrounding jurisdictions in understanding how the Airport operates, the Airport's flight patterns and the type of aircraft operating at the Airport. Also assist surrounding jurisdictions in understanding how the Airport benefits the local economy and the community's health, welfare, and safety.
- Maintain awareness of land use actions proposed by the adjacent counties and municipalities.
- Stay apprised of the existing zoning or land use, how it is being enforced, and changing Airport operations and associated needs and impacts on areas adjacent to the Airport.
- Assist local jurisdictions in understanding Part 77 notification requirements and the special needs for protecting the safety and efficiency of aircraft operations.
- Provide copies of the Airport Layout Plan (ALP) to the local planning and zoning authorities.
- Attend planning meetings on land use decisions in the vicinity of the Airport.
- Invite local government officials and planners to be part of airport advisory committee meetings to keep them informed of the airport's plans and needs.

Zoning Implementation

Due to the number of planning entities affected by the proposed zoning for RCRA, it was determined the best method to implement comprehensive zoning was for Rapid City, Box Elder, Pennington County, and Meade County to separately enact zoning for their respective jurisdictions. In order to eliminate confusion, it is highly recommended that RCRA specific ordinances implemented in the cities and counties be the same or as similar as possible.

Land Use Compatibility Categories

The land use compatibility issues introduced in this report are treated as separate categories with individual policy recommendations for each issue. The land use compatibility categories for which criteria have been developed are airspace, safety, and wildlife attractants. The issue of noise is not addressed, because the current and projected noise contours show the 65 decibel (dB) Day-Night Average Sound Level (DNL) contour staying on RCRA controlled property.

The pace and nature of development in the areas bordering RCRA make an individualized approach to each land use compatibility issue appropriate. Rapid City, Box Elder, Pennington County, and Meade County have adopted zoning ordinances that at least partially satisfy land use compatibility concerns, so an individualized approach allows a more specific analysis of the suitability of existing zoning.

Airspace Category

Airspace definition is established through Part 77 as explained earlier in this document and there is no need to improve upon the current arrangement of airspace surfaces as shown in the ALP. See **Exhibit 8: RCRA Part 77 Airspace Surfaces** for RCRA's airspace surfaces.

Responsibility for planning and controlling the placement of tall structures that could obstruct RCRA's airspace is shared by Rapid City, Box Elder, Pennington County, and Meade County; however, the City of Rapid City has a higher level of responsibility through sponsor assurances on federal grants the city has received for airport improvements. Noncompliance with sponsor assurances could result in demands for repayment of grants, revocation of the FAA Airport Operating Certificate required by FAR Part 139 for commercial airline service, or a significant diminishment of the Airport's capability to serve all aircraft operations resulting from the obstruction of airspace caused by construction of a tall structure.

Each of the jurisdictions around the Airport play a vital role in controlling airspace, but not all have formally adopted zoning that specifically protects airspace required for the safe and effective operation of RCRA.

Pennington County has adopted zoning that specifically protects airspace through Section 301 – Airport Height and Hazard Zoning. However, changes should be made to the existing ordinance to better protect RCRA. The recommended changes were discussed in **Chapter 2** and are also detailed in **Appendix I**.

It is recommended that Rapid City, Box Elder, and Meade County adopt zoning that protects RCRA airspace. Pennington County's Section 301, along with the changes recommended to Section 301, could be utilized to draft zoning that protects RCRA airspace.

Wind Turbine Restrictions

It is recommended that Rapid City, Box Elder, Pennington County, and Meade County restrict commercial wind turbine development near RCRA. Rapid City Municipal Code (RCMC) Chapter 17.50.215 provides a good example of appropriate restrictions on commercial wind development.

It is also recommended that proponents of non-commercial wind energy systems who are required to file a Notice of Proposed Construction or Alteration (Form 7460-1) with the FAA be required to present the FAA determination to the appropriate jurisdiction's planning department for approval before they begin construction.

Safety Category

A safety compatibility zone map was developed for RCRA that includes five compatibility zones.

- Zone 1: Runway Protection Zone
- Zone 2: Inner Approach/Departure
- Zone 3: Circling Traffic Patterns
- Zone 4: Precision Flight Corridor
- Zone 5: Aviation Hazards

Each safety compatibility zone is assigned development criteria involving acceptable and prohibited land uses. **Exhibit 9: Safety Compatibility Zones** provides an illustration of the safety compatibility zones and **Table 5: Safety Compatibility Zone Criteria** outlines the development criteria for each zone.

Each safety compatibility zone and its criteria approximately relate to the degree of risk of aircraft accidents within each zone. As compared to the California Airport Land Use Planning Handbook, the proposed safety compatibility map for RCRA uses fewer zones. This change reflects the actual development character of the area surrounding RCRA. A description of each of the RCRA safety compatibility zones is detailed in the following paragraphs.

Zone 1 – Runway Protection Zone

This zone consists of the Runway Protection Zone (RPZ) located within the inner approach area at each runway end. The total area, shape, and development criteria used for Zone 1 comply with the RPZ design standards in FAA Advisory Circular (AC) 150/5300-13 and are consistent with the ultimate RPZs shown on the Draft Airport Layout Plan (ALP) for RCRA located in the 2008 RCRA Master Plan Update[11].

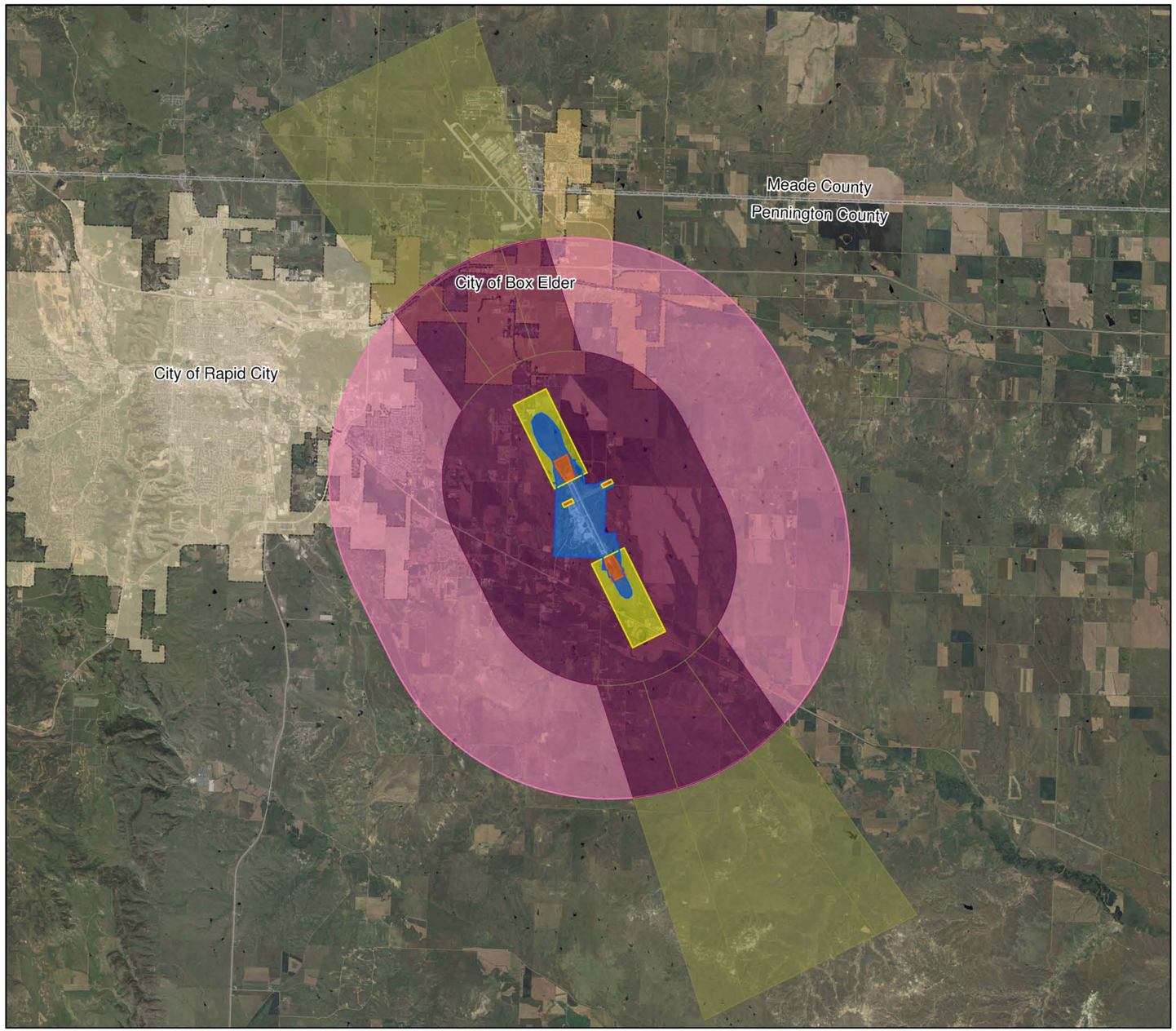
Zone 1 prohibits all development that is not necessary for aeronautical purposes. As with Zones 2 through 5, hazards to flight, which include physical, visual, and electronic forms of interference with the safety of aircraft operations, are prohibited within Zone 1.

All land within this zone should be owned by the Airport in order to provide the level of control commensurate with the high level of accident risk the area is subject to. The high level of aircraft noise experienced in this area also makes most forms of development incompatible. When airport ownership is not possible, avigation easements should be secured. Avigation easements convey rights of aircraft over-flight, creation of noise and vibrations, limitations on the heights of structures and trees, and prohibit uses that involve congregations of people.

RCRA has protected the majority of Zone 1 by acquiring all of the property included in the existing RPZ for all four runway ends. RCRA currently owns the majority of the future RPZ for an ultimate 500 foot extension Runway 14-32 to the south; a small amount of property needs to be acquired to fully protect the RPZ if the Runway 32 End is lengthened 500 feet. The property to be acquired is shown on the 2008 RCRA Master Plan Update[12] Airport Property Map. A copy of the Airport Property Map is located in **Appendix D**.

[11] *Rapid City Regional Airport Master Plan Update. Reynolds, Smith, and Hills, Inc., 2008*
[12] *Rapid City Regional Airport Master Plan Update. Reynolds, Smith, and Hills, Inc., 2008*

Exhibit 9: Safety Compatibility Zones



Rapid City Regional Airport
Rapid City, South Dakota

Safety Compatibility Zones

Legend

Proposed Airport Land Use Zoning

- ZONE 0 = Airport Property
- ZONE 1 = Runway Protection Zone
- ZONE 2 = Inner Approach/Departure
- ZONE 3 = Circling Traffic Patterns
- ZONE 4 = Precision Flight Corridor
- ZONE 5 = Aviation Hazards
- Rapid City Jurisdiction
- Box Elder Jurisdiction
- County Lines

N

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Engineers Surveyors Planners

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Table 5: Safety Compatibility Zone Criteria

Safety Zone		Maximum People Per Acre		Additional Criteria	
		Average	Single Acre	Unacceptable Uses	Other Development Conditions
1	Runway Protection Zone	Not Applicable	Not Applicable	▸ All structures except ones with location set by aeronautical function ▸ Assemblages of people ▸ Storage of hazardous materials ▸ Hazards to flight	▸ Airport should acquire fee ownership of land within RPZs or acquire adequate land use control through avigation easements
2	Inner Approach/ Departure Zone	25	50	▸ Children's schools, child care centers, libraries, hospitals, and nursing homes ▸ Above ground bulk storage of hazardous materials ▸ Highly noise-sensitive outdoor nonresidential uses ▸ "Hazardous Wildlife Attractants" as defined in FAA AC 150/5200-33B ▸ Commercial Wind Energy Systems ▸ Hazards to flight	▸ Locate structures maximum distance from extended runway centerline ▸ Critical community infrastructure facilities generally unacceptable ▸ Maximum of one dwelling unit per 10 acres ▸ Minimum lot size of 10 acres
3	Circling Traffic Pattern Protection Zone	150	450	▸ Highly noise-sensitive nonresidential uses ▸ "Hazardous Wildlife Attractants" as defined in FAA AC 150/5200-33B ▸ Commercial Wind Energy Systems ▸ Hazards to flight	▸ Children's schools, hospitals, nursing homes, and similar uses should be avoided ▸ Major spectator-oriented facilities, amphitheaters, concert halls generally unacceptable
4	Precision Flight Corridor Zone	No Restriction		▸ Commercial Wind Energy Systems ▸ Hazards to flight	▸ Major spectator-oriented facilities, amphitheaters, concert halls generally unacceptable
5	Aviation Hazards Zone	No Restriction		▸ "Hazardous Wildlife Attractants" as defined in FAA AC 150/5200-33B ▸ Commercial Wind Energy Systems ▸ Hazards to flight	

Zone 2 – Inner Approach & Departure Zone

This zone includes the portion of the inner, final approach located immediately outside of the RPZs (Zone 1). Zone 2 is the area normally residing outside of airport property that is exposed to the highest noise levels and greatest risk of an aircraft accident. Aircraft in this zone operate at very low altitudes and during takeoffs, under full thrust power. This combination of aircraft operation factors creates the moderate levels of noise and increased risk of accidents. The distance this zone extends away from the runway end is greatest for primary Runway 14-32, which serves most of the aircraft operations and all large aircraft. Crosswind Runway 5-23 is a secondary runway with fewer aircraft operations and the length of Zone 2 on this runway was substantially reduced.

Zone 2 extends from the ends of primary Runway 14-32 an approximate distance of 10,200 feet (1/5 the length of the FAR Part 77 approach surface) and at a width of 4000 feet. Zone 2 extends from the ends of crosswind Runway 5-23 an approximate distance of 1,200 feet (1/5 the length of the FAR Part 77 approach surface) and at a width of 450 feet.

It is recommended that Zone 2 have a minimum lot size requirement of ten acres. This is consistent with density requirements currently in place. Additionally, it is recommended that land within Zone 2 remain designated as "agricultural". Schools, hospitals, churches, and similar uses are not acceptable uses. Above ground storage of fuel or other hazardous materials should be avoided.

It is also recommended that Zone 2 have population density restrictions. The population density of any use in Zone 2 should not exceed an average of 25 persons per gross acre, and a maximum of 50 persons per single acre, at any time. Density calculations shall include all people (e.g., employees, customers/visitors, etc.) who may be on the property at any single point in time, whether indoors or outside.

No commercial wind turbine development or hazards to flight should be allowed in Zone 2. It is also recommended that restrictions be placed on applicable "Hazardous Wildlife Attractants" detailed in **Table 2: Hazardous Wildlife Attractants On or Near Airports**.

Zone 3 – Circling Traffic Pattern Protection Zone

This zone is representative of the traffic pattern flown by aircraft that use RCRA. Zone 3 approximately extends to the perimeter of the Part 77 conical surface to ensure the zone encompasses the aircraft traffic pattern. The approximate dimensions of Zone 3 would be established by swinging arcs of 14,000 feet from the center of each end of the Part 77 primary surfaces of Runway 14-32 (the end of the primary surface extends 200 feet beyond the runway end) and connecting the adjacent arcs by drawing lines tangent to these arcs. Zone 3 also includes the outer portion of RCRA's Part 77 approach and transitional surfaces for Runway 14-32 within five miles of the Airport.

Zone 3 is subject to moderate levels of noise occurring during individual events as an airplane flies overhead. The risk of an accident is also lower within this zone.

It is recommended that Zone 3 have population density restrictions. The population density of any use in Zone 3 should not exceed an average of 150 persons per gross acre, and a maximum 450 persons per single acre, at any time. Density calculations shall include all people (e.g., employees, customers/visitors, etc.) who may be on the property at any single point in time, whether indoors or outside. Major spectator oriented facilities should be avoided due to the concentrations of people they produce and exposure to aircraft noise interference.

No commercial wind turbine development or hazards to flight should be allowed in Zone 3. It is also recommended that restrictions be placed on applicable "Hazardous Wildlife Attractants" detailed in **Table 2: Hazardous Wildlife Attractants On or Near Airports**.

Zone 4 – Precision Flight Corridor Zone

This zone roughly encompasses the area not covered by Zone 2 and Zone 3 that is under the outer portion of RCRA's Part 77 approach and transitional surfaces for Runway 14-32. Zone 4 extends approximately 50,000 feet beyond the ends of Runway 14-32's FAR Part 77 primary surface (the end of the Part 77 primary surface extends 200 feet beyond the runway end). The width of Zone 4 is approximately 26,000 feet wide at its outer limits and narrows as it approaches the end of Zone 3.

Development in this area is exposed to lower levels of aircraft noise and lower risk of aircraft accidents. No commercial wind turbine development or hazards to flight should be allowed in Zone 4.

Zone 5 – Aviation Hazards Zones

Zone 5 encompasses a 5-mile area surrounding RCRA. This zone is representative of the FAA recommended distance between airports and hazardous wildlife attractants that could cause hazardous wildlife movement into or across the approach or departure surfaces. For ease of implementation, the perimeter of the zone is constructed by swinging arcs of five statute miles from the center of each end of Runway 14-32 and connecting the adjacent arcs by lines tangent to those arcs.

It is recommended that restrictions be placed on applicable "Hazardous Wildlife Attractants" detailed in **Table 2: Hazardous Wildlife Attractants On or Near Airports**. It is also recommended that no commercial wind turbine development or hazards to flight be allowed in Zone 5.

Supporting Material

Appendix H contains exhibits of the safety compatibility zones overlaid on the following:

- Existing zoning map developed using RapidMap, the Rapid City - Pennington County Internet Mapping Site
- Airport Neighborhood Area Future Land Use Map
- Pennington County's Future Land Use Map.

For reference purposes, **Appendix H** also contains the above-mentioned maps without the compatibility zone overlay along with the Airport Neighborhood Area Future Land Plan, and Pennington County Zoning Ordinance, Sections 205 – 213. Pennington County Zoning Ordinance Sections 205 – 213 details the county's zoning district provisions.

Wildlife Attractants

RCRA intends to update the Airport's Wildlife Hazard Management Plan in the near future. The updated Plan will detail potential wildlife attractants located on the airfield and provide methods to remove or mitigate those hazards.

The safety compatibility zones discussed above include wildlife attractant restrictions for areas within five miles of the Airport. The best method of implementing the land use compatibility recommendations related to wildlife attractants will be determined by Rapid City, Box Elder, and Pennington County.

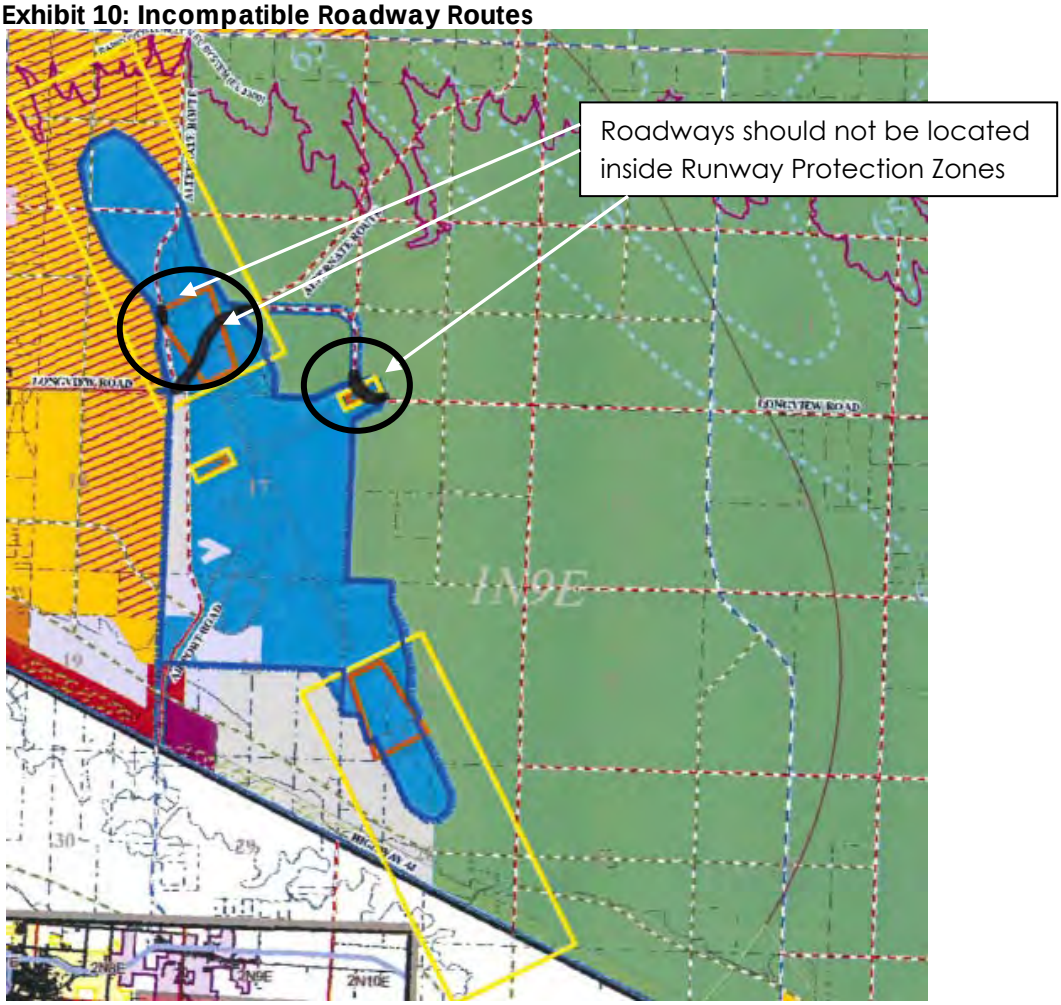
Other Areas of Concern

Proposed Road Construction

The 2005 Airport Neighborhood Future Land Use Plan located in **Appendix H** shows road development alternatives on existing Airport property, near critical areas, such as RPZs and Zone 2, which may lead to unwanted development of land surrounding the Airport. RCRA should be vigilant in protecting the interests of the Airport and opposing development which could lead to incompatible land uses.

Exhibit 10: Incompatible Roadway Routes displays a portion of Rapid City's Airport Neighborhood Future Land Use Zoning Map; blacked out routes are strongly recommended not to be considered for construction due to the above concerns. Existing roadways in RCRA's RPZs should be relocated outside the RPZ if possible.

Exhibit 10: Incompatible Roadway Routes



Compatibility Zone Implementation Issues

The compatibility zones detailed in this plan may be difficult to implement since they are based on stated distances from airport surfaces or runway ends. Therefore, it was decided to make adjustments to the zones by basing zone boundaries on 10-acre squares that follow section line boundaries. This change makes zone boundaries easier to define and enforce. Because the 10-acre squares followed section line boundaries, they could be considered a quarter-quarter-quarter section. If less than 25 percent of a 10-acre square was within a certain zone, the 10-acre square was not considered part of that zone. **Appendix J** contains an exhibit of the proposed safety compatibility zones based on this method. The various zoning jurisdiction lines were also included on the exhibit.

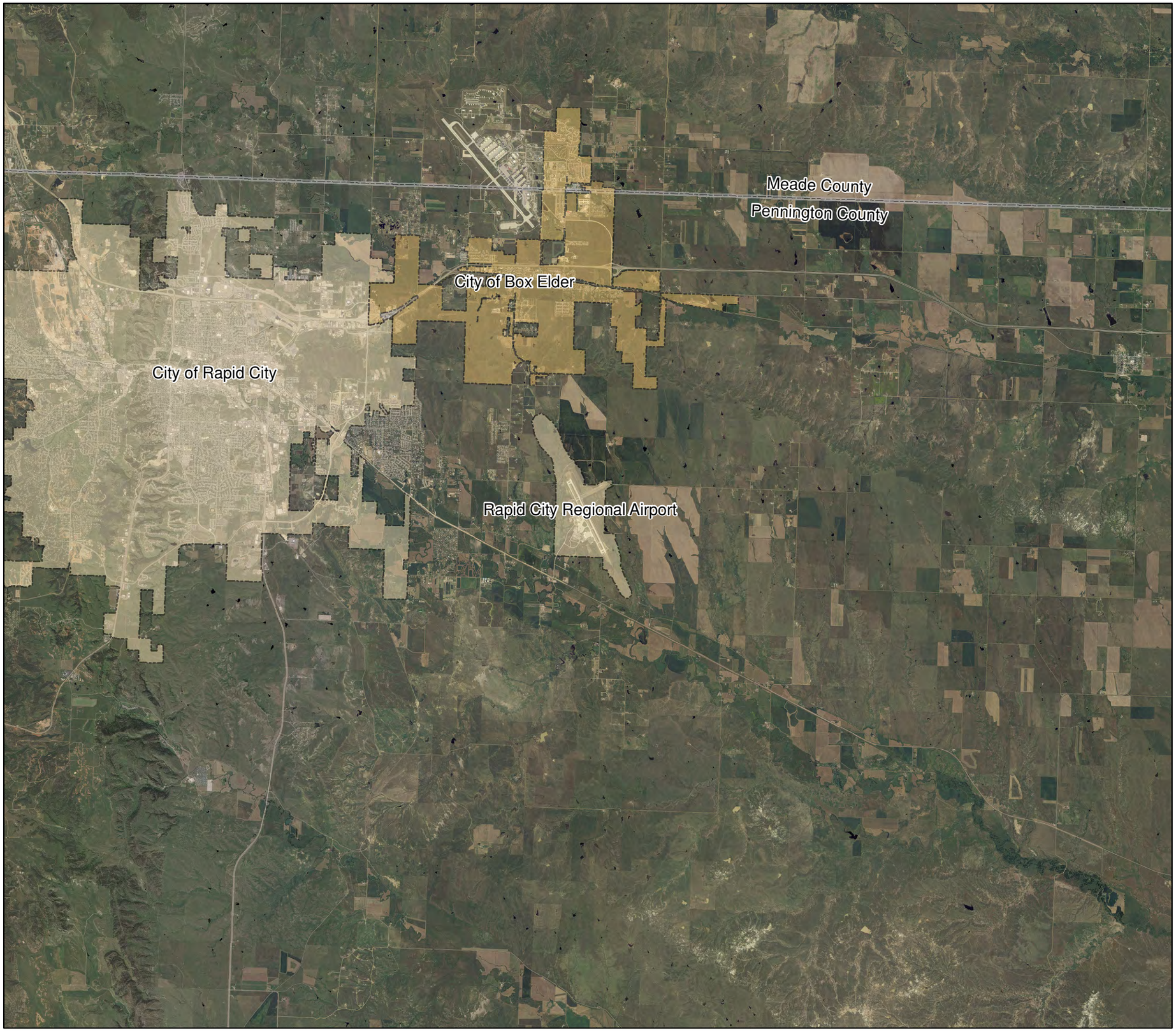
Conclusion

The implementation of the recommended measures in this Land Use Compatibility Plan will help RCRA achieve the stated objectives of land use compatibility for the issues of airspace, safety, wildlife attractants, and noise. Implementation will also assist RCRA in compliance with applicable FAA and State requirements for airport land use compatibility. Additional work on the part of RCRA, in cooperation with Rapid City, Box Elder, Pennington County, and Meade County, will be required to arrive at the best methods of transforming these recommendations into active land use policies. Adjustments to some of the zone boundaries and development criteria may be necessary to arrive at the best solution. Further, land use is a dynamic process and periodic updates to map boundaries, development criteria, and overall policies will be necessary.

Appendix A: Jurisdiction Map

Rapid City Regional Airport
Rapid City, South Dakota

Jurisdictions
Overlaid on Aerial Photo



Legend

- Rapid City Jurisdiction
- Box Elder Jurisdiction
- County Lines

N

0 1 2 4 Miles

FOR PLANNING PURPOSES ONLY

Kadrmas Lee & Jackson
Engineers Surveyors Planners

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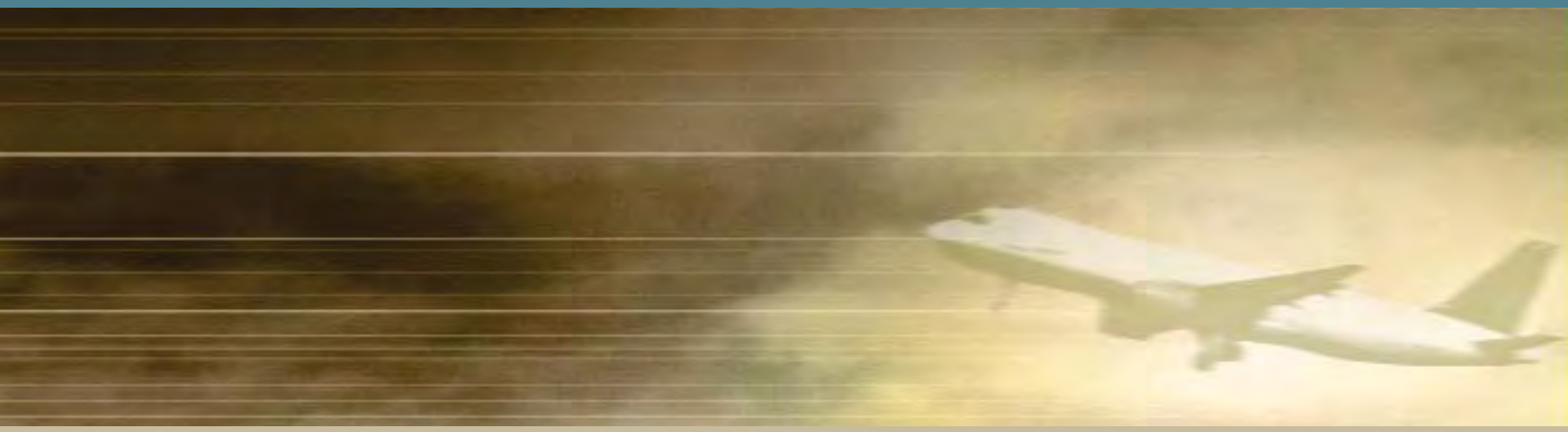
Appendix B: FAA Sponsor Assurances, Paragraphs 20 & 21



operate and maintain the airport and all facilities thereon or connected therewith, with due regard to climatic and flood conditions. Any proposal to temporarily close the airport for non-aeronautical purposes must first be approved by the Secretary.
In furtherance of this assurance, the sponsor will have in effect arrangements for-

(1) Operating the airport's aeronautical facilities whenever required;

(2) Promptly marking and lighting hazards resulting from airport conditions, including temporary conditions; and

(3) Promptly notifying airmen of any condition affecting aeronautical use of the airport.

Nothing contained herein shall be construed to require that the airport be operated for aeronautical use during temporary periods when snow, flood or other climatic conditions interfere with such operation and maintenance. Further, nothing herein shall be construed as requiring the maintenance, repair, restoration, or replacement of any structure or facility which is substantially damaged or destroyed due to an act of God or other condition or circumstance beyond the control of the sponsor.

b. It will suitably operate and maintain noise compatibility program items that it owns or controls upon which Federal funds have been expended.

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

21. Compatible Land Use. It will take appropriate action, to the extent reasonable, including the adoption of zoning laws, to restrict the use of land adjacent to or in the immediate vicinity of the airport to activities and purposes compatible with normal airport operations, including landing and takeoff of aircraft. In addition, if the project is for noise compatibility program implementation, it will not cause or permit any change in land use, within its jurisdiction, that will reduce its compatibility, with respect to the airport, of the noise compatibility program measures upon which Federal funds have been expended.

22. Economic Nondiscrimination.

a. It will make the airport available as an airport for public use on reasonable terms and without unjust discrimination to all types, kinds and classes of aeronautical activities, including commercial aeronautical activities offering services to the public at the airport.

b. In any agreement, contract, lease, or other arrangement under which a right or privilege at the airport is granted to any person, firm, or corporation to conduct or to engage in any aeronautical activity for furnishing services to the public at the airport, the sponsor will insert and enforce provisions requiring the contractor to-

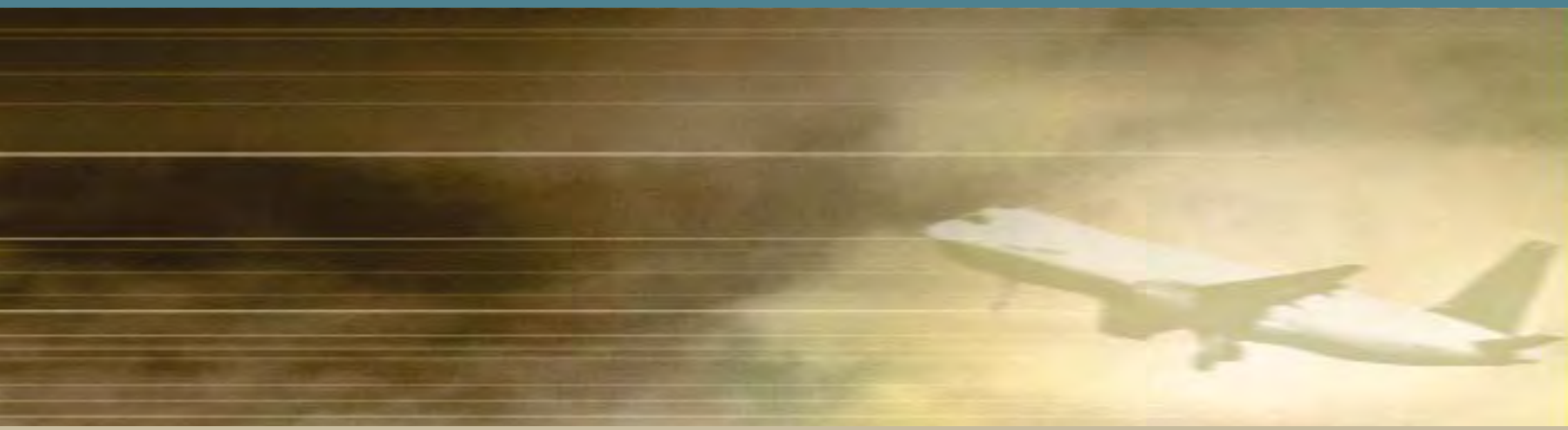
(1) furnish said services on a reasonable, and not unjustly discriminatory, basis to all users thereof, and

(2) charge reasonable, and not unjustly discriminatory, prices for each unit or service, provided that the contractor may be allowed to make reasonable and nondiscriminatory discounts, rebates, or other similar types of price reductions to volume purchasers.

Appendix C: South Dakota Codified Laws

Chapter 50-10, Airport Zoning

Chapter 50-9, Air Navigation Hazards



Chapter 50-10, Airport Zoning

CHAPTER 50-10

AIRPORT ZONING

50-10-1. Definitions. Terms used in this chapter mean:

(1) "Airport," any military airport or any area of land or water designed for the landing and taking-off of aircraft and utilized or to be utilized by the public as a point of arrival or departure by air;

(2) "Airport hazard," any structure, or tree, or use of land, which obstructs the aerial approaches of such an airport or is otherwise hazardous to its use for landing or taking off;

(3) "Commission," the South Dakota Aeronautics Commission;

(4) "Person," any individual, firm, copartnership, corporation, company, limited liability company, association, joint stock association or body politic, including any trustee, receiver, assignee, or other similar representative;

(5) "Publicly owned," an airport is publicly owned if the portion of the airport used for the landing and taking-off of aircraft is owned by a governmental body, political subdivision, public agency, or other public corporation;

(6) "Structure," any object constructed or installed by human action, including buildings, towers, smokestacks, and overhead transmission lines, but not including any building, or any part of any building, used or useful in serving the public;

(7) "Tree," any object of natural growth.

Source: SL 1943, ch 2, § 1; SDC Supp 1960, § 2.0501; SL 1970, ch 264, § 1; SL 1994, ch 351, § 144; SL 1996, ch 278, § 7.

50-10-2. Airport hazards as danger to life and property. It is hereby found and declared that an airport hazard endangers the lives and property of users of the airport and of occupants of land in its vicinity, and also, if of the obstruction type, in

effect reduces the size of the area available for the landing, taking off and maneuvering of aircraft, thus tending to destroy or impair the utility of the airport and the public investment therein. Accordingly it is hereby declared:

(1) That the creation or establishment of an airport hazard is a public nuisance and an injury to the community or the United States served by the airport in question;

(2) That it is therefore necessary in the interest of the public health, public safety, and general welfare that the creation or establishment of airport hazards be prevented;

(3) That this should be accomplished, to the extent legally possible, by exercise of the police powers, without compensation.

Source: SL 1943, ch 2, § 2; SDC Supp 1960, § 2.0502; SL 1970, ch 264, § 2; SL 1996, ch 278, § 5.

50-10-2.1. Removal of airport hazards as public purpose--Use of public funds. It is further declared that both the prevention of the creation or establishment of airport hazards and the elimination, removal, alteration, mitigation, or marking and lighting of existing airport hazards are public purposes for which the political subdivisions may raise and expend public funds and acquire land or property interest therein.
Source: SDCL, § 50-10-2 as added by SL 1970, ch 264, § 2.

50-10-3. Formulation of airport approach plans--Indication of hazardous structures--Permissible zone and height limits--Applicability of federal standards. The Aeronautics Commission is hereby empowered and directed to formulate and adopt, and from time to time as may be necessary revise, an airport approach plan for each publicly owned airport in the state. Each such plan shall indicate the circumstances in which structures and trees are or would be airport hazards, the area within which measures for the protection of the airport's aerial approaches should be taken, and what the height limits and other objectives of such measures should be; provided that the zone and height limits shall in no case be more exacting than is necessary to conform to the current airport approach and turning space standards of any agency of the federal government which may be concerned with the fostering of civil aeronautics.
Source: SL 1943, ch 2, § 3; SDC Supp 1960, § 2.0503.

50-10-4. Considerations upon adoption or rejection of approach plan--Federal standards. In adopting or revising any airport approach plan, the Aeronautics Commission shall consider, among other things, the character of the flying operations expected to be conducted at the airport, the nature of the terrain, the height of existing structures and trees above the level of the airport, and the possibility of lowering or removing existing obstructions, and the commission may obtain and consider the views of the agency of the federal government charged with the fostering of civil aeronautics, as to the aerial approaches necessary to safe flying operations at the airport.
Source: SL 1943, ch 2, § 3; SDC Supp 1960, § 2.0503.

50-10-5. Local zoning enforcement of approach plan. Every municipality and county or other political subdivision having within or without its territorial limits an area within which, according to an airport approach plan adopted by the Aeronautics Commission, measures should be taken for the protection of airport approaches, shall adopt, administer, and enforce, under the police power and in the manner and upon the conditions hereinafter prescribed, airport zoning regulations applicable to such area.
Source: SL 1943, ch 2, § 4 (1); SDC Supp 1960, § 2.0504; SL 1965, ch 1.

50-10-6. Area restrictions provided by local zoning--Conformity to commission approach plan. The regulations required by § 50-10-5 shall divide the area into zones, and, within such zones, specify the land uses permitted, regulate and restrict the height to which structures and trees may be erected or allowed to grow, prohibit the obstruction, by lights, smoke, electronic devices, or any other means, of the safe operation of aircraft near airports, and impose such other restrictions and requirements as may be necessary to effectuate the Aeronautics Commission's approach plan for the airport.
Source: SL 1943, ch 2, § 4 (1); SDC Supp 1960, § 2.0504; SL 1965, ch 1; SL 1979, ch 320.

50-10-7. Incorporation of approach plan in general zoning regulations--Local incorporation as not affecting commission authority. In the event that a political subdivision has adopted, or hereafter adopts, a general zoning ordinance regulating, among other things, the height of buildings, any airport zoning regulations adopted for the same area or portion thereof under this chapter, may be incorporated in and made a part of such general zoning regulations, and be administered and enforced in connection therewith, but such general zoning regulations shall not limit the effectiveness or scope of the regulations adopted under this chapter.
Source: SL 1943, ch 2, § 4 (2); SDC Supp 1960, § 2.0505.

50-10-8. Local zoning to be consistent with commission approach plan--Periodic amendment of local zoning. Any zoning or other regulations applicable to any area within which, according to an airport approach plan adopted by the commission, measures should be taken for the protection of airport approaches, including not only any airport zoning regulations adopted under this chapter but any zoning or other regulations dealing with the same or similar matters, that have been or may be adopted under authority other than that conferred by this chapter, shall be consistent with, and conform to, the commission's approach plan for such area, and shall be amended from time to time as may be necessary to conform to any revision of the plan that may be made by the commission.
Source: SL 1943, ch 2, § 4 (3); SDC Supp 1960, § 2.0506.

50-10-9. Preexisting nonconforming structures unaffected--Exceptions. All airport zoning regulations adopted under this chapter shall be reasonable, and none shall require the removal, lowering, or other change or alteration of any structure or tree not conforming to the regulations when adopted or amended, or otherwise interfere with the continuance of any nonconforming use, except as provided in § 50-10-28.
Source: SL 1943, ch 2, § 4 (4); SDC Supp 1960, § 2.0507.

