

Malmstrom AFB Joint Land Use Study



Cascade County
Planning Department

March 2012
FINAL REPORT



Malmstrom AFB Joint Land Use Study

prepared for

**Cascade County
Chouteau County
Fergus County
Lewis and Clark County
Judith Basin County
Teton County
Wheatland County
City of Great Falls**

prepared by



March 2012

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The Policy Committee played an active and important role in the development of the Malmstrom AFB JLUS. Cascade County would like to thank the following individuals for their support and professional advice:

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PUBLIC INPUT

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A

AGL..... above ground level
 APZ I Accident Potential Zone I
 APZ II Accident Potential Zone II
 AFB..... Air Force Base
 AFI..... Air Force Instruction
 AFMAN..... Air Force Manual
 AICUZ Air Installation Compatible Use Zone
 AT/FP Anti-Terrorism / Force Protection

B

BX..... Base Exchange
 BRAC Base Realignment and Closure
 BASH Bird / Wildlife Aircraft Strike Hazard
 BCB..... Building Code Bureau
 BLM..... Bureau of Land Management
 BNSF..... Burlington Northern Santa Fe

C

CEIC..... Census and Economic Information Center
 CZ Clear Zone

CEDC Community Economic Development Council
 CDG Compatibility Development Guidelines
 CA Comprehensive Agreement

D

dBA decibel
 DAR..... Defense Access Road
 DECA..... Defense Commissary Agency
 DoD Department of Defense
 DOE Department of Energy
 DEQ Department of Environmental Quality
 DHS..... Department of Homeland Security
 DLI Department of Labor and Industry
 DNRC Department of Natural Resources and Conservation
 DA..... Development Agreement

E

ESA Endangered Species Act
 EA Environmental Assessment

E (continued)

EIS Environmental Impact Statement
EPI Environmental Protection Initiative
ESQD explosive safety quantity distance

F

40 HS 40th Helicopter Squadron
FM facility manager
FAA Federal Aviation Administration
FAR Federal Aviation Regulations
FCC Federal Communications Commission
FICUN Federal Interagency Committee on Urban Noise
FONSI Finding of No Significant Impact
FY09 Fiscal Year 2009
ft foot

G

GISR Global Intelligence, Surveillance, and Reconnaissance
GFDA Great Falls Development Authority
GFIA Great Falls International Airport

H

HICS Hardened Inter-site Cable System
HAF Headquarters Air Force
HMOD Height Military Overlay District
HMA Helicopter Maneuver Area
HS Helicopter Squadron
HVDC high voltage direct current

I

ICRMP Integrated Cultural Resources Management Plan
INRMP Integrated Natural Resource Management Plan
ICBM Intercontinental Ballistic Missiles

J

JLUS Joint Land Use Study

L

LZs Landing Zones
LCC Launch Control Center
LCEB Launch Control Equipment Building
LCSB Launch Control Support Building
LF Launch Facility

M

MFSA Major Facilities Siting Act
MAFB Malmstrom Air Force Base
MSL mean sea level
MOU Memorandum of Understanding
MAAs Military Affected Areas
MOAD Military Overlay Airport District
MOD Military Overlay District
MGD million gallons per day
MAF Missile Alert Facility
MCC Missile Counties Committee
MW Missile Wing
MEA Mitigated Environmental Assessment
MANG Montana Air National Guard
MACo Montana Association of Counties
MCA Montana Code Annotated
MDOT Montana Department of Transportation
MEPA Montana Environmental Policy Act
MSPA Montana Subdivision and Platting Act
MTI/MTD Moving Target Indicator/Detection

N

NACo National Association of Counties
NEPA National Environmental Policy Act

N (continued)

NHPA..... National Historic Preservation Act
NOAA National Oceanic and Atmospheric Administration
NRMP..... Natural Resource Management Plan
NSPS..... National Security Personnel System
NVDs Night Vision Devices
NVG..... Night Vision Goggle
NSMOD Noise and Safety Military Overlay District
NAF Non-Appropriated Fund
NGOs..... Non-governmental Organizations
NORAD North American Aerospace Defense Command