50-10-10. Permits for replacement or alteration of existing structures--Conditions for grant of permit--Abandoned and deteriorated structures. Where advisable to facilitate the enforcement of zoning regulations adopted pursuant to this chapter, a system may be established for granting permits to establish or construct new structures and other uses and to replace existing structures and other uses or make substantial changes therein or substantial repairs thereof. In any event, before any nonconforming structure or tree may be replaced, substantially altered or repaired, rebuilt, allowed to grow higher, or replanted, a permit must be secured from the administrative agency authorized to administer and enforce the regulations, authorizing such replacement, change, or repair. No such permit shall be granted that would allow the structure or tree in question to be made higher or become a greater hazard to air navigation than it was when the applicable regulation was adopted; and whenever the administrative agency determines that a nonconforming structure or tree has been abandoned or more than eighty percent physically deteriorated, or decayed no permit shall be granted that would allow said structure or tree to exceed the applicable height limit or otherwise deviate from the zoning regulations. Except as indicated all applications for permits for replacement, change, or repair of nonconforming uses shall be granted.
Source: SL 1943, ch 2, § 5 (1); SDC Supp 1960, § 2.0508.

50-10-11. Application for variance--Circumstances under which variance may be allowed. Any person desiring to erect any structure, or increase the height of any structure, or permit the growth of any tree, or otherwise use his property, in violation of airport zoning regulations adopted under this chapter, may apply to the board of appeals, as provided in § 50-10-15, for a variance from the zoning regulations in question. Such variances shall be allowed where a literal application or enforcement of the regulations would result in practical difficulty or unnecessary hardship and the relief granted would not be contrary to the public interest but do substantial justice and be in accordance with the spirit of the regulations.
Source: SL 1943, ch 2, § 5 (2); SDC Supp 1960, § 2.0509.

50-10-12. Conditions to grant of permit or variance--Erection of obstruction markers and lights. In granting any permit or variance under § 50-10-10 or 50-10-11, the administrative agency or board of appeals may, if it deems such action advisable to effectuate the purposes of this chapter and reasonable in the circumstances, so condition such permit or variance as to require the owner of the structure or tree in question to permit the political subdivision, at its own expense, to provide for the installation, operation, and maintenance of suitable obstruction markers and obstruction lights thereon.
Source: SL 1943, ch 2, § 5 (3); SDC Supp 1960, § 2.0510.

50-10-13. Adoption or change of zoning regulations by local governing body--Public hearing--Notice of hearing. No airport zoning regulations shall be adopted, amended, or changed under this chapter except by action of the governing body of the political subdivision in question after a public hearing in relation thereto, at which parties in interest and citizens shall have an opportunity to be heard. Notice of said hearing shall be given at least fifteen days prior to the date of said hearing by publication of a notice of the time and place of holding such hearing in a legal newspaper or a newspaper of general circulation published in the political subdivision or subdivisions in which is located the airport hazard to be zoned; provided that, if there be no such newspaper, or newspaper published in the said subdivision or subdivisions, said notice shall be published in the nearest legal newspaper, or newspaper of general circulation.
Source: SL 1943, ch 2, § 6 (1); SL 1949, ch 8, § 4; SDC Supp 1960, § 2.0511.

50-10-14. Delegation of zoning administration and enforcement--Permissible delegation. The governing body of any political subdivision adopting airport zoning regulations under this chapter may delegate the duty of administering and enforcing such regulations to any administrative agency under its jurisdiction, but such administrative agency shall not be or include any member of the board of appeals. The duties of such administrative agency shall include that of hearing and deciding all permits under § 50-10-10, but such agency shall not have or exercise any of the powers delegated to the board of appeals.
Source: SL 1943, ch 2, § 6 (2); SDC Supp 1960, § 2.0512.

50-10-15. Board of airport zoning appeals--Powers of board. Airport zoning regulations adopted under this chapter shall provide for appointment of a board of appeals to have and exercise the following powers:

(1) To hear and decide appeals from any order, requirement, decision, or determination made by the administrative agency in the enforcement of this chapter or of any ordinance adopted pursuant thereto;

(2) To hear and decide special exceptions to the terms of the ordinance upon which such board may be required to pass under such ordinance;

(3) To hear and decide specific variances under § 50-10-11.

Where a zoning board of appeals or adjustment already exist, it may be appointed as the board of appeals. Otherwise, the board of appeals shall consist of five members, each to be appointed for a term of three years and to be removable for cause by the appointing authority upon written charges and after public hearing.
Source: SL 1943, ch 2, § 6; SDC Supp 1960, § 2.0513.

50-10-16. Meetings of board--Oaths and attendance of witnesses--Records of proceedings. The board established pursuant to § 50-10-15 shall adopt rules in accordance with the provisions of any ordinance adopted under this chapter. Meetings of the board shall be held at the call of the chairman and at such other times as the board may determine. The chairman, or in his absence the acting chairman, may administer oaths and compel the attendance of witnesses. All meetings of the board shall be public. The board shall keep minutes of its proceedings, showing the vote of each member upon each question, or, if absent or failing to vote, indicating such fact, and shall keep records of its examinations and other official actions, all of which shall immediately be filed in the office of the board and shall be a public record.
Source: SL 1943, ch 2, § 6; SDC Supp 1960, § 2.0513.

50-10-17. Appeals to board--Time for appeal--Procedure. Appeals to the board established pursuant to § 50-10-15 may be taken by any person aggrieved, or by any officer, department, board, or bureau of the political subdivision affected, by any decision of the administrative agency. An appeal must be taken within a reasonable time, as provided by the rules of the board, by filing with the agency from which the appeal is taken and with the board, a notice of appeal specifying the grounds thereof. The agency from which the appeal is taken shall forthwith transmit to the board all the papers constituting the record upon which the action appealed from was taken.
Source: SL 1943, ch 2, § 6; SDC Supp 1960, § 2.0513.

50-10-18. Appeal as staying proceedings--Exceptions--Court restraining order. An appeal pursuant to § 50-10-15 shall stay all proceedings in furtherance of the action appealed from, unless the agency from which the appeal is taken certifies to the board, after the notice of appeal has been filed with it, that by reason of the facts stated in the certificate a stay would, in its opinion, cause imminent peril to life or property. In such case proceedings shall not be stayed otherwise than by a restraining order which may be granted by the board or by a court of record on application on notice to the agency from which the appeal is taken and on due cause shown.
Source: SL 1943, ch 2, § 6; SDC Supp 1960, § 2.0513.

50-10-19. Hearing of appeal--Notice of hearing. The board of appeals shall fix a reasonable time for the hearing of an appeal pursuant to § 50-10-15, give public notice and due notice to the parties in interest, and decide the same within a reasonable time. Upon the hearing any party may appear in person or by agent or by attorney.
Source: SL 1943, ch 2, § 6; SDC Supp 1960, § 2.0513.

50-10-20. Actions of board--Scope of review. The board of appeals may, in conformity with the provisions of this chapter, reverse or affirm, wholly or partially, or modify, the order, requirement, decision, or determination appealed from and may make such order, requirement, decision, or determination as ought to be made, and to that end shall have all the powers of the administrative agency from which the appeal is taken.
Source: SL 1943, ch 2, § 6; SDC Supp 1960, § 2.0513.

50-10-21. Board to decide by majority vote. The concurring vote of a majority of the members of the board of appeals shall be sufficient to reverse any order, requirement, decision, or determination of the administrative agency, or to decide in favor of the applicant on any matter upon which it is required to pass under any such ordinance, or to effect any variation in such ordinance.
Source: SL 1943, ch 2, § 6; SDC Supp 1960, § 2.0513.

50-10-22. Appeal to circuit court from board of appeals--Petition--Time for petition. Any person aggrieved by any decision of the board of appeals, or any taxpayer, or any officer, department, board, or bureau of the political subdivision, may present to the circuit court a verified petition setting forth that the decision is illegal, in whole or in part, and specifying the grounds of the illegality. Such petition shall be presented to the court within thirty days after the decision is filed in the office of the board.
Source: SL 1943, ch 2, § 7; SDC Supp 1960, § 2.0514 (1).

50-10-23. Certiorari to board of appeals--Writ as not staying proceedings--Grant of restraining order--Return to writ. Upon presentation of a petition pursuant to § 50-10-22, the circuit court may allow a writ of certiorari directed to the board of appeals to review such decision of the board. The allowance of the writ shall not stay proceedings upon the decision appealed from, but the court may, on application, on notice to the board and on due cause shown grant a restraining order. The board of appeals shall not be required to return the original papers acted upon by it, but it shall be sufficient to return certified or sworn copies thereof or of such portions thereof as may be called for by the writ. The return shall concisely set forth such other facts as may be pertinent and material to show the grounds of the decision appealed from and shall be verified.
Source: SL 1943, ch 2, § 7; SDC Supp 1960, § 2.0514 (2), (3).

50-10-24. Jurisdiction of court--Further proceedings by board of appeals. The circuit court shall have exclusive jurisdiction to affirm, modify, or set aside the decision brought up for review pursuant to § 50-10-23, in whole or in part, and if need be, to order further proceedings by the board of appeals.
Source: SL 1943, ch 2, § 7; SDC Supp 1960, § 2.0514 (4).

50-10-25. Findings of fact as conclusive on court--Objections not urged before board. The findings of fact by the board of appeals, if supported by substantial evidence, shall be accepted by the circuit court as conclusive, and no objection to a decision of the board shall be considered by the court unless such objections shall have been urged before the board, or, if it was not so urged, unless there were reasonable grounds for failure to do so.
Source: SL 1943, ch 2, § 7; SDC Supp 1960, § 2.0514 (4).

50-10-26. Allowance of costs. Costs shall not be allowed against the board of appeals unless it appears to the circuit court that it acted with gross negligence, in bad faith, or with malice, in making the decision appealed from.
Source: SL 1943, ch 2, § 7; SDC Supp 1960, § 2.0514 (5).

50-10-27. Court action against violators--Injunction. In addition, either the political subdivision within which the property is located or the Aeronautics Commission may institute in any court of competent jurisdiction, an action to prevent, restrain, correct, or abate any violation of this chapter, or of airport zoning regulations adopted under this chapter, or of any order or ruling made in connection with their administration or enforcement, and the court shall adjudge to the plaintiff such relief, by way of injunction, which may be mandatory or otherwise, as may be proper under all the facts and circumstances of the case, in order fully to effectuate the purposes of this chapter and of the regulations adopted and orders and rulings made pursuant thereto.
Source: SL 1943, ch 2, § 8; SDC Supp 1960, § 2.0515.

50-10-28. Acquisition of nonconforming structures--Purchase, grant, or condemnation--Circumstances under which acquisition authorized. In any case in which:

(1) It is desired to remove, lower, or otherwise terminate a nonconforming use; or

(2) The approach protection necessary according to the Aeronautics Commission's airport approach plan cannot, because of constitutional limitations, be provided by airport zoning regulations under this chapter; or

(3) It appears advisable that the necessary approach protection be provided by acquisition of property rights,

the political subdivision within which the property or nonconforming use is located, the political subdivision owning the airport or served by it, or the commission, shall acquire by purchase, grant, or condemnation in the manner provided by the law under which political subdivisions are authorized to acquire real property for public purposes, such an air right, easement,

or other estate or interest in the property or nonconforming use in question as may be necessary to effectuate the purposes of this chapter.
Source: SL 1943, ch 2, § 9; SDC Supp 1960, § 2.0516.

50-10-29. Violation of regulation, order or ruling as misdemeanor. A violation of any regulation, order, or ruling promulgated or made pursuant to this chapter, is a Class 1 misdemeanor.
Source: SL 1943, ch 2, § 8; SDC Supp 1960, § 2.9908; SL 1983, ch 15, § 185.

50-10-30. Severability and saving clause. If any provision of this chapter or the application thereof to any person or circumstances is held invalid, such invalidity shall not affect other provisions or applications of the chapter which can be given effect without the valid provision or application, and to this end the provisions of this chapter are declared to be severable.
Source: SL 1943, ch 2, § 10; SDC Supp 1960, § 2.0517.

50-10-31. Citation of chapter. This chapter shall be known and may be cited as the "Model Airport Zoning Act."
Source: SL 1943, ch 2, § 11; SDC Supp 1960, § 2.0518.

50-10-32. Definition of terms. Terms in §§ 50-10-33 to 50-10-35, inclusive, mean:

(1) "Centerline," a line extended through the midpoint of each end of a runway;

(2) "Compatible land use," a use of land adjacent to a military airport that does not endanger the health, safety, or welfare of the owners, occupants, or users of the land because of levels of noise or vibrations or the risk of personal injury or property damage created by the operations of the military airport, including the taking off and landing of military aircraft;

(3) "Controlled compatible land use area," any area of land located outside military airport boundaries and within a rectangle bounded by lines located no farther than one and one-half statute miles from the centerline of an instrument or primary runway and lines located no farther than five statute miles from each end of the paved surface of an instrument or primary runway unless noise standards exceed these distances;

(4) "Instrument runway," any existing or planned military runway of at least three thousand two hundred feet which serves or will serve an instrument landing procedure prescribed by Federal Aviation Administration Order 8260.3B "United States Standard for Terminal Instrument Procedures";

(5) "Military airport," any area of land or water, publicly or privately owned, designed and set aside for the landing and taking off of military aircraft and used in the interest of the public for that purpose;

(6) "Military airport hazard," any structure or obstruction that obstructs the air space required for the taking off, landing, or flight of military aircraft or that interferes with visual, radar, radio, or other systems for tracking, monitoring, controlling, or acquiring data relating to military aircraft;

(7) "Military airport hazard area," an area of land or water on which a military airport hazard may exist;

(8) "Military airport zoning regulation," a military airport hazard area zoning regulation and a military airport compatible land use zoning regulation adopted under §§ 50-10-32 to 50-10-35, inclusive;

(9) "Obstruction," any structure, object of natural growth, or other object, including a mobile object, that exceeds a height established by C.F.R. 14 Federal Aviation Regulations Part 77 "Objects Affecting Navigable Airspace" or by a military airport hazard area zoning standard;

(10) "Political subdivision," any municipality or county;

(11) "Primary runway," any existing or planned paved runway, as shown on the official military airport layout plan, of at least three thousand two hundred feet on which a majority of the approaches to and departures from the military airport occur;

(12) "Runway," a defined area of a military airport prepared for the landing and taking off of military aircraft along its length.

Source: SL 1996, ch 278, § 1.

50-10-33. Military airport--Purpose. For the purposes of §§ 50-10-32 to 50-10-35, inclusive, a military airport is an airport used by the state or a political subdivision of the state, or by the United States for national defense purposes or for any federal program relating to flight.
Source: SL 1996, ch 278, § 2.

50-10-34. Military airport hazard area zoning regulations. Any political subdivision in which a military airport hazard area is located may adopt, administer, and enforce, under its police power, military airport hazard area zoning regulations for the military airport hazard area to prevent the creation of a military airport hazard. The military airport hazard area zoning regulations may divide a military airport hazard area into zones and for each zone:

(1) Specify the land uses permitted;

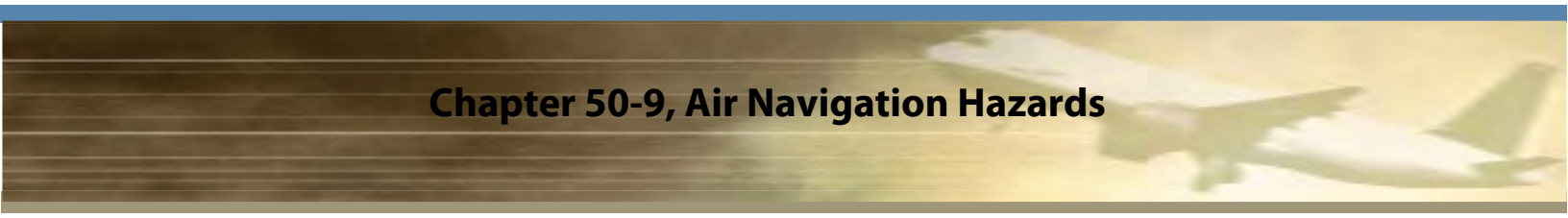
(2) Regulate the type and density of structures; and

(3) Restrict the height of structures and obstructions to prevent the creation of an obstruction to flight operations or air navigation.

Source: SL 1996, ch 278, § 3.

50-10-35. Military airport compatible land use zoning regulations--Implementation of federal law or rules controlling use of adjacent lands--Statement of purpose. A political subdivision may adopt, administer, and enforce, under its police power, military airport compatible land use zoning regulations for the part of a controlled compatible land use area located within the political subdivision. The political subdivision by ordinance or resolution may implement, in connection with military airport compatible land use zoning regulations, any federal law or rules controlling the use of land located adjacent to or in the immediate vicinity of the military airport. The military airport compatible land use zoning regulations shall include a statement that the military airport fulfills an essential national defense purpose.

Source: SL 1996, ch 278, § 4.



Chapter 50-9, Air Navigation Hazards

CHAPTER 50-9

AIR NAVIGATION HAZARDS

50-9-1. Height of structures within proximity of airport--Approval of Aeronautics Commission--Certain structures within corporate limits excepted. Any public utility, power district, or other governmental subdivision, or any person, association, corporation, limited liability company, or partnership, before engaging in the construction or alteration which extends the height, in the State of South Dakota, of any overhead line, cable, pipeline, outdoor theater, derricks, towers, or other structures within two miles from the nearest boundary of any airport which has been approved by the South Dakota Aeronautics Commission for public use by aircraft, the height of which is over ten feet above the elevation of an airport, for each five hundred feet of distance from the nearest boundary of the airport, before the alteration or construction of any such item or structure, shall file an application with and obtain the approval of the South Dakota Aeronautics Commission, for permission to enter upon and complete such construction or alteration. However, no application is needed if the construction or alteration is within the corporate limits of a municipality and is adjacent to other structures of a permanent character which are an equal or greater height than the construction or alteration proposed.

Source: SL 1953, ch 3, § 1; SDC Supp 1960, § 2.0210; SL 1992, ch 60, § 2; SL 1994, ch 351, § 142.

50-9-2. Violating structures as danger to person and property--Rules for approval of structures. The alteration or construction of overhead lines, cables, pipelines, outdoor theaters, derricks, towers, or other structures not approved by the South Dakota Aeronautics Commission within two miles from the nearest boundary of any airport which has been approved by the South Dakota Aeronautics Commission for public use by aircraft, is declared to be a danger to the public and to life, limb, property and persons in the vicinity thereof. The South Dakota Aeronautics Commission shall adopt and establish and publish reasonable rules pursuant to chapter 1-26 covering the requirements that must be met by any applicant to obtain the approval for the construction or alteration of any such overhead line, cable, pipeline, outdoor theater, derricks, towers, or other structures which is not exempt from the requirements of § 50-9-1.

Source: SL 1953, ch 3, § 2; SDC Supp 1960, § 2.0211; SL 1987, ch 356, § 13.

50-9-3. Hearing on application for approval--Certain structures approvable without hearing--Notice of hearing--Cease and desist order. The South Dakota Aeronautics Commission may in its discretion, approve the application filed, as required by § 50-9-1 without a hearing, provided that, in the event that the commission deems the erection of said structures to create a hazard to the safe use of said airports by aircraft, and a public danger, or finds the same to be in violation of any of the rules and regulations referred to in § 50-9-2 the commission shall assign said application for hearing upon reasonable notice to the applicant and may order and require applicant to cease and desist from erecting such overhead lines, cables, pipelines, outdoor

theaters, towers, or other structures except pursuant to and in conformity to plans and specifications relating to height thereof, approved by said commission.

Source: SL 1953, ch 3, § 4; SDC Supp 1960, § 2.0212.

50-9-4. Appeals from order of commission--Procedure. Any person aggrieved by any action of the Aeronautics Commission may appeal in the manner provided by law and the rules of practice and procedure adopted by the Supreme Court governing appeals from boards and commissions.

Source: SL 1953, ch 3, § 6; SDC Supp 1960, § 2.0213.

50-9-5. Erection of unapproved structures as misdemeanor. The erection or alteration of any of overhead lines, cables, pipelines, towers, outdoor theaters, derricks, or other structures within two miles of the nearest boundary of an airport not exempt from the requirements of § 50-9-1 without the approval of the South Dakota Aeronautics Commission is a Class 1 misdemeanor.

Source: SL 1953, ch 3, § 5; SDC Supp 1960, § 2.9910; SL 1983, ch 15, § 182.

50-9-6. Municipal zoning regulations applicable. Sections 50-9-1 to 50-9-5, inclusive, shall not apply to airports for which zoning regulations have been adopted by municipal, county, or other political subdivisions.

Source: SL 1953, ch 3, § 1; SDC Supp 1960, § 2.0210.

50-9-7. Permit for erection of structure exceeding two hundred feet in height required--Violation as misdemeanor. No person, firm, corporation, limited liability company, or association may erect anywhere in this state a building, structure, or tower of any kind over two hundred feet in height above the terrain, without first filing with the South Dakota Aeronautics Commission a notice and application showing the location and dimensions of the building, structure, or tower, and procuring a permit approving the location from the South Dakota Aeronautics Commission. A violation of this section, or a rule or order adopted pursuant to § 50-9-9, is a Class 1 misdemeanor.

Source: SL 1957, ch 2, § 1; SDC Supp 1960, § 2.0215; SL 1983, ch 15, § 183; SL 1989, ch 406, § 2; SL 1994, ch 351, § 143.

50-9-8. Erection of certain temporary buildings upon notice--Definition of temporary building. Notwithstanding § 50-9-7, temporary buildings or structures not located within the airways or within five miles of an airport, may be erected upon filing with the Aeronautics Commission a notice showing the location thereof without making application and procuring a permit pursuant to § 50-9-7. A temporary building, structure, or tower shall mean any building, structure or tower which shall be dismantled or removed not later than six months from the date the erection of said building or structure is commenced.

Source: SL 1957, ch 2, § 1; SDC Supp 1960, § 2.0215.

50-9-9. Rules respecting high buildings--Marking and lighting--Court enforcement of rules. The South Dakota Aeronautics Commission may, pursuant to chapter 1-26, adopt and enforce rules establishing minimum standards and criteria, including lighting, painting, and marking of any buildings, structures, towers, and hazards referred to in §§ 50-9-2, 50-9-3 and 50-9-7 in the interest of safe operation of aircraft and public safety. In adopting and enforcing rules, the Aeronautics Commission shall consider aviation safety, economic impact, financial impact on applicants applying for permits to build structures, multiple uses of airspace, federal regulations, and other relevant factors. The power and authority to enforce such rules by injunction proceedings in any court of competent jurisdiction instituted in the name of the South Dakota Aeronautics Commission, is hereby conferred.

Source: SL 1957, ch 2, § 2; SDC Supp 1960, § 2.0216; SL 1987, ch 356, § 14; SL 1989, ch 406, § 3.

50-9-10. Conflicting jurisdiction between Aeronautics Commission and local political subdivisions--Superiority of commission--Public hearing. When conflicting jurisdiction arises over the control of the erection of a building, structure, tower, or hazard in relation to an airport, airway, or air navigation facility between the State Aeronautics Commission and any political subdivision of the state, the commission may overrule, change, modify, or amend zoning rules and regulations adopted by any political subdivision or by any airport zoning board created by a political subdivision under the laws of this state, after a public hearing wherein all parties thereto have been given an opportunity to be heard.

Source: SL 1957, ch 2, § 3; SDC Supp 1960, § 2.0217.

50-9-11. Repealed by SL 1983, ch 15, § 184.

Appendix D: Supporting Information

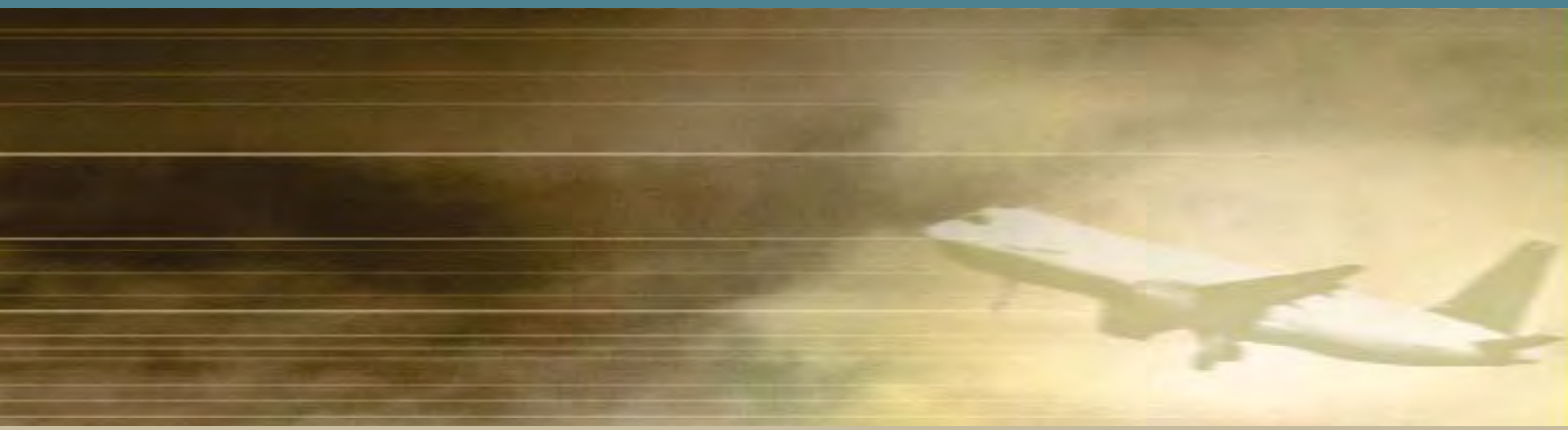
FAA Terminal Area Forecast (TAF)

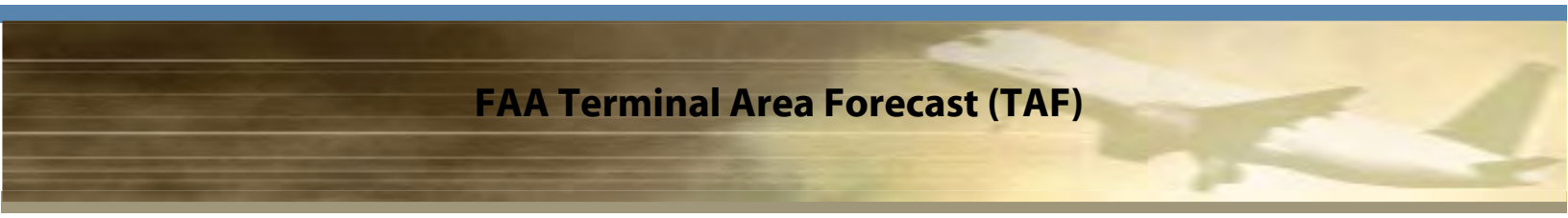
Part 77 Surfaces

- Airspace Plan
- Extended Glide Path

FAA Advisory Circular 150/5200-33B

Airport Property Map




FAA Terminal Area Forecast (TAF)

APO TERMINAL AREA FORECAST DETAIL REPORT
Forecast Issued December 2009

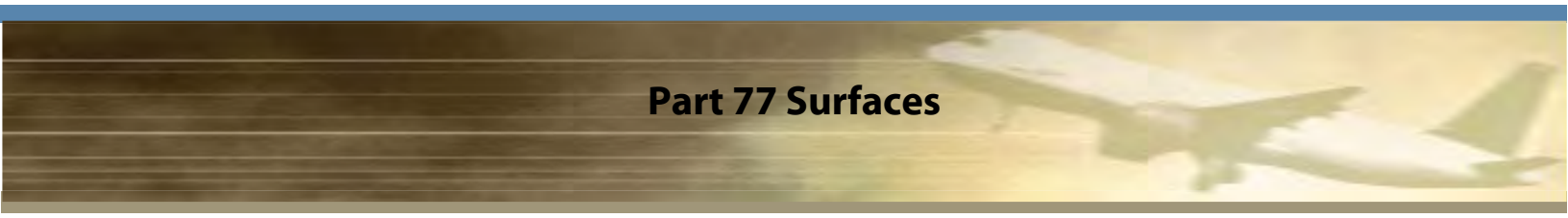
RAP

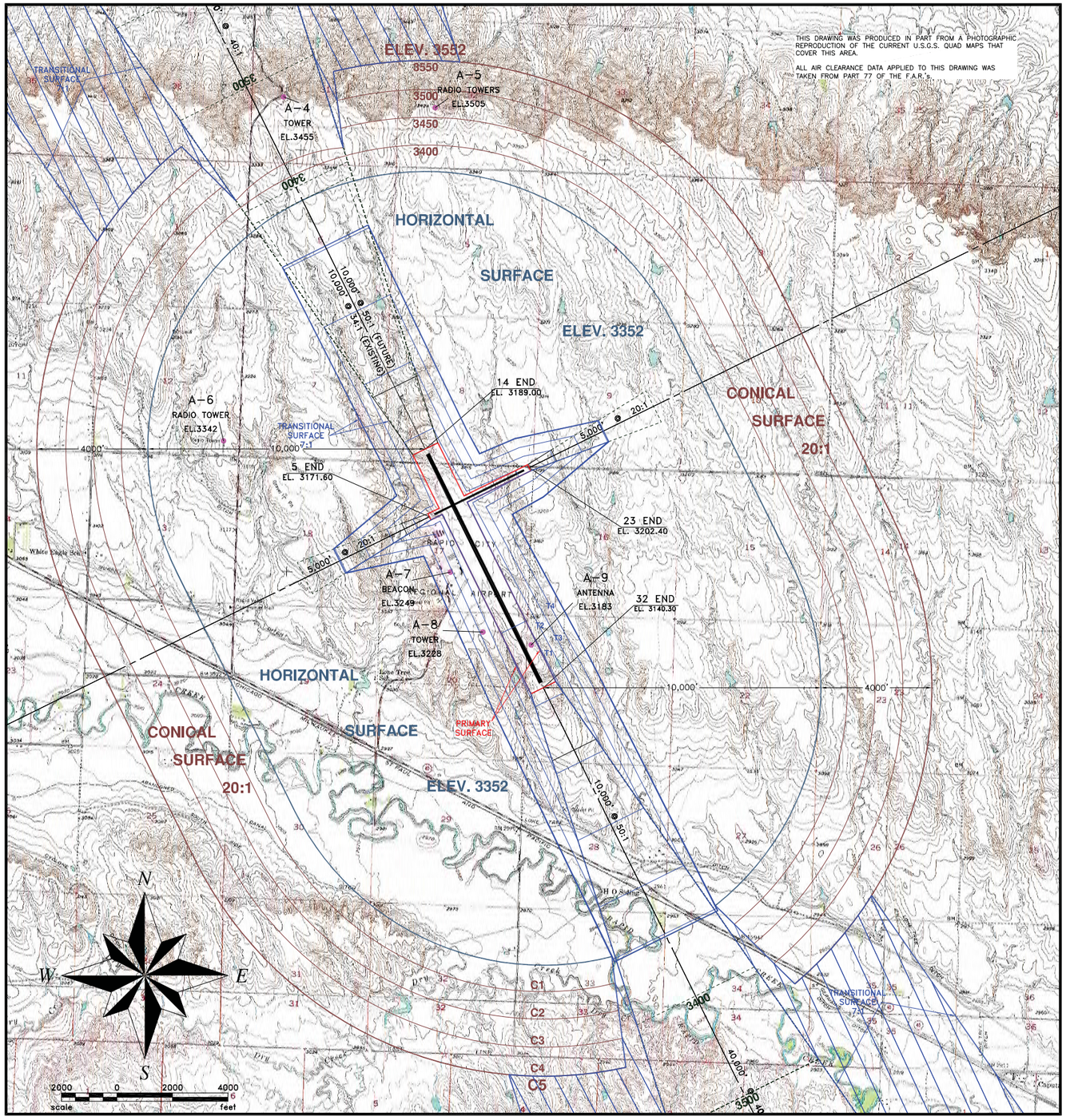
	AIRCRAFT OPERATIONS													
	Enplanements			Itinerant Operations					Local Operations					
Fiscal Year	**Air Carrier**	**Commuter**	**Total**	**Air Carrier**	**Air Taxi & Commuter**	**GA**	**Military**	**Total**	**Civil**	**Military**	**Total**	**Total Ops**	**Total Tracon Ops**	**Based Aircraft**
REGION:AGL **STATE:**SD **LOCID:**RAP														
CITY:RAPID CITY **AIRPORT:**RAPID CITY RGNL														
1990	104,547	56,220	160,767	3,935	8,664	16,915	2,548	32,062	15,052	4,307	19,359	51,421	0	92
1991	100,836	67,730	168,566	5,129	12,928	20,895	2,764	41,716	19,128	6,250	25,378	67,094	0	92
1992	113,501	74,663	188,164	5,211	12,007	21,601	2,931	41,750	22,311	6,204	28,515	70,265	0	92
1993	111,702	77,648	189,350	5,275	12,328	20,712	2,407	40,722	20,016	4,737	24,753	65,475	0	92
1994	86,442	99,388	185,830	3,355	14,773	22,389	2,453	42,970	18,299	3,762	22,061	65,031	0	72
1995	77,081	103,376	180,457	2,218	13,275	21,993	2,404	39,890	16,801	3,216	20,017	59,907	0	72
1996	80,655	104,144	184,799	2,073	11,361	20,595	2,680	36,709	16,610	2,047	18,657	55,366	0	77
1997	74,239	96,260	170,499	2,312	12,110	21,739	1,973	38,134	15,359	1,416	16,775	54,909	0	117
1998	100,088	68,983	169,071	2,767	11,410	23,274	1,869	39,320	16,663	2,163	18,826	58,146	0	117
1999	152,781	42,108	194,889	3,583	12,251	21,656	2,177	39,667	17,660	1,996	19,656	59,323	0	113
2000	162,544	33,787	196,331	3,781	12,362	23,238	2,295	41,676	15,617	1,823	17,440	59,116	0	113
2001	87,844	105,067	192,911	3,666	11,512	22,481	2,869	40,528	14,037	2,230	16,267	56,795	0	112
2002	85,640	110,507	196,147	3,442	12,179	26,121	3,051	44,793	18,375	2,292	20,667	65,460	0	112
2003	81,733	132,011	213,744	3,382	11,626	22,986	3,523	41,517	11,690	2,610	14,300	55,817	0	113
2004	85,415	152,601	238,016	2,986	14,199	24,090	2,553	43,828	12,839	1,581	14,420	58,248	0	116
2005	84,869	158,617	243,486	3,144	12,336	21,985	2,885	40,350	11,129	1,748	12,877	53,227	0	122
2006	82,030	145,339	227,369	2,665	12,612	19,872	2,839	37,988	8,981	1,504	10,485	48,473	0	124
2007	88,233	137,871	226,104	2,085	12,752	20,136	2,965	37,938	9,037	1,264	10,301	48,239	0	124
2008	95,764	186,772	282,536	4,589	10,981	16,684	1,897	34,151	8,329	572	8,901	43,052	0	125
2009*	64,210	197,116	261,326	4,631	10,666	14,530	2,223	32,050	6,344	692	7,036	39,086	0	127
2010*	65,173	200,073	265,246	4,677	10,773	14,634	2,223	32,307	7,052	692	7,744	40,051	0	130
2011*	66,150	203,074	269,224	4,723	10,881	14,829	2,223	32,656	7,157	692	7,849	40,505	0	133
2012*	67,142	206,119	273,261	4,769	10,990	15,037	2,223	33,019	7,263	692	7,955	40,974	0	139
2013*	68,149	209,211	277,360	4,817	11,100	15,248	2,223	33,388	7,370	692	8,062	41,450	0	140
2014*	69,171	212,349	281,520	4,865	11,211	15,461	2,223	33,760	7,478	692	8,170	41,930	0	144
2015*	70,208	215,534	285,742	4,913	11,323	15,678	2,223	34,137	7,590	692	8,282	42,419	0	146
2016*	71,261	218,766	290,027	4,963	11,436	15,898	2,223	34,520	7,702	692	8,394	42,914	0	149
2017*	72,323	222,048	294,371	5,013	11,549	16,121	2,223	34,906	7,816	692	8,508	43,414	0	151
2018*	73,407	225,379	298,786	5,063	11,664	16,347	2,223	35,297	7,931	692	8,623	43,920	0	155
2019*	74,508	228,759	303,267	5,113	11,780	16,576	2,223	35,692	8,049	692	8,741	44,433	0	158

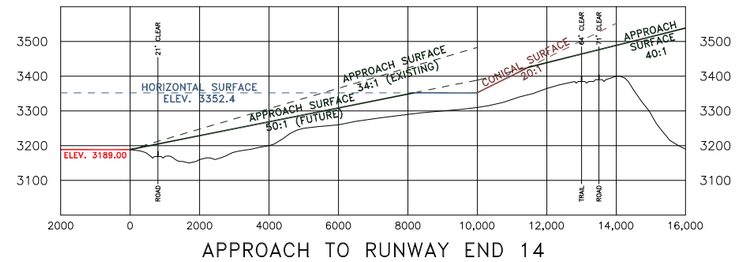
APO TERMINAL AREA FORECAST DETAIL REPORT
Forecast Issued December 2009

RAP

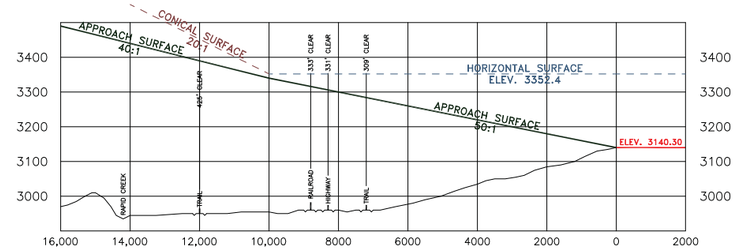
	AIRCRAFT OPERATIONS													
	Enplanements			Itinerant Operations					Local Operations					
Fiscal Year	**Air Carrier**	**Commuter**	**Total**	**Air Carrier**	**Air Taxi & Commuter**	**GA**	**Military**	**Total**	**Civil**	**Military**	**Total**	**Total Ops**	**Total Tracon Ops**	**Based Aircraft**
2020*	75,625	232,191	307,816	5,163	11,897	16,809	2,223	36,092	8,167	692	8,859	44,951	0	160
2021*	76,759	235,673	312,432	5,215	12,015	17,044	2,223	36,497	8,289	692	8,981	45,478	0	164
2022*	77,910	239,207	317,117	5,265	12,135	17,283	2,223	36,906	8,412	692	9,104	46,010	0	167
2023*	79,079	242,796	321,875	5,317	12,257	17,525	2,223	37,322	8,537	692	9,229	46,551	0	169
2024*	80,264	246,437	326,701	5,372	12,379	17,770	2,223	37,744	8,662	692	9,354	47,098	0	173
2025*	81,468	250,135	331,603	5,424	12,502	18,019	2,223	38,168	8,789	692	9,481	47,649	0	176
2026*	82,691	253,887	336,578	5,477	12,626	18,271	2,223	38,597	8,918	692	9,610	48,207	0	179
2027*	83,932	257,697	341,629	5,530	12,752	18,526	2,223	39,031	9,049	692	9,741	48,772	0	182
2028*	85,191	261,563	346,754	5,584	12,879	18,785	2,223	39,471	9,183	692	9,875	49,346	0	185
2029*	86,470	265,486	351,956	5,638	13,007	19,048	2,223	39,916	9,318	692	10,010	49,926	0	188
2030*	87,767	269,468	357,235	5,693	13,136	19,315	2,223	40,367	9,456	692	10,148	50,515	0	191


Part 77 Surfaces





APPROACH TO RUNWAY END 14



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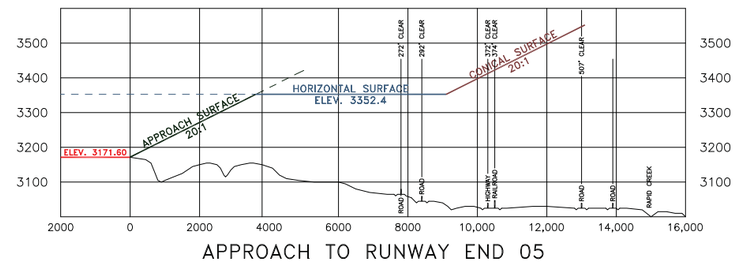
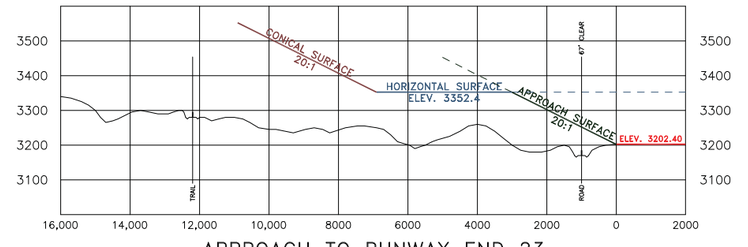
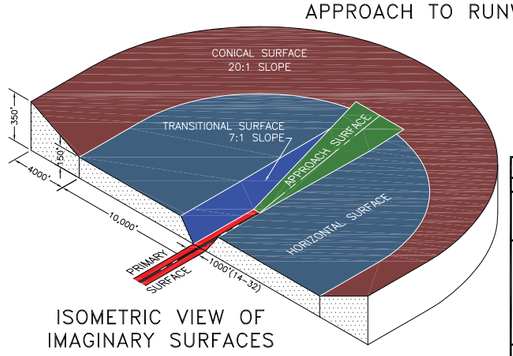


APPROACH TO RUNWAY END 05



APPROACH TO RUNWAY END 23



ISOMETRIC VIEW OF IMAGINARY SURFACES

FOR PLANNING PURPOSES ONLY

Rev'd.

RAPID CITY REGIONAL AIRPORT
CITY OF RAPID CITY (OWNER)
RAPID CITY, SOUTH DAKOTA

SHEET NO. 1 of 2

Kadrmas Lee & Jackson
Engineers, Surveyors and Planners

AIRSPACE SURFACES

DRWN. BY	CHK'D BY	COMPUTER NO.	LAST REVISED
C.A.S./AES		10503100	09/03/2010

J:\airport\10503100\CAD\alp\10503100_zoning.dwg (Airspace)

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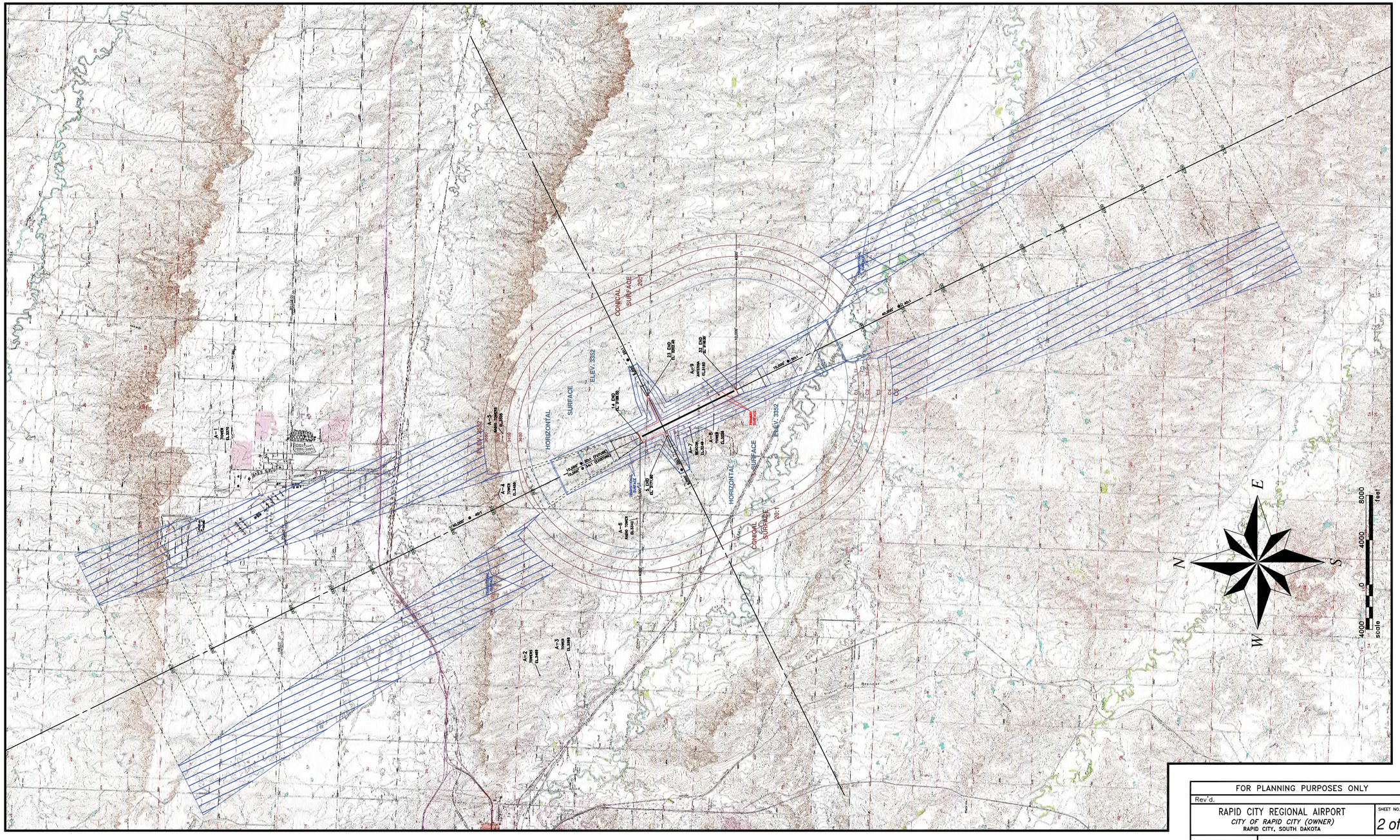

PRIMARY SURFACE AREA
– NO OBJECTS ALLOWED IN PRIMARY SURFACE

TRANSITIONAL SURFACE AREA
– T1 ELEVATION 3150.0 MSL
– T2 ELEVATION 3200.0 MSL
– T3 ELEVATION 3250.0 MSL
– T4 ELEVATION 3300.0 MSL

HORIZONTAL SURFACE AREA
– H1 ELEVATION 3352.0 MSL

CONICAL SURFACE AREA
– C1 ELEVATION 3400.0 MSL
– C2 ELEVATION 3450.0 MSL
– C3 ELEVATION 3500.0 MSL
– C4 ELEVATION 3550.0 MSL
– C5 ELEVATION 3552.0 MSL

APPROXIMATE CONTROLLING STRUCTURE ELEVATIONS

THIS DRAWING WAS PRODUCED IN PART FROM A PHOTOGRAPHIC REPRODUCTION OF THE CURRENT U.S.G.S. QUAD MAPS THAT COVER THIS AREA.

ALL AIR CLEARANCE DATA APPLIED TO THIS DRAWING WAS TAKEN FROM PART 77 OF THE F.A.R.'s.

FOR PLANNING PURPOSES ONLY

Rev'd.

RAPID CITY REGIONAL AIRPORT
CITY OF RAPID CITY (OWNER)
RAPID CITY, SOUTH DAKOTA

SHEET NO. 2 of 2

Kadrmas Lee & Jackson
Engineers, Surveyors and Planners

AIRSPACE SURFACES

DRWN. BY	CHK'D BY	COMPUTER NO.	LAST REVISED
C.A.S./AES		10503100	09/03/2010

J:\airport\10503100\CAD\alp\10503100_zoning.dwg (Extended Glide Path)

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FAA Advisory Circular 150/5200-33B

U.S. Department
of Transportation

Federal Aviation Administration

Advisory Circular

Subject: HAZARDOUS WILDLIFE ATTRACTANTS ON OR NEAR AIRPORTS	**Date:** 8/28/2007	**AC No:** 150/5200-33B
	Initiated by: AAS-300	**Change:**

1. PURPOSE. This Advisory Circular (AC) provides guidance on certain land uses that have the potential to attract hazardous wildlife on or near public-use airports. It also discusses airport development projects (including airport construction, expansion, and renovation) affecting aircraft movement near hazardous wildlife attractants. Appendix 1 provides definitions of terms used in this AC.

2. APPLICABILITY. The Federal Aviation Administration (FAA) recommends that public-use airport operators implement the standards and practices contained in this AC. The holders of Airport Operating Certificates issued under Title 14, Code of Federal Regulations (CFR), Part 139, Certification of Airports, Subpart D (Part 139), may use the standards, practices, and recommendations contained in this AC to comply with the wildlife hazard management requirements of Part 139. Airports that have received Federal grant-in-aid assistance must use these standards. The FAA also recommends the guidance in this AC for land-use planners, operators of non-certificated airports, and developers of projects, facilities, and activities on or near airports.

3. CANCELLATION. This AC cancels AC 150/5200-33A, *Hazardous Wildlife Attractants on or near Airports*, dated July 27, 2004.

4. PRINCIPAL CHANGES. This AC contains the following major changes, which are marked with vertical bars in the margin:

a. Technical changes to paragraph references.

b. Wording on storm water detention ponds.

c. Deleted paragraph 4-3.b, *Additional Coordination.*

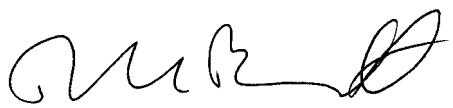
5. BACKGROUND. Information about the risks posed to aircraft by certain wildlife species has increased a great deal in recent years. Improved reporting, studies, documentation, and statistics clearly show that aircraft collisions with birds and other wildlife are a serious economic and public safety problem. While many species of wildlife can pose a threat to aircraft safety, they are not equally hazardous. Table 1

ranks the wildlife groups commonly involved in damaging strikes in the United States according to their relative hazard to aircraft. The ranking is based on the 47,212 records in the FAA National Wildlife Strike Database for the years 1990 through 2003. These hazard rankings, in conjunction with site-specific Wildlife Hazards Assessments (WHA), will help airport operators determine the relative abundance and use patterns of wildlife species and help focus hazardous wildlife management efforts on those species most likely to cause problems at an airport.

Most public-use airports have large tracts of open, undeveloped land that provide added margins of safety and noise mitigation. These areas can also present potential hazards to aviation if they encourage wildlife to enter an airport's approach or departure airspace or air operations area (AOA). Constructed or natural areas—such as poorly drained locations, detention/retention ponds, roosting habitats on buildings, landscaping, odor-causing rotting organic matter (putrescible waste) disposal operations, wastewater treatment plants, agricultural or aquaculture activities, surface mining, or wetlands—can provide wildlife with ideal locations for feeding, loafing, reproduction, and escape. Even small facilities, such as fast food restaurants, taxicab staging areas, rental car facilities, aircraft viewing areas, and public parks, can produce substantial attractions for hazardous wildlife.

During the past century, wildlife-aircraft strikes have resulted in the loss of hundreds of lives worldwide, as well as billions of dollars in aircraft damage. Hazardous wildlife attractants on and near airports can jeopardize future airport expansion, making proper community land-use planning essential. This AC provides airport operators and those parties with whom they cooperate with the guidance they need to assess and address potentially hazardous wildlife attractants when locating new facilities and implementing certain land-use practices on or near public-use airports.

6. MEMORANDUM OF AGREEMENT BETWEEN FEDERAL RESOURCE AGENCIES. The FAA, the U.S. Air Force, the U.S. Army Corps of Engineers, the U.S. Environmental Protection Agency, the U.S. Fish and Wildlife Service, and the U.S. Department of Agriculture - Wildlife Services signed a Memorandum of Agreement (MOA) in July 2003 to acknowledge their respective missions in protecting aviation from wildlife hazards. Through the MOA, the agencies established procedures necessary to coordinate their missions to address more effectively existing and future environmental conditions contributing to collisions between wildlife and aircraft (wildlife strikes) throughout the United States. These efforts are intended to minimize wildlife risks to aviation and human safety while protecting the Nation’s valuable environmental resources.



DAVID L. BENNETT
Director, Office of Airport Safety
and Standards

Table 1. Ranking of 25 species groups as to relative hazard to aircraft (1=most hazardous) based on three criteria (damage, major damage, and effect-on-flight), a composite ranking based on all three rankings, and a relative hazard score. Data were derived from the FAA National Wildlife Strike Database, January 1990–April 2003.[1]

Species group	Ranking by criteria			Composite ranking[2]	Relative hazard score[3]
	Damage[4]	Major damage[5]	Effect on flight[6]		
Deer	1	1	1	1	100
Vultures	2	2	2	2	64
Geese	3	3	6	3	55
Cormorants/pelicans	4	5	3	4	54
Cranes	7	6	4	5	47
Eagles	6	9	7	6	41
Ducks	5	8	10	7	39
Osprey	8	4	8	8	39
Turkey/pheasants	9	7	11	9	33
Herons	11	14	9	10	27
Hawks (buteos)	10	12	12	11	25
Gulls	12	11	13	12	24
Rock pigeon	13	10	14	13	23
Owls	14	13	20	14	23
H. lark/s. bunting	18	15	15	15	17
Crows/ravens	15	16	16	16	16
Coyote	16	19	5	17	14
Mourning dove	17	17	17	18	14
Shorebirds	19	21	18	19	10
Blackbirds/starling	20	22	19	20	10
American kestrel	21	18	21	21	9
Meadowlarks	22	20	22	22	7
Swallows	24	23	24	23	4
Sparrows	25	24	23	24	4
Nighthawks	23	25	25	25	1

[1] Excerpted from the *Special Report for the FAA, "Ranking the Hazard Level of Wildlife Species to Civil Aviation in the USA: Update #1, July 2, 2003".* Refer to this report for additional explanations of criteria and method of ranking.

[2] Relative rank of each species group was compared with every other group for the three variables, placing the species group with the greatest hazard rank for $\geq$ 2 of the 3 variables above the next highest ranked group, then proceeding down the list.

[3] Percentage values, from Tables 3 and 4 in Footnote 1 of the *Special Report*, for the three criteria were summed and scaled down from 100, with 100 as the score for the species group with the maximum summed values and the greatest potential hazard to aircraft.

[4] Aircraft incurred at least some damage (destroyed, substantial, minor, or unknown) from strike.

[5] Aircraft incurred damage or structural failure, which adversely affected the structure strength, performance, or flight characteristics, and which would normally require major repair or replacement of the affected component, or the damage sustained makes it inadvisable to restore aircraft to airworthy condition.

[6] Aborted takeoff, engine shutdown, precautionary landing, or other.

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SECTION 1.

GENERAL SEPARATION CRITERIA FOR HAZARDOUS WILDLIFE ATTRACTANTS ON OR NEAR AIRPORTS.

1-1. INTRODUCTION. When considering proposed land uses, airport operators, local planners, and developers must take into account whether the proposed land uses, including new development projects, will increase wildlife hazards. Land-use practices that attract or sustain hazardous wildlife populations on or near airports can significantly increase the potential for wildlife strikes.

The FAA recommends the minimum separation criteria outlined below for land-use practices that attract hazardous wildlife to the vicinity of airports. Please note that FAA criteria include land uses that cause movement of hazardous wildlife onto, into, or across the airport's approach or departure airspace or air operations area (AOA). (See the discussion of the synergistic effects of surrounding land uses in Section 2-8 of this AC.)

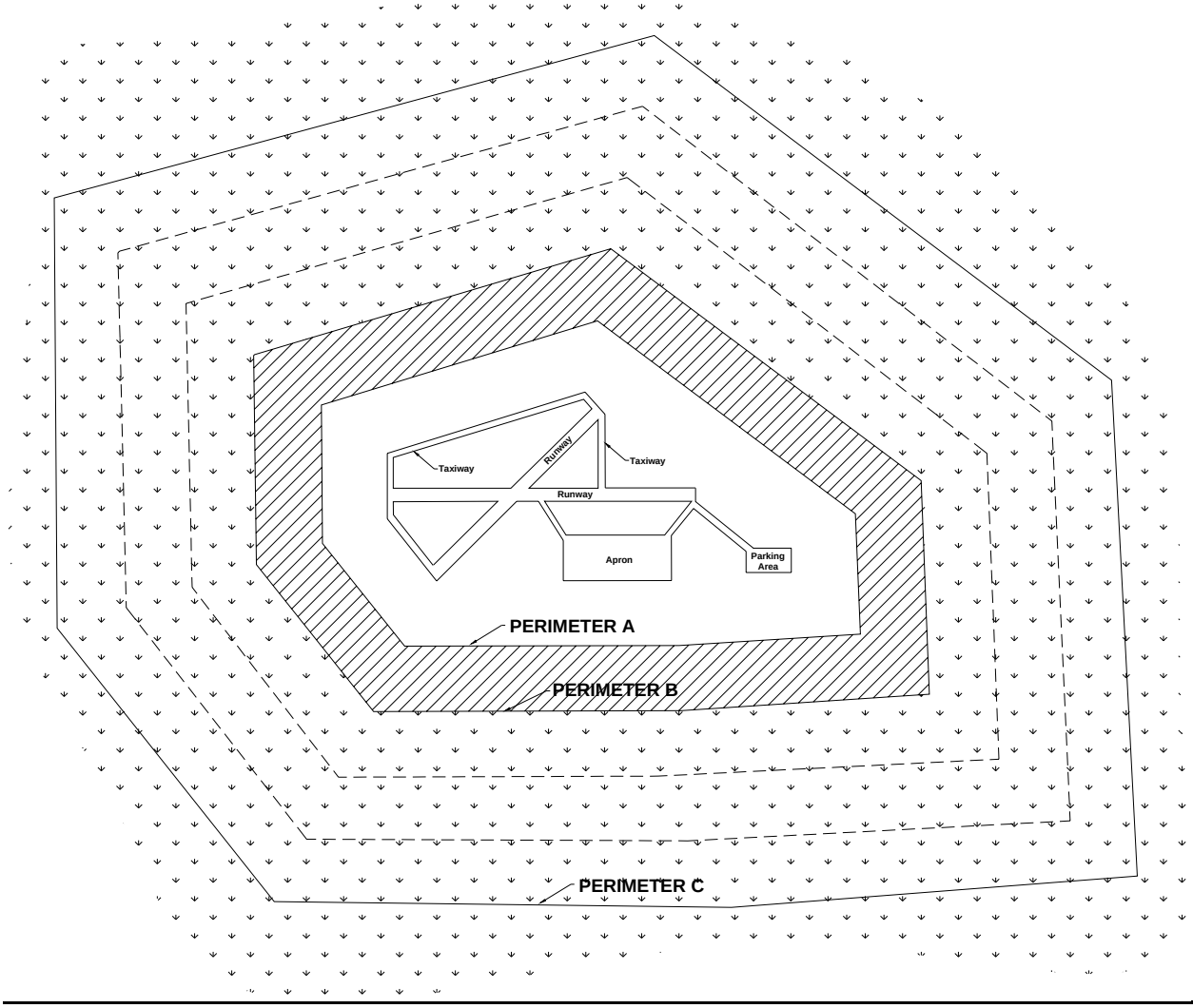
The basis for the separation criteria contained in this section can be found in existing FAA regulations. The separation distances are based on (1) flight patterns of piston-powered aircraft and turbine-powered aircraft, (2) the altitude at which most strikes happen (78 percent occur under 1,000 feet and 90 percent occur under 3,000 feet above ground level), and (3) National Transportation Safety Board (NTSB) recommendations.

1-2. AIRPORTS SERVING PISTON-POWERED AIRCRAFT. Airports that do not sell Jet-A fuel normally serve piston-powered aircraft. Notwithstanding more stringent requirements for specific land uses, the FAA recommends a separation distance of 5,000 feet at these airports for any of the hazardous wildlife attractants mentioned in Section 2 or for new airport development projects meant to accommodate aircraft movement. This distance is to be maintained between an airport's AOA and the hazardous wildlife attractant. Figure 1 depicts this separation distance measured from the nearest aircraft operations areas.

1-3. AIRPORTS SERVING TURBINE-POWERED AIRCRAFT. Airports selling Jet-A fuel normally serve turbine-powered aircraft. Notwithstanding more stringent requirements for specific land uses, the FAA recommends a separation distance of 10,000 feet at these airports for any of the hazardous wildlife attractants mentioned in Section 2 or for new airport development projects meant to accommodate aircraft movement. This distance is to be maintained between an airport's AOA and the hazardous wildlife attractant. Figure 1 depicts this separation distance from the nearest aircraft movement areas.

1-4. PROTECTION OF APPROACH, DEPARTURE, AND CIRCLING AIRSPACE. For all airports, the FAA recommends a distance of 5 statute miles between the farthest edge of the airport's AOA and the hazardous wildlife attractant if the attractant could cause hazardous wildlife movement into or across the approach or departure airspace.

Figure 1. Separation distances within which hazardous wildlife attractants should be avoided, eliminated, or mitigated.



PERIMETER A: For airports serving piston-powered aircraft, hazardous wildlife attractants must be 5,000 feet from the nearest air operations area.

PERIMETER B: For airports serving turbine-powered aircraft, hazardous wildlife attractants must be 10,000 feet from the nearest air operations area.

PERIMETER C: 5-mile range to protect approach, departure and circling airspace.

SECTION 2.

LAND-USE PRACTICES ON OR NEAR AIRPORTS THAT POTENTIALLY ATTRACT HAZARDOUS WILDLIFE.

2-1. GENERAL. The wildlife species and the size of the populations attracted to the airport environment vary considerably, depending on several factors, including land-use practices on or near the airport. This section discusses land-use practices having the potential to attract hazardous wildlife and threaten aviation safety. In addition to the specific considerations outlined below, airport operators should refer to *Wildlife Hazard Management at Airports,* prepared by FAA and U.S. Department of Agriculture (USDA) staff. (This manual is available in English, Spanish, and French. It can be viewed and downloaded free of charge from the FAA's wildlife hazard mitigation web site: http://wildlife-mitigation.tc.FAA.gov.). And, *Prevention and Control of Wildlife Damage,* compiled by the University of Nebraska Cooperative Extension Division. (This manual is available online in a periodically updated version at: ianrwww.unl.edu/wildlife/solutions/handbook/.)

2-2. WASTE DISPOSAL OPERATIONS. Municipal solid waste landfills (MSWLF) are known to attract large numbers of hazardous wildlife, particularly birds. Because of this, these operations, when located within the separations identified in the siting criteria in Sections 1-2 through 1-4, are considered incompatible with safe airport operations.

a. Siting for new municipal solid waste landfills subject to AIR 21. Section 503 of the Wendell H. Ford Aviation Investment and Reform Act for the 21st Century (Public Law 106-181) (AIR 21) prohibits the construction or establishment of a new MSWLF within 6 statute miles of certain public-use airports. Before these prohibitions apply, both the airport and the landfill must meet the very specific conditions described below. These restrictions do not apply to airports or landfills located within the state of Alaska.

The airport must (1) have received a Federal grant(s) under 49 U.S.C. § 47101, et. seq.; (2) be under control of a public agency; (3) serve some scheduled air carrier operations conducted in aircraft with less than 60 seats; and (4) have total annual enplanements consisting of at least 51 percent of scheduled air carrier enplanements conducted in aircraft with less than 60 passenger seats.

The proposed MSWLF must (1) be within 6 miles of the airport, as measured from airport property line to MSWLF property line, and (2) have started construction or establishment on or after April 5, 2001. Public Law 106-181 only limits the construction or establishment of some new MSWLF. It does not limit the expansion, either vertical or horizontal, of existing landfills.

NOTE: Consult the most recent version of AC 150/5200-34, *Construction or Establishment of Landfills Near Public Airports,* for a more detailed discussion of these restrictions.

b. Siting for new MSWLF not subject to AIR 21. If an airport and MSWLF do not meet the restrictions of Public Law 106-181, the FAA recommends against locating MSWLF within the separation distances identified in Sections 1-2 through 1-4. The separation distances should be measured from the closest point of the airport's AOA to the closest planned MSWLF cell.

c. Considerations for existing waste disposal facilities within the limits of separation criteria. The FAA recommends against airport development projects that would increase the number of aircraft operations or accommodate larger or faster aircraft near MSWLF operations located within the separations identified in Sections 1-2 through 1-4. In addition, in accordance with 40 CFR 258.10, owners or operators of existing MSWLF units that are located within the separations listed in Sections 1-2 through 1-4 must demonstrate that the unit is designed and operated so it does not pose a bird hazard to aircraft. (See Section 4-2(b) of this AC for a discussion of this demonstration requirement.)

d. Enclosed trash transfer stations. Enclosed waste-handling facilities that receive garbage behind closed doors; process it via compaction, incineration, or similar manner; and remove all residue by enclosed vehicles generally are compatible with safe airport operations, provided they are not located on airport property or within the Runway Protection Zone (RPZ). These facilities should not handle or store putrescible waste outside or in a partially enclosed structure accessible to hazardous wildlife. Trash transfer facilities that are open on one or more sides; that store uncovered quantities of municipal solid waste outside, even if only for a short time; that use semi-trailers that leak or have trash clinging to the outside; or that do not control odors by ventilation and filtration systems (odor masking is not acceptable) do not meet the FAA's definition of fully enclosed trash transfer stations. The FAA considers these facilities incompatible with safe airport operations if they are located closer than the separation distances specified in Sections 1-2 through 1-4.

e. Composting operations on or near airport property. Composting operations that accept only yard waste (e.g., leaves, lawn clippings, or branches) generally do not attract hazardous wildlife. Sewage sludge, woodchips, and similar material are not municipal solid wastes and may be used as compost bulking agents. The compost, however, must never include food or other municipal solid waste. Composting operations should not be located on airport property. Off-airport property composting operations should be located no closer than the greater of the following distances: 1,200 feet from any AOA or the distance called for by airport design requirements (see AC 150/5300-13, *Airport Design*). This spacing should prevent material, personnel, or equipment from penetrating any Object Free Area (OFA), Obstacle Free Zone (OFZ), Threshold Siting Surface (TSS), or Clearway. Airport operators should monitor composting operations located in proximity to the airport to ensure that steam or thermal rise does not adversely affect air traffic. On-airport disposal of compost by-products should not be conducted for the reasons stated in 2-3f.

f. Underwater waste discharges. The FAA recommends against the underwater discharge of any food waste (e.g., fish processing offal) within the separations identified in Sections 1-2 through 1-4 because it could attract scavenging hazardous wildlife.

g. Recycling centers. Recycling centers that accept previously sorted non-food items, such as glass, newspaper, cardboard, or aluminum, are, in most cases, not attractive to hazardous wildlife and are acceptable.

h. Construction and demolition (C&D) debris facilities. C&D landfills do not generally attract hazardous wildlife and are acceptable if maintained in an orderly manner, admit no putrescible waste, and are not co-located with other waste disposal operations. However, C&D landfills have similar visual and operational characteristics to putrescible waste disposal sites. When co-located with putrescible waste disposal operations, C&D landfills are more likely to attract hazardous wildlife because of the similarities between these disposal facilities. Therefore, a C&D landfill co-located with another waste disposal operation should be located outside of the separations identified in Sections 1-2 through 1-4.

i. Fly ash disposal. The incinerated residue from resource recovery power/heat-generating facilities that are fired by municipal solid waste, coal, or wood is generally not a wildlife attractant because it no longer contains putrescible matter. Landfills accepting only fly ash are generally not considered to be wildlife attractants and are acceptable as long as they are maintained in an orderly manner, admit no putrescible waste of any kind, and are not co-located with other disposal operations that attract hazardous wildlife.

Since varying degrees of waste consumption are associated with general incineration (not resource recovery power/heat-generating facilities), the FAA considers the ash from general incinerators a regular waste disposal by-product and, therefore, a hazardous wildlife attractant if disposed of within the separation criteria outlined in Sections 1-2 through 1-4.

2-3. WATER MANAGEMENT FACILITIES. Drinking water intake and treatment facilities, storm water and wastewater treatment facilities, associated retention and settling ponds, ponds built for recreational use, and ponds that result from mining activities often attract large numbers of potentially hazardous wildlife. To prevent wildlife hazards, land-use developers and airport operators may need to develop management plans, in compliance with local and state regulations, to support the operation of storm water management facilities on or near all public-use airports to ensure a safe airport environment.

a. Existing storm water management facilities. On-airport storm water management facilities allow the quick removal of surface water, including discharges related to aircraft deicing, from impervious surfaces, such as pavement and terminal/hangar building roofs. Existing on-airport detention ponds collect storm water, protect water quality, and control runoff. Because they slowly release water

after storms, they create standing bodies of water that can attract hazardous wildlife. Where the airport has developed a Wildlife Hazard Management Plan (WHMP) in accordance with Part 139, the FAA requires immediate correction of any wildlife hazards arising from existing storm water facilities located on or near airports, using appropriate wildlife hazard mitigation techniques. Airport operators should develop measures to minimize hazardous wildlife attraction in consultation with a wildlife damage management biologist.

Where possible, airport operators should modify storm water detention ponds to allow a maximum 48-hour detention period for the design storm. The FAA recommends that airport operators avoid or remove retention ponds and detention ponds featuring dead storage to eliminate standing water. Detention basins should remain totally dry between rainfalls. Where constant flow of water is anticipated through the basin, or where any portion of the basin bottom may remain wet, the detention facility should include a concrete or paved pad and/or ditch/swale in the bottom to prevent vegetation that may provide nesting habitat.

When it is not possible to drain a large detention pond completely, airport operators may use physical barriers, such as bird balls, wires grids, pillows, or netting, to deter birds and other hazardous wildlife. When physical barriers are used, airport operators must evaluate their use and ensure they will not adversely affect water rescue. Before installing any physical barriers over detention ponds on Part 139 airports, airport operators must get approval from the appropriate FAA Regional Airports Division Office.

The FAA recommends that airport operators encourage off-airport storm water treatment facility operators to incorporate appropriate wildlife hazard mitigation techniques into storm water treatment facility operating practices when their facility is located within the separation criteria specified in Sections 1-2 through 1-4.

b. New storm water management facilities. The FAA strongly recommends that off-airport storm water management systems located within the separations identified in Sections 1-2 through 1-4 be designed and operated so as not to create above-ground standing water. Stormwater detention ponds should be designed, engineered, constructed, and maintained for a maximum 48–hour detention period after the design storm and remain completely dry between storms. To facilitate the control of hazardous wildlife, the FAA recommends the use of steep-sided, rip-rap lined, narrow, linearly shaped water detention basins. When it is not possible to place these ponds away from an airport's AOA, airport operators should use physical barriers, such as bird balls, wires grids, pillows, or netting, to prevent access of hazardous wildlife to open water and minimize aircraft-wildlife interactions. When physical barriers are used, airport operators must evaluate their use and ensure they will not adversely affect water rescue. Before installing any physical barriers over detention ponds on Part 139 airports, airport operators must get approval from the appropriate FAA Regional Airports Division Office. All vegetation in or around detention basins that provide food or cover for hazardous wildlife should be eliminated. If soil conditions and other requirements allow, the FAA encourages

the use of underground storm water infiltration systems, such as French drains or buried rock fields, because they are less attractive to wildlife.

c. Existing wastewater treatment facilities. The FAA strongly recommends that airport operators immediately correct any wildlife hazards arising from existing wastewater treatment facilities located on or near the airport. Where required, a WHMP developed in accordance with Part 139 will outline appropriate wildlife hazard mitigation techniques. Accordingly, airport operators should encourage wastewater treatment facility operators to incorporate measures, developed in consultation with a wildlife damage management biologist, to minimize hazardous wildlife attractants. Airport operators should also encourage those wastewater treatment facility operators to incorporate these mitigation techniques into their standard operating practices. In addition, airport operators should consider the existence of wastewater treatment facilities when evaluating proposed sites for new airport development projects and avoid such sites when practicable.

d. New wastewater treatment facilities. The FAA strongly recommends against the construction of new wastewater treatment facilities or associated settling ponds within the separations identified in Sections 1-2 through 1-4. Appendix 1 defines wastewater treatment facility as “any devices and/or systems used to store, treat, recycle, or reclaim municipal sewage or liquid industrial wastes.” The definition includes any pretreatment involving the reduction of the amount of pollutants or the elimination of pollutants prior to introducing such pollutants into a publicly owned treatment works (wastewater treatment facility). During the site-location analysis for wastewater treatment facilities, developers should consider the potential to attract hazardous wildlife if an airport is in the vicinity of the proposed site, and airport operators should voice their opposition to such facilities if they are in proximity to the airport.

e. Artificial marshes. In warmer climates, wastewater treatment facilities sometimes employ artificial marshes and use submergent and emergent aquatic vegetation as natural filters. These artificial marshes may be used by some species of flocking birds, such as blackbirds and waterfowl, for breeding or roosting activities. The FAA strongly recommends against establishing artificial marshes within the separations identified in Sections 1-2 through 1-4.

f. Wastewater discharge and sludge disposal. The FAA recommends against the discharge of wastewater or sludge on airport property because it may improve soil moisture and quality on unpaved areas and lead to improved turf growth that can be an attractive food source for many species of animals. Also, the turf requires more frequent mowing, which in turn may mutilate or flush insects or small animals and produce straw, both of which can attract hazardous wildlife. In addition, the improved turf may attract grazing wildlife, such as deer and geese. Problems may also occur when discharges saturate unpaved airport areas. The resultant soft, muddy conditions can severely restrict or prevent emergency vehicles from reaching accident sites in a timely manner.

2-4. WETLANDS. Wetlands provide a variety of functions and can be regulated by local, state, and Federal laws. Normally, wetlands are attractive to many types of wildlife, including many which rank high on the list of hazardous wildlife species (Table 1).

NOTE: If questions exist as to whether an area qualifies as a wetland, contact the local division of the U.S. Army Corps of Engineers, the Natural Resources Conservation Service, or a wetland consultant qualified to delineate wetlands.

a. Existing wetlands on or near airport property. If wetlands are located on or near airport property, airport operators should be alert to any wildlife use or habitat changes in these areas that could affect safe aircraft operations. At public-use airports, the FAA recommends immediately correcting, in cooperation with local, state, and Federal regulatory agencies, any wildlife hazards arising from existing wetlands located on or near airports. Where required, a WHMP will outline appropriate wildlife hazard mitigation techniques. Accordingly, airport operators should develop measures to minimize hazardous wildlife attraction in consultation with a wildlife damage management biologist.

b. New airport development. Whenever possible, the FAA recommends locating new airports using the separations from wetlands identified in Sections 1-2 through 1-4. Where alternative sites are not practicable, or when airport operators are expanding an existing airport into or near wetlands, a wildlife damage management biologist, in consultation with the U.S. Fish and Wildlife Service, the U.S. Army Corps of Engineers, and the state wildlife management agency should evaluate the wildlife hazards and prepare a WHMP that indicates methods of minimizing the hazards.

c. Mitigation for wetland impacts from airport projects. Wetland mitigation may be necessary when unavoidable wetland disturbances result from new airport development projects or projects required to correct wildlife hazards from wetlands. Wetland mitigation must be designed so it does not create a wildlife hazard. The FAA recommends that wetland mitigation projects that may attract hazardous wildlife be sited outside of the separations identified in Sections 1-2 through 1-4.

(1) Onsite mitigation of wetland functions. The FAA may consider exceptions to locating mitigation activities outside the separations identified in Sections 1-2 through 1-4 if the affected wetlands provide unique ecological functions, such as critical habitat for threatened or endangered species or ground water recharge, which cannot be replicated when moved to a different location. Using existing airport property is sometimes the only feasible way to achieve the mitigation ratios mandated in regulatory orders and/or settlement agreements with the resource agencies. Conservation easements are an additional means of providing mitigation for project impacts. Typically the airport operator continues to own the property, and an easement is created stipulating that the property will be maintained as habitat for state or Federally listed species.

Mitigation must not inhibit the airport operator's ability to effectively control hazardous wildlife on or near the mitigation site or effectively maintain other aspects of safe airport operations. Enhancing such mitigation areas to attract hazardous wildlife must be avoided. The FAA will review any onsite mitigation proposals to determine compatibility with safe airport operations. A wildlife damage management biologist should evaluate any wetland mitigation projects that are needed to protect unique wetland functions and that must be located in the separation criteria in Sections 1-2 through 1-4 before the mitigation is implemented. A WHMP should be developed to reduce the wildlife hazards.

(2) Offsite mitigation of wetland functions. The FAA recommends that wetland mitigation projects that may attract hazardous wildlife be sited outside of the separations identified in Sections 1-2 through 1-4 unless they provide unique functions that must remain onsite (see 2-4c(1)). Agencies that regulate impacts to or around wetlands recognize that it may be necessary to split wetland functions in mitigation schemes. Therefore, regulatory agencies may, under certain circumstances, allow portions of mitigation to take place in different locations.

(3) Mitigation banking. Wetland mitigation banking is the creation or restoration of wetlands in order to provide mitigation credits that can be used to offset permitted wetland losses. Mitigation banking benefits wetland resources by providing advance replacement for permitted wetland losses; consolidating small projects into larger, better-designed and managed units; and encouraging integration of wetland mitigation projects with watershed planning. This last benefit is most helpful for airport projects, as wetland impacts mitigated outside of the separations identified in Sections 1-2 through 1-4 can still be located within the same watershed. Wetland mitigation banks meeting the separation criteria offer an ecologically sound approach to mitigation in these situations. Airport operators should work with local watershed management agencies or organizations to develop mitigation banking for wetland impacts on airport property.

2-5. DREDGE SPOIL CONTAINMENT AREAS. The FAA recommends against locating dredge spoil containment areas (also known as Confined Disposal Facilities) within the separations identified in Sections 1-2 through 1-4 if the containment area or the spoils contain material that would attract hazardous wildlife.

2-6. AGRICULTURAL ACTIVITIES. Because most, if not all, agricultural crops can attract hazardous wildlife during some phase of production, the FAA recommends against the used of airport property for agricultural production, including hay crops, within the separations identified in Sections 1-2 through 1-4. . If the airport has no financial alternative to agricultural crops to produce income necessary to maintain the viability of the airport, then the airport shall follow the crop distance guidelines listed in the table titled "Minimum Distances between Certain Airport Features and Any On-Airport Agricultural Crops" found in AC 150/5300-13, *Airport Design*, Appendix 17. The cost of wildlife control and potential accidents should be weighed against the income produced by the on-airport crops when deciding whether to allow crops on the airport.

a. Livestock production. Confined livestock operations (i.e., feedlots, dairy operations, hog or chicken production facilities, or egg laying operations) often attract flocking birds, such as starlings, that pose a hazard to aviation. Therefore, The FAA recommends against such facilities within the separations identified in Sections 1-2 through 1-4. Any livestock operation within these separations should have a program developed to reduce the attractiveness of the site to species that are hazardous to aviation safety. Free-ranging livestock must not be grazed on airport property because the animals may wander onto the AOA. Furthermore, livestock feed, water, and manure may attract birds.

b. Aquaculture. Aquaculture activities (i.e. catfish or trout production) conducted outside of fully enclosed buildings are inherently attractive to a wide variety of birds. Existing aquaculture facilities/activities within the separations listed in Sections 1-2 through 1-4 must have a program developed to reduce the attractiveness of the sites to species that are hazardous to aviation safety. Airport operators should also oppose the establishment of new aquaculture facilities/activities within the separations listed in Sections 1-2 through 1-4.

c. Alternative uses of agricultural land. Some airports are surrounded by vast areas of farmed land within the distances specified in Sections 1-2 through 1-4. Seasonal uses of agricultural land for activities such as hunting can create a hazardous wildlife situation. In some areas, farmers will rent their land for hunting purposes. Rice farmers, for example, flood their land during waterfowl hunting season and obtain additional revenue by renting out duck blinds. The duck hunters then use decoys and call in hundreds, if not thousands, of birds, creating a tremendous threat to aircraft safety. A wildlife damage management biologist should review, in coordination with local farmers and producers, these types of seasonal land uses and incorporate them into the WHMP.

2-7. GOLF COURSES, LANDSCAPING AND OTHER LAND-USE CONSIDERATIONS.

a. Golf courses. The large grassy areas and open water found on most golf courses are attractive to hazardous wildlife, particularly Canada geese and some species of gulls. These species can pose a threat to aviation safety. The FAA recommends against construction of new golf courses within the separations identified in Sections 1-2 through 1-4. Existing golf courses located within these separations must develop a program to reduce the attractiveness of the sites to species that are hazardous to aviation safety. Airport operators should ensure these golf courses are monitored on a continuing basis for the presence of hazardous wildlife. If hazardous wildlife is detected, corrective actions should be immediately implemented.

b. Landscaping and landscape maintenance. Depending on its geographic location, landscaping can attract hazardous wildlife. The FAA recommends that airport operators approach landscaping with caution and confine it to airport areas not associated with aircraft movements. A wildlife damage management biologist should review all landscaping plans. Airport operators should also monitor all landscaped areas on a continuing basis for the presence of hazardous wildlife. If

hazardous wildlife is detected, corrective actions should be immediately implemented.

Turf grass areas can be highly attractive to a variety of hazardous wildlife species. Research conducted by the USDA Wildlife Services' National Wildlife Research Center has shown that no one grass management regime will deter all species of hazardous wildlife in all situations. In cooperation with wildlife damage management biologist, airport operators should develop airport turf grass management plans on a prescription basis, depending on the airport's geographic locations and the type of hazardous wildlife likely to frequent the airport

Airport operators should ensure that plant varieties attractive to hazardous wildlife are not used on the airport. Disturbed areas or areas in need of re-vegetating should not be planted with seed mixtures containing millet or any other large-seed producing grass. For airport property already planted with seed mixtures containing millet, rye grass, or other large-seed producing grasses, the FAA recommends disking, plowing, or another suitable agricultural practice to prevent plant maturation and seed head production. Plantings should follow the specific recommendations for grass management and seed and plant selection made by the State University Cooperative Extension Service, the local office of Wildlife Services, or a qualified wildlife damage management biologist. Airport operators should also consider developing and implementing a preferred/prohibited plant species list, reviewed by a wildlife damage management biologist, which has been designed for the geographic location to reduce the attractiveness to hazardous wildlife for landscaping airport property.

c. Airports surrounded by wildlife habitat. The FAA recommends that operators of airports surrounded by woodlands, water, or wetlands refer to Section 2.4 of this AC. Operators of such airports should provide for a Wildlife Hazard Assessment (WHA) conducted by a wildlife damage management biologist. This WHA is the first step in preparing a WHMP, where required.

d. Other hazardous wildlife attractants. Other specific land uses or activities (e.g., sport or commercial fishing, shellfish harvesting, etc.), perhaps unique to certain regions of the country, have the potential to attract hazardous wildlife. Regardless of the source of the attraction, when hazardous wildlife is noted on a public-use airport, airport operators must take prompt remedial action(s) to protect aviation safety.