O

OEA Office of Economic Adjustment

P

PC..... Policy Committee

R

ROC Radar Operations Center
REPI..... Readiness and Environmental Protection Initiative
RX..... receiver
ROD..... Record of Decision
RCS..... Recovery Credit System
RIP..... Regional Infrastructure Plan
RPA..... Remotely Piloted Aircraft
ROW..... right-of-way
ROE right-of-entry
ROFA Runway Object Free Area
RPZ..... Runway Protection Zone

S

SHPO State Historic Preservation Office
STIP State Transportation Improvement Plan

SWPPP Storm Water Prevention Pollution Plan
START..... Strategic Arms Reduction Treaty
SLBM..... submarine launched ballistic missiles

T

341st MW ... 341st Missile Wing
TC..... Technical Committee
T&E threatened and endangered
TLV threshold limited value
TDR Transfer of Development Rights
TX..... transmitter
TE transporter-erector
THPO Tribal Historic Preservation Office

U

USFWS US Fish and Wildlife Service
USURA..... US Urban Renewal Administration
U.S..... United States
UAVs Unmanned Aerial Vehicles

V

VFR..... visual flight rules

W

WAPA..... Western Area Power Administration
WECS..... Wind Energy Conversion System

Please see the next page.



A

Accident Potential Zone (APZ)

An APZ is a zone at the end of a runway and along the centerline of an approach and departure flight path that has a higher potential for aircraft accidents (based on a statistical evaluation of past aircraft incidents). The type of APZ relates to the probability of a safety hazard. A Clear Zone (CZ) is an area that extends 3,000 feet from the end of a runway and is 3,000 feet wide. Above ground structures are typically not permitted in these areas and, optimally, these areas remain undeveloped. APZ I begins at the end of the CZ and is 5,000 feet long and 3,000 feet wide. APZ II begins at the end of APZ I and is 7,000 feet long and 3,000 feet wide. APZ I has less accident potential than the CZ, and APZ II has less potential than APZ I. Where an APZ or CZ extends off a base, land use planning/regulations that limit concentrations of people exposed to possible flight safety hazards is desirable in order to protect public health and safety.

AICUZ (Air Installation Compatibility Use Zone)

An AICUZ is a study which identifies/recommends land uses that will be compatible with the noise levels, accident potential and obstruction clearance criteria unique to the mission/aircraft stationed at a particular air installation. An air installation AICUZ is

typically updated commensurate with the change of an installation's mission.

Airport Noise Zones

Means any area of land or water between designated noise contours on a noise exposure map where an incompatible use might be established if not prevented as provided in these regulations.

Ambient Noise

The total noise associated with an existing environment and usually comprising sounds from many sources, both near and far.

Attenuation

A reduction in the level of sound resulting from an object's distance from the noise source or absorption by the surrounding topography, the atmosphere, barriers, construction techniques and materials, and other factors.

A-weighted decibel (dBAA)

A dBAA is a unit of measurement for noise using a logarithmic scale and measured using the A-weighted sensory network on a noise-measuring device. An increase or decrease of 10 decibels corresponds to a tenfold increase or decrease in

sound energy. A doubling or halving of sound energy corresponds to a 3-dBAA increase or decrease. This unit is used to evaluate sources related to transportation and small arms firing (.50-caliber and smaller).

C

Cantonment

A cantonment is the temporary or semi-permanent quarters/housing area for military troops/personnel.

D

Day-Night Average Sound Level (DNL)

DNL represents an average sound exposure over a 24-hour period. During the nighttime period (10:00 p.m. to 7:00 a.m.), averages are artificially increased by 10 dBA. This weighting reflects the added intrusiveness and the greater disturbance potential of nighttime noise events attributable to the fact that community background noise typically decreases by 10 dBA at night.