2-8. SYNERGISTIC EFFECTS OF SURROUNDING LAND USES. There may be circumstances where two (or more) different land uses that would not, by themselves, be considered hazardous wildlife attractants or that are located outside of the separations identified in Sections 1-2 through 1-4 that are in such an alignment with the airport as to create a wildlife corridor directly through the airport and/or surrounding airspace. An example of this situation may involve a lake located outside of the separation criteria on the east side of an airport and a large hayfield on the west side of an airport, land uses that together could create a flyway for Canada geese directly across the airspace of the airport. There are numerous examples of such situations;

therefore, airport operators and the wildlife damage management biologist must consider the entire surrounding landscape and community when developing the WHMP.

SECTION 3.

PROCEDURES FOR WILDLIFE HAZARD MANAGEMENT BY OPERATORS OF PUBLIC-USE AIRPORTS.

3.1. INTRODUCTION. In recognition of the increased risk of serious aircraft damage or the loss of human life that can result from a wildlife strike, the FAA may require the development of a Wildlife Hazard Management Plan (WHMP) when specific triggering events occur on or near the airport. Part 139.337 discusses the specific events that trigger a Wildlife Hazard Assessment (WHA) and the specific issues that a WHMP must address for FAA approval and inclusion in an Airport Certification Manual.

3.2. COORDINATION WITH USDA WILDLIFE SERVICES OR OTHER QUALIFIED WILDLIFE DAMAGE MANAGEMENT BIOLOGISTS. The FAA will use the Wildlife Hazard Assessment (WHA) conducted in accordance with Part 139 to determine if the airport needs a WHMP. Therefore, persons having the education, training, and expertise necessary to assess wildlife hazards must conduct the WHA. The airport operator may look to Wildlife Services or to qualified private consultants to conduct the WHA. When the services of a wildlife damage management biologist are required, the FAA recommends that land-use developers or airport operators contact a consultant specializing in wildlife damage management or the appropriate state director of Wildlife Services.

NOTE: Telephone numbers for the respective USDA Wildlife Services state offices can be obtained by contacting USDA Wildlife Services Operational Support Staff, 4700 River Road, Unit 87, Riverdale, MD, 20737-1234, Telephone (301) 734-7921, Fax (301) 734-5157 *(http://www.aphis.usda.gov/ws/)*.

3-3. WILDLIFE HAZARD MANAGEMENT AT AIRPORTS: A MANUAL FOR AIRPORT PERSONNEL. This manual, prepared by FAA and USDA Wildlife Services staff, contains a compilation of information to assist airport personnel in the development, implementation, and evaluation of WHMPs at airports. The manual includes specific information on the nature of wildlife strikes, legal authority, regulations, wildlife management techniques, WHAs, WHMPs, and sources of help and information. The manual is available in three languages: English, Spanish, and French. It can be viewed and downloaded free of charge from the FAA's wildlife hazard mitigation web site: http://wildlife-mitigation.tc.FAA.gov/. This manual only provides a starting point for addressing wildlife hazard issues at airports. Hazardous wildlife management is a complex discipline and conditions vary widely across the United States. Therefore, qualified wildlife damage management biologists must direct the development of a WHMP and the implementation of management actions by airport personnel.

There are many other resources complementary to this manual for use in developing and implementing WHMPs. Several are listed in the manual's bibliography.

3-4. WILDLIFE HAZARD ASSESSMENTS, TITLE 14, CODE OF FEDERAL REGULATIONS, PART 139. Part 139.337(b) requires airport operators to conduct a Wildlife Hazard Assessment (WHA) when certain events occur on or near the airport.

Part 139.337 (c) provides specific guidance as to what facts must be addressed in a WHA.

3-5. WILDLIFE HAZARD MANAGEMENT PLAN (WHMP). The FAA will consider the results of the WHA, along with the aeronautical activity at the airport and the views of the airport operator and airport users, in determining whether a formal WHMP is needed, in accordance with Part 139.337. If the FAA determines that a WHMP is needed, the airport operator must formulate and implement a WHMP, using the WHA as the basis for the plan.

The goal of an airport's Wildlife Hazard Management Plan is to minimize the risk to aviation safety, airport structures or equipment, or human health posed by populations of hazardous wildlife on and around the airport.

The WHMP must identify hazardous wildlife attractants on or near the airport and the appropriate wildlife damage management techniques to minimize the wildlife hazard. It must also prioritize the management measures.

3-6. LOCAL COORDINATION. The establishment of a Wildlife Hazards Working Group (WHWG) will facilitate the communication, cooperation, and coordination of the airport and its surrounding community necessary to ensure the effectiveness of the WHMP. The cooperation of the airport community is also necessary when new projects are considered. Whether on or off the airport, the input from all involved parties must be considered when a potentially hazardous wildlife attractant is being proposed. Airport operators should also incorporate public education activities with the local coordination efforts because some activities in the vicinity of your airport, while harmless under normal leisure conditions, can attract wildlife and present a danger to aircraft. For example, if public trails are planned near wetlands or in parks adjoining airport property, the public should know that feeding birds and other wildlife in the area may pose a risk to aircraft.

Airport operators should work with local and regional planning and zoning boards so as to be aware of proposed land-use changes, or modification of existing land uses, that could create hazardous wildlife attractants within the separations identified in Sections 1-2 through 1-4. Pay particular attention to proposed land uses involving creation or expansion of waste water treatment facilities, development of wetland mitigation sites, or development or expansion of dredge spoil containment areas. At the very least, airport operators must ensure they are on the notification list of the local planning board or equivalent review entity for all communities located within 5 miles of the airport, so they will receive notification of any proposed project and have the opportunity to review it for attractiveness to hazardous wildlife.

3-7 COORDINATION/NOTIFICATION OF AIRMEN OF WILDLIFE HAZARDS. If an existing land-use practice creates a wildlife hazard and the land-use practice or wildlife hazard cannot be immediately eliminated, airport operators must issue a Notice to Airmen (NOTAM) and encourage the land–owner or manager to take steps to control the wildlife hazard and minimize further attraction.

SECTION 4.

FAA NOTIFICATION AND REVIEW OF PROPOSED LAND-USE PRACTICE CHANGES IN THE VICINITY OF PUBLIC-USE AIRPORTS

4-1. FAA REVIEW OF PROPOSED LAND-USE PRACTICE CHANGES IN THE VICINITY OF PUBLIC-USE AIRPORTS.

a. The FAA discourages the development of waste disposal and other facilities, discussed in Section 2, located within the 5,000/10,000-foot criteria specified in Sections 1-2 through 1-4.

b. For projects that are located outside the 5,000/10,000-foot criteria but within 5 statute miles of the airport's AOA, the FAA may review development plans, proposed land-use changes, operational changes, or wetland mitigation plans to determine if such changes present potential wildlife hazards to aircraft operations. The FAA considers sensitive airport areas as those that lie under or next to approach or departure airspace. This brief examination should indicate if further investigation is warranted.

c. Where a wildlife damage management biologist has conducted a further study to evaluate a site's compatibility with airport operations, the FAA may use the study results to make a determination.

4-2. WASTE MANAGEMENT FACILITIES.

a. Notification of new/expanded project proposal. Section 503 of the Wendell H. Ford Aviation Investment and Reform Act for the 21st Century (Public Law 106-181) limits the construction or establishment of new MSWLF within 6 statute miles of certain public-use airports, when both the airport and the landfill meet very specific conditions. See Section 2-2 of this AC and AC 150/5200-34 for a more detailed discussion of these restrictions.

The Environmental Protection Agency (EPA) requires any MSWLF operator proposing a new or expanded waste disposal operation within 5 statute miles of a runway end to notify the appropriate FAA Regional Airports Division Office and the airport operator of the proposal (40 CFR 258, *Criteria for Municipal Solid Waste Landfills*, Section 258.10, *Airport Safety*). The EPA also requires owners or operators of new MSWLF units, or lateral expansions of existing MSWLF units, that are located within 10,000 feet of any airport runway end used by turbojet aircraft, or within 5,000 feet of any airport runway end used only by piston-type aircraft, to demonstrate successfully that such units are not hazards to aircraft. (See 4-2.b below.)

When new or expanded MSWLF are being proposed near airports, MSWLF operators must notify the airport operator and the FAA of the proposal as early as possible pursuant to 40 CFR 258.

b. Waste handling facilities within separations identified in Sections 1-2 through 1-4. To claim successfully that a waste-handling facility sited within the separations identified in Sections 1-2 through 1-4 does not attract hazardous wildlife and does not threaten aviation, the developer must establish convincingly that the facility will not handle putrescible material other than that as outlined in 2-2.d. The FAA strongly recommends against any facility other than that as outlined in 2-2.d (enclosed transfer stations). The FAA will use this information to determine if the facility will be a hazard to aviation.

c. Putrescible-Waste Facilities. In their effort to satisfy the EPA requirement, some putrescible-waste facility proponents may offer to undertake experimental measures to demonstrate that their proposed facility will not be a hazard to aircraft. To date, no such facility has been able to demonstrate an ability to reduce and sustain hazardous wildlife to levels that existed before the putrescible-waste landfill began operating. For this reason, demonstrations of experimental wildlife control measures may not be conducted within the separation identified in Sections 1-2 through 1-4.

4-3. OTHER LAND-USE PRACTICE CHANGES. As a matter of policy, the FAA encourages operators of public-use airports who become aware of proposed land use practice changes that may attract hazardous wildlife within 5 statute miles of their airports to promptly notify the FAA. The FAA also encourages proponents of such land use changes to notify the FAA as early in the planning process as possible. Advanced notice affords the FAA an opportunity (1) to evaluate the effect of a particular land-use change on aviation safety and (2) to support efforts by the airport sponsor to restrict the use of land next to or near the airport to uses that are compatible with the airport.

The airport operator, project proponent, or land-use operator may use FAA Form 7460-1, *Notice of Proposed Construction or Alteration*, or other suitable documents similar to FAA Form 7460-1 to notify the appropriate FAA Regional Airports Division Office. Project proponents can contact the appropriate FAA Regional Airports Division Office for assistance with the notification process.

It is helpful if the notification includes a 15-minute quadrangle map of the area identifying the location of the proposed activity. The land-use operator or project proponent should also forward specific details of the proposed land-use change or operational change or expansion. In the case of solid waste landfills, the information should include the type of waste to be handled, how the waste will be processed, and final disposal methods.

a. Airports that have received Federal grant-in-aid assistance. Airports that have received Federal grant-in-aid assistance are required by their grant assurances to take appropriate actions to restrict the use of land next to or near the airport to uses that are compatible with normal airport operations. The FAA recommends that airport operators to the extent practicable oppose off-airport land-use changes or practices within the separations identified in Sections 1-2 through 1-4 that may attract hazardous wildlife. Failure to do so may lead to noncompliance with applicable grant assurances. The FAA will not approve the placement of airport

development projects pertaining to aircraft movement in the vicinity of hazardous wildlife attractants without appropriate mitigating measures. Increasing the intensity of wildlife control efforts is not a substitute for eliminating or reducing a proposed wildlife hazard. Airport operators should identify hazardous wildlife attractants and any associated wildlife hazards during any planning process for new airport development projects.

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APPENDIX 1. DEFINITIONS OF TERMS USED IN THIS ADVISORY CIRCULAR.

1. **GENERAL.** This appendix provides definitions of terms used throughout this AC.

    1. **Air operations area.** Any area of an airport used or intended to be used for landing, takeoff, or surface maneuvering of aircraft. An air operations area includes such paved areas or unpaved areas that are used or intended to be used for the unobstructed movement of aircraft in addition to its associated runway, taxiways, or apron.

    2. **Airport operator.** The operator (private or public) or sponsor of a public-use airport.

    3. **Approach or departure airspace.** The airspace, within 5 statute miles of an airport, through which aircraft move during landing or takeoff.

    4. **Bird balls.** High-density plastic floating balls that can be used to cover ponds and prevent birds from using the sites.

    5. **Certificate holder.** The holder of an Airport Operating Certificate issued under Title 14, Code of Federal Regulations, Part 139.

    6. **Construct a new MSWLF.** To begin to excavate, grade land, or raise structures to prepare a municipal solid waste landfill as permitted by the appropriate regulatory or permitting agency.

    7. **Detention ponds.** Storm water management ponds that hold storm water for short periods of time, a few hours to a few days.

    8. **Establish a new MSWLF.** When the first load of putrescible waste is received on-site for placement in a prepared municipal solid waste landfill.

    9. **Fly ash.** The fine, sand-like residue resulting from the complete incineration of an organic fuel source. Fly ash typically results from the combustion of coal or waste used to operate a power generating plant.

    10. **General aviation aircraft.** Any civil aviation aircraft not operating under 14 CFR Part 119, Certification: Air Carriers and Commercial Operators.

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

    12. **Municipal Solid Waste Landfill (MSWLF).** A publicly or privately owned discrete area of land or an excavation that receives household waste and that is not a land application unit, surface impoundment, injection well, or waste pile, as those terms are defined under 40 CFR § 257.2. An MSWLF may receive

other types wastes, such as commercial solid waste, non-hazardous sludge, small-quantity generator waste, and industrial solid waste, as defined under 40 CFR § 258.2. An MSWLF can consist of either a stand alone unit or several cells that receive household waste.

13. **New MSWLF.** A municipal solid waste landfill that was established or constructed after April 5, 2001.

14. **Piston-powered aircraft.** Fixed-wing aircraft powered by piston engines.

15. **Piston-use airport.** Any airport that does not sell Jet-A fuel for fixed-wing turbine-powered aircraft, and primarily serves fixed-wing, piston-powered aircraft. Incidental use of the airport by turbine-powered, fixed-wing aircraft would not affect this designation. However, such aircraft should not be based at the airport.

16. **Public agency.** A State or political subdivision of a State, a tax-supported organization, or an Indian tribe or pueblo (49 U.S.C. § 47102(19)).

17. **Public airport.** An airport used or intended to be used for public purposes that is under the control of a public agency; and of which the area used or intended to be used for landing, taking off, or surface maneuvering of aircraft is publicly owned (49 U.S.C. § 47102(20)).

18. **Public-use airport.** An airport used or intended to be used for public purposes, and of which the area used or intended to be used for landing, taking off, or surface maneuvering of aircraft may be under the control of a public agency or privately owned and used for public purposes (49 U.S.C. § 47102(21)).

19. **Putrescible waste.** Solid waste that contains organic matter capable of being decomposed by micro-organisms and of such a character and proportion as to be capable of attracting or providing food for birds (40 CFR §257.3-8).

20. **Putrescible-waste disposal operation.** Landfills, garbage dumps, underwater waste discharges, or similar facilities where activities include processing, burying, storing, or otherwise disposing of putrescible material, trash, and refuse.

21. **Retention ponds.** Storm water management ponds that hold water for several months.

22. **Runway protection zone (RPZ).** An area off the runway end to enhance the protection of people and property on the ground (see AC 150/5300-13). The dimensions of this zone vary with the airport design, aircraft, type of operation, and visibility minimum.

23. **Scheduled air carrier operation.** Any common carriage passenger-carrying operation for compensation or hire conducted by an air carrier or commercial

operator for which the air carrier, commercial operator, or their representative offers in advance the departure location, departure time, and arrival location. It does not include any operation that is conducted as a supplemental operation under 14 CFR Part 119 or as a public charter operation under 14 CFR Part 380 (14 CFR § 119.3).

24. **Sewage sludge.** Any solid, semi-solid, or liquid residue generated during the treatment of domestic sewage in a treatment works. Sewage sludge includes, but is not limited to, domestic septage; scum or solids removed in primary, secondary, or advanced wastewater treatment process; and a material derived from sewage sludge. Sewage does not include ash generated during the firing of sewage sludge in a sewage sludge incinerator or grit and screenings generated during preliminary treatment of domestic sewage in a treatment works. (40 CFR 257.2)

25. **Sludge.** Any solid, semi-solid, or liquid waste generated form a municipal, commercial or industrial wastewater treatment plant, water supply treatment plant, or air pollution control facility or any other such waste having similar characteristics and effect. (40 CFR 257.2)

26. **Solid waste.** Any garbage, refuse, sludge, from a waste treatment plant, water supply treatment plant or air pollution control facility and other discarded material, including, solid liquid, semisolid, or contained gaseous material resulting from industrial, commercial, mining, and agricultural operations, and from community activities, but does not include solid or dissolved materials in domestic sewage, or solid or dissolved material in irrigation return flows or industrial discharges which are point sources subject to permits under section 402 of the Federal Water Pollution Control Act, as amended (86 Stat. 880), or source, special nuclear, or by product material as defined by the Atomic Energy Act of 1954, as amended, (68 Stat. 923). (40 CFR 257.2)

27. **Turbine-powered aircraft.** Aircraft powered by turbine engines including turbojets and turboprops but excluding turbo-shaft rotary-wing aircraft.

28. **Turbine-use airport.** Any airport that sells Jet-A fuel for fixed-wing turbine-powered aircraft.

29. **Wastewater treatment facility.** Any devices and/or systems used to store, treat, recycle, or reclaim municipal sewage or liquid industrial wastes, including Publicly Owned Treatment Works (POTW), as defined by Section 212 of the Federal Water Pollution Control Act (P.L. 92-500) as amended by the Clean Water Act of 1977 (P.L. 95-576) and the Water Quality Act of 1987 (P.L. 100-4). This definition includes any pretreatment involving the reduction of the amount of pollutants, the elimination of pollutants, or the alteration of the nature of pollutant properties in wastewater prior to or in lieu of discharging or otherwise introducing such pollutants into a POTW. (See 40 CFR Section 403.3 (q), (r), & (s)).

30. Wildlife. Any wild animal, including without limitation any wild mammal, bird, reptile, fish, amphibian, mollusk, crustacean, arthropod, coelenterate, or other invertebrate, including any part, product, egg, or offspring thereof (50 CFR 10.12, *Taking, Possession, Transportation, Sale, Purchase, Barter, Exportation, and Importation of Wildlife and Plants*). As used in this AC, wildlife includes feral animals and domestic animals out of the control of their owners (14 CFR Part 139, Certification of Airports).

31. Wildlife attractants. Any human-made structure, land-use practice, or human-made or natural geographic feature that can attract or sustain hazardous wildlife within the landing or departure airspace or the airport's AOA. These attractants can include architectural features, landscaping, waste disposal sites, wastewater treatment facilities, agricultural or aquaculture activities, surface mining, or wetlands.

32. Wildlife hazard. A potential for a damaging aircraft collision with wildlife on or near an airport.

33. Wildlife strike. A wildlife strike is deemed to have occurred when:

a. A pilot reports striking 1 or more birds or other wildlife;

b. Aircraft maintenance personnel identify aircraft damage as having been caused by a wildlife strike;

c. Personnel on the ground report seeing an aircraft strike 1 or more birds or other wildlife;

d. Bird or other wildlife remains, whether in whole or in part, are found within 200 feet of a runway centerline, unless another reason for the animal's death is identified;

e. The animal's presence on the airport had a significant negative effect on a flight (i.e., aborted takeoff, aborted landing, high-speed emergency stop, aircraft left pavement area to avoid collision with animal) (Transport Canada, Airports Group, *Wildlife Control Procedures Manual*, Technical Publication 11500E, 1994).

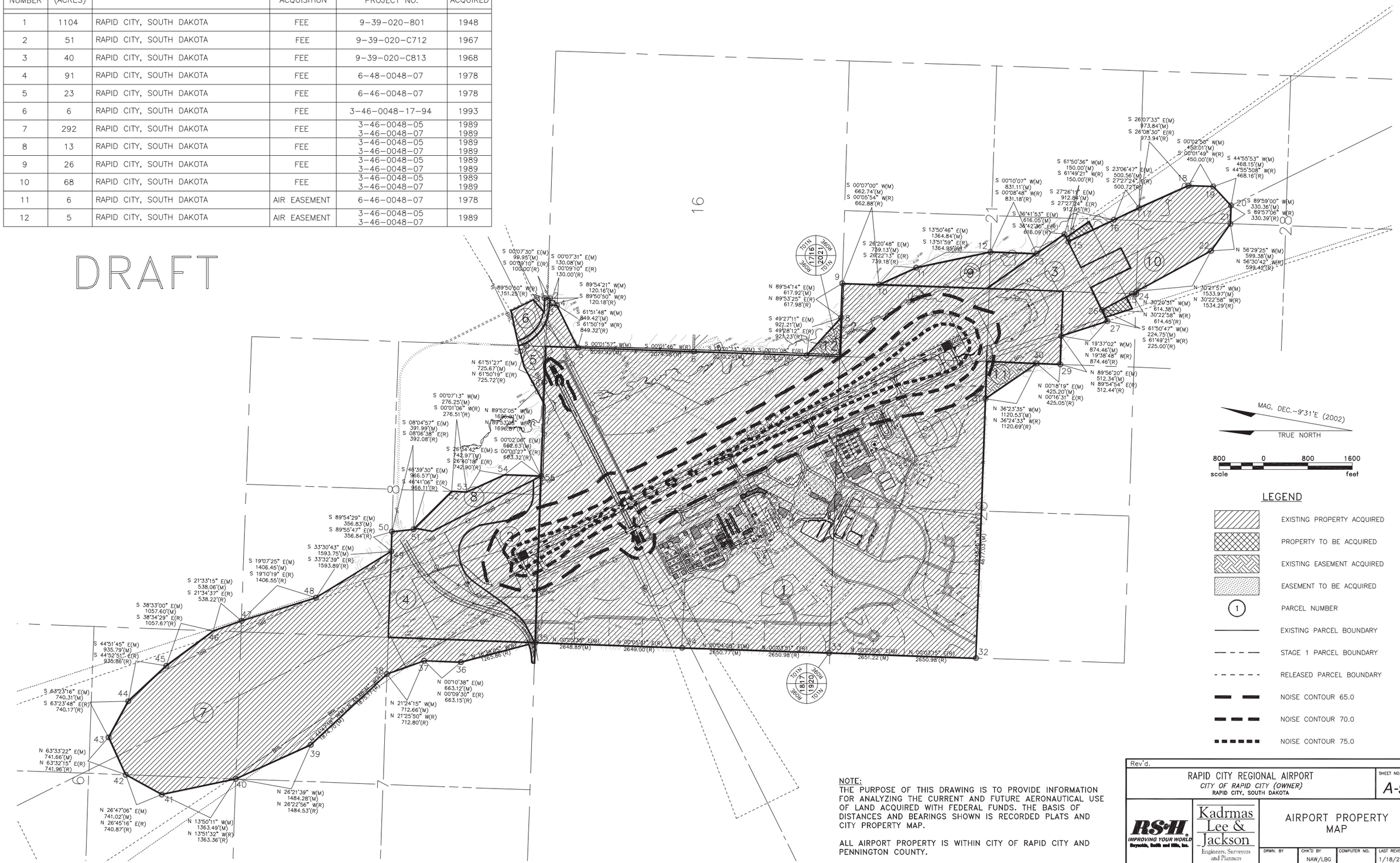
2. RESERVED.

Airport Property Map

TABLE OF LAND PARCELS – EXISTING

PARCEL NUMBER	AREA (ACRES)	CURRENT PROPERTY OWNER	TYPE OF ACQUISITION	ACQUIRED UNDER PROJECT NO.	YEAR ACQUIRED
1	1104	RAPID CITY, SOUTH DAKOTA	FEE	9-39-020-801	1948
2	51	RAPID CITY, SOUTH DAKOTA	FEE	9-39-020-C712	1967
3	40	RAPID CITY, SOUTH DAKOTA	FEE	9-39-020-C813	1968
4	91	RAPID CITY, SOUTH DAKOTA	FEE	6-48-0048-07	1978
5	23	RAPID CITY, SOUTH DAKOTA	FEE	6-46-0048-07	1978
6	6	RAPID CITY, SOUTH DAKOTA	FEE	3-46-0048-17-94	1993
7	292	RAPID CITY, SOUTH DAKOTA	FEE	3-46-0048-05 3-46-0048-07	1989 1989
8	13	RAPID CITY, SOUTH DAKOTA	FEE	3-46-0048-05 3-46-0048-07	1989 1989
9	26	RAPID CITY, SOUTH DAKOTA	FEE	3-46-0048-05 3-46-0048-07	1989 1989
10	68	RAPID CITY, SOUTH DAKOTA	FEE	3-46-0048-05 3-46-0048-07	1989 1989
11	6	RAPID CITY, SOUTH DAKOTA	AIR EASEMENT	6-46-0048-07	1978
12	5	RAPID CITY, SOUTH DAKOTA	AIR EASEMENT	3-46-0048-05 3-46-0048-07	1989

DRAFT



NOTE:
THE PURPOSE OF THIS DRAWING IS TO PROVIDE INFORMATION FOR ANALYZING THE CURRENT AND FUTURE AERONAUTICAL USE OF LAND ACQUIRED WITH FEDERAL FUNDS. THE BASIS OF DISTANCES AND BEARINGS SHOWN IS RECORDED PLATS AND CITY PROPERTY MAP.

ALL AIRPORT PROPERTY IS WITHIN CITY OF RAPID CITY AND PENNINGTON COUNTY.

Rev'd.

RAPID CITY REGIONAL AIRPORT
CITY OF RAPID CITY (OWNER)
RAPID CITY, SOUTH DAKOTA

SHEET NO. A-9

RS&H IMPROVING YOUR WORLD Reynolds, Smith and Hills, Inc.

Kadrmas Lee & Jackson Engineers, Surveyors and Planners

AIRPORT PROPERTY MAP

DRWN. BY	CHK'D BY	COMPUTER NO.	LAST REVISED
	NAW/LBG		1/18/2008

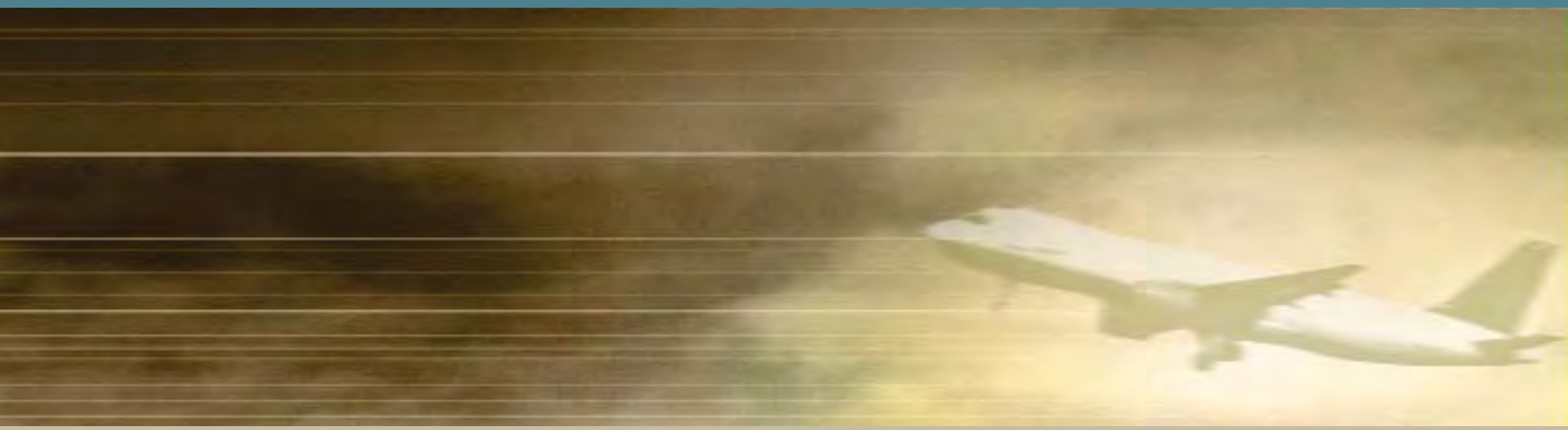
T:\P\2137103.000 Rapid City MP\CAD\V\RAP_A9.dwg (Property)

Plotted-6/16/2008-1:33pm

Appendix E: Airport Ordinances

Pennington County Zoning Ordinance, Section 301, Airport Height and Hazard Zoning

Rapid City Municipal Code Chapter 17.58, Airport Zoning District



Pennington County Zoning Ordinance, Section 301, Airport Height and Hazard Zoning

d. Copies of any special agreements, conveyances, restrictions, or covenants which shall govern the use, maintenance, and continued protection of the Planned Unit Development and any of its common area

3. The developer and developers shall submit proof to the Planning Commission that all parks and open spaces shall be dedicated to the Homeowners Association and a performance bond equal to the cost of the improvements shall be posted prior to the final plat being filed.

SECTION 214 - FP FLOODPLAIN ORDINANCE

Floodplain considerations for any lands lying within the area of jurisdiction of the Pennington County Flood Damage Prevention Ordinance shall be regulated according to the provisions of said Ordinance.

SECTION 300 - SUPPLEMENTARY REGULATIONS

In order to accomplish the general purpose of these Zoning Ordinances, it is necessary to give special consideration to certain uses because they are unique in nature, require large land areas, are potentially incompatible with existing development, or because the effects of such uses cannot definitely be foreseen.

SECTION 301 – AIRPORT HEIGHT AND HAZARD ZONING

A. Intent:

To regulate and restrict the height of structures and objects of natural growth and otherwise regulate the use of property, in the vicinity of the Rapid City Regional Airport, by creating the appropriate zones and establishing the boundaries thereof.

B. General:

It is hereby found that an obstruction has the potential for endangering the lives and property of users of Rapid City Regional Airport and property or occupants of land in its vicinity; that an obstruction may affect existing and future instrument approach minimums of Rapid City Regional Airport; that an obstruction may reduce the size of areas available for the landing, takeoff, and maneuvering of aircraft, thus, tending to destroy or impair the utility of Rapid City Regional Airport and the public investment therein. Accordingly, it is declared:

1. That the creation or establishment of an obstruction has the potential of being a public nuisance and may injure the region served by Rapid City Airport;

2. That it is necessary in the interest of the public health, public safety, and general welfare that the creation or establishment of obstructions that are a hazard to air navigation be prevented; and

3. That the prevention of these obstructions should be accomplished, to the extent legally possible, by the exercise of the police power without compensation.

It is further declared that the prevention of the creation or establishment of hazards to air navigation, the elimination, removal, alteration or mitigation of hazards to air navigation, or marking and lighting of obstructions are public purposes for which a political subdivision may raise and expend public funds and acquire land or interests in land.

C. Airport Zones:

In order to carry out the provisions of this Ordinance, there are hereby created and established certain zones which include all of the land lying beneath the approach surfaces, transitional surfaces, horizontal surfaces, and conical surfaces as they apply to Rapid City Regional Airport. Such zones are shown on Rapid City Regional Airport Zoning Map consisting of two sheets, dated October 15, 2003, which is attached as an adjunct hereof. An area located in more than one of the following zones is considered to be only in the zone with the more restrictive height limitation. The various zones are hereby established and defined as follows:

1. Utility Runway Visual Approach Zone

The inner edge of this approach zone coincides with the width of the primary surface and is 250 feet wide. The approach zone expands outward uniformly to a width of 1,250 feet at a horizontal distance of 5,000 feet from the primary surface. Its centerline is the continuation of the centerline of the runway.

2. Utility Runway Nonprecision Instrument Approach Zone

The inner edge of this approach zone coincides with the width of the primary surface and is 500 feet wide. The approach zone expands outward uniformly to a width of 2,000 feet at a horizontal distance 5,000 feet from the primary surface. Its centerline is the continuation of the centerline of the runway.

3. Runway Larger Than Utility Visual Approach Zone

The inner edge of this approach zone coincides with the width of the primary surface and is 500 feet wide. The approach zone expands outward uniformly to a width of 1,500 feet at a horizontal distance of 5,000 feet from the primary surface. Its centerline is the continuation of the centerline of the runway.

4. Runway Larger Than Utility With A Visibility Minimum Greater Than 3/4 Mile Nonprecision Instrument Approach Zone

The inner edge of this approach zone coincides with the width of the primary surface and is 500 feet wide. The approach zone expands outward uniformly to a width of 3,500 feet at a horizontal distance of 10,000 feet from the primary surface. Its centerline is the continuation of the centerline of the runway.

5. Runway Larger Than Utility With A Visibility Minimum As Low As 3/4 Mile Nonprecision Instrument Approach Zone

The inner edge of this approach zone coincides with the width of the primary surface and is 1,000 feet wide. The approach zone expands outward uniformly to a width of 4,000 feet at a horizontal distance of 10,000 feet from the primary surface. Its centerline is the continuation of the centerline of the runway.

6. Precision Instrument Runway Approach Zone

The inner edge of this approach zone coincides with the width of the primary surface and is 1,000 feet wide. The approach zone expands outward uniformly to a width of 16,000 feet at a horizontal distance of 50,000 feet from the primary surface. Its centerline is the continuation of the centerline of the runway.

7. Transitional Zones

The transitional zones are the areas beneath the transitional surfaces.

8. Horizontal Zone

The horizontal zone is established by swinging arcs of 5,000 feet radii for all runways designated utility or visual and 10,000 feet for all others from the center of each end of the primary surface of each runway and connecting the adjacent arcs by drawing lines tangent to those arcs. The horizontal zone does not include the approach and transitional zones.

9. Conical Zone

The conical zone is established as the area that commences at the periphery of the horizontal zone and extends outward there from a horizontal distance of 4,000 feet.

D. Airport Zone Height Limitations:

Except as otherwise provided in this Ordinance, no structure shall be erected, altered, or maintained, and no tree shall be allowed to grow in any zone created by this Ordinance to a height in excess of the applicable height herein established for such zone. Such applicable height limitations are hereby established for each of the zones in question as follows:

1. Utility Runway Visual Approach Zone

Slopes twenty (20) feet outward for each foot upward beginning at the end of and at the same elevation as the primary surface and extending to a horizontal distance of 5,000 feet along the extended runway centerline.

2. Utility Runway Nonprecision Instrument Approach Zone

Slopes twenty (20) feet outward for each foot upward beginning at the end of and at the same elevation as the primary surface and extending to a horizontal distance of 5,000 feet along the extended runway centerline.

3. Runway Larger Than Utility Visual Approach Zone

Slopes twenty (20) feet outward for each foot upward beginning at the end of and at the same elevation as the primary surface and extending to a horizontal distance of 5,000 feet along the extended runway centerline.

4. Runway Larger Than Utility With A Visibility Minimum Greater Than 3/4 Mile Nonprecision Instrument Approach Zone

Slopes thirty-four (34) feet outward for each foot upward beginning at the end of and at the same elevation as the primary surface and extending to a horizontal distance of 10,000 feet along the extended runway centerline.

5. Runway Larger Than Utility With A Visibility Minimum As Low As 3/4 Mile Nonprecision Instrument Approach Zone

Slopes thirty-four (34) feet outward for each foot upward beginning at the end of and at the same elevation as the primary surface and extending to a horizontal distance of 10,000 feet along the extended runway centerline.

6. Precision Instrument Runway Approach Zone

Slopes fifty (50) feet outward for each foot upward beginning at the end of and at the same elevation as the primary surface and extending to a horizontal distance of 10,000 feet along the extended runway centerline; thence slopes upward forty (40) feet horizontally for each foot vertically to an additional horizontal distance of 40,000 feet along the extended runway centerline.

7. Transitional Zones

Slope seven (7) feet outward for each foot upward beginning at the sides of and at the same elevation as the primary surface and the approach surface, and extending to a height of 150 feet above the airport elevation which is 100 feet above mean sea level. In addition to the foregoing, there are established height limits sloping seven (7) feet outward for each foot upward beginning at the sides of and the same elevation as the approach surface, and extending to where they intersect the conical surface. Where the precision instrument runway approach zone projects beyond the conical zone, there are established height limits sloping seven (7) feet outward for each foot upward beginning at the sides of and the same elevation as the approach surface, and extending a horizontal distance of 5,000 feet measured at 90-degree angles to the extended runway centerline.

8. Horizontal Zone

Established at 150 feet above the airport elevation or at a height of 250 feet above mean sea level.

9. Conical Zone

Slopes twenty (20) feet outward for each foot upward beginning at the periphery of the horizontal zone and at 150 feet above the airport elevation and extending to a height of 350 feet above the airport elevation.

10. Excepted Height Limitations

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.

E. Use Restriction:

Notwithstanding any other provisions of this Ordinance, no use may be made of land or water within any zone established by this Ordinance in such a manner as to create electrical interference with navigational signals or radio communication between the airport and aircraft, make it difficult for pilots to distinguish between airport lights and others, result in glare in the eyes of pilots using the airport, impair visibility in the vicinity of the airport, create bird strike hazards, or otherwise in any way endanger or interfere with the landing, takeoff, or maneuvering of aircraft intending to use the airport.

F. Nonconforming Uses:

1. Regulations Not Retroactive

The regulations prescribed in this Ordinance shall not be construed to require the removal, lowering, or other change or alteration of any structure or tree not conforming to the regulations as the effective date of this Ordinance, or otherwise interfere with the continuance of a nonconforming use. Nothing contained herein shall require any change in the construction, alteration, or intended use of any structure, the construction or alteration of which was begun prior to the effective date of this Ordinance, and is diligently prosecuted.

2. Marking and Lighting

Notwithstanding the preceding provision of this Section, the owner of any existing nonconforming structure or tree is hereby required to permit the installation, operation, and maintenance thereon of such markers and lights as shall be deemed necessary by the Airport Manager to indicate to the operators of aircraft in the vicinity of the airport the presence of such airport obstruction. Such markers and lights shall be installed, operated, and maintained at the expense of the City of Rapid City.

G. Permits:

1. Future Uses

Except as specifically provided in a, b, and c hereunder, no structure shall be erected or otherwise established, and no tree shall be planted in any

zone hereby created unless a permit therefore shall have been applied for and granted. Each application for a permit shall indicate the purpose for which the permit is desired, with sufficient particularity to permit it to be determined whether the resulting structure or tree would conform to the regulations herein prescribed. If such determination is in the affirmative, the permit shall be granted. No permit for a use inconsistent with the provisions of this Ordinance shall be granted unless a Variance has been approved in accordance with Section 301.G.4.

a. In the area lying within the limits of the horizontal zone and conical zone, no permit shall be required for any tree or structure less than fifty (50) feet of vertical height above the ground, except when, because of terrain, land contour, or topographic features, such tree or structure would extend above the height limits prescribed for such zones.

b. In areas lying within the limits of the approach zones, but at a horizontal distance of not less than 4,200 feet from each end of the runway, no permit shall be required for any tree or structure less than fifty (50) feet of vertical height above the ground, except when such tree or structure would extend above the height limit prescribed for such approach zones.

c. In the areas lying within the limits of the transition zones, beyond the perimeter of the horizontal zone**,** no permit shall be required for any tree or structure less than fifty (50) feet of vertical height above the ground, except when such tree or structure, because of terrain, land contour, or topographic features, would extend above the height limit prescribed for such transition zones.

Nothing contained in any of the foregoing exceptions shall be construed as permitting or intending to permit any construction, or alteration of any structure, or growth of any tree in excess of any of the height limits established by this Ordinance except as set forth in Section 301.D.10.

2. Existing Uses

No permit shall be granted that would allow the establishment or creation of an obstruction or permit a nonconforming use, structure, or tree to become a greater hazard to air navigation, than it was on the effective date of this Ordinance or any amendments thereto or than it is when the application for a permit is made. Except as indicated, all applications for such a permit shall be granted.

3. Nonconforming Uses Abandoned or Destroyed

Whenever the Pennington County Planning Director determines that a nonconforming tree or structure has been abandoned or more than 80 percent torn down, physically deteriorated, or decayed, no permit shall be granted that would allow such structure or tree to exceed the applicable height limit or otherwise deviate from these zoning regulations.

4. Variances

Any person desiring to erect or increase the height of any structure or permit the growth of any tree, or use property, not in accordance with the regulations prescribed in this Ordinance, may apply to the Board of Adjustment for a variance from such regulations. The application for variance shall be accompanied by a determination from the Federal Aviation Administration as to the effect of the proposal on the operation of air navigation facilities and the safe, efficient use of navigable airspace. Such variances shall be allowed where it is dully found that a literal application or enforcement of the regulations will result in unnecessary hardship and relief granted, will not be contrary to the public interest, will not create a hazard to air navigation, will do substantial justice, and will be in accordance with the spirit of this Ordinance. Additionally, no application for variance, to the requirements of this Ordinance, may be considered by the Board of Adjustment unless a copy of the application has been furnished to the Airport Manager for advice as to the aeronautical effects of the variance. If the Airport Manager does not provide a written response to the application within fifteen (15) days after receipt, the Board of Adjustment may act on its own to grant or deny said application.

5. Obstruction Marking and Lighting

Any permit or variance granted, if such action is deemed advisable to effectuate the purpose of this Ordinance and be reasonable in the circumstances, may be so conditioned as to require the owner of the structure or tree in question to install, operate, and maintain, at the owner's expense, such markings and lights as may be necessary. If deemed proper by the Board of Adjustment, this condition may be modified to require the owner to permit the City of Rapid City, at its own expense, to install, operate, and maintain the necessary markings and lights.

H. Enforcement:

It shall be the duty of the Pennington County Planning Director to administer and enforce the regulations prescribed herein. Applications for permits and variances shall be made to the Pennington County Planning Director upon a form published for that purpose. Applications required by this Ordinance to be submitted to the Pennington County Planning Director shall either be granted or denied. Application for action by the Board of Adjustment shall be forthwith transmitted by the Pennington County Planning Director.

I. Appeals:

1. Any person aggrieved or any taxpayer affected by any decision of the Pennington County Planning Director**,** made in the administration of the Ordinance, may appeal to the Board of Adjustment.

2. All appeals hereunder must be taken within a reasonable time as provided by the rules of the Board of Adjustment, by filing with the Pennington County Planning Director a notice of appeal specifying the grounds thereof. The Pennington County Planning Director shall forthwith

transmit to the Board of Adjustment all the papers constituting the record upon which the action appealed from was taken.

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

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

5. The Board of Adjustment may, in conformity with the provisions of this Ordinance, reverse or affirm, in whole or in part, or modify the order, requirement, decision, or determination appealed from and may make such order; requirement; decision; or determination as may be appropriate under the circumstances.

J. Judicial Review:

Any person aggrieved, or any taxpayer affected, by any decision of the Board of Adjustment, may appeal to the Circuit Court as provided in SDCL 11-2-61.

K. Conflicting Regulations:

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

L. Severability:

If any of the provisions of this Ordinance or the application thereof to any person or circumstances are held invalid, such invalidity shall not affect other provisions or applications of the Ordinance which can be given effect without the invalid provision or application, and to this end, the provisions of this Ordinance are declared to be severable.

SECTION 302 - NEIGHBORHOOD COMMERCIAL

A. Intent:

To establish areas for those commercial facilities which are especially useful in close proximity to residential areas, while minimizing any undesirable impact of such uses on the neighborhoods which they service.

Rapid City Municipal Code Chapter 17.58, Airport Zoning District

CHAPTER 17.58: AIRPORT ZONING DISTRICT

Section

C*ross-reference:*

Rapid City Regional Airport Board, see Ch. 2.72

17.58.010 General description.

This district is intended to provide regulations for the safe operation of aircraft into and out of the Rapid City Regional Airport.

(Ord. 5066 (part), 2005)

17.58.020 Permitted uses.

Property and buildings in the airport zoning district shall be used only for the following purposes:

A. Agriculture;

B. Airport terminals and hangers;

C. Airport runways, including approach-departure areas, and helipads;

D. Fire stations;

E. Transportation and utility easements and rights-of-way;

F. Accessory uses and buildings, provided such uses are incidental to the principal use;

G. On-premise signs as regulated by Chapter 15.28 of this code;

H. Government buildings and uses incidental to the principal use;

I. Private terminals and accessory buildings;

J. Car rental and accessory car washing and detailing;

K. Commercial parking lots;

L. South Dakota Air National Guard and accessory uses;

M. Crew quarters necessary for airport and emergency operations;

N. Wholesale and distribution centers;

O. Retail business within airport terminal;

P. Seasonal retail business within airport terminal;

Q. Restaurant within airport terminal;

R. Manufacturing;

S. Commercial Aeronautical activities.

(Ord. 5517 (part), 2009; Ord. 5066 (part), 2005)

17.58.030 Conditional uses.

A. Planned commercial developments as regulated in §§ 17.50.050 through 17.50.100 of this code;

B. Retail business or structure located outside the airport terminal;

C. Seasonal retail business or structure located outside the airport terminal;

D. Off-premise signs as regulated by Chapter 15.28 and in accordance with the requirements of § 17.50.380.

E. Restaurant with on-sale liquor;

F. On-sale liquor establishments.

G. Hotel and Motel.

(Ord. 5517 (part), 2009; Ord. 5066 (part), 2005)

17.58.040 Area regulations.

The following shall *apply to all uses permitted in this district:*

A. *Front yard*. All buildings shall set back a minimum of 25 feet from the front property line of the exterior boundaries of the airport property and not from the internal lease boundaries.

B. *Side yard.* No side yard is required, except that the width of a side yard which abuts a residential district shall not be less than 25 feet.

C. *Rear yard.* Where a commercial building is to be serviced from the rear, there shall be provided an alleyway, service court, rear yard, or combination thereof of, not less than 30 feet in depth. The depth of a rear yard which abuts a residential district shall be not less than 15 feet. In all other cases, no rear yard is required.

D. *Setback from section lines.* Principal and accessory buildings and structures shall be set back no less than 58 feet from any section line. No setback is required from any legally vacated section line; however, if the vacated section line forms a property line, the applicable side, rear or front yard setbacks shall be observed.

(Ord. 5517 (part), 2009; Ord. 5066 (part), 2005)

17.58.050 Off-street parking.

As regulated in § 17.50.270.

(Ord. 5066 (part), 2005)

17.58.060 Nonconforming uses.

No preexisting nonconforming structure, tree or use shall be replaced, rebuilt, altered, allowed to grow higher or replanted so as to constitute a greater airport hazard than it was on the date the ordinance from which this article derives was adopted.

(Ord. 5066 (part), 2005)

17.58.070 Airport encroachment area.

There is hereby created an airport encroachment area, which consists of runway area zones, approach-departure zones, transition zones, a horizontal zone and a conical zone, which are adopted by the Airport Improvement Plan and defined in the Federal Aviation Regulation Part 77.25, and includes the following zones:

A. *Runway area zones.* Runway area zones are established along the runways.

B. *Approach-departure zones.* Approach-departure zones are established beyond and outward from the landing thresholds and departure limits of the runways.

C. *Transition zones.* Transition zones are established along both sides of all runways and approach-departure zones.

D. *Horizontal zone.* A horizontal zone is established which has as its outer boundary a line beyond the airport property line.

E. *Conical zone.* A conical zone is established as the land lying under the approach surface. The conical zone commences at the periphery of the horizontal zone, and extends outward and upward at a slope of 20 to 1 for a horizontal distance of 4,000 feet, as set forth in Section 77.25 of the Federal Aviation Regulations.

(Ord. 5066 (part), 2005)

17.58.080 Height regulations.

No structure, tree or other use of land shall be permitted which exceeds the height limit established by each of the encroachment zones.

(Ord. 5066 (part), 2005)

17.58.090 Use regulations.

Notwithstanding any other provisions of this article, no use may be made of any land within any runway area zone, approach-departure zone, horizontal zone, conical zone or transition zone in any manner as to create electrical interference with the radio or radar communication or navigation aids between the airport and aircraft; make it difficult for air crews to distinguish between airport lights and others; result in glare in the eyes of air crews using the airport; impair visibility in the vicinity of the airport; or otherwise endanger the landing, taking off or maneuvering of aircraft within these zones.

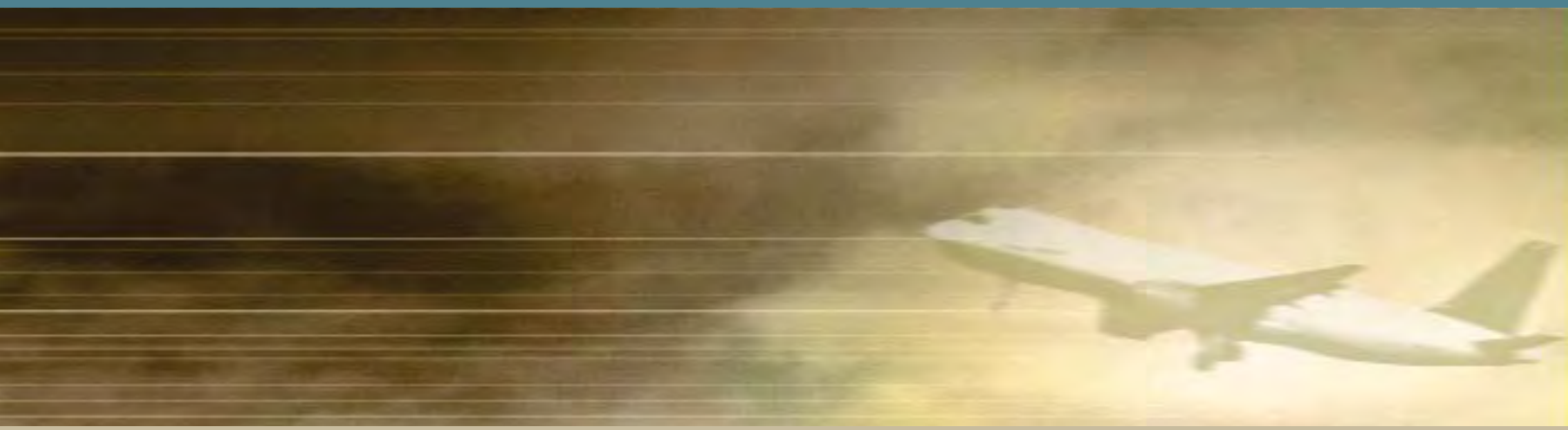
(Ord. 5066 (part), 2005)

Appendix F: Wind Energy Ordinances

Rapid City Municipal Code Chapter 17.50.215, Wind Energy Conversion Systems

Box Elder Ordinance #478 Section 7H: Wind Energy Systems

Meade County's Wind Generator Ordinance 32



Rapid City Municipal Code Chapter 17.50.215, Wind Energy Conversion Systems

17.50.215 Wind energy conversion systems.

A. *General.* Wind energy conversion systems shall be allowed as accessory structures as conditional uses in certain zoning districts. In addition to the standards set forth in Chapter 17.54.030 regarding all conditional, all wind energy conversion systems shall also meet all requirements of § 17.50.215 herein.

B. Commercial sale of power prohibited. Any wind energy conversion system shall be used only for the purpose of generating power for the property on which the wind energy conversion system is located, or for the purpose of transmitting power to the electrical grid of an electric utility company through an approved interconnection.

C. Utility interconnections. Any wind energy conversion system shall be constructed and operated, and any interconnection between a wind energy conversion system and an electric utility company shall be allowed only in accordance with all local, state, and federal regulations including regulations issued by the Public Utilities Commission and the Federal Aviation Administration. Additionally, electrical interconnections shall be allowed only in accordance with the applicable standards of the electric utility company.

D. Required setbacks. A minimum setback of one and one-half times the height of the wind energy conversion system shall be maintained between the wind energy conversion system and any property line, structure intended for human occupation, overhead utility line, or other tower support base.

E. Tower height. In no event shall the height of a wind energy conversion system exceed 90 feet as measured from the ground to the rotor hub. Further, there shall be no less than 30 feet between the lowest arc of the rotors of a wind energy conversion system and the ground, any portion of a structure or any tree.

F. Rotor size/operation. The maximum size of the rotors of a wind energy conversion system shall be reviewed upon application for a conditional use. In determining the appropriate size for the rotors, the city shall consider such factors as noise, proximity to surrounding residences, safety and aesthetic issues. All systems shall be equipped with appropriate braking devices or similar protective devices to slow down or stop the rotors if the wind exceeds the capacity of the system.

G. Noise. No wind energy conversion system shall produce more than 60 decibels of sound measured at the closest point on the closest property line from the base of the system. Information from the manufacturer of the wind energy conversion system shall be submitted at the time of the submittal of the conditional use, ensuring

H. Electromagnetic interference. No wind energy conversion system shall produce electromagnetic interference so as to disrupt transmissions such as those from radio, television or microwave towers. At the time of application for the conditional use, the petitioner must submit information from the manufacturer indicating that, once operational, the wind energy conversion system will not adversely affect the transmissions. If necessary, generators and alternators shall be filtered, shielded, or both so as to prevent the emission of radio and television signals.

I. Tower access. Appropriate safety measures must be undertaken to discourage unauthorized climbing of a wind energy conversion system tower. Appropriate measures shall include either:

1. The construction of a 6-foot tall chain link fence with locking gate around the tower;

2. The tower shall be constructed so that the lowest climbing access shall be at least 12 feet above the ground; or

3. A locked anti-climb device shall be installed on the tower.

J. Warning information. Information related to the maximum power output, nominal voltage and maximum current, and emergency shut-down procedures for the wind energy conversion system shall be posted near the base of the tower in a visible location.

K. Lighting. Unless required by a more restrictive regulation, no lighting shall be installed on a wind energy conversion system.

L. Tower design. In reviewing the conditional use for a wind energy conversion system, the city shall consider the design and color of the tower to ensure that no significant adverse impacts are occurring to neighboring property owners, including, but not limited to, infringement into natural and urban viewsheds, historic property, major community entryways, parks, schools, churches, playgrounds, or similar public and recreational uses.

M. Manufacturer warranty/maintenance information. Upon application for a conditional use for a wind energy conversion system, the petitioner shall submit a manufacturer's statement documenting that the system has been successfully and safely operated in atmospheric conditions that are similar to conditions in Rapid City. Further, the petitioner shall provide a copy of the manufacturer's warranty indicating that the system is warranted against any system failures reasonably expected during severe weather conditions. Further, the petitioner shall submit system specifications including maximum power output and a maintenance schedule for the system.

N. Construction standards. Any wind energy conversion system shall be constructed in accordance with all applicable life, safety, building and fire codes including but not limited to the following:

1. An applicant for a building permit for a wind energy conversion system shall submit plans and specifications stamped by a registered engineer.

2. Lightning Protection. Any wind energy conversion system shall have appropriate lightning protection to sufficiently protect all connected and adjacent equipment and structures from damage. The lightning protection system shall effectively discharge lightning energy from the structure to the ground through the application of shielding, lightning arresters and deep earth grounding.

O. Abandonment/removal.

l. Any wind energy conversion system which has not been used for a period of 6 months ormore shall be declared abandoned. Upon abandonment of the system, the city shall revoke the conditional use and the system shall be removed at the expense of the property owner. The city shall determine that a wind energy conversion system has not been used if the following criteria apply:

a. The wind energy conversion system has not been operating for a substantial period of time and the owner of the system is unable to provide documentation demonstrating that the system has produced a minimum of 25% of the power output as stated in the system specifications over the past 6 months;

b. The wind energy conversion system has fallen into obvious disrepair and/or has been condemned by the City of Rapid City.

c. The wind energy conversion system has become violative of some other local, state or federal law and the owner of the system has not taken appropriate actions to remedy the problem.

2. If deemed appropriate, the city may stipulate through the conditional use that the wind energy conversion system shall be removed at the owner's expense, upon the rezoning of the subject property to a zoning district classification in which wind energy conversion systems are not allowed as either a permitted use or conditional use.

(Ord. 3705 (part), 2001)

Box Elder Ordinance #478 Section 7H: Wind Energy Systems

H. Wind Energy Systems (WES).

Wind energy systems shall meet the following criteria and standards:

1. The maximum height of a WES shall be less than seventy-five feet (75') above the pre-construction level of the grade adjacent to the tower location. This height shall be an exception to the Zoning District's maximum structure height.
2. The minimum setback distance between each wind turbine tower and all surrounding property lines, overhead utility or transmission lines, other wind turbine towers, electrical substations, public roads, and dwelling units shall be equal to no less than one point one (1.1) times the system height (measured from the grade adjacent to the tower pad to the highest system component, including blades).
3. The vertical distance from the adjacent grade to the tip of the wind turbine blade when the blade is at its lowest point must be at least twenty-five feet (25').
4. The owner of a WES shall take such reasonable steps as are necessary to prevent, mitigate, and eliminate shadow flicker (the shadow cast by the rotating blade of the WES) on an occupied building on adjacent property.
5. The owner of a WES shall minimize or mitigate interference with electromagnetic communications, such as radio, telephone, microwave, or television signals caused by the WES.
6. The building permit application for a WES, in addition to the requirements of Article 7, Section 2 of this Ordinance, shall include structure plans prepared by a PE and a certification by a PE that the structure has been designed to withstand the wind, snow, and ice loads typical of this area.
7. All ground- or pad-mounted electrical and control equipment shall be labeled and secured to prevent unauthorized access. If the WES is located in a Flood Hazard Area, said equipment shall be located more than three feet (3') above the Base Flood Elevation at the site.
8. All signs, other than the manufacturer's or installer's identification, appropriate warning signs, or owner identification on any WES structure that is visible from any public road shall be prohibited.
9. All electrical wires associated with a WES, other than wires necessary to connect the wind turbine to its base and to overhead collection lines must be buried underground.
10. A WES tower shall be designed and installed so as to not provide step bolts or a ladder readily accessible to the public for a minimum height of eight feet (8') above adjacent grade.
11. A WES shall not be artificially lighted unless such lighting is required by the Federal Aviation Administration.
12. A WES shall not generate more than sixty dBA of sound, as measured at the closest portion of the nearest inhabited dwelling when the wind speed is less than twenty (20) miles per hour.
13. A WES shall remain painted or finished in the color or finish that was originally applied by the manufacturer unless otherwise stipulated in the CUP.
14. A WES shall comply with all applicable state and local construction and electrical codes and the National Electrical Code.
15. A WES shall not be installed until evidence has been provided to the Planning Coordinator that the appropriate utility company has been informed of the applicant's intent to install an interconnected WES. Off-grid systems shall be exempt from this requirement.
16. A WES shall not be installed until evidence has been provided to the Planning Coordinator that all communication tower operators within two (2) miles of the proposed WES location have been informed of the applicant's intent to install a WES.

17. A WES that is out-of-service for a continuous twelve (12) month period will be deemed to have been abandoned. An abandoned WES shall be deemed a public nuisance.

SECTION 8 – NONCONFORMING USE OF LAND OR STRUCTURES.

A. Any otherwise lawful use of land or structure existing at the time of adoption of these regulations may be continued, maintained, and repaired except as otherwise provided.

B. Except as otherwise required by law, a structure or use legally established prior to the adoption date of this Ordinance may be maintained unchanged. In other than criminal proceedings, the owner, occupant, or user shall have the burden to show that the structure, lot, or use was lawfully established.

C. Where there are existing recorded lots which do not meet minimum lot size requirements and are under separate ownership, including lot area, lot width and lot length, residential buildings may be constructed as long as side yards are not less than five feet (5') wide and the rear yard is not less than fifteen feet (15') deep. Front yard requirements must be met. However, no recorded lot shall be divided into two or more lots unless the resulting lots conform to all size regulations of the Zoning District in which the lot is located.

D. Any lot or structure, or portion thereof, occupied by a nonconforming use, which is or hereafter becomes vacant and remains unoccupied by a nonconforming use for a period of six (6) months shall not thereafter be occupied, except by a use that conforms to this Ordinance.

E. The right to operate and maintain any nonconforming use shall terminate whenever the structure or structures in which the nonconforming use is operated and maintained are damaged, destroyed, or become obsolete or substandard beyond the limits hereinafter established for the termination of nonconforming structures.

F. Except as provided, any nonconforming use shall not be enlarged or extended. A nonconforming structure in which only permitted uses are operated may be enlarged or extended with approved permits if the enlargement or extension can be made in compliance with all of the provisions of this Ordinance established for structures in the Zoning District in which the nonconforming structure is located.

G. A nonconforming structure damaged in any manner and from any cause whatsoever to the extent of not more than fifty percent (50%) of its replacement cost may be restored, provided restoration is completed within one (1) year of the date of damage.

H. Maintenance, repairs, and structural alterations may be permitted to be made to nonconforming structures or to a building housing a nonconforming use with approved permits.

Meade County's Wind Generator Ordinance 32

WIND GENERATOR ORDINANCE 32

ARTICLE 1 PURPOSE

PURPOSE
The purpose of the Ordinance is to provide for the construction and permitting of small residential, rural and commercial Wind Generator Facilities in the unincorporated areas of Meade County, subject to reasonable conditions that will protect the public health and safety.

ARTICLE II DEFINITIONS

"Applicant" is the person or entity filing an application under this Ordinance.

"Hub Height" means the distance measured from the surface of the tower foundation to the height of the Wind Turbine hub, to which the blade is attached.

"Commercial Wind Generator Facility" (Wind Farm) means an electric generating facility, placed on 73 acres or more, whose main purpose is to supply electricity; consisting of one or more Wind Turbines and other accessory structures and buildings, including substations, meteorological towers, electrical infrastructure, transmission lines and other appurtenant structures and facilities.

"Engineering Certification" – For all commercial wind generators or meteorological towers, the manufacturer's engineer or another qualified engineer shall certify that the turbine, foundation and tower design of the commercial wind generators or meteorological towers is within accepted professional standards, given local soil and climate conditions.

"Facility Owner" means the entity or entities having an equity interest in the Wind Generator Facility, including their respective successors and assigns.

"Meteorological Tower": For the purposes of this Wind Energy Conversion System Ordinance, meteorological towers (temporary or permanent) are those towers which are erected primarily to measure wind speed and directions plus other data relevant to sitting or proposed WECS. Meteorological towers do not include towers and equipment used by airports, the South Dakota Department of Transportation, National Weather Service or other similar applications to monitor weather conditions. Meteorological Towers, whether temporary or permanent must meet FAA requirements.

"Non-Participating Landowner" means any landowner except those on whose property all or a portion of a Wind Generator Facility is located pursuant to an agreement with the Facility Owner or Operator.

"Operator" means the entity responsible for the day-to-day operation and maintenance of the Wind Generator Facility.

"Occupied Building" means a residence, school, hospital, church, public library or other building used for public gathering that is occupied or in use when the permit application is submitted.

"Rural Wind Turbines" small to medium size wind energy systems installed for on-site use on agricultural property for supplying electricity or other uses, not to exceed 120 feet in height.

"Small Residential Wind Turbine" small wind energy systems installed to reduce the on-site consumption of utility supplied electricity. Tower height for property sizes between 3+ acres to 9+ acres the tower height shall be limited to 60 ft. and property sizes of greater than 10 acres up to 39 acres shall have a maximum tower height of 80 ft.

"**Small Wind Turbine System"** A wind energy conversion system consisting of a wind turbine, a tower, and associated control or conversion electronics, which has a rated capacity of not more than 10 kW and which is intended to primarily reduce on-site consumption of utility power.

"Turbine Height" means the distance measured from the surface of the tower foundation to the highest point of the turbine rotor plane.

"Tower Height": The height above grade of the fixed portion of the tower, excluding the wind turbine itself.

"Wind Turbine" means a wind Generator conversion system that converts wind Generator into electricity through the use of a wind turbine generator, and includes the nacelle, rotor, tower, and pad transformer, if any.

"WECS" - Wind Energy Conversion System: An electrical generating facility comprised of one or more wind turbines and accessory facilities, including but not limited to: power lines, transformers, substations and meteorological towers that operates by converting the kinetic energy of wind into electrical energy. The energy may be used on-site or distributed into the electrical grid. The term WECS is synonymous for wind turbine or wind generator.

ARTICLE III APPLICABILITY

A. This Ordinance applies to all Wind Generators, Wind Generator Facilities and temporary or permanent Meteorological Towers proposed to be constructed or placed after the effective date of the Ordinance, and also applies to stand-alone Wind Turbines constructed primarily for residential or farm use.

B. Wind Generators and Wind Generator Facilities including Meteorological Towers constructed or placed prior to the effective date of this Ordinance shall not be required to

meet the requirements of this Ordinance; Provided that any physical modification to an existing Wind Generator Facility that materially alters the size, type and number of Wind Turbines or other equipment shall require a permit under this Ordinance.

SECTION 1 PERMITTED USE

A Wind Generator Facility or Meteorological Tower shall be considered a Permitted Use if approved by the Meade County Governing Board with proper ~~permits and~~ documentation required by this Ordinance.

1. PERMIT REQUIREMENT

A. No Wind Generator Facility, an addition of a Wind Turbine to an existing Wind Generator Facility or Meteorological Tower shall be constructed or located within the unincorporated boundaries of Meade County unless a permit has been issued to the Facility Owner or Operator approving construction of the facility under this Ordinance.

B. The permit application or amended permit application shall be accompanied with a fee in the amount of $ ~~85.00~~, $125.00, for all Commercial Wind Generator Facilities. Rural (non-commercial) Wind Turbines and Small Residential Wind Turbines are exempt from permit fees; however, all wind generators require a building permit for the entire structure and equipment, not to exceed $1,000 per unit.

C. Any physical modification to an existing and permitted Commercial Wind Generator Facility that materially alters the size, type and number of Wind Turbines or other equipment shall require a permit modification under this Ordinance. Like-kind replacements shall not require a permit modification.

D. Commercial Wind Generator Facilities and Meteorological Towers shall only be placed on agricultural property of 73 acres or more.

2. PERMIT APPLICATION

A. The permit application shall demonstrate that the proposed **Commercial Wind Generator Facility, (WCES) or Meteorological Tower,** will comply with this Ordinance.

B. The application shall contain the following:

1. A narrative describing the proposed Commercial Wind Generator Facility or WECS, including an overview of the project; the project location; the approximate generating capacity of the Commercial Wind Generator Facility; the approximate number, representative types and height or range of heights of Wind Turbines to be constructed, including their generating capacity, dimensions and respective manufacturers, and a description of ancillary facilities. Meteorological Tower Application must include a

decommissioning time table for data collection. Temporary Meteorological Towers will be permitted for a maximum duration of 5 years.

2. An affidavit or similar evidence of agreement between the property owner and the Facility Owner or Operator demonstrating that the Facility Owner or Operator has the permission of the property owner to apply for necessary permits for construction and operation of the Commercial Wind Generator Facility or a Meteorological Tower.

3. Identification of the properties on which the proposed Commercial Wind Generator Facility or Meteorological Tower will be located, and the properties adjacent to and within 1,000 foot radius where the Commercial Wind Generator Facility will be located.

4. A site plan showing the planned location of each Wind Turbine (or Meteorological Tower), property lines, setback lines, access road and turnout locations, substation(s), electrical cabling from the Commercial Wind Generator Facility to the substation(s), ancillary equipment, buildings, and structures, including meteorological towers, associated transmission lines, and layout of all structures within the geographical boundaries of any applicable setback.

5. Documents related to decommissioning of all equipment.

6. Other relevant studies, reports, certifications and approvals as may be reasonably requested by Meade County to ensure compliance with this Ordinance.

7. Provide a copy of the agreement between the Facility Owner and the affected local power company, (if applicable).

C. Within (30) days after receipt of a permit application, Meade County Director of Equalization & Planning or his or her designee will determine whether the application is complete and advise the applicant accordingly.

D. The applicant must appear before the Governing Board at the regularly scheduled meeting. The applicant shall participate in the hearings and be afforded an opportunity to present the project to the public and the Meade County Governing Board of Commissioners, and answer questions about the project. The public shall be afforded an opportunity to ask questions and provide comment on the proposed project.

1. Neighbors within a 1000 feet of the property of the proposed wind generator or Meteorological Tower must be Notified by certified mail at least 14 calendar days in advance of any Meade County Governing Board of Commissioners Meeting along with a return receipt requested, of the proposed construction which notice shall include a map of the location of the proposed construction and also:

i.) Given the telephone number and address of the facility owner or operator; and

ii) Informed of his or her right to participate in the Meade County Planning Commission's proceedings ~~or~~ and the Meade County Governing Board of Commissioners meeting on the application.

2. A list of the property owners who received the notice, together with copies of the certified receipts for the notice sent to the listed property owners.

E. Within (30) days after the close of hearing or at the hearing of the Governing Board, Meade County will make a decision whether to issue or deny the permit application.

F. Throughout the permit process, the Applicant shall promptly notify Meade County of any changes to the information contained in the permit application.

G. Changes to the pending application that do not materially alter the initial site plan may be adopted without a renewed public hearing.

SECTION 2 DESIGN AND INSTALLATION OF COMMERCIAL WIND GENERATOR FACILITIES.

A. Design Safety Certification
The design of the Wind Generator Facility shall conform to applicable industry standards, including those of the American National Standards Institute. The Applicant shall submit an Engineering Certification for all commercial wind generators or meteorological towers, the manufacturer's engineer or another qualified engineer shall certify that the turbine, foundation and tower design of the commercial wind generators or meteorological tower is within accepted professional standards, given local soil and climate conditions. ~~certificates of design compliance obtained by the equipment manufacturers from Underwriters Laboratories, Det Norske Veritas, Germanishcer Llloyd Wind Energies, or other similar certifying organizations.~~

B. ~~Uniform~~ 2006 International Building Code
To the extent applicable, the Wind Generator Facility shall comply with the ~~1997 Uniform~~ 2006 International Building Construction Code.

C. Controls and Brakes
All Wind Generator Facilities shall be equipped a electronic shut down or with a redundant braking system. This includes both aerodynamic over-speed controls (including variable pitch, tip, and other similar systems) and/or mechanical brakes. Mechanical brakes shall be operated in a fail-safe mode. Stall regulation shall not be considered a sufficient braking system for over-speed protection.

D. Electrical Components
All electrical components of a Commercial Wind Generator Facility, Rural Wind Generator and Small Residential Wind Turbines shall conform to the National Electric

Code and to relevant and applicable local, state and national codes, including the National Electric Code, and relevant and applicable international standards; along with the standards set forth by the affected local power company.

E. Visual Appearance; Power Lines

1. Wind Turbines shall be a non-obtrusive color such as white, off-white or gray.
2. Wind Generator Facilities shall not be artificially lighted, except to the extent required by the Federal Aviation Administration or other applicable authority that regulates air safety, and/or the Meade County Governing Board of Commissioners.

3. Wind Turbines shall not display advertising, except for reasonable identification of the turbine manufacturer, Facility Owner and Operator.

4. On-site transmission and power lines between Wind Turbines shall, to the maximum extent practicable, be placed underground.

F. Warnings

1. A clearly visible warning sign concerning voltage must be placed at the base of all pad-mounted transformers and substations.

2. Visible, reflective, colored objects, such as flags, reflectors, or tape shall be placed on the anchor points of guy wires and along the guy wires up to a height of ten feet from the ground.

3. Climb Prevention/Locks

a. Wind Turbines and meteorological towers shall not be climbable up to fifteen (15) feet above ground surface.

b. All access doors to Wind Turbines and/or meteorological towers and electrical equipment shall be locked or fenced, as appropriate, to prevent entry by non-authorized persons.

G. Decommissioning

Any and all WECS (Wind Generator Systems) or meteorological towers which are not used for twelve successive months shall be deemed abandoned and shall be dismantled, including excavating and removing concrete footings to a depth of 4 feet and all materials must be removed from the property at the expense of the facility owner or property owner." Facility owners of Commercial Wind Generator Facilities must provide a copy of financial surety and or an insurance certificate which will cover the decommissioning of each WECS at the facility or wind farm, to the Meade County Department of Equalization & Planning. For every Wind Generator System (WECS) and any Meteorological Tower (including Temporary Meteorological Tower) that is

decommissioned or removed within Meade County, the facility or tower operator and/or owner must notify in writing to the Meade County Director of Equalization and Planning their intent to decommission or remove the System or Tower, within 14 calendar days of the date the equipment and/or tower is to be decommission or removed by certified mail and must include a copy of the permit along with the written notification.

SECTION 3 SETBACKS FOR COMMERCIAL WIND GENERATOR FACILITIES AND METEOROLOGICAL TOWERS.

A. Occupied Buildings
1. Wind Turbines shall be set back from the nearest Occupied Building a distance not less than 1.1 times the Turbine Height. The setback distance shall be measured from the center of the Wind Turbine base to the nearest point on the foundation of the Occupied Building.

2. Wind Turbines or meteorological towers shall be set back from the nearest Occupied Building located on a Non-participating Landowner's property a distance of not less than five (5) times the Hub Height, (or in the case of a meteorological tower, the entire height) as measured from the center of the Wind Turbine base to the nearest point on the foundation of the Occupied Building.

B. Property lines: All Wind Turbines shall be set back from the nearest property line a distance of not less than the normal setback requirements per Ordinance No. 20 or 1.1 times the Turbine Height or the total height of the meteorological tower, whichever is greater. The setback distance shall be measured to the center of the Wind Turbine or the the meteorological tower base.

C. Public Roads: All Wind Turbines shall be set back from the nearest public road a distance of not less than 1.1 times the Turbine Height or for meteorological towers, the total height of the tower, as measured from the right-of- way line of the nearest public road to the center of the Wind Turbine or meteorological tower base or the minimum setbacks stated in Ordinance No. 20, whatever is greater.

D. Wind Generator Facilities / Wind Farms and meteorological towers must comply with applicable FAA regulations, including any necessary approvals for installations close to commercial or private airports including Ellsworth Air Force Base.

SECTION 4 WAIVER OF SETBACKS FOR COMMERCIAL WIND GENERATOR FACILITIES OR COMMERCIAL WECS.

A. Agricultural Property owners may waive the setback requirements in 9(A)(2) (Occupied Buildings on Non-participating Landowner's property) by signing a waiver

that sets forth the applicable setback provision(s) and the proposed changes if placed on agricultural property of 73 acres or more.

B. The written waiver shall notify affected property owner(s) of the setback required by this Ordinance, describe how the proposed Commercial Wind Generator Facility or a meteorological tower is not in compliance, and state that consent is granted for the Commercial Wind Generator Facility or meteorological towers to not be setback as required by this Ordinance.

C. Upon application, Meade County may waive the setback requirement for public roads for good cause.

SECTION 5 USE OF PUBLIC ROADS FOR COMMERCIAL WIND GENERATOR FACILITIES.

A. The Applicant shall identify all state and local public roads to be used within Meade County to transport equipment and parts for construction, operation or maintenance of the Commercial Wind Generator Facility.

B. The Meade County Highway Superintendent or a qualified third party engineer hired by Meade County shall document road conditions prior to construction. The Meade County Highway Superintendent or a third party engineer shall document road conditions again thirty (30) days after construction is complete or as weather permits.

C. Meade County Governing Board ~~may~~ will require that the road(s) to be used, be bonded by the applicant.

D. Any road damage caused by the applicant or its contractors shall be promptly repaired at the applicant's expense and repairs must be approved by Meade County Highway Superintendent.

E. The Applicant shall demonstrate that it has appropriate financial assurance to ensure the prompt repair of damaged roads either through a bond or a irrevocable letter of credit.

SECTION 6 LOCAL EMERGENCY SERVICES FOR COMMERCIAL WIND GENERATOR FACILITIES.

A. The Applicant shall provide a copy of the project summary and site plan also to local emergency services, including volunteer Fire Department(s).

B. Upon request, the Applicant shall cooperate with Meade County Emergency Management and other emergency services to develop and coordinate implementation of an emergency response plan for the Commercial Wind Generator Facility or meteorological tower.

SECTION 13 REGULATIONS FOR RURAL (NON-COMMERCIAL) AND SMALL RESIDENTIAL WIND TURBINES

A. Purpose: It is the purpose of this regulation to promote the safe, effective and efficient use of small wind energy systems installed to reduce the on-site consumption of utility supplied electricity.

B. Permitted Use: Small wind energy systems (WECS) shall be a permitted use on Agricultural land and in Medium and Rural Density subdivision classifications (per Ordinance No. 20) where structures are allowed; subject to certain requirements as set forth below:

1 Tower Height: For property sizes between 3+ acres to 9+ acres the tower height shall be limited to 60 ft. and property sizes of greater than 10 acres up to 39 acres shall have a maximum tower height of 80 ft. and property from 40 acres or more for Rural Wind Generators, the maximum tower height is 120 ft.

2 Set-back: No part of the wind system structure, including guy wire anchors, may extend closer than 1.1 times the hub height in feet to the property boundaries or structures of the installation site.

3 Noise: Small wind energy systems shall not exceed 55 dBA for lot sizes of 3+ to 9+ acres, as measured at the closest neighboring inhabited dwelling. The level, however, may be exceeded during short-term events such as utility outages and/or severe wind storms.

4 Approved Wind Turbines: Small wind turbines and rural wind generators must have been approved under the Emerging Technologies program recognized by the American Wind Energy Association.

5 Compliance with 1~~997 Uniform~~ 2006 International Building Code: Building permit applications for small and rural wind energy systems shall be accompanied by standard drawings of the wind turbine structure, including the tower, base, and footings.

6 Compliance with FAA Regulations: Small and rural wind energy systems must comply with applicable FAA regulations, including any necessary approvals for installations close to airports.

7 Compliance with National Electric Code: Building permit applications for small and rural wind energy systems shall meet the National Electrical Code and the local power companies requirements.

8 Utility Notification: No small or rural wind energy system shall be installed until evidence has been given that the utility company has been informed of the customer's intent to install an interconnected customer-owned generator. Off-grid systems shall be exempt from this requirement.

9 Evidence: that the proposed height of the wind turbine tower does not exceed the height recommended by the manufacturer or distributor of the system.

SECTION 14 REMEDIES

A. It shall be unlawful for any person, firm, or corporation to violate or fail to comply with or take any action which is contrary to the terms of the ordinance, or any permit issued under the ordinance, or cause another to violate or fail to comply, or to take any action which is contrary to the terms of the ordinance or any permit issued under the ordinance.

B. If Meade County determines that a violation of the Ordinance or the permit has occurred; Meade County shall provide written notice to any person, firm, or corporation alleged to be in violation of this Ordinance or permit. If the alleged violation does not pose an immediate threat to public health or safety, Meade County and the parties shall engage in good faith negotiations to resolve the alleged violation. Such negotiations shall be conducted within thirty (30) days of the notice of violation.

C. If after thirty (30) days from the date of the notice of violation Meade County determines, in its discretion, that the parties have not resolved the alleged violation; Meade County may institute civil enforcement proceedings or any other remedy at law to ensure compliance with the Ordinance or permit.

ARTICLE IV: VARIANCES

Section 1: VARIANCE PROCEDURE

The Meade County Board of Commissioners shall hear and decide appeals and requests for variances from the terms of this ordinance. The board shall base its determination on technical justifications, and has the right to attach such conditions to variances as it deems necessary to further the purposes and objectives of this ordinance.

A. Conditions

In granting variances, modifications, and approvals for the wind generator application, the Governing Board of Commissioners may require such conditions as will, in its judgment, secure substantially the objectives or the standards or requirements so varied, modified, or approved. In granting any variance, the Governing Board of Commissioners shall prescribe conditions that it deems necessary to, or desirable for the public interest. These conditions may include, without being limited to personal, surety, performance, or maintenance bonds, affidavits, covenants, or other legal instruments.

In making its findings, as required herein, the Governing Board of Commissioners shall take into account the nature of the proposed use of

land and the existing use of land in the vicinity, the number of persons to reside or work near the proposed wind generator facility site and the probable effect of the proposed wind generator facility upon living conditions in the vicinity.

That the variance is necessary for the preservation and enjoyment of a substantial property right of the petitioner;

That there are special circumstances or conditions affecting said property such that the strict application of the provisions of this Ordinance would deprive the applicant of the reasonable use of his/her land

B. Application Required

Applications for any such variance shall be submitted in writing by the Facility Owner and/or property owner at the time when the wind generator facility application is filed for consideration by the Governing Board of Commissioners stating fully and clearly all facts relied upon by the petitioner and shall be supplemented with maps, plans or other additional data which may aid the Governing Board of Commissioners in the analysis of the proposed wind generator project. The plans for the proposed wind generator or meteorological tower shall include such covenants, restrictions other legal provisions necessary to guarantee the full achievement of the proposed plan.

Applications for variance shall be considered with the wind generator facility application, and the Meade County Governing Board of Commissioners will render its decision at the hearing or no later than thirty (30) days after the hearing at which the preliminary package and request for a variance was submitted. All variances must be approved by the Governing Board.

C. Requirements for granting Variance

The Meade County Governing Board shall have the authority to give a Variance, the person claiming the Variance has the burden of showing:

That the granting of the Variance will not be contrary to the public interest;

That the literal enforcement of the Ordinance will result in unnecessary hardship;

That by granting the Variance contrary to the provisions of the Ordinance the spirit of the ordinance will be observed; and

That by granting the Variance, justice will be done.

D. Report to the County Board

For each application for a Variance, the Facility Owner and/or property owner will coordinate with the Administrative Assistant to the Governing Board to set a date and time for a public hearing regarding a variance request.

Section 2: PENALTIES FOR VIOLATION OF ORDINANCE NO. 32

A: Violation of this ordinance shall be a Class 2 misdemeanor, and each day's violation shall constitute a separate offense. In addition to the criminal penalty set forth above, the Governing Board of County Commission may immediately suspend all of the permits or the construction activities of a wind generator facility which does not meet the requirements of the Meade County Wind Generator Ordinance. If a suspension occurs, the reasons for such suspension shall be clearly stated by the Governing Board. The suspension on wind generator facility permits or construction activities shall be lifted by the Governing Board upon satisfactory approved that the reasons which led to the suspension have been remedied.

ARTICLE V: SEVERABILITY AND SEPARABILITY

Should any Article, Section, Sub-section or Provision of the Wind Generator Ordinance be declared by a court of competent jurisdiction to be invalid or unconstitutional, such decision shall not affect the validity or constitutionality of the Wind Generator Ordinance as a whole or any part thereof other than the part so declared to be invalid or unconstitutional.

ARTICLE VI: EFFECTIVE DATE

Wind Generator Ordinance No. 32 shall take effect and be in force from and after 20 days from the date of completed publication. Adopted this _____ day of _____, 2008.

Dated at Sturgis, South Dakota, this ____ day of _____, 2008.