Decibel (db)

The physical unit commonly used to describe noise levels. A unit for describing the amplitude of sound, as it is heard by the human ear.

Defense Access Road Program

The DAR Program provides a legal mechanism for the Department of Defense to help pay for a portion of improvements to certain public highways. These funds can only be used on highways defined as "important to the national defense". This program can be critical to a given military mission since many of the roads providing access to military installations are usually not Department of Defense-owned. Since military installations are not responsible for, and therefore cannot provide funding for the maintenance of any non-DAR designated public highways, unimproved civilian roadways can cause challenges to military operations. The DAR

program allows DAR-designated roads to be maintained and improved to allow for continued military use.

Doppler Radar

A Doppler radar is specialized radar that makes use of the Doppler effect to produce velocity data about objects at a distance. It does this by beaming a microwave signal towards a desired target and listening for its reflection, then analyzing how the frequency of the returned signal has been altered by the object's motion.

E

Effluent

Effluent is defined by the United States Environmental Protection Agency as "wastewater - treated or untreated - that flows out of a treatment plant, sewer, or industrial outfall. Generally refers to wastes discharged into surface waters".

Endangered species

Endangered species are plant or animal species that have a very small population and are at greater risk of becoming extinct. Many species that become extinct never make it to the endangered species list. The presence of threatened and endangered species may require special development considerations, could halt development, and could impact the performance of military missions.

Environmental Assessment

Per the National Environmental Protection Act (NEPA) an Environmental Assessment (EA) is a statement of the environmental effects of a proposed federal agency activity. An EA is supposed to provide evidence that there is no need for an Environmental Impact Statement and provide a Finding of No Significant Impacts.

Environmental Impact Statement

Per NEPA an Environmental Impact Statement (EIS) is a full disclosure document that outlines how a federal project was developed, identifies

the alternatives that were considered, analyzes the potential impacts resulting from the alternatives, and demonstrates compliance with other applicable environmental laws and executive orders. The EIS process is completed in the following ordered steps: Notice of Intent (NOI), draft EIS, final EIS, and record of decision (ROD).

F

Frequency Spectrum

The frequency spectrum is the entire range of electromagnetic frequencies used for communications; which includes frequencies used for radio, radar and television. In the performance of typical operations, the military relies on a range of frequencies for communications and support systems. Similarly, public and private users rely on a range of frequencies to support daily life.

Fresnel Zone

The Fresnel Zone is an area around the visual line-of-sight that radio waves spread out into after they leave an antenna. This area must be clear of vertical obstructions or else signal strength will weaken.

G

Glare

The presence of excessively bright light, such as direct or reflected sunlight, or artificial light, such as sport field and stadium lights at night. Glare reduces visibility and can completely impair vision when very intense.

H

Hardened Inter-site Cable System (HICS)

The Hardened Inter-site Cable System (HICS) is an extensive network of buried copper cables designed to survive a nuclear attack. The HICS is

an underground communications link that connects the LCCs. HICS serves as the command and control communications network for the Intercontinental Ballistic Missiles (ICBMs).

I

Impedance

Impedance is the interruption of electronic signals due to the existence of a structure or object between the source of the signal and its destination. Key issues to consider relative to frequency spectrum impedance include the construction of buildings or other facilities that block or impede the transmission of signals from antennas, satellite dishes, or other transmission / reception devices affected by line-of-sight requirements.

Interference

Interference is the inability to effectively distribute or receive a particular frequency because of similar frequency competition. As the use of the frequency spectrum increases (such as the rapid increase in cellular phone technology over the last decade) and as development expands near military installations and operational areas, the potential for frequency spectrum interference increases.

Instrument Flight Rules (IFR)

Rules and regulations established by the Federal Aviation Administration (FAA) to govern flight under conditions in which flight by outside visual reference is not safe. IFR flight depends upon flying by reference to instruments in the flight deck, and navigation is accomplished by reference to electronic signals.