Chairman Bob Mallow_____
Meade County Commissioner

Attested: _____

Lisa Schieffer, Meade County Auditor

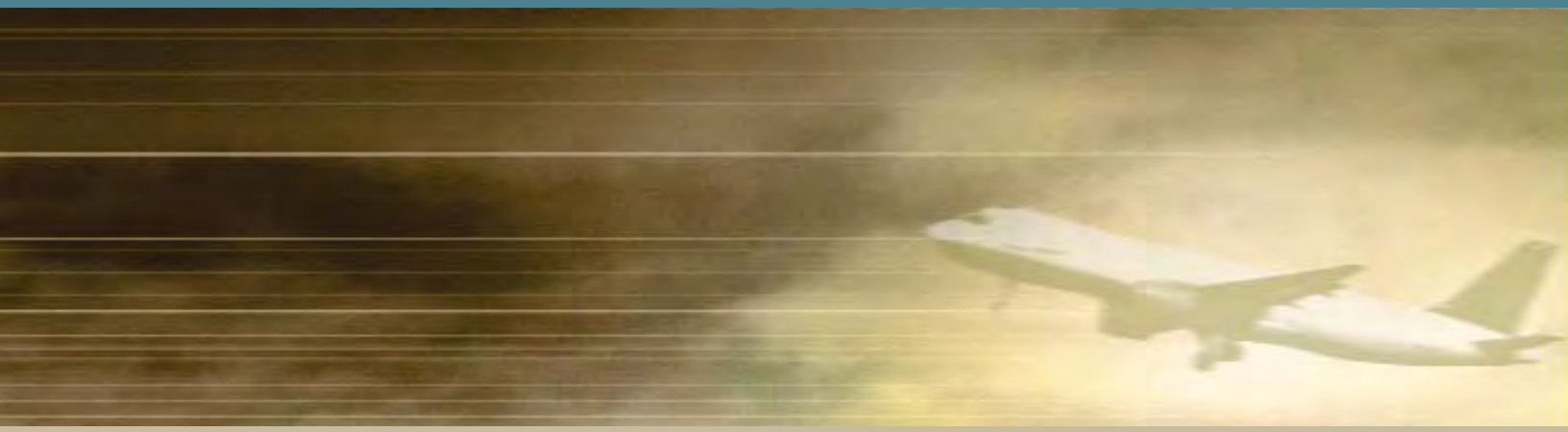
First Reading: August 2nd, 2007
Second Reading: October 3rd, 2007
Adopted: October 3rd, 2007
Published:
Effective date:

REVISED
First Reading: October 8, 2008
Second Reading: November 12th, 2008
Adopted: November 12th, 2008
Published:
Effective date:

Appendix G: Noise Contours

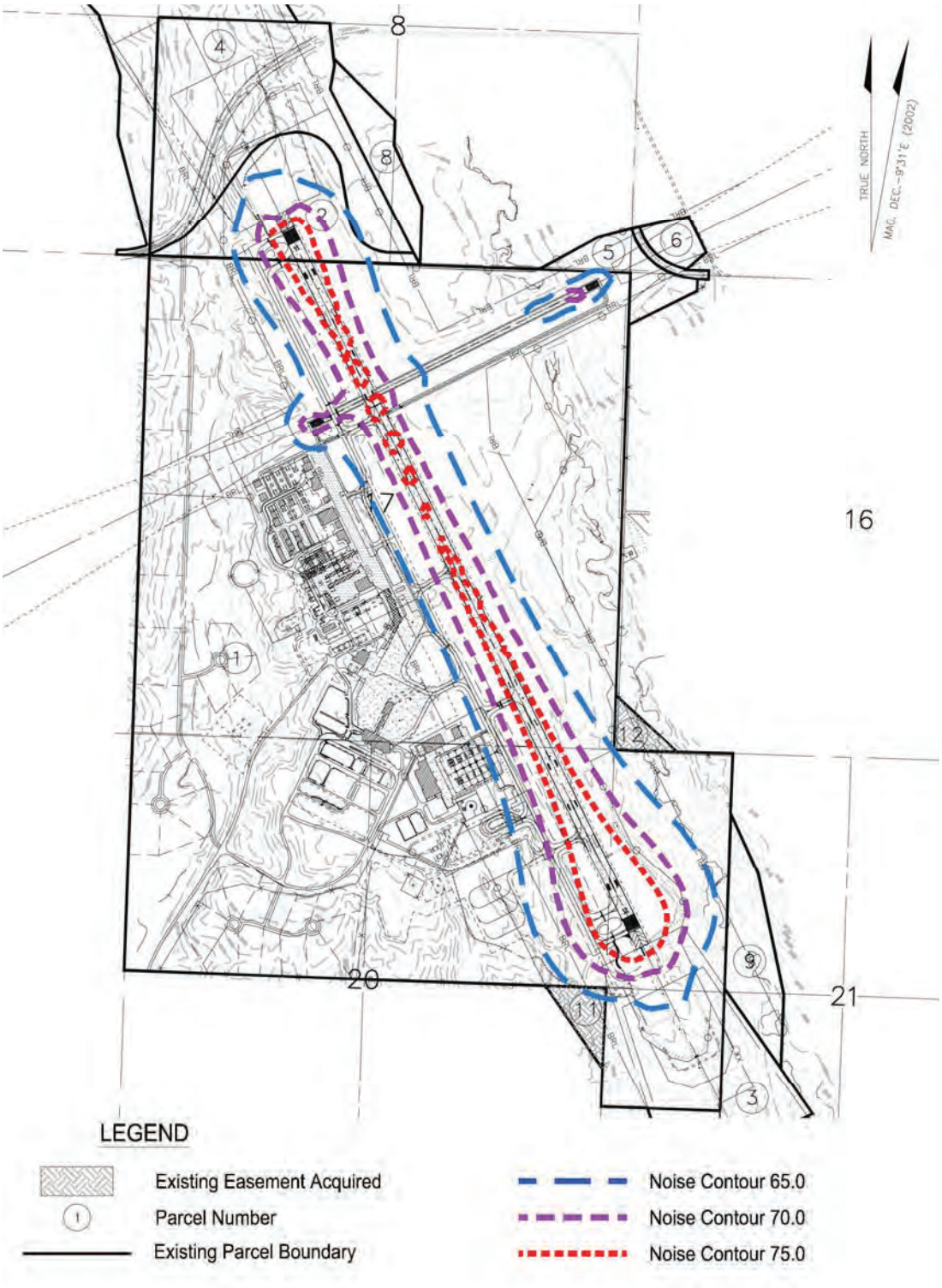
2008 RCRA Master Plan 2005 Noise Contours

2008 RCRA Master Plan 2025 Noise Contours



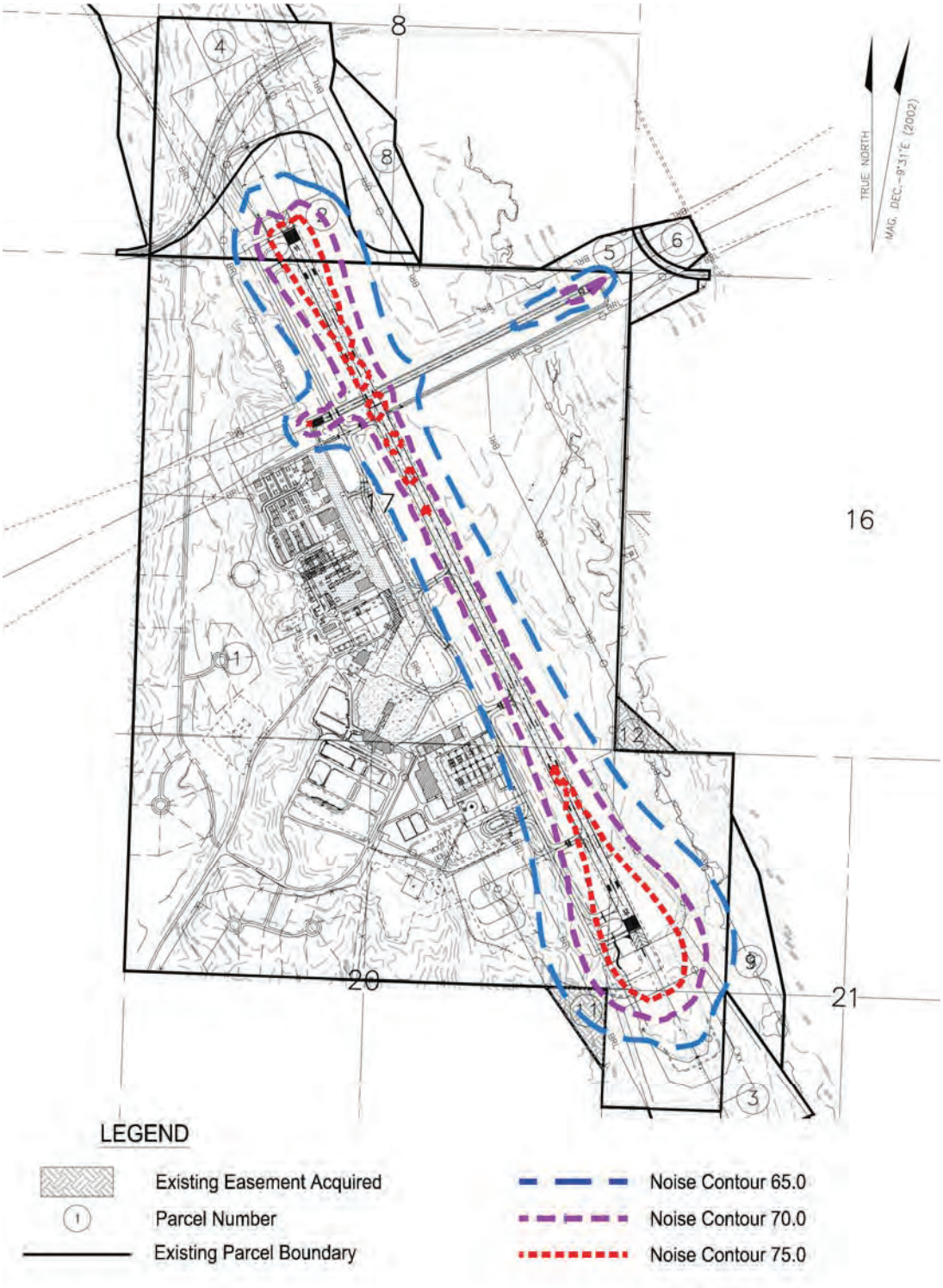
2005 Noise Contours

Exhibit 4-47
EXISTING NOISE CONTOURS



2025 Noise Contours

Exhibit 4-48
FUTURE NOISE CONTOURS



Appendix H: Safety Compatibility Zone Overlays

Existing Land Use

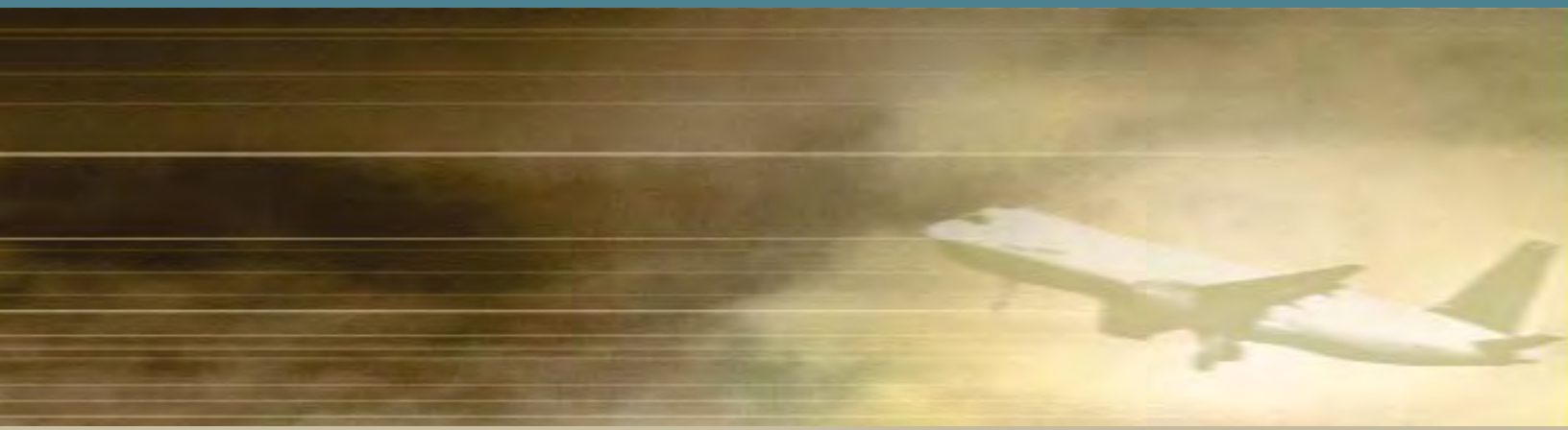
- Existing Land Use Map
- Safety Compatibility Zones Overlaid on Existing Zoning Map

Airport Neighborhood Future Land Use

- Airport Neighborhood Future Land Use Plan
- Airport Neighborhood Future Land Use Map
- Safety Compatibility Zones Overlaid on Airport Neighborhood Future Land Use Map

Pennington County Future Land Use

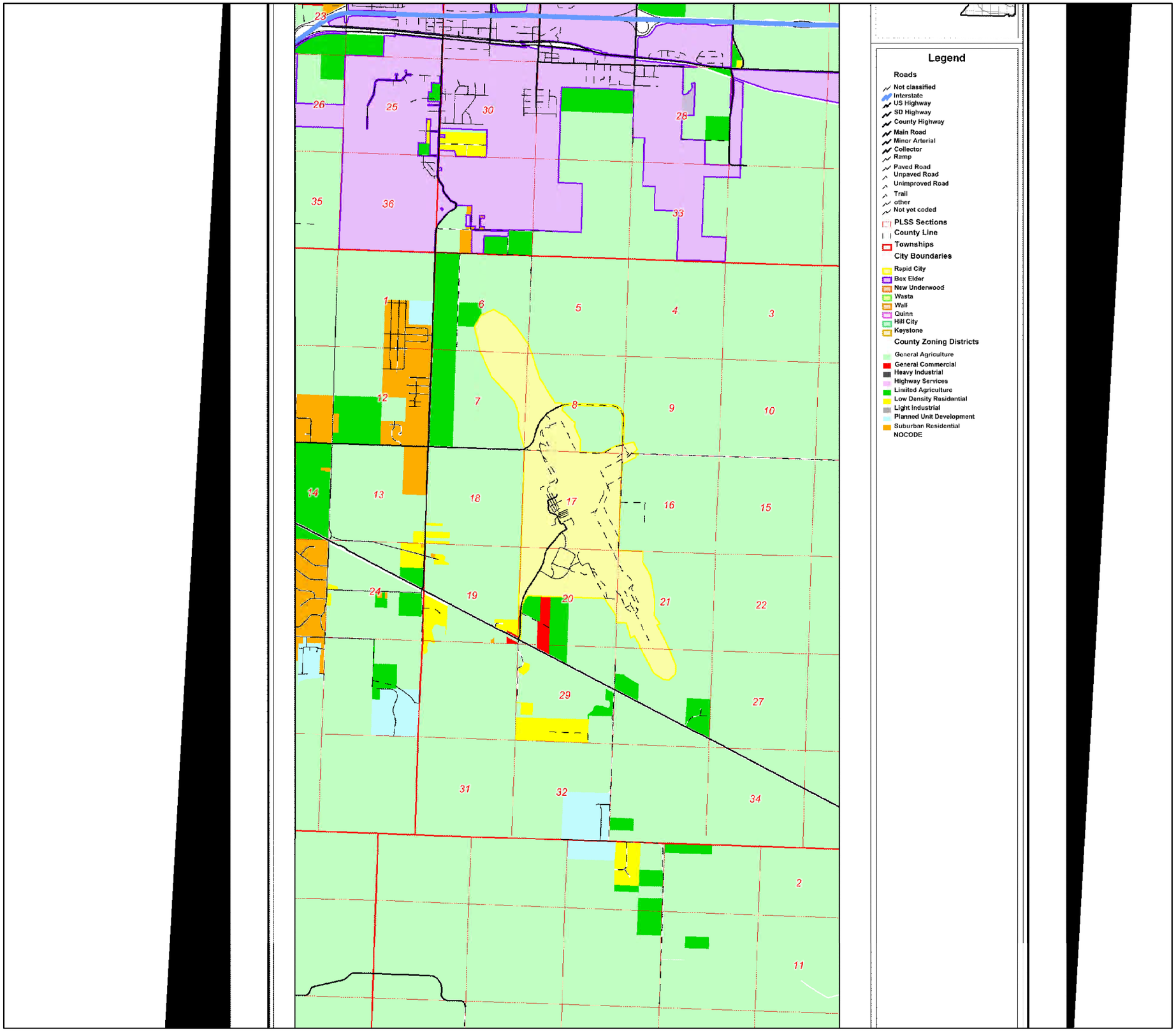
- Pennington County's Future Land Use Map
- Safety Compatibility Zones Overlaid on Pennington County's Future Land Use Map
- Pennington County Zoning Ordinance, Sections 205 – 213



Existing Land Use

Rapid City Regional Airport
Rapid City, South Dakota

Existing Land Use Map



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0 0.5 1 2 Miles

FOR PLANNING PURPOSES ONLY

PRELIMINARY

Kadrmas Lee & Jackson
Engineers Surveyors Planners

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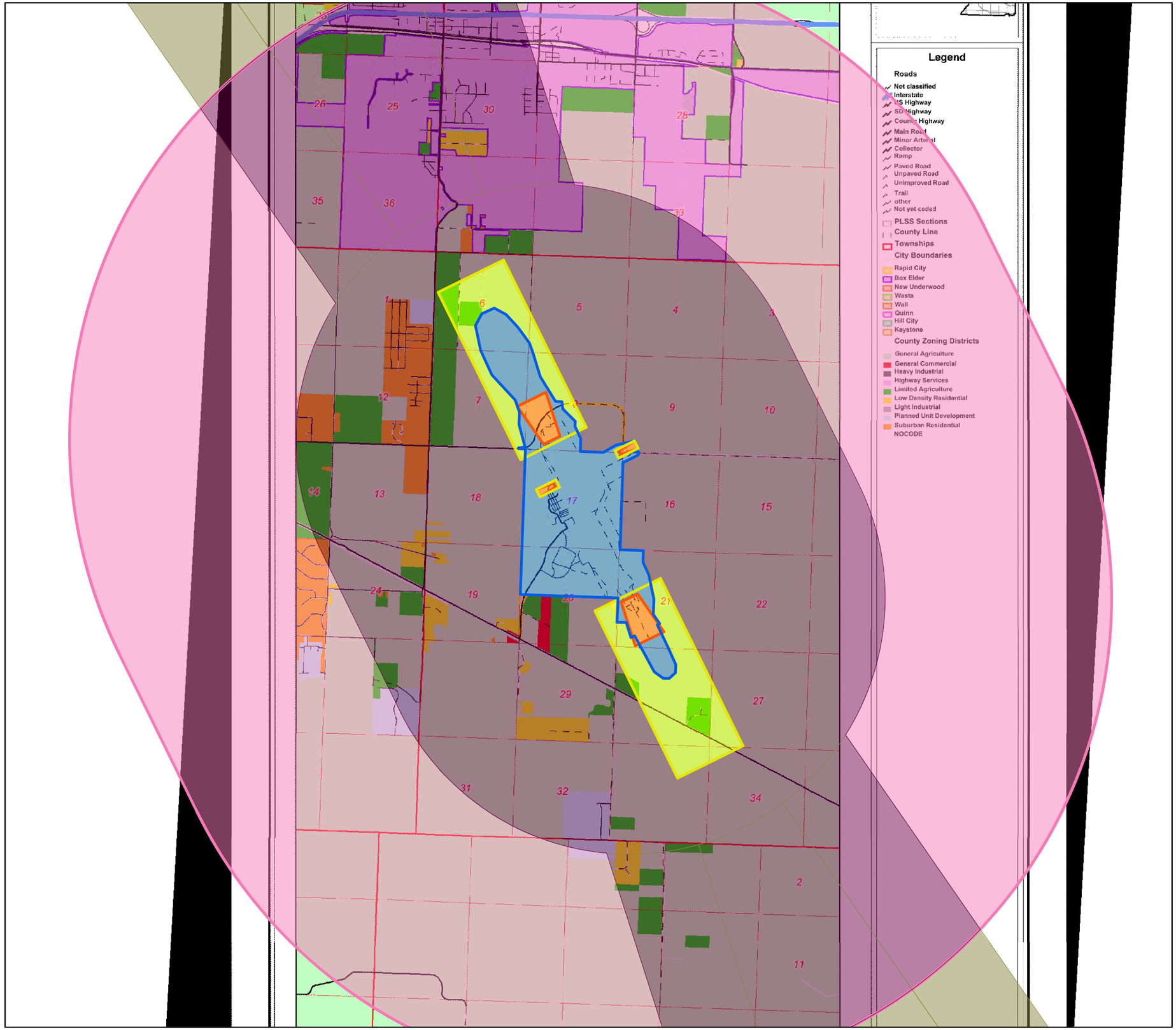
Rapid City Regional Airport
Rapid City, South Dakota

Safety Compatibility Zones Overlaid on Existing Zoning Map



Legend

Proposed Airport Land Use Zoning

- ZONE 0 = Airport Property
- ZONE 1 = Runway Protection Zone
- ZONE 2 = Inner Approach/Departure
- ZONE 3 = Circling Traffic Patterns
- ZONE 4 = Precision Flight Corridor
- ZONE 5 = Aviation Hazards

N

Miles

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FOR PLANNING PURPOSES ONLY

Kadrmas Lee & Jackson
Engineers Surveyors Planners

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Airport Neighborhood Future Land Use

Airport
Neighborhood Area

FUTURE LAND USE PLAN

in conjunction with the
Rapid City Area Metropolitan Planning Organization
and the
South Dakota Department of Transportation
and the
U.S. Department of Transportation
Federal Highway Administration

Airport Neighborhood Area

Future Land Use Plan

Executive Summary

The Future Land Use Plan is an indispensable tool for all sectors of the community. Local government can invest public infrastructure dollars more wisely if the location and magnitude of anticipated growth is identified. Private sector businesses can use the Plan to make more accurate growth projections and better position themselves to meet the needs of the future population. The Plan will provide developers and landowners with a clear idea of the location and type of development desired by the community thus saving time and money in assembling development plans. The Plan will enable individual citizens to be more aware of how the community and their specific neighborhoods will develop, assisting them in making more informed decisions about where to live and work.

The Airport Neighborhood Area Future Land Use Plan includes land within corporate city limits, the three-mile platting jurisdiction and the MPO planning jurisdiction. The Airport Neighborhood Area encompasses approximately 24,418 acres and is located in the eastern portion of the community. The following points summarize the intent of the Airport Neighborhood Area Future Land Use Plan.

- Residential growth patterns will increase, primarily as single family dwelling units

- Extension of infrastructure is identified to support the anticipated growth patterns

- Because South Dakota Highway 44 is an entryway corridor, General Commercial and Industrial uses have been identified along this corridor to accommodate and encourage business development.

- The Plan acknowledges the importance of the noise associated with both the Ellsworth Air Force Base and Rapid City Regional Airport flight paths.

- The Plan acknowledges the importance of protecting the Rapid City Regional Airport from encroachment by residential development.

TABLE OF CONTENTS

AIRPORT NEIGHBORHOOD AREA
FUTURE LAND USE PLAN

Introduction

The Airport Neighborhood Area encompasses approximately 24,418 acres and is located in the eastern portion of the community. The northern limit of the Neighborhood Area is the first half section into Township 2 North. The western boundary is the western side of Sections 2, 11 and 14, Township 1 North, Range 8 East and Section 35, Township 2 North Range 8 East. The eastern boundary is the range line between Range 9 East and 10 East, which is one mile east of Caputa. The southern limit is South Dakota Highway 44. The Future Land Use Neighborhood Area Map included within this text identifies the Airport Neighborhood Area in geographic relation to the other neighborhoods in the Future Land Use Neighborhood Area.

The Airport Neighborhood Area encompasses the Rapid City Regional Airport and the southern end of the City of Box Elder. The property within the City of Box Elder corporate limits was excluded from the development of this future land use plan.

The *Rapid City Area Future Land Use Plan Overview* provides the background information used in preparing the calculations for the Airport Neighborhood Area Land Use Plan as well as describes the process in developing the Future Land Use Plan. A copy of the Plan Overview is available in the Rapid City Growth Management Department.

The Future Land Use Committee developed this Plan through significant public input in the form of Public Open Houses and private meetings with property owners of 40 acres or more. The larger land owners have the potential to dramatically affect the manner in which the Neighborhood develops, whereas owners of smaller parcels do not have as much direct influence. The Plan also reflects incorporation of portions of the *Pennington County Comprehensive Plan*.

Neighborhood Profile

Physical Characteristics

The Airport Neighborhood Area includes a wide variety of topography ranging from approximately 3,400 feet above mean sea level in the northwest corner of the Neighborhood area to approximately 2,925 feet in the southeast corner of the Neighborhood area near Caputa.

The Airport Neighborhood Area is significantly different than all of the other Rapid City Neighborhoods in that the Rapid City Regional Airport significantly impacts the potential

development of the surrounding property. Although a majority of the nearly 1,750 acres within the Regional Airport boundary has a future land use designation of Public within this Plan, there are substantial amounts of industrial and office/service uses within this designation. The land uses within the Regional Airport boundary are shown and described within the *Airport Master Plan Update* adopted by the Rapid City Common Council in late 2004.

Residential Characteristics

Between 1990 and 1997, the number of dwelling units in the Airport Neighborhood Area increased by 17.1 percent. This 17.1 percent increase amounts to a 2.4 percent average annual increase in total dwelling units in the Airport Neighborhood Area, an increase of approximately 5.3 dwelling units per year.

Figure 1 below identifies the number of residential units in the US 16 Neighborhood Area. This information was taken from the 1990 U.S. Census and supplemented by approved building permits between 1990 and 1997.

Figure 1

Airport Neighborhood Area
1990 – 2004 Residential Growth

Dwelling Units	1990 U.S. Census	1990-1997 Increase	*1997 Total*
Single Family	213	37	*250*
Multi-Family	4	0	*4*
Total	217	37	*254*
Percent of Total in Future Land Use Neighborhood Area	*0.8%*	*1.3%*	*0.8%*

Source: Rapid City Growth Management Department

Group homes are included in a category other than the single family homes and the multi-family units because there are not separate kitchen facilities in the group home units. Group home units are identified as assisted living facilities, dormitories, and jails. At 1997 year end, there were no group home units in the Airport Neighborhood Area.

The information provided in Figure 1 is presented to show that significant growth in the Airport Neighborhood Area occurred after the current *Rapid City Area Future Land Use Plan Overview* planning period.

Non-Residential Characteristics

In 1992, the Airport Neighborhood Area included no retail land uses including motels, a campground, and recreational facilities. During the five year period between 1992 and 1997, the retail land use gross square foot floor area in the Airport Neighborhood Area increased by zero square feet.

The office/service land uses in the Airport Neighborhood Area included the Rapid City Regional Airport Terminal and a repair shop outside of the Regional Airport boundary and had 84,610 gross square foot floor area in 1992, as outlined in the Plan Overview. The office/service land uses in the Area remained constant through 1997 and amounted to 2.1 percent of all total office/service land uses within the Future Land Use Neighborhood Area.

Figure 2 provides a comparison of the non-residential land uses in 1992 and 1997, as well as the Airport Neighborhood Area's percentage of the total gross square foot floor area in comparison to the Future Land Use Neighborhood Area. Figure 2 also identifies the percentage increases for the four non-residential land use categories.

Figure 2

Airport Neighborhood Area
Non-Residential Land Use
1992 and 1997 Total Gross Square Foot Floor Area

	1992		1997		1992-1997
	Gross Sq. Ft. Floor Area	Percent of Total	Gross Sq. Ft. Floor Area	Percent of Total	Percentage Change
Retail Land Uses	0	0.00%	0	0.00%	0.00%
Office/Service Land Uses	84,610	2.28%	84,610	2.12%	0.00%
Industrial Land Uses	192,256	3.85%	208,726	3.63%	8.57%
Public Land Uses	151,503	8.70%	151,503	8.07%	0.00%

Source: Rapid City Growth Management Department

Existing Land Use Profile

To identify future land uses, it is first essential to determine the existing land uses within a neighborhood area. There are eight (8) residential and six (6) non-residential categories of uses identified in this Neighborhood. Single family residential, multiple family residential, group homes, and mobile homes are evaluated based on the number of units. Retail, office/service, industrial and public uses are evaluated based on the gross square foot floor area.

Figure 3a below identifies the existing uses according to various land use categories for ***platted property***. Figure 3b below identifies the existing uses according to various land use categories for ***unplatted property***. Each category, i.e., residential use, commercial use, industrial use, and public use is further subcategorized to provide the basis for anticipated density information. These designations correspond to the future land use designations identified on Figure 4, the Airport Neighborhood Area Future Land Use Map.

Figure 3a

Airport Neighborhood Area
Existing Land Use Compilation for PLATTED Property

Area Wide	Existing *OCCUPIED* Platted Land					
Proposed Land Use	Existing Occupied Platted Parcels	Gross Sq Ft Floor Area	SF Dwell Units	MF Dwell Units	Group Homes	Mobile Homes
Residential Uses						
Low Density Residential	150.46	8,280	148	0	0	119
Medium Density Residential	5.33	0	3	0	0	0
High Density Residential	34.28	0	2	0	0	38
Planned Residential Development 1.5 du/ac	0.00	0	0	0	0	0
Planned Residential Development 1 du/ac	5.68	0	18	0	0	0
Planned Residential Development 1 du/3 ac	29.65	0	9	0	0	3
Planned Residential Development 1 du/10 ac	201.55	280	3	0	0	18
Rural Reserve (1 du/40 ac Maximum)	104.90	0	7	0	0	0
Commercial Uses						
Business Park	0.00	0	0	0	0	0
Light Industrial	0.00	0	0	0	0	0
Neighborhood Commercial	0.00	0	0	0	0	0
Office Commercial	0.00	0	0	0	0	0
General Commercial						
with Planned Commercial Development	4.21	0	2	4	0	16
Other Uses						
Public	98.72	4,800	0	0	0	0
Public/Airport	3.47	84,610	0	0	0	0

Figure 3b

Airport Neighborhood Area
Existing Land Use Compilation for UNPLATTED Property

Area Wide	Existing Occupied Unplatted Land					
Proposed Land Use	Existing Occupied Unplatted Parcels	Gross SqFt Floor Area	SF Dwell Units	MF Dwell Units	Group Homes	Mobile Homes
Residential Uses						
Low Density Residential	1,124.76	0	24	0	0	16
Medium Density Residential	0.00	0	0	0	0	0
High Density Residential	0.00	0	0	0	0	0
Planned Residential Development 1.5 du/ac	40.54	0	1	0	0	0
Planned Residential Development 1 du/ac	159.94	0	2	0	0	1
Planned Residential Development 1 du/3 ac	285.49	0	1	0	0	1
Planned Residential Development 1 du/10 ac	618.3	0	7	0	0	8
Rural Reserve (1 du/40 ac Maximum)	2,027.00	0	20	0	0	17
Commercial Uses						
Business Park	0.00	0	0	0	0	0
Light Industrial	157.15	0	1	0	0	0
Neighborhood Commercial	0.00	0	0	0	0	0
Office Commercial	0.00	0	0	0	0	0
General Commercial						
with Planned Commercial Development	49.87	0	2	0	0	2
Other Uses						
Public	0	0	0	0	0	0
Public/Airport	779.51	341,510	0	0	0	0

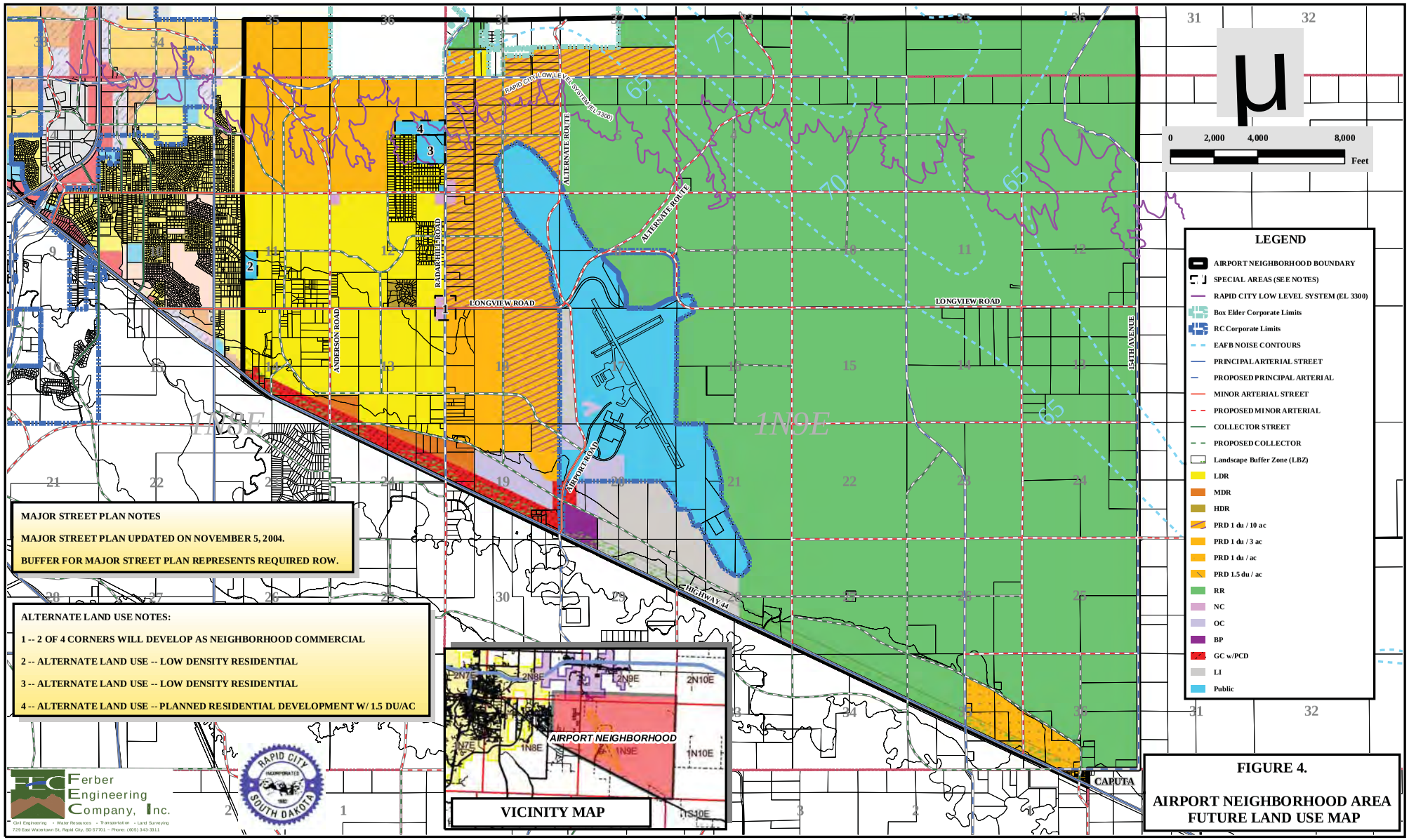

FIGURE 4.

AIRPORT NEIGHBORHOOD AREA FUTURE LAND USE MAP

Growth Profile

The Future Land Use Study Committee has identified thirteen categories within this Plan for planning purposes, which include low density residential, medium density residential, high density residential, planned residential developments, neighborhood commercial, general commercial, office commercial, business park, public, and rural reserve. These categories provide the basis of the residential, commercial, and public uses described above. *It is essential to note that the commercial and industrial categories identified in Figures 3a and 3b vary from the types of land use.* For example, the General Commercial category allows all four land uses (retail, office/service, industrial, and public).

Low density residential designations include only single family homes, typically with only one family per unit. Land areas designated for current and future residential use should be located close to City services such as fire protection, schools, and parks. Low density residential designations should have some type of buffer from commercial and/or industrial land use activities. This land designation should also have access to an adequate local road system.

Medium density residential designations include all town homes, condominiums, and apartment complexes. Land areas designated for current and future multiple residential uses should also be located close to City services and near collector or arterial streets to address neighborhood traffic safety concerns and provide a buffer between non-residential uses and single family residential uses.

Planned developments provide flexibility in land development to encourage imaginative urban design. Planned developments allow a mix of land uses that are compatible and well integrated. Planned developments provide the opportunity for an adequate review procedure to promote the proper development of those areas that may be environmentally sensitive because of steep slopes and/or unusual topography. A planned development also promotes compatibility with adjacent land use and available public facilities in terms of such factors as intensity of use, density and traffic circulation.

There are four planned residential developments within the Airport Neighborhood Area, each with a different density specification. Each planned development was identified to specifically address issues relative to the property. These four planned residential developments are identified in Figures 3a and 3b as:

1) Planned Residential Development 1 incorporates an anticipated density of 1.5 dwelling units per acre;
2) Planned Residential Development 2 includes an anticipated density of 1 dwelling units per acre;
3) Planned Residential Development 3 includes an anticipated density of 1 dwelling units per 3 acres;
4) Planned Residential Development 4 incorporates an anticipated density of 1 dwelling units per 10 acres;

Each area's density designation addresses the physical constraints of the property including steep slopes, unusual topography, access issues, water pressure concerns, land use mix and adjacent land use compatibility, and to encourage unique development potential.

There are four commercial designations within the Airport Neighborhood Area. Theses designations also provide flexibility in addressing slope stability, site entrances, traffic safety concerns, access issues, and commercial development diversity.

Infrastructure. The *Rapid City Area Major Street Plan* identifies several north/south and east/west arterial and collector streets. These roadways will enhance the existing road network and provide road connections, which will adequately move traffic to the major roadways. It is anticipated that utility infrastructure, including water and sanitary sewer lines, will be extended along these roadways to provide services for existing and proposed subdivisions.

School Sites. There are no existing public schools that lie within the Airport Neighborhood Area.

Parks. The Airport Neighborhood Area includes a variety of potential park sites which will provide a range of recreational opportunities. The principal criteria for future park sites include size and proximity of population to be served, access, topography, and presence of environmental factors such as drainage ways. The parks have been classified according to National Recreation and Park Association standards based on function, size and service area.

Neighborhood parks generally range in size from 5-20 acres and typically have play equipment and picnic areas, and may have playfields, depending upon need and the suitability of the land. They are often combined with other public uses such as schools. Two public areas are proposed for the Airport Neighborhood Area, one contains a road crossing of a major drainage, which could serve as a stormwater detention facility integrated into a centrally located park area. Another area is located along the west boundary of the Airport Neighborhood Area and will serve as a nice park area. Establishing park space in these areas is contingent upon mutual agreement between the landowner and the government authority purchasing the land.

Public Facilities. Currently, there is only a small portion of the Airport Neighborhood Area that is served by public utilities. The Rapid Valley Fire Department fire station is located approximately ¼-mile west of the Airport Neighborhood Area boundary along Highway 44. The Rapid City Regional Airport is located in the eastern half of the Airport Neighborhood Area just north of US Highway 44.

Truck Traffic. Truck traffic is expected to remain on US Highway 44. The Committee anticipates a significant amount of additional truck traffic along US Highway 44 when the Heartland Expressway is completed in 2005. The Heartland Expressway connects

Interstate 90 to SD Highway 79 south to Denver. With anticipated future increases in airline cargo, the Rapid City Regional Airport is expected to contribute to increased truck traffic along US Highway 44. At some point in the future, a direct connection to Interstate 90 Exit 67 is anticipated. No preferred route has been defined, but two alternate Interstate 90 access routes are shown on the Airport Neighborhood Area Future Land Use Map. Access to truck routes is a significant factor in identifying parcels with potential industrial uses.

Safety. Pedestrian, bicyclist, and children's safety are a key concern of the Future Land Use Study Committee. The Committee's desire with the development of this Plan is to locate high traffic generating businesses out of the residential areas and along collector streets and arterial streets. Keeping the truck traffic off local roads also addresses many neighborhood safety concerns.

Capacity. The Future Land Use Study Committee is also cognizant of neighborhood concerns regarding the capacity of the road system and the perception that many of the existing roads already carry more traffic than the roads can handle. The Committee has addressed these concerns by identifying additional collector and arterial streets to handle the traffic flows and proposing those land uses that generate more traffic along those collector and arterial routes as described earlier.

Density. To arrive at the anticipated development density of the Airport Neighborhood Area, the Committee compared the existing density of the various uses to the maximum density allowed by the Rapid City Municipal Zoning Code. The Committee also considered gross density in surrounding and adjacent neighborhood areas for additional comparison. Figure 5 below provides the options used in determining the anticipated development densities. The anticipated density value for dwelling units or square footage per acre is used as a multiplier to determine the total number of dwelling units or total square footage for the undeveloped property within the Airport Neighborhood Area.

The anticipated densities under each type of land use are influenced by the topography, the cost effectiveness in providing municipal water and sewer, and compatibility with surrounding development. A variety of residential land use classifications are used to accommodate housing demand, provide housing choices, and protect existing residential neighborhoods. Additionally, several non-residential uses were also identified to provide development flexibility in addressing the area's commercial and industrial growth needs.

Figure 5

Airport Neighborhood Area
Land Use Density Comparisons

	Option A Existing Density	Option B Maximum Density	Option C Anticipated Density
Residential Uses			
Low Density Residential	0.13 du/ac	6.7 du/ac	2.4 du/ac
Medium Density Residential	0.03 du/ac	25 du/ac	15 du/ac
High Density Residential	0.99 du/ac	68 du/ac	30 du/ac
Planned Residential Development 1.5 du/ac	0.00 du/ac	1.5 du/ac	1.5 du/ac
Planned Residential Development 1 du/ac	0.07 du/ac	1 du/ac	1 du/ac
Planned Residential Development 1du/3 ac	0.09 du/ac	1 du/3 ac	1 du/3 ac
Planned Residential Development 1 du/10 ac	0.20 du/ac	1 du/10 ac	1 du/10 ac
Rural Reserve	0.07 du/ac	1 du/40 ac	1 du/40 ac
Commercial Uses			
Business Park	0.00 sf/ac	7,000 sf/ac	3,200 sf/ac
Neighborhood Commercial	0.00 sf/ac	5,445 sf/ac	2,600 sf/ac
Office Commercial	0.00 sf/ac	6,353 sf/ac	3,000 sf/ac
General Commercial with Planned Commercial Development	0.00 sf/ac	13,613 sf/ac	9,800 sf/ac
Other Uses			
Public	48.62 sf/ac	21,780 sf/ac	9,000 sf/ac
Public/Airport	54.08 sf/ac	21,780 sf/ac	400 sf/ac

Source: Rapid City Growth Management Department

The non-residential land use densities are based upon existing development. However, because of the large quantities of undeveloped land in the Airport Neighborhood Area, for many land uses, there is no existing land development of the same type. In these cases representative density numbers were sampled from other areas in Rapid City.

Year 2025 Residential Growth Projections

The year 2025 projections indicate how much of the total build out will be achieved in twenty years. The projections provide the basis for planning many public services, including sewer and water, storm drainage, and road networks. The Future Land Use Study Committee determined the Future Land Use Study Area Year 2025 population to be 103,000 based on numerous methodologies. Both the Rapid City Planning Commission and Rapid City Council have adopted this population projection as well. This population projection was then allocated over all of the neighborhood areas based on the assumption that residential growth will continue in a pattern similar to the 1990-1997 residential growth. The individual neighborhood area growth projections were determined by dividing the 103,000 population estimate by 2.55 which is the average number of persons per household within the Neighborhood Area. This calculation provides the total number of dwelling units in the Year 2025, or 40,392 total dwelling

units in the Future Land Use Neighborhood Area. The total number of dwelling units was then allocated to the type of dwelling unit according to the historical patterns within each neighborhood area, i.e., single family units or multi-family units.

During the period from 1990-1997, 1.88 percent of residential building permits for the entire Future Land Use Neighborhood Area occurred in the Airport Neighborhood Area. As shown in Figure 1 above, the Airport Neighborhood Area had 254 dwelling units in 1997, with 98.4 percent single family units and 1.6 percent multi-family units.

In the Year 2025, the Committee anticipates an increase of 623 new dwelling units in the Airport Neighborhood Area, 547 which will be new single family units and 76 will be multi-family dwelling units. The total dwelling units anticipated in the Airport Neighborhood Area is expected to reach 869 by the Year 2025. Figure 6 identifies the breakdown of dwelling unit increases for the years 1998 to 2025 and a total dwelling unit projection by dwelling unit type for the year 2025.

Figure 6

Future Land Use Neighborhood Area
Year 2025 Dwelling Unit Projections

Dwelling Unit Type	1998-2025 Increase	Total Year 2025*
Single Family	547	789
Multi-Family	76	80
Total	**623**	**869**
Percent of Total in Future		
Future Land Use Neighborhood Area	6.47%	2.2%

**2025 dwelling unit values obtained from Rapid City Area Future Land Use Plan Overview.*

The Committee anticipates new single family residential development extending northerly from generally 500 feet north of US Highway 44 to the northern boundary of the Airport Neighborhood Area. Four (4) planned residential developments of varying degrees of density have been anticipated within the Neighborhood:

1) One area of Planned Residential Development 1 dwelling unit per acre (PRD 1 du/ac) is anticipated in and around the community of Caputa,
2) An area of Planned Residential Development 1.5 dwelling units per acre (PRD 1.5 du/ac) is anticipated north of Twilight Drive and west of Radar Hill Road,
3) One area of Planned Residential Development 1 dwelling unit per 3 acres (PRD 1 du/ac) is anticipated in the first half mile east of Radar Hill Road and south of Longview Road, and
4) Two areas of Planned Residential Development of 1 dwelling unit per 10 acres (PRD 1 du/10 ac) are anticipated in the Airport Neighborhood to incorporate existing land uses and to limit encroachment into the Regional Airport flight path:

a. east of Radar Hill Road and north of Longview Road north of Runway 14/32; and
b. in the east half of Section 18, T1N, R9E and the north half of Section 19, T1N, R9E, which is west of Runway 5/23 to incorporate existing land uses and to limit encroachment into the Regional Airport flight path.

In addition, Low Density Residential is anticipated, in general, north of Highway 44 east of Radar Hill Road and south of Twilight Drive. This area includes the Valley View Estates and Valley Heights Estates. This type of development is anticipated in order to match the currently recognized land use and development density. This designation will also encourage residential infill in the areas that have yet to be developed to their potential. The Committee anticipates that the Mesa View Estates area will redevelop into High Density Residential at some point in the future.

Since development of areas east of Airport Road is limited by the availability of City utilities and transportation infrastructure, the Committee anticipates that a Rural Reserve designation is best utilized for the foreseeable future. This designation allows a maximum development density of one dwelling unit per 40 acres, which is equivalent to the Pennington County General Agriculture designation. By using the Rural Reserve designation, development will remain limited, but during future updates of this Plan, it is possible that this Rural Reserve designation will be modified to reflect a greater allowable density. However, it is unlikely greater densities will be allowed until public sanitary and water facilities can economically be extended to the Regional Airport and beyond.

Some multi-family developments are identified near non-residential areas to provide a buffer between the non-residential developments adjacent to collector and arterial streets and the single family residential developments.

Year 2025 Non-Residential Growth Projections

The Airport Neighborhood Area non-residential gross square foot floor area is anticipated to increase within the next twenty-eight years. Figure 7 below identifies the projected gross square foot floor area by the four land use categories.

Figure 7

Airport Neighborhood Area
Year 2025 Non-Residential Projected Increases in
Gross Square Foot Floor Area

Land Use Category	Gross Square Foot Floor Area	Percent of Total Increase
Retail Use	48,586	1.0%
Office/Service Use	19,270	1.0%
Industrial	89,331	2.1%
Public	14,465	2.0%

**All values presented were taken from the Rapid City Area Future Land Use Plan Overview.*

The rate of growth for commercial and industrial land use is based upon the *Plan Overview* square foot percentage as compared to the total gross square foot floor area for the entire Future Land Use Neighborhood Area. Growth projections for neighborhood area commercial and industrial uses are then extrapolated based upon twenty-eight year projections for the entire Future Land Use Study Area. Because there is basically no non-residential development within the Airport Neighborhood outside of the Regional Airport boundary, it is difficult to determine any more realistic 2025 projection than that provided in the *Plan Overview*.

Figure 8 identifies the remaining Airport Neighborhood Area Land Use Compilation totals. This land use compilation provides a summary of all anticipated land uses as identified on the Airport Neighborhood Area Future Land Use Map.

Figure 8

Airport Neighborhood Area
Vacant and Redeveloped Land Use Compilation Totals

Area Wide	Vacant Platted Land			Redeveloped Platted Land			Unplatted Vacant Land		
	Vacant Platted Parcels (ac)	Antic. DU or Gross SF	Projected DU or Gross SF	Redev. Parcel Area (ac)	Antic. DU or Gross SF	Projected DU or Gross SF	Vacant Unplatted Parcels (ac)	Antic. DU or Gross SF	Projected DU or Gross SF
Residential Uses									
HDR	6.15	30	16	0	30	0	0	30	0
LDR	292.18	2.4	445	145.75	2.4	331	1,544.51	2.4	3,690
MDR	35.77	15	448	20.17	15	300	48.7	15	728
PRD 1.5 du/ac	1.71	1.5	0	0	1.5	0	1,174.15	1.5	1,757
PRD 1 du/ac	88.65	1	55	2.48	1	2	165.05	1	164
PRD 1 du/3 ac	47.90	0.33	11	93.1	0.33	31	285.49	0.33	93
PRD 1du/10 ac	175.58	0.1	9	0	0.1	0	930.73	0.1	83
RR	792.76	0.025	13	0	0.025	0	15,097.55	0.025	340
Commercial Uses									
BP	64.23	3,200	173,728	0	3,200	0	0	3,200	0
GC w/ PCD	142.29	9,800	916,202	37.97	9,800	372,106	136.99	9,800	1,342,502
NC	14.39	2,600	28,106	0	2,600	0	21.60	2,600	56,160
OC	13.56	3,000	36,810	128.05	3,000	384,150	104.74	3,000	341,220
Industrial Uses									
LI	20.87	2,500	200	30.94	2,500	77,350	554.54	2,500	1,386,350
Other Uses									
Public	4.66	9,000	16,380	0	9,000	0	91.36	9,000	822,240
Public/Airport	730.92	400	284,188	0	400	0	830.14	400	332,056

Residential Build Out

Build out is when all developable land parcels have reached anticipated density. The Airport Neighborhood Area build out scenario as proposed under this Plan is based on an analysis of existing patterns of development, physical constraints, access to municipal water and sewer, and existing plans for the area.

Figure 9 below identifies the anticipated total dwelling units at build out categorized by the various proposed residential land use categories within the Airport Neighborhood Area.

Between 1990 and 1997, the Airport Neighborhood Area has grown by approximately 37 single family dwelling units and 0 multi-family dwelling units per year. If history repeats itself, the Airport Neighborhood Area will have the anticipated maximum single family dwelling units of 7,024 by the Year 2288.

Figure 9

Airport Neighborhood Area
Build Out Projected Dwelling Units at Anticipated Densities

Proposed Land Use **Residential Uses**	Gross Neighborhood Acres	Anticipated Density per Acres	Total Dwelling Unit
Low Density Residential	2,132.90	2.4	4,466 DU
Planned Residential Development 1	456.14	3	135 DU
Planned Residential Development 2	1,175.86	1.5	1,757 DU
Planned Residential Development 3	261.86	1	221 DU
Planned Residential Development 4	1,307.86	0.1	92 DU
Rural Reserve	15,995.22	0.025	353 DU
Total Single Family Units			**7,024 DU**
High Density Residential	40.43	30	16 DU
Medium Density Residential	109.97	15	1,476 DU
Total Residential Dwelling Units			**8,516 DU**

Source: Rapid City Growth Management Department

However, the Future Land Use Study Area must be considered in its entirety. The anticipated 28 year projections (based on population growth patterns) identify the construction of an average of 47 single family dwelling units per year and 31 multi-family dwelling units per year within the Airport Neighborhood Area. Using these estimates, the land area specifically identified for single family residential land use areas in the Airport Neighborhood Area will be built out by the Year 2153 with an anticipated 7,024 single family dwelling units; the multi-family residential land use areas will be built out by the Year 2052 with an anticipated 1,492 multi-family dwelling units.

Non-Residential Build Out

The Airport Neighborhood Area gross square foot floor area build out expectations at anticipated densities are identified in Figure 10. The size of the parcels significantly impacts the total amount of acreage available for development.

Figure 10

Airport Neighborhood Area
Non-Residential Gross Square Foot Floor Area
Build Out Projections at Anticipated Densities

	Gross Neighborhood Area	Anticipated Density per Acre	Gross Sq. Ft. Floor Area
Commercial Uses			
Neighborhood Commercial	35.99	2,600	84,266
Office Commercial	246.35	3,000	735,180
General Commercial with Planned Commercial Development	321.46	9,800	2,630,810
Total Commercial Uses			3,450,256
Industrial Uses			
Light Industrial	606.35	2,500	1,463,700
Total Industrial Uses			1,463,700
Other Uses			
Public	98.72	9,000	838,620
Public/Airport	1,564.53	400	616,244
Total Public Uses			1,454,864

Summary

The Airport Neighborhood Area Future Land Use Plan anticipates that the residential growth patterns will continue, primarily as single family units. Additionally, the Plan identifies extension of the infrastructure to support the anticipated growth patterns. There is a need for additional parks and recreational opportunities in the Neighborhood Area and the Future Land Use Plan has identified areas where those sites would be appropriate.

Rapid City Area Future Land Use Plan

Neighborhood Study Areas

- Airport
- Black Hawk
- Deadwood Avenue
- Downtown/Skyline Drive
- Elk Vale Road
- Ellsworth
- Nemo Road
- North Rapid
- Northeast
- Piedmont Valley
- Sheridan Lake Road
- South Robbinsdale
- Southeast Connector
- Spring Creek
- US Highway 16
- West Rapid
- City of Box Elder*
- City of Rapid City
- Ellsworth AFB*
- City of Piedmont*
- City of Summerset*

*Future Land Use Plans not yet available

Rapid City Area Metropolitan Planning Organization

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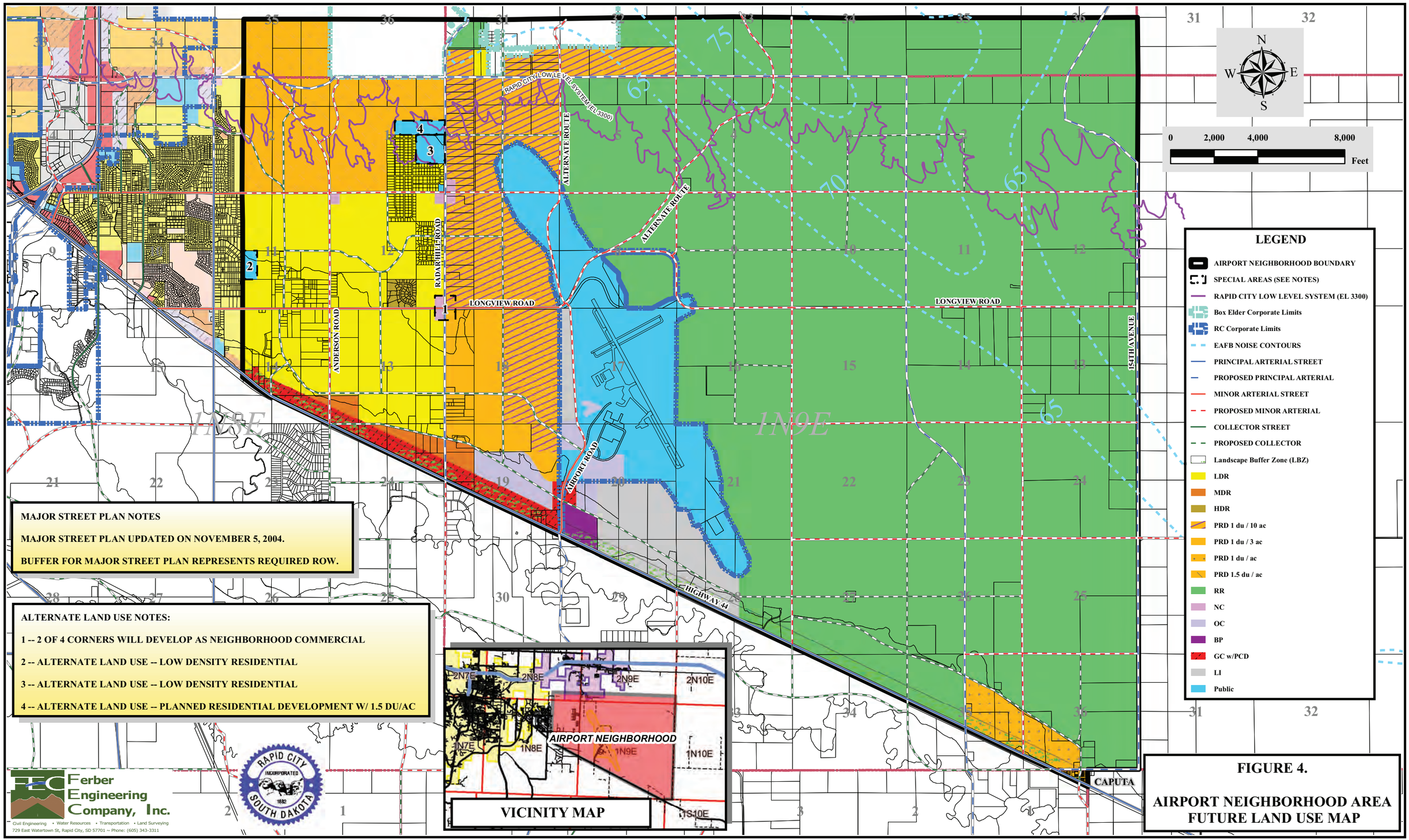
Miles



MAJOR STREET PLAN NOTES

MAJOR STREET PLAN UPDATED ON NOVEMBER 5, 2004.

BUFFER FOR MAJOR STREET PLAN REPRESENTS REQUIRED ROW.

ALTERNATE LAND USE NOTES:

1 -- 2 OF 4 CORNERS WILL DEVELOP AS NEIGHBORHOOD COMMERCIAL

2 -- ALTERNATE LAND USE -- LOW DENSITY RESIDENTIAL

3 -- ALTERNATE LAND USE -- LOW DENSITY RESIDENTIAL

4 -- ALTERNATE LAND USE -- PLANNED RESIDENTIAL DEVELOPMENT W/ 1.5 DU/AC

VICINITY MAP

Ferber Engineering Company, Inc.
Civil Engineering • Water Resources • Transportation • Land Surveying
729 East Watertown St, Rapid City, SD 57701 ~ Phone: (605) 343-3311

FIGURE 4.

AIRPORT NEIGHBORHOOD AREA FUTURE LAND USE MAP

Rapid City Regional Airport
Rapid City, South Dakota

Safety Compatibility Zones Overlaid on Airport Neighborhood Future Land Use Map

Legend

Proposed Airport Land Use Zoning

- ZONE 0 = Airport Property
- ZONE 1 = Runway Protection Zone
- ZONE 2 = Inner Approach/Departure
- ZONE 3 = Circling Traffic Patterns
- ZONE 4 = Precision Flight Corridor
- ZONE 5 = Aviation Hazards

N

0 0.5 1 2 Miles

FOR PLANNING PURPOSES ONLY

Kadrmas Lee & Jackson
Engineers Surveyors Planners

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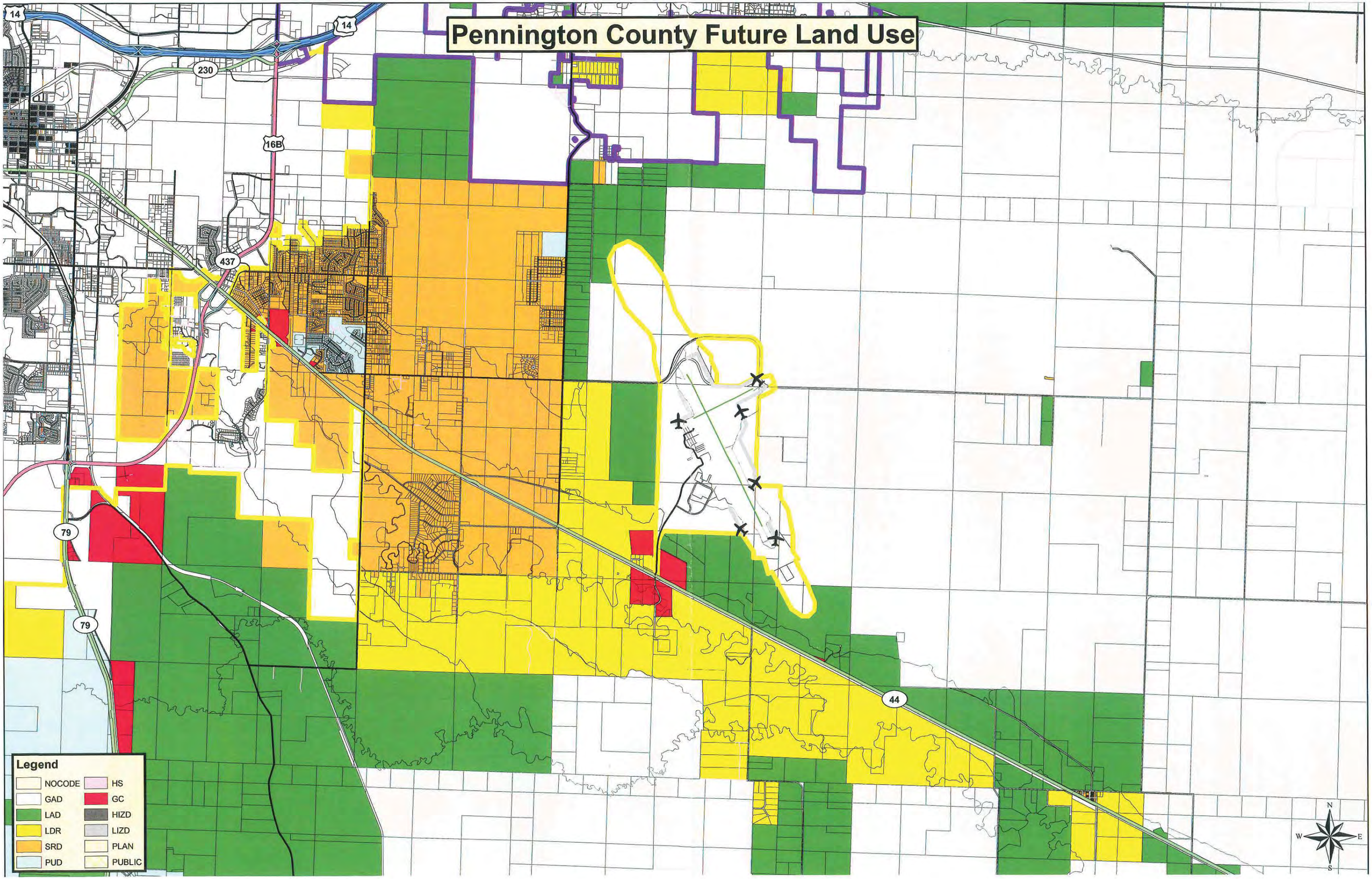
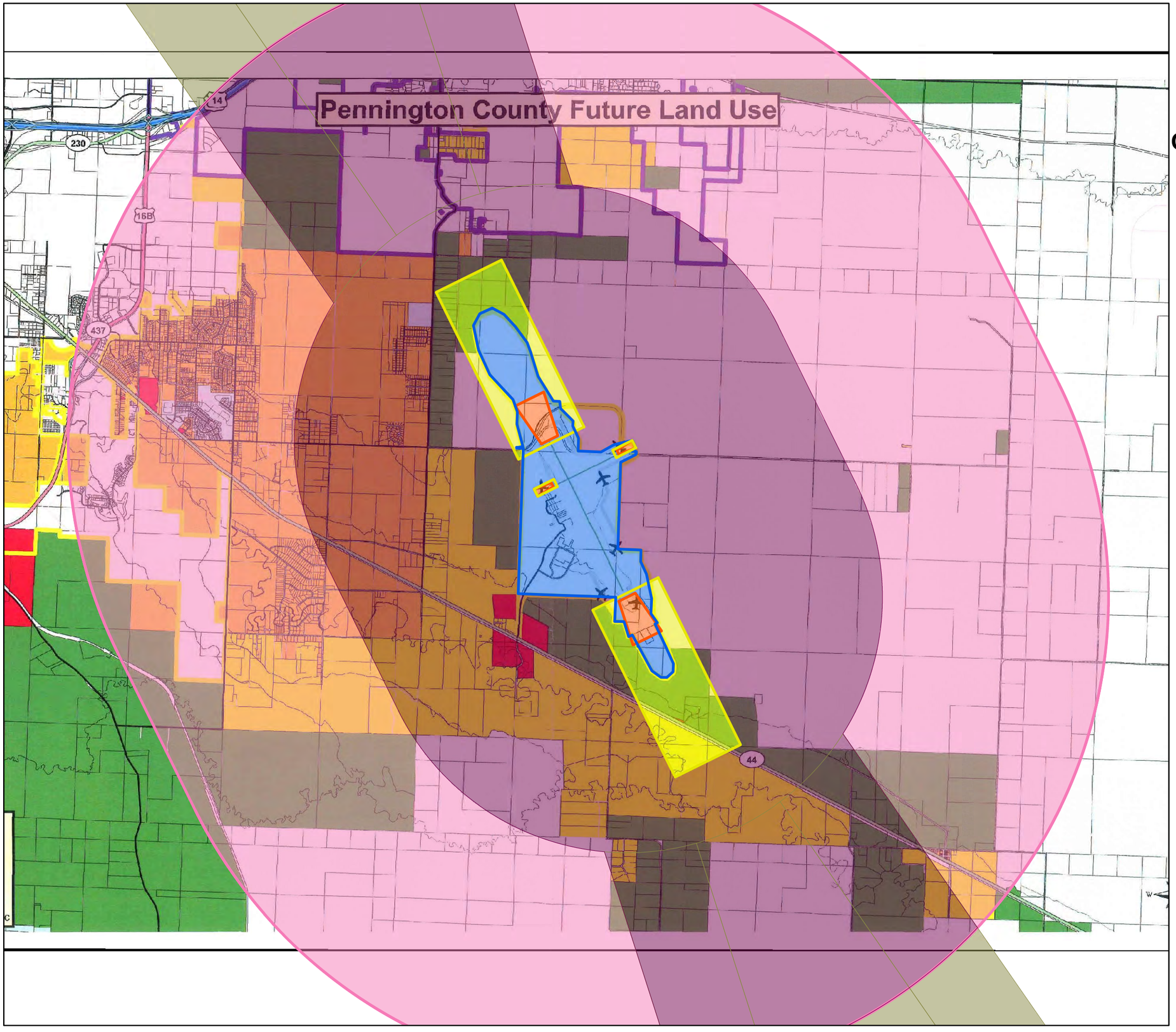
Pennington County Future Land Use

Pennington County Future Land Use



Rapid City Regional Airport
Rapid City, South Dakota

Safety Compatibility Zones Overlaid on Pennington County's Future Land Use Map



Legend

Proposed Airport Land Use Zoning

- ZONE 0 = Airport Property
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N

0 0.5 1 2 Miles

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SECTION 205 - A-1 GENERAL AGRICULTURE DISTRICT

A. Intent:

The intent of the A-1 General Agriculture District is to provide a district that will support and encourage agriculture.

B. Permitted Uses:

All agricultural uses shall be allowed in the A-1 General Agriculture District, including, but not limited to, the following:

1. General farming and harvesting
2. General ranching and grazing
3. Animal and poultry husbandry
4. Sod and tree farming
5. Apiculture
6. Forest preserves
7. Roadside stands exclusive for sale of products raised on the premises
8. Manufactured homes, modular homes, and site or stick-built homes in compliance with Section 204-I
9. Water treatment, purification, storage and pumping facilities
10. Transportation and utility easements and rights-of-way
11. Accessory uses and structures (as regulated in Section 204-General District Provisions)
12. Nurseries and greenhouses
13. Temporary quarries
14. Sawmills
15. Business and Community signs
16. Drilling for oil or natural gas or the extraction of sand, gravel, or minerals, provided that a Construction Permit is obtained in accordance with these Zoning Ordinances.
17. Mining provided a Construction Permit is obtained in accordance with these Zoning Ordinances.
18. Family Daycare Home
19. Isolated cabins and recreation residences, including groups of residences on National Forest Land.
20. Home Offices
21. Telecommunication Facilities in accordance with Section 316.

C. Conditional Uses:

The following uses are illustrative of those which may be permitted upon review by the Board upon recommendation of the Commission according to the provisions contained in Section 510 - Conditional Use Permits:

1. Commercial feed lots
2. Kennels and catteries
3. Livestock auction yards
4. Fur farms
5. Fish hatcheries
6. Home occupations (as regulated in Section 204 - General District Provisions)

7. Organized group camps
8. Churches and other religious structures and cemeteries
9. Airports, schools, playgrounds, parks, fairgrounds, and community centers
10. Public service structures, such as fire stations, police stations, and post offices
11. Utility substations and electric generation facilities
12. Gun and archery ranges, riding stables and academies
13. Temporary uses as regulated by Section 204 - General District Provisions
14. Advertising signs
15. Lodge hall, etc.
16. Recreational resort area, provided all requirements of a Planned Unit Development are met (See Section 213)
17. Historical monuments and structures
18. Solid waste disposal sites
19. Child Care Center
20. Seasonal Cabin/Dwelling
21. Model Home and Sales Office
22. Manufactured homes, modular homes, and site or stick-built homes not in compliance with Section 204
23. Contractor's equipment storage yard
24. Multiple-family dwellings and housing for hired help.
25. Farmers Markets, Deli's and Bakery's
26. Recreational vehicle as temporary living quarters. (This ordinance shall not allow multiple recreational vehicles as temporary living quarters on the same parcel and shall not allow additional living quarters when living quarters already exist on the property). The site must have an approved wastewater disposal system including bathroom/shower facilities and an improved site area for the recreational vehicle. If the recreational vehicle is not equipped with a bathroom/shower facility, said facility must be provided on the premises and connected to the wastewater disposal system. The recreational vehicle shall not be used as temporary living quarters on premises for more than 180 days per calendar year.

D. Minimum Lot Requirements:

There are no lot dimensions required. The minimum area is forty (40) acres or a government lot when surrounded by public land. However, when the lot is to be occupied as a residence of someone directly engaged in the operation of a farm or ranch, the Commission may instruct the Planning Director to issue one additional permit.

E. Minimum Setback Requirements:

All structures shall have front, side, and rear setbacks of twenty-five (25) feet from the property lines.

F. Structure Placement and Lot Coverage:

No accessory structure exceeding 5,000 square feet in area and/or thirty-five (35) feet in height shall be located closer than five hundred (500) feet from any residential zoning district without a Variance.

SECTION 206 - A-2 LIMITED AGRICULTURE DISTRICT

A. Intent:

To establish areas for limited agricultural and low-density residential uses.

B. Permitted Uses:

Property and buildings may include, but are not limited to the following purposes:

1. General farming and harvesting, not including fur farms
2. General ranching and grazing not including commercial feed lots or rendering plants
3. Animal and poultry husbandry
4. Sod and tree farming
5. Apiculture
6. Forest preserves
7. Roadside stands exclusively for the sale of produce raised on the premises
8. Manufactured homes, modular homes, and site or stick-built homes in compliance with Section 204 (I)
9. Water treatment, purification, storage, and pumping facilities
10. Transportation and utility easements and rights-of-way
11. Historical monuments and structures
12. Accessory uses and structures (as regulated in Section 204-General District Provisions)
13. Parks, playgrounds, play fields and community centers
14. Nurseries and greenhouses
15. Family Daycare Center
16. Home Offices
17. Community Signs
18. Telecommunication Facilities in accordance with Section 316.

C. Conditional Uses:

The following uses may be permitted upon review by the Board upon recommendation of the Commission according to the provisions contained in Section 510 - Conditional Use Permits:

1. Fish hatcheries
2. Country clubs, driving ranges, and golf courses
3. Home occupations (as regulated in Section 204 - General District Provisions)
4. Organized group camps
5. Churches and other religious structures and cemeteries
6. Multiple-family dwellings and housing for hired help
7. Schools, playgrounds, and fairgrounds
8. Swimming pools and tennis courts
9. Public service structures, such as fire stations, police stations, and post offices
10. Community centers
11. Utility substations
12. Kennels, catteries, and animal hospitals
13. Gun and archery ranges, riding stables, and academies

14. Mobile homes (as regulated in Section 304 - Mobile Homes)
15. Neighborhood commercial uses (as regulated in Section 302 - Neighborhood Commercial)
16. Lodge hall, etc.
17. Sawmill
18. Child Care Center
19. Seasonal Cabin/Dwelling
20. Model Home and Sales Office
21. Manufactured homes, modular homes, and site or stick-built homes not in compliance with Section 204
22. Contractor's equipment storage yard
23. Recreational vehicle as temporary living quarters. (This ordinance shall not allow multiple recreational vehicles as temporary living quarters on the same parcel and shall not allow additional living quarters when living quarters already exist on the property). The site must have an approved wastewater disposal system, including bathroom/shower facilities. and an improved site area for the recreational vehicle. If the recreational vehicle is not equipped with a bathroom/shower facility, said facility must be provided on the premises and connected to the wastewater disposal system. The recreational vehicle shall not be used as temporary living quarters on premises for more than 180 days per calendar year.

D. Minimum Lot Requirements:

1. Lot Area

All permitted uses together with all accessory uses shall be located on a lot having a minimum of ten (10) acres, exclusive of dedicated public streets or platted private drives.

2. Lot Width

Lots shall abut a dedicated public street for a distance of not less than fifty (50) feet or shall have access to a public street by way of a platted private drive or an easement approved pursuant to the provisions of Section 313.

E. Minimum Setback Requirements:

All structures shall have front, side and rear setbacks of twenty-five feet from the property lines.

F. Maximum Height:

No structure shall exceed two and one-half stories or thirty-five (35) feet in height without a Variance.

G. Structure Placement and Lot Coverage:

All accessory structures exceeding 5,000 square feet in area and/or thirty-five (35) feet in height shall be located at least five hundred (500) feet from any residential district without a Variance.

SECTION 207 - LDR LOW DENSITY RESIDENTIAL DISTRICT

A. Intent:

To allow low density residential areas by design or to establish low density residential areas which may not be suited to higher density development by reason of topography, geology, drainage, or similar problems.

B. Permitted Uses:

Property and buildings may include, but are not limited to the following purposes:

1. Manufactured homes, modular homes, and site or stick-built homes in compliance with Section 204-I
2. Transportation and utility easements and rights-of-way
3. Accessory uses and structures (as regulated in Section 204-General District Provisions)
4. Temporary buildings for uses incidental to construction work. These buildings shall be immediately adjacent to the construction work and shall be removed upon completion or abandonment of the construction work and shall require a temporary building permit. Temporary living quarters shall require an accessory building permit.
5. Family Daycare Home
6. Home Offices
7. Community Signs
8. Telecommunication Facilities in accordance with Section 316.

C. Conditional Uses:

The following uses are illustrative of those which the Board may approve. Other uses may be allowed, provided they are not found to be contrary to intended uses of the district under consideration. (See Section 204F):

1. Home occupations (as regulated in Section 204 - General District Provisions)
2. Parks, play grounds, play fields, and community centers
3. Utility substations
4. Schools, including childcare centers and kindergartens
5. Churches or similar places of worship
6. Public service structures, such as fire stations, police stations, and post offices
7. Libraries, museums and historical monuments, and structures
8. Neighborhood commercial uses (as regulated in Section 302 - Neighborhood Commercial)
9. Multiple-family dwellings
10. Mobile homes (as regulated in Section 304 - Mobile Homes)
11. Wind generator
12. Lodge hall, Veterans organization, service organizations
13. Seasonal Cabin/Dwelling
14. Model Home and Sales Office
15. Manufactured homes, modular homes, and site or stick-built homes not in compliance with Section 204

16. Recreational vehicle as temporary living quarters. (This ordinance shall not allow multiple recreational vehicles as temporary living quarters on the same parcel and shall not allow additional living quarters when living quarters already exist on the property). The site must have an approved wastewater disposal system including bathroom/shower facilities and an improved site area for the recreational vehicle. If the recreational vehicle is not equipped with a bathroom/shower facility, said facility must be provided on the premises and connected to the wastewater disposal system. The recreational vehicle shall not be used as temporary living quarters on premises for more than 180 days per calendar year.

D. Minimum Lot Requirements:

1. All approved uses shall have a minimum lot size of three (3) acres, exclusive of dedicated public streets or platted private drives.

2. All lots shall have a minimum lot width of one hundred (100) feet at the front building line.

3. Lots shall abut a dedicated public street for a distance of not less than twenty-five (25) feet, or shall have access to a public street by way of a platted private drive, or an easement approved pursuant to the provisions of Section 313 of the Zoning Ordinance.

E. Minimum Setback Requirements:

All structures shall have front, side, and rear setbacks of twenty-five (25) feet from the property lines.

F. Maximum Height:

No structure shall exceed two and one-half stories or thirty-five (35) feet in height, without a Variance.

SECTION 208 - SRD SUBURBAN RESIDENTIAL DISTRICT

A. Intent:

To establish medium density residential areas where central water and/or sewer is provided, excluding uses which are not compatible with residential use but permitting certain nonresidential uses which are of particular convenience to the residents of the district.

B. Permitted Uses:

Property and buildings may include, but are not limited to the following purposes:

1. Manufactured homes, modular homes, and site or stick-built homes in compliance with Section 204-I
2. Transportation and utility easements and rights-of-way
3. Accessory uses and structures (as regulated in Section 204-General District Provisions)

4. Temporary buildings for uses incidental to construction work. These buildings shall be immediately adjacent to the construction work and shall be removed upon completion or abandonment of the construction work, and shall require a temporary building permit.
5. Family Daycare Home
6. Home Offices
7. Community Signs
8. Telecommunication Facilities in accordance with Section 316.

C. Conditional Uses:

The following uses are illustrative of those which the Board may approve. Other uses may be allowed, provided they are not found to be contrary to intended uses of the district under consideration.(See Section 204-F)

1. Multiple-family dwellings
2. Mobile home parks (as regulated in Section 305 - Mobile Home Parks)
3. Rooming and boarding houses
4. Convalescent and nursing homes
5. Family and group care facilities
6. Home occupations (as regulated in Section 204 - General District Provisions)
7. Parks, playgrounds, play fields, and community centers
8. Schools, including childcare centers and kindergartens
9. Churches or similar places of worship
10. Public service structures, such as fire stations, police stations, and post offices.
11. Libraries, museums and historical monuments and structures
12. Medical centers
13. Neighborhood commercial uses (as regulated in Section 302 - Neighborhood Commercial)
14. Mobile homes (as regulated in Section 304 - Mobile Homes)
15. Utility substations
16. Wind generator
17. Zero lot line or common wall dwellings
18. Model Home and Sales Office
19. Manufactured homes, modular homes, and site or stick-built homes not in compliance with Section 204.

D. Minimum Lot Requirements:

1. Lot Area

a. For each dwelling and its accessory buildings served by a central water system approved by the Pennington County Health Department and a private water carriage waste disposal system, the lot size shall be at least 20,000 square feet, exclusive of dedicated public streets or platted private drives.

b. For each dwelling and its accessory buildings served by a central water system approved by the Pennington County Health Department and a private well, the lot size shall be at least 20,000

square feet, exclusive of dedicated public streets or platted private drives.

c. For each dwelling and its accessory buildings served by both an approved central water system and central sanitary sewer, the lot size shall be at least 6,500 square feet, exclusive of dedicated public streets or platted private drives.

d. For all other uses and their accessory buildings, the lot area, exclusive of dedicated public streets or platted private drives, shall be adequate to provide the approved water and sewer systems, the yard area required in this district and the necessary off-street parking.

2. Lot Width

a. All lots shall have a minimum lot width of sixty-five (65) feet at the front building line.

b. Lots shall abut a dedicated public street for a distance of not less than twenty-five (25) feet or shall have access to a public street by way of a platted private drive, or an easement approved pursuant to the provisions of Section 313.

E. Density Bonus:

1. The Planning Commission may allow a density bonus of 500 square feet per lot if the subdivision is developed for cluster housing. Example: Under conventional development, a 10-acre site would yield a maximum of 67 home sites. If the density bonus were used, 73 home sites would be available.

2. Adequate provision must be made to ensure that common open space abuts the cluster housing and that no future subdivision of the common open space shall occur.

3. The Health Department shall approve sewer and water systems for cluster housing.

F. Minimum Setback Requirements:

1. Front Yard

a. All structures shall have a front yard setback of twenty-five (25) feet.

b. Decks (uncovered) shall be allowed to have a fifteen (15) foot setback.

2. Side Yard

a. For a single-story dwelling located on interior lots, side yards shall be not less than eight (8) feet in width.

b. For unattached buildings of accessory use, there shall be a side yard of not less than eight (8) feet, provided that unattached one-story buildings of accessory use shall not be required to be set back more than five (5) feet from an interior side lot line when all parts of the accessory building are located more than ninety (90) feet behind the front lot line.

3. Rear Yard

a. For main buildings, there shall be a rear yard of not less than twenty-five (25) feet.

b. Unattached accessory buildings shall not be located closer than five (5) feet from the rear lot line.

G. Maximum Height:

No structure shall exceed two and one-half stories or thirty-five (35) feet in height, without a Variance.

SECTION 209 - GC GENERAL COMMERCIAL DISTRICT

A. Intent:

To establish general commercial areas for the overall general retail, personal, and business services of the County.

B. Property and buildings may include, but are not limited to the following purposes:

1. Retail establishments, including incidental manufacturing of goods for sale at retail on the premises, when conducted entirely in an enclosed building.
2. The storage, display, and sale of new; used; repossessed and traded-in merchandise, when conducted entirely in an enclosed building.
3. Barber and beauty shops and schools.
4. Cleaning, dyeing, laundry, pressing, dressmaking, tailoring, and garment and shoe repair shops.
5. Medical and/or dental clinics or offices and hospitals.
6. Hotels, motels, rooming and boarding houses.
7. Clubs and lodges.
8. Eating and drinking establishments.
9. Offices, studios, clinics, and laboratories.
10. Financial and credit institutions.
11. Funeral homes.
12. Bakeries.
13. Auditoriums, libraries, art galleries, museums and other cultural structures, and activities and community centers.
14. Laboratories and establishments for production and repair of jewelry, eyeglasses, hearing aids, and prosthetic appliances.
15. Business and vocational schools not involving operations of an industrial character.