L

Launch Facilities (LFs)

An LF is an underground vertical cylindrical container for the storage and launching of ICBMs. LFs typically have the missile a specified distance

under the surface, protected by a large "blast door" on top. They are connected, either physically or electrically to a launch control center. ICBM Launch facilities are synonymous with the term missile silo, used in common nomenclature.

Launch Control Center (LCC)

A Launch Control Center (LCC) is an underground structure of reinforced concrete and steel of sufficient strength to withstand weapon effects. It contains equipment and personnel capable of controlling, monitoring, and launching 50 missiles in the unmanned launch facilities within the squadron.

Line of Sight

A line of sight is an imaginary line from the eye to a perceived object.

M

Minuteman III Intercontinental Ballistic Missile (ICBM)

The Minuteman III Intercontinental Ballistic Missile (ICBM) is a strategic weapon system using a ballistic missile of intercontinental range, i.e., approximately 3400 to 9000 miles. Missiles are dispersed in hardened silos to protect against attack and connected to an underground launch control center through a system of hardened cables. Launch crews, consisting of two officers, perform around-the-clock alert in the launch control center.

Missile Alert Facilities (MAFs)

Missile Alert Facilities (MAFs) are located at each operational missile wing for command, control, and monitoring of the Minuteman LFs. The MAF consists of a buried and hardened Launch Control Center (LCC), an above-ground Launch Control Support Building (LCSB), a buried and hardened Launch Control Equipment Building (LCEB) to house the cooling and generator systems. These LCCs are removed 20 to 150 miles from the central support base and a minimum of 14 miles from each other. The LCCs are located a minimum of three miles from the nearest LF, and the individual

LFs are separated by a similar distance. A crew of two officers operates all of the systems in the LCC on a 24-hour shift. From the LCC, they remotely monitor their flight of ten missiles and back up another flight of ten.

N

National Environmental Policy Act (NEPA)

NEPA is the 1969 federal environmental law that requires all federal agencies to evaluate and publicly report the environment effects of actions undertaken by an agency. NEPA establishes procedural requirements for all federal agencies to prepare Environmental Assessments (EAs) and Environmental Impact Statements (EISs) that describe the environmental effects of agency actions.

National Historic Preservation Act (NHPA)

NHPA is the federal law which establishes policies for the preservation of the Nation's cultural and historic heritage. The NHPA established the Section 106 consultation requirement for federal "undertakings" and established the Advisory Council of Historic Properties (ACHP) as an independent Federal agency to administer Section 106 through procedures specified in 36 CFR Part 800.

Noise Attenuation

Noise attenuation is a reduction in the level of sound resulting from absorption by the surrounding topography, the atmosphere, distance from the source, barriers, construction techniques and materials, and other factors.

Noise Contour

A noise contour is a noise impact line constructed by connecting points of equal noise level measured in decibels Ldn, on a map.

Noise Exposure Map

A noise exposure map is a scaled, geographic depiction of an airport, its noise contours and surrounding areas.

Noise Level Reduction (NLR)

The amount of reduction in noise for any given point as achieved through the incorporation of noise attenuation measures incorporated into the design and construction of buildings. These reductions may be incorporated during initial construction or as additional construction for existing buildings.

R

Restrictive Easement

A restrictive easement is a perpetual and assignable easement, which establishes a restricted area in, on, over and across designated lands. Restrictive easements consist of the right to prohibit human habitation; the right to remove buildings used for human habitation; the right to prohibit the gathering of large groups of people; the right to post signs indicating the nature and extent of the Government's control; and the right of ingress and egress over and across said land.

S

Sedimentation

Sedimentation is the accumulation of debris, dirt, or particulates in a body of water.

Sound Attenuation

Sound attenuation refers to special construction practices designed to lower the amount of noise that penetrates the windows, doors, and walls of a building.

Sound Exposure Level (SEL)

This metric is a measure of the total sound energy and is a sum of the sound intensity over the duration of exposure. The SEL provides a convenient single number that adds the total acoustic energy in a transient event, and it has proven to be effective in assessing the relative annoyance of different transient sounds.

Sound Level (also Noise Level)

In decibels, the quantity measured by an instrument satisfying requirements of American National Standard Specification for Sound Level Meters SI.4-1971, or the latest revision thereof. Unless explicitly described otherwise, the sound level shall be the frequency-weighted sound pressure level obtained with the frequency weighted A and the standardized dynamic characteristic SLOW. In this order, the sound level is to be understood to be the A-weighted sound level matter is relatively less sensitive to low frequency sound, somewhat in the way the ear is progressively less sensitive to sounds of frequency below 1000 Hertz (cycles per sound).

Special-Status Species

Special-status species are plants or animals that are legally protected under the ESA. Species can be classified as listed, candidate, sensitive or species of concern.

T

Threatened species

Threatened species are plant or animal species that may become extinct if measures are not taken to protect it.

U

United States Environmental Protection Agency (USEPA)

USEPA is an agency of the federal government charged with protecting human health and the environment, by developing and enforcing regulations based on laws passed by Congress. USEPA implements and enforces the provisions of the federal Clean Water Act (CWA) and Safe Drinking Water Act (SDWA), which ensures a clean and safe potable water supply for all states and territories of the United States.

V

Vibration

Vibration is the oscillation or motion that alternates in opposite directions and may occur as a result of an impact, explosion, noise, mechanical operation, or other change in the environment.

Visual Flight Rules (VFR)

Regulations which allow a pilot to operate an aircraft in weather conditions generally clear enough to allow the pilot to see where the aircraft is going.

W

Wind Energy Conversion System

Wind energy conversion systems (WECS) convert the kinetic energy of the wind into electricity or other forms of energy.

Chapter 1 Introduction





Military installations are critical to local economies because they typically generate thousands of jobs and hundreds of millions of dollars in economic activity and tax revenue annually. In past instances, incompatible development near military installations has been a factor in the curtailment of training operations and the reorganizing of mission critical components to other installations. To protect military missions and the health of the economies and industries that rely on them, incompatible development must be addressed through collaboration and joint planning between installations and local communities. This Joint Land Use Study (JLUS) attempts to mitigate future issues and improve coordination among the City of Great Falls, Cascade County, Chouteau County, Fergus County, Judith Basin County, Lewis and Clark County, Teton County, Wheatland County, and Malmstrom Air Force Base (AFB).

The region surrounding Malmstrom AFB and the Malmstrom Missile Complex has the potential to experience economic and population growth in the future. As new and infill development moves closer to the Base and / or Missile Alert Facilities (MAFs) and Launch Facilities (LFs), a coordinated effort is needed to ensure that the growth throughout the JLUS study areas allow the installation to maintain its strategic role in the nation’s defense, as well as continue to be a vital member of the local community and a major contributor to the regional economy.

The Malmstrom AFB JLUS was undertaken as a proactive and preventative effort to ensure that mutually beneficial growth and development occurs at MAFB and in the jurisdictions in proximity to the installation and the Missile Complex. This study seeks to avoid conflicts previously experienced between the United States (U.S.) military and local communities in other areas of the country by engaging the military and local decision makers early in the planning process to address issues proactively. This approach allows for multiple alternatives to be evaluated before issues become unmanageable, as opposed to reactively when options for success may be very limited.

1.1 What is a Joint Land Use Study?

A JLUS is a planning process accomplished through the collaborative efforts of key stakeholders working together to identify compatible land uses and growth management guidelines within and adjacent to active military installations. These stakeholders typically include local community and federal officials, residents, business owners, nongovernmental organizations, and the military. The intent of the process is to establish and foster a working relationship among military installations and proximate communities to work as a team to prevent



and/or curtail encroachment issues associated with future mission expansion and local growth. Although primarily federally funded by the Department of Defense (DoD), Office of Economic Adjustment