16. Commercial recreation and amusement structures and uses conducted entirely in an enclosed building, such as theaters, bowling alleys, and poolrooms.
17. Utility substations.
18. Public buildings and grounds other than elementary or high schools.
19. Churches or similar places of worship.
20. Bus stations.
21. Service and repair establishments, including automobile service and repair, but excluding airplane and railroad repair establishments.
22. Parking lots and garages.
23. New and used motor vehicle sales, rental and repair, including trailers; boat sales; motorcycle sales and service; and travel trailer sales.
24. Mobile home sales, including prefabricated and shell homes.
25. New and used farm implement and machinery sales.
26. Building material sales not to include central mix or transit mix concrete plants and asphalt plants.
27. Outdoor advertising and community signs (as regulated in Section 312 - Signs, Billboards and Other Advertising Structures).
28. Accessory uses and structures on the same premises and clearly incidental to permitted uses or structures, including a dwelling unit for occupancy only by owners or caretakers.
29. Vacation home rental.
30. Telecommunication Facilities in accordance with Section 316.

C. Conditional Uses:

The following uses are illustrative of those which the Board may approve. Other uses may be allowed, provided they are not found to be contrary to intended uses of the district under consideration. (See Section 204-F)

1. Golf driving ranges.
2. Drive-in theaters.
3. Racetracks.
4. Construction equipment sales.
5. Warehousing, wholesale, and distribution establishments.
6. Kennels, catteries, and animal hospitals.
7. Other general commercial uses, which, although they are not specified in this section due to omission or lack of technological development, in the opinion of the Commission, are not contrary to the intent of the general commercial district.
8. Adult Amusement or Entertainment establishments, Adult bookstores, Adult motion picture theaters or drive in theaters, Adult photo studios, Adult cabarets, Adult motels, Nude model studios, Adult video stores, and Adult novelty stores in conformance with Section 204.K.

D. Minimum Lot Requirements:

1. Lot Area

a. For each principal structure and its accessory buildings served by a central water system approved by the Pennington County Health Department and a private water carriage waste disposal system, the

lot size shall be 20,000 square feet, exclusive of dedicated public streets or platted private drives.

b. For each principal structure and its accessory buildings served by a central sewer system approved by the Pennington County Health Department and a private well, the lot size shall be 20,000 square feet, exclusive of dedicated public streets or platted private drives.

c. For each principal structure and its accessory buildings served by both an approved central water system and central sanitary sewer, the lot size shall be 7,500 square feet, exclusive of dedicated public streets or platted private drives.

d. For all other uses and their accessory buildings, the lot area, exclusive of dedicated public streets or platted private drives, shall be adequate to provide the approved water and sewer system, the yard area required in this district and the necessary off-street parking.

2. Lot Width

Each lot shall have a width at the front building line of not less than seventy-five (75) feet and which abuts on a public right-of-way at least twenty-five (25) feet.

E. Minimum Yard Requirements:

1. Front Yard

All structures shall have a front yard setback of twenty-five (25) feet.

2. Side Yard

The minimum side yard shall be ten (10) feet except that the width of a side yard, which abuts a residential district, shall be not less than thirty (30) feet and screening may be required.

3. Rear Yard

Each lot shall have a rear yard setback of not less than ten (10) feet. Where a commercial building is serviced from the rear or abuts a street or a residential district, there shall be a rear yard setback of not less than thirty (30) feet.

F. Maximum Height of Structures:

No principal building or structure shall exceed three (3) stories or thirty-five (35) feet in height; whichever is the least, except as provided in Section 204 - General District Provisions. No accessory building or structure shall exceed one (1) story or twenty-five (25) feet in height. Variances may be granted from these height requirements.

G. Off-Street Parking:

As regulated in Section 310 - Minimum Off-Street Parking Requirements.

H. Screening:

When required, screening between residential and commercial zones shall be fencing or shrubbery, which is sufficiently opaque or resistant to penetration to alleviate the apparent nuisance.

SECTION 210 - HS HIGHWAY SERVICE DISTRICT

A. Intent:

To establish areas for highway-oriented businesses and to provide development standards that will not impair or obstruct the traffic carrying capabilities of abutting roads and highways.

B. Property and buildings may include, but are not limited to the following purposes:

1. Hotels and motels.
2. Eating and drinking establishments, including drive-in eating establishments.
3. Service stations and garages.
4. Souvenir, gift, jewelry, arts, and crafts shops.
5. Retail businesses.
6. Coin-operated laundry and dry cleaning establishments.
7. Commercial recreation and amusement structures and uses, including theaters, amusement parks, bowling alleys, ice and roller rinks, archery ranges, and miniature golf.
8. Public service structures, such as police and fire stations and post offices.
9. Bus stations.
10. Outdoor advertising and community signs (as regulated in Section 312 - Signs, Billboards and Other Advertising Structures).
11. Accessory uses and structures on the same premises and clearly incidental to permitted uses or structures, including a dwelling unit for occupancy only by owners or caretakers.
12. Auction house.
13. Model home and sales office.
14. Vacation home rental.
15. Telecommunication Facilities in accordance with Section 316.

C. Conditional Uses:

The following uses are illustrative of those which the Board may approve. Other uses may be allowed provided they are not found to be contrary to intended uses of the district under consideration. (See Section 204F)

1. Golf driving ranges.
2. Drive-in theaters.
3. Racetracks.
4. Other highway-oriented businesses which are not listed but which the Commission may determine meet the intent of the Highway Service

District. This shall not be construed to include general commercial activities which more appropriately fit the general commercial district.

5. Well drilling businesses and accessory exterior equipment and material storage.
6. Recreational vehicle parks as regulated in Section 306.
7. Adult Amusement or Entertainment establishments, Adult bookstores, Adult motion picture theaters or adult drive in theaters, Adult photo studios, Adult cabarets, Adult motels, Nude model studios, Adult video stores, and Adult novelty stores in conformance with Section 204.K.

D. Minimum Lot Requirements:

1. Lot Area

a. For each principal structure and its accessory buildings served by a central water system approved by the Pennington County Health Department and a private water carriage waste disposal system, the lot size shall be 20,000 square feet, exclusive of dedicated public streets or platted private drives.

b. For each principal structure and its accessory buildings served by a central sewer system approved by the Pennington County Health Department and a private water carriage waste disposal system, the lot size shall be 20,000 square feet, exclusive of dedicated public streets or platted private drives.

c. For each principal structure and its accessory buildings served by both an approved central water system and central sanitary sewer, the lot size shall be 7,500 square feet, exclusive of dedicated public streets or platted private drives.

d. For all other uses and their accessory buildings, the lot area, excluding dedicated public streets or platted private drives, shall be adequate to provide the approved water and sewer system, the yard area required in this district, and the necessary off-street parking.

2. Lot Width

Each lot shall have a width at the front building line of not less than seventy-five (75) feet of which fifty (50) feet must abut a public right-of-way.

E. Minimum Yard Requirements:

1. Front Yard

All structures shall have a front yard setback of twenty-five (25) feet.

2. Side Yard

Each side yard shall be not less than ten (10) feet. The depth of a side yard, which abuts a residential district or a street, shall be not less than thirty (30) feet.

3. Rear Yard

Each lot shall have a rear yard of not less than ten (10) feet. Where a commercial building is serviced from the rear, there shall be provided a rear yard of not less than thirty (30) feet. The depth of a rear yard, which abuts a street or a residential district, shall not be less than thirty (30) feet.

F. Maximum Height of Structures:

No principal building or structure shall exceed three (3) stories or thirty-five (35) feet in height except as otherwise provided. No accessory building or structure shall exceed one (1) story or twenty (20) feet in height. Variances may be granted from these height requirements.

G. Off-Street Parking:

As regulated in Section 310 - Minimum Off-Street Parking Requirements.

SECTION 211 - LI LIGHT INDUSTRIAL DISTRICT

A. Intent:

To establish areas for industrial and related uses of such a nature that they do not create serious problems of compatibility with other kinds of land uses, and to make provision for certain kinds of commercial uses which are most appropriately located as neighbors of industrial uses or which are necessary to service the immediate needs of people in these areas.

B. Property and buildings may include, but are not limited to the following purposes:

1. Manufacturing
2. Wholesaling
3. Distributing
4. Warehousing
5. Bulk storage
6. Building material sales yard and lumber yard, including the sale of rock, sand, gravel, and the like as an incidental art of the main business but not including a concrete batch plant or a transit mix plant or an asphalt plant
7. Contractor's equipment storage yard or plant or the rental of equipment commonly used by contractors
8. Freight or truck yard and terminal
9. Public utility service yard or electrical receiving or transferring station
10. Auction house, except for the sale of livestock
11. Tire recapping or retreading
12. Water treatment, purification, storage, and pumping facilities
13. Outdoor advertising and community signs (as regulated in Section 312 - Signs, Billboards, and Other Advertising Structures)
14. The following uses when conducted within a completely enclosed building:

    a. The manufacture, compounding, assembling, or treatment or articles or merchandise from the following previously prepared

materials: aluminum; bone; cellophane; canvas; cloth; cork; feathers; felt; fiber; fur; glass; precious or semi-precious metals or stones; shell; rubber; textiles; tin; iron; steel; and wood.

b. The manufacture of pottery and figurines or other similar ceramic products using only previously pulverized clay and kilns fired only by electricity or gas.

c. The manufacture and maintenance of electric and neon signs, commercial advertising structures, light sheet metal products, including heating and ventilating ducts and equipment, cornices, eaves and the like.

d. Blacksmith and machine shop.

15. Accessory uses and structures on the same premises which are clearly incidental to the permitted use, including sleeping facilities required by a caretaker or night watchman.
16. A retail or service use only when it directly serves or is incidental to the needs of the industrial plants and the employees thereof.
17. Telecommunication Facilities in accordance with Section 316.

C. Conditional Uses:

Those General Commercial District uses deemed compatible with the surrounding Light Industrial District may be permitted upon review by the Board upon recommendation from the Commission according to the provisions contained in Section 510 - Conditional Use Permits.

D. Special Provisions:

1. The foregoing use authorizations do not include any of such uses which emit any fumes, vibration, smoke or noise, except the noise of vehicles coming and going, which is detectable from off the premises by the senses of a normal human being and unless all operations, including the storage of anything except merchandise displayed for sale, are conducted in a fully enclosed building or entirely behind walls or fences which conceal them from visibility from off the lot.

2. No merchandise shall be displayed for sale in any required front yard.

E. Minimum Lot Requirements:

1. Lot Area

a. Any principal use together with all accessory uses shall be located on a lot having a minimum area of 20,000 square feet, exclusive of dedicated public streets or platted private drives, if served by a central water system or a central sewer system provided approval is obtained from the Pennington County Health Department.

b. The lot area, exclusive of dedicated public streets or platted private drives, shall be determined by the private water carriage waste

disposal system based on individual requirements and data required by the Pennington County Health Department. When an individual water system is also to be used, the lot size, exclusive of dedicated public streets or platted private drives, will be increased to accommodate both the water and waste systems as approved by the Pennington County Health Department.

2. Lot Width

Each lot shall have a width at the front building line of not less than one hundred (100) feet of which fifty (50) feet must abut a public right-of-way.

F. Minimum Yard Requirements:

1. Front Yard

All structures shall have a front yard setback of twenty-five (25) feet.

2. Side Yard

No building shall be located closer than fifteen (15) feet to aside yard lot line, which must be maintained open as a fire lane. The width of a side yard, which abuts a residential district, shall be not less than fifty (50) feet and the Commission may require screening.

3. Rear Yard

No building shall be located closer than twenty-five (25) feet to the rear lot line. The depth of a rear yard, which abuts a residential district, shall be not less than fifty (50) feet.

G. Maximum Height of Structures:

No building or structure shall exceed four (4) stories or forty-five (45) feet in height except as hereinafter provided in Section 204 - General District Provisions, or with a Variance.

H. Minimum Off-Street Parking and Loading Requirements:

As regulated in Section 310 - Minimum Off-Street Parking Requirements or Section 311 - Off-Street Loading and Unloading Requirements.

SECTION 212 - HI HEAVY INDUSTRIAL DISTRICT

A. Intent:

To establish areas for necessary industrial and related uses of such a nature that they require isolation from many other kinds of land uses, and to make provision for commercial uses which are necessary to service the immediate needs of people in their areas.

B. Property and buildings may include, but are not limited to the following purposes:

1. Manufacturing, requiring yard storage and fabrication
2. Wholesaling, requiring yard storage and assembly
3. Warehousing, requiring yard storage
4. Bulk storage
5. Foundries
6. General repair and service of trucks and construction equipment
7. Railroad freight terminal and repair shop
8. Power plants
9. Stockyards, feeding pens, and auction houses for sale of livestock
10. Tannery or curing or storage of raw hides
11. Sawmills
12. Rock, sand, gravel, or earth excavation, crushing or distribution
13. Slaughter of animals, including poultry killing or dressing
14. Processing of junk, waste, discarded or salvaged materials, machinery or equipment, including automobile wrecking or dismantling
15. Outdoor advertising and community signs (as regulated in Section 312 - Signs, Billboards and Other Advertising Structures)
16. Accessory uses and structures on the same premises which are clearly incidental to the permitted use, including sleeping facilities required by a caretaker or night watchman
17. Concrete batch plant, transit mix plant, or asphalt plant
18. Concrete block, precast concrete and prestressed concrete fabrication and storage
19. Structural and reinforcing steel fabrication, welding and storage
20. A retail or service use only when it directly serves or is incidental to the needs of the industrial plants and the employees thereof
21. Grain elevators
22. Auction houses not for the sale of livestock
23. Telecommunication Facilities in accordance with Section 316.

C. Conditional Uses:

1. Solid waste disposal sites.

D. Prohibited Uses:

None, so long as uses are consistent with the above intent.

E. Minimum Lot Requirements:

The following requirements shall apply to all uses permitted in this district.

1. Lot Area

Any principal use, together with all accessory uses, shall have a front lot area of adequate size to serve the needs of the proposed use provided that lots of less than 20,000 square feet shall not be allowed.

2. Lot Width

Each lot shall have a width at the front building line of not less than one hundred (100) feet of which fifty (50) feet must abut a public right-of-way.

F. Minimum Yard Requirements:

1. Front Yard

All structures shall have a front yard setback of twenty-five (25) feet.

2. Side Yard

No building shall be located closer than twenty-five (25) feet to a side lot line. The width of a side yard, which abuts a residential district, shall be not less than seventy-five (75) feet.

3. Rear Yard

No building shall be located closer than twenty-five (25) feet to the rear lot line. The depth of any rear yard, which abuts a street or residential district, shall be not less than fifty (50) feet.

G. Minimum Off-Street Parking and Loading Requirements:

As regulated in Section 310 - Minimum Off-Street Parking Requirements and Section 311 - Off-Street Loading and Unloading Requirements.

SECTION 213 - PUD PLANNED UNIT DEVELOPMENT DISTRICT

A. General Description:

1. The intent of the Planned Unit Development is to allow districts in which ingenuity, imagination and design efforts on the part of the builders, architects, site planners, and developers can produce desirable residential developments.

2. Planned Unit Developments may be approved in areas designated Planned Unit Development Districts or such Planned Unit Developments may be approved for districts designated Suburban Residential District.

B. Permitted Uses:

1. Property and buildings in the Planned Unit Development are to be planned and organized as a single entity and as one complex land use unit rather than as a group of individual buildings located on separate lots.

2. Uses permitted in the Planned Unit Development may include single-family dwellings, duplexes, triplexes, four-plexes, apartments, townhouses, patio-houses, mobile homes, neighborhood commercial, school sites, parks, and open space uses as necessary and as part of a general plat and plan.

3. Permitted uses other than single-family dwellings must be located either within the interior of the Planned Unit development or in areas where the adjacent uses outside the boundaries of the Planned Unit Development are compatible.

4. Resort developments where there will be no sale of individual lots shall be considered as a Planned Unit Development. The Commission may waive any portion of this section which is not appropriate to resort development and may require any additional information necessary to determine compatibility of the proposal.

C. Area Regulations:

The following requirements shall apply to all uses permitted in a Planned Unit Development:

1. Yard, setback, lot size, type of dwelling unit, height, frontage requirements and use restrictions may be waived within the Planned Unit Development, provided that the intent of this section is complied with in total development plan as determined by the Commission. The Commission may determine that certain setbacks are required within all or a portion of the site and shall exercise ultimate discretion as to whether the total development plan does comply with the intent of this section.

   a. Setback requirements of the district containing the Planned Unit Development will apply on all major county highways and on all boundaries of the Development.

2. Off-street parking must be provided in each Planned Unit Development and the following factors are to be taken into consideration for such approval:

   a. Probable number of automobiles and vehicles owned by occupants of dwellings in the Planned Unit Development

   b. Parking needs of any nondwelling uses

   c. Varying time periods of use whenever joint use of common parking areas is proposed

3. Approval of a Planned Unit Development does not eliminate the requirements of subdividing. A preliminary plan and plat must be submitted and processed through procedures specified in the Subdivision Regulations.

4. The Commission must be satisfied that the site plan for the Planned Unit Development has met each of the following criteria or can demonstrate that one or more of them are not applicable and that a practicable solution consistent with public interest has been achieved for each of these elements:

   a. That there is an appropriate relationship to the surrounding area.

b. That provisions are made for an internal street system designed for the type of traffic generated, safety, separation from living areas, convenience, access, noise, and exhaust control. Private internal streets and walkways may be permitted if they may be used by police and fire department vehicles for emergency purposes. Bicycle traffic shall be considered when the site is used for an area for living purposes. Proper circulation in parking areas for safety, convenience, separation, and screening must be provided. Such streets shall be designed according to generally accepted specifications for residential streets and maintained in good condition.

Minimum right-of-way widths and roadway widths as required in the Subdivision Regulations may be waived by the Commission provided that adequate consideration is given to ingress and egress of emergency vehicles.

c. That there is functional open space for optimum preservation of natural features, including trees and drainage areas, recreation, views, density, relief, and convenience in function.

d. That privacy, in terms of the needs of individual families and neighbors, is provided.

e. That there is provisions for pedestrian traffic for safety, separation, convenience, access to points in common areas and attractiveness.

f. That building types are appropriate to the density and site relationship.

g. That there are adequate provisions for sewer and water systems as approved by the Pennington County Health Department.

5. The Planned Unit Development may be subdivided or re-subdivided for purposes of sale or lease. An application for approval of a subdivision or re-subdivision will create a new plat line. The procedures applicable to the initial approval of the Planned Unit Development are also applicable to the approval of a subdivision or a re-subdivision.

A subdivision or a re-subdivision may be approved if it does not increase the dwelling unit density of the Planned Unit Development and if the subdivision or re-subdivisions are in compliance with the standards for Planned Unit Developments provided for in this district. At no time shall the common area be subdivided without the consent of the Board upon recommendation of the Commission after proper notice to the public and a hearing.

Any change in the use of any property, in an approved Development, will be subject to the procedures applicable to the initial approval of the Planned Unit Development.

6. Density (dwelling units per acre) may be increased if the character of the development and the advantages incorporated in the development warrant such increases.

D. Application:

A preliminary Planned Unit Development application shall be submitted for consideration by the Zoning Commission to allow for notice procedure set forth under Section 512 - Amendments. Upon submission of a preliminary plan of a sufficient scope to permit preliminary approval, a formal application for approval of a Planned Unit Development shall be filed. The application must include consent by the owners of all property to be included in the Planned Unit. The application must be accompanied by a site plan and a written statement containing:

1. A site plan showing the major details of the proposed Planned Unit Development, prepared to scale, shall be submitted in sufficient detail to evaluate the land planning, building design, and other features of the Planned Unit Development. The site plan must contain insofar as applicable the following minimum information:

    a. The existing topographic character of the land
    b. Proposed land uses
    c. Location and size of existing and proposed buildings, structures and improvements, including an indication of the buildable area of each lot
    d. The minimum height of all buildings
    e. The density and type of dwellings
    f. The internal traffic and circulation system, off-street parking areas, service areas, loading areas, and major points of access to public right-of-way
    g. The location, height and size of proposed signs, lighting, and advertising devices
    h. Areas which are to be conveyed, dedicated, or reserved as common areas, including parks and recreational areas and sites for schools and other public buildings
    i. Drainage pattern and plan for disposing of runoff in such a manner as to protect adjacent property

2. A written statement to be submitted with the Planned Unit Development application must contain the following:

    a. A statement of the present ownership and a legal description of the land included in the Planned Unit Development

    b. An explanation of the objectives to be achieved by the Planned Unit Development, including building descriptions, sketches, or elevations as may be required to describe the objectives

    c. A development schedule indicating the approximate date when the construction of the Planned Unit Development or stages of the Planned Unit Development can be expected to begin and to be completed

d. Copies of any special agreements, conveyances, restrictions, or covenants which shall govern the use, maintenance, and continued protection of the Planned Unit Development and any of its common area

3. The developer and developers shall submit proof to the Planning Commission that all parks and open spaces shall be dedicated to the Homeowners Association and a performance bond equal to the cost of the improvements shall be posted prior to the final plat being filed.

SECTION 214 - FP FLOODPLAIN ORDINANCE

Floodplain considerations for any lands lying within the area of jurisdiction of the Pennington County Flood Damage Prevention Ordinance shall be regulated according to the provisions of said Ordinance.

SECTION 300 - SUPPLEMENTARY REGULATIONS

In order to accomplish the general purpose of these Zoning Ordinances, it is necessary to give special consideration to certain uses because they are unique in nature, require large land areas, are potentially incompatible with existing development, or because the effects of such uses cannot definitely be foreseen.

SECTION 301 – AIRPORT HEIGHT AND HAZARD ZONING

A. Intent:

To regulate and restrict the height of structures and objects of natural growth and otherwise regulate the use of property, in the vicinity of the Rapid City Regional Airport, by creating the appropriate zones and establishing the boundaries thereof.

B. General:

It is hereby found that an obstruction has the potential for endangering the lives and property of users of Rapid City Regional Airport and property or occupants of land in its vicinity; that an obstruction may affect existing and future instrument approach minimums of Rapid City Regional Airport; that an obstruction may reduce the size of areas available for the landing, takeoff, and maneuvering of aircraft, thus, tending to destroy or impair the utility of Rapid City Regional Airport and the public investment therein. Accordingly, it is declared:

1. That the creation or establishment of an obstruction has the potential of being a public nuisance and may injure the region served by Rapid City Airport;

2. That it is necessary in the interest of the public health, public safety, and general welfare that the creation or establishment of obstructions that are a hazard to air navigation be prevented; and

3. That the prevention of these obstructions should be accomplished, to the extent legally possible, by the exercise of the police power without compensation.

Appendix I: Specific Recommendations

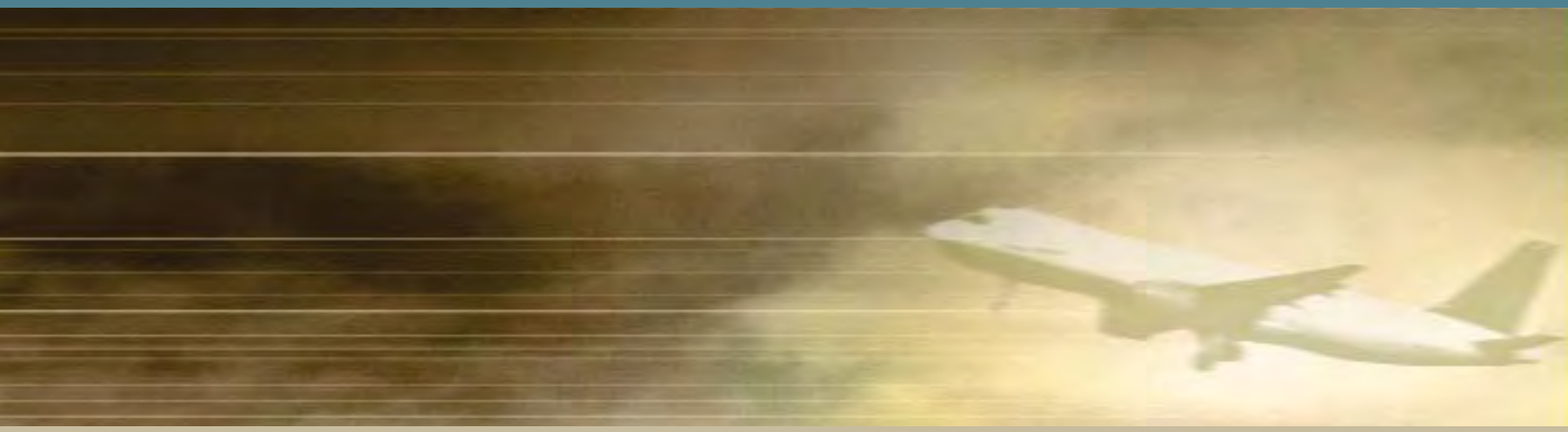
Pennington County Recommendation

Rapid City Recommendation

Box Elder Recommendation

Meade County Recommendation

Land Use Zoning Map



Pennington County Recommendation

Airspace

Airspace protection is provided for RCRA in Pennington County's Section 301 – Airport Height and Hazard Zoning. However, in order to better protect RCRA, changes to the ordinance should be made:

- Subsection D.10 should be removed. The subsection 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."
  It is possible that a structure less than 50 feet tall could present a hazard to air navigation. Furthermore, this subsection appears to contradict the language in subsection G.1.
- 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 located in **Appendix D** could be utilized for that purpose.
- Subsection D.7 and D.8 incorrectly apply an airport elevation of 100 feet above mean sea level. Airport elevation is 3,202 above mean sea level.
- It is recommended that the ordinance contain a provision that reminds persons proposing construction or alteration near RCRA of their potential responsibility to notify the FAA and South Dakota Aeronautics Commission. It is also recommended that persons required to notify the FAA (through the 7460-1 process) present the decision of record to the Pennington County Planning Director prior to construction for project approval.

Safety

It is recommended that the applicable Safety Compatibility Zones listed in Chapter 3 and the corresponding restrictions proposed for those zones are incorporated into Pennington County's Section 301 – Airport Height and Hazard Zoning.

The land use zoning map located at the end of this appendix or a similar map should be included in the zoning ordinance or its location referenced. In addition to referencing hardcopy documents, the land use restrictions could be incorporated into GIS systems.

Wildlife

The wildlife recommendations detailed in the Land Use Compatibility Plan should be incorporated into Section 301. Hazardous wildlife attractants could be included in a list of non-permitted uses. Some of these non-permitted uses could include:

- Landfills
- Commercial Feed Lots
- Livestock Auction Yards
- Open Water Treatment Plants
- Golf Courses

Rapid City Recommendation

Airspace

Rapid City Municipal Code Chapter 17.58 - Airport Zoning District establishes zoning authority over the Airport Zoning District, which encompasses RCRA property. In Chapter 17.58, an Airport Encroachment Area and Height Regulations section are established in reference to Part 77.25, but do not adequately define the restrictions. In addition, the terminology used in RCMC Chapter 17.58 and Part 77.25 do not exactly match. Rapid City Municipal Code Chapter 17.58 does not adequately protect airspace surrounding the Airport. It is recommended that airspace protection language similar to Pennington County's Section 301 be adopted by Rapid City. It is important that the ordinance protects RCRA airspace beyond the Airport Zoning District as well.

The Part 77 Airspace Surface exhibits located in **Appendix D** or similar Part 77 surface maps could be created and either included in the zoning ordinance or its location referenced. In addition to referencing hardcopy documents, the airspace restrictions could be incorporated into GIS systems.

Safety

Rapid City Municipal Code Chapter 17.58 provides appropriate land use restrictions for the Airport Zoning District; however, restrictions should also be adopted for areas outside the Airport Zoning District. For that reason, it is recommended that a new ordinance be adopted by Rapid City that includes the provisions of Chapter 17.58, but expands to incorporate the recommended land use zones detailed in Chapter 3.

Additionally, an "Airport Property Zone" could be included in the ordinance which incorporates the land use restrictions listed in Rapid City Municipal Code Chapter 17.58. Inclusion of the Runway Protection Zone (Zone 1) is unnecessary because the Airport currently owns the property and controls land uses within the existing RPZs. If Runway 14-32 is lengthened in the future, the Airport plans on purchasing the property needed to maintain control over land uses in the RPZs.

The land use zoning map located at the end of this appendix or a similar map should be included in the zoning ordinance or its location referenced. In addition to referencing hardcopy documents, the land use restrictions could be incorporated into GIS systems.

Wildlife

The wildlife recommendations detailed in the Land Use Compatibility Plan should be incorporated into Rapid City Zoning. Hazardous wildlife attractants could be included in a list of non-permitted uses. Some of these non-permitted uses could include:

- Landfills
- Commercial Feed Lots
- Livestock Auction Yards
- Open Water Treatment Plants
- Golf Courses

Box Elder Recommendation

Airspace

At this time, the City of Box Elder has not adopted zoning that protects RCRA airspace. It is recommended that airspace protection language similar to Pennington County's Section 301 be adopted by Box Elder.

The Part 77 Airspace Surface exhibits located in **Appendix D** or similar Part 77 surface maps could be created and either included in the zoning ordinance or its location referenced. In addition to referencing hardcopy documents, the airspace restrictions could be incorporated into GIS systems.

Safety

It is recommended that the applicable Safety Compatibility Zones listed in Chapter 3 and the corresponding restrictions proposed for those zones are incorporated into Box Elder zoning.

The land use zoning map located at the end of this appendix or a similar map should be included in the zoning ordinance or its location referenced. In addition to referencing hardcopy documents, the land use restrictions could be incorporated into GIS systems.

Wildlife

The wildlife recommendations detailed in the Land Use Compatibility Plan should be incorporated into Box Elder Zoning. Hazardous wildlife attractants could be included in a list of non-permitted uses. Some of these non-permitted uses could include:

- Landfills
- Commercial Feed Lots
- Livestock Auction Yards
- Open Water Treatment Plants
- Golf Courses

Meade County Recommendation

Airspace

At this time, Meade County has not adopted zoning that protects RCRA airspace. It is recommended that airspace protection language similar to Pennington County's Section 301 be adopted by Meade County. Due to the Airport's distance from Meade County, the Precision Instrument Runway Approach Surface is the only Part 77 surface within Meade County Jurisdiction.

The Part 77 Airspace Surface exhibits located in **Appendix D** or similar Part 77 surface maps could be created and either included in the zoning ordinance or its location referenced. In addition to referencing hardcopy documents, the airspace restrictions could be incorporated into GIS systems.

Safety

It is recommended that the applicable Safety Compatibility Zones listed in Chapter 3 and the corresponding restrictions proposed for those zones are incorporated into Meade County zoning. The only recommended land use zone within Meade County jurisdiction is the Precision Flight Corridor Zone.

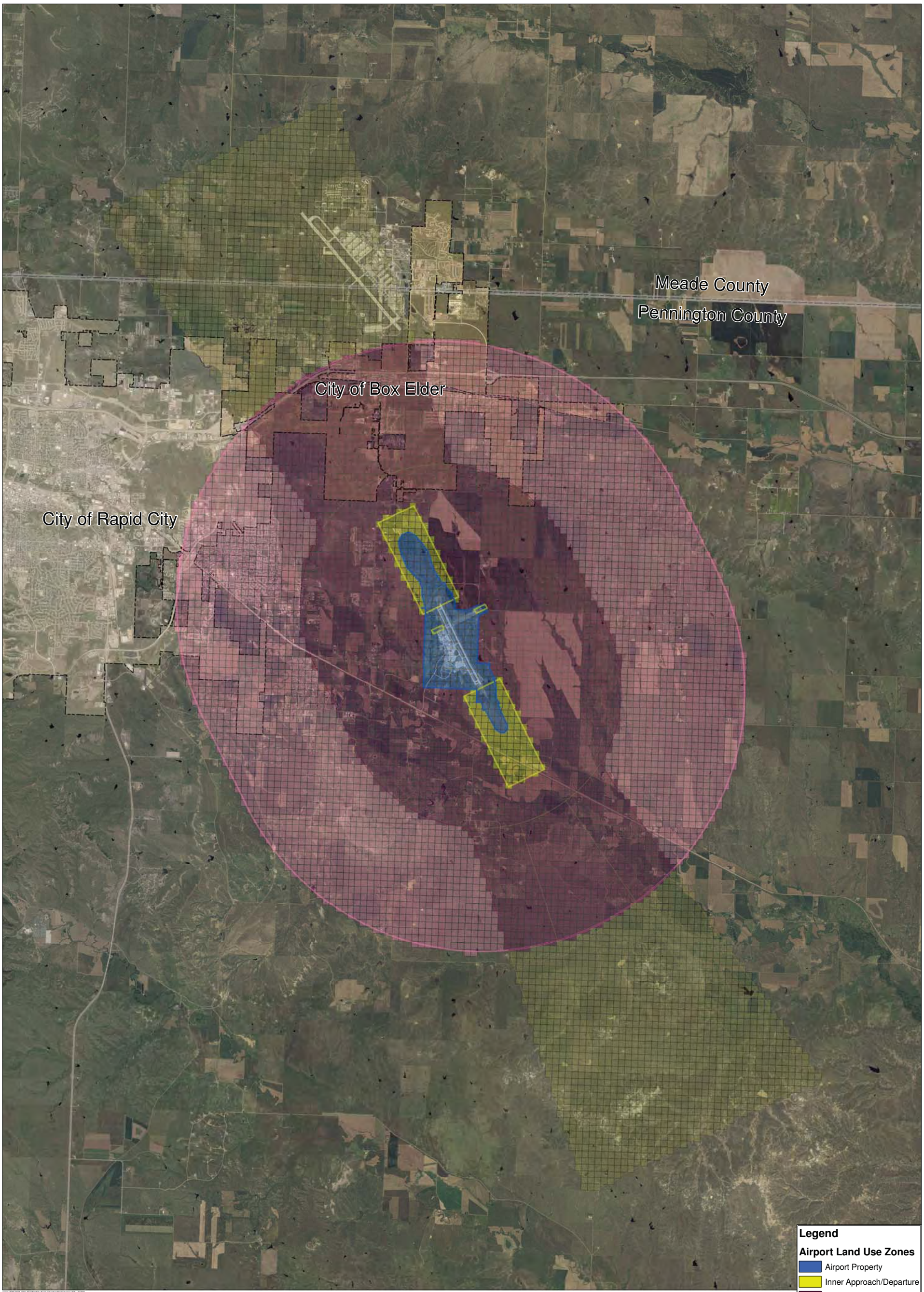
The land use zoning map located at the end of this appendix or a similar map should be included in the zoning ordinance or its location referenced. In addition to referencing hardcopy documents, the land use restrictions could be incorporated into GIS systems.

Wildlife

Due to Meade County's distance from the Airport, the wildlife recommendations detailed in the Land Use Compatibility Plan are not applicable.

Land Use Zoning Map

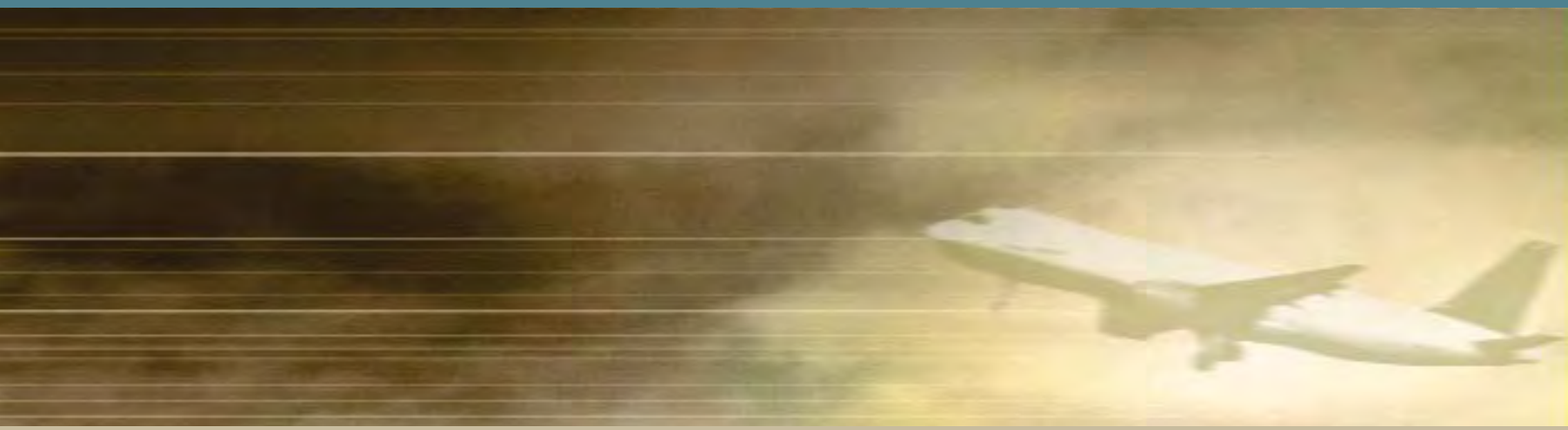
Rapid City Regional Airport Land Use Zones



FOR PLANNING PURPOSES ONLY

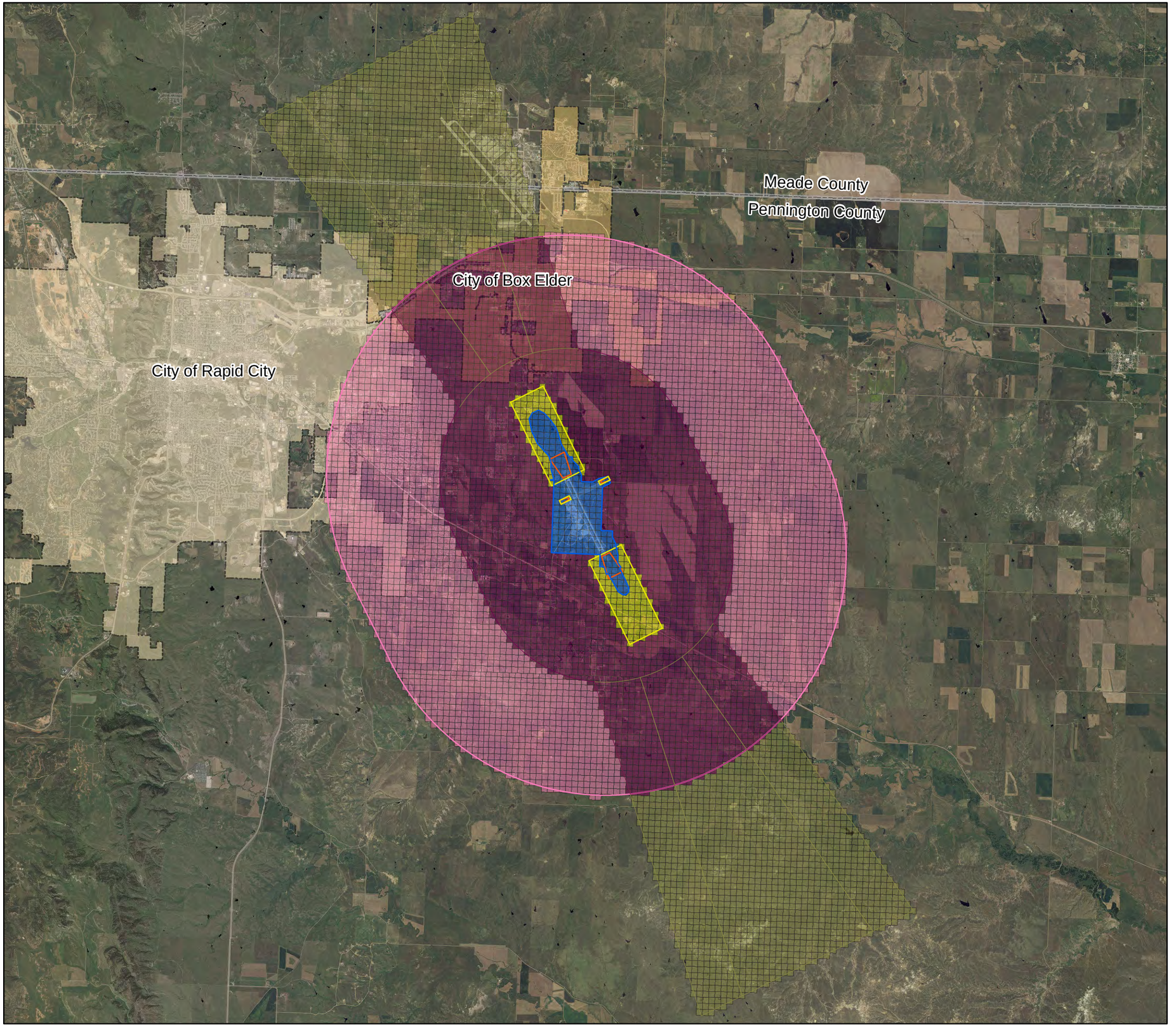
Kadrmas Lee & Jackson
Engineers Surveyors Planners

Appendix J: Proposed Safety Compatibility Zones



Rapid City Regional Airport
Rapid City, South Dakota

Proposed Safety Compatibility Zones



Legend

- Rapid City Jurisdiction
- Box Elder Jurisdiction
- County Lines

Proposed Airport Land Use Zoning

- ZONE 0 = Airport Property
- ZONE 1 = Runway Protection Zone
- ZONE 2 = Inner Approach/Departure
- ZONE 3 = Circling Traffic Patterns
- ZONE 4 = Precision Flight Corridor
- ZONE 5 = Aviation Hazards

N

0 1 2 4 Miles

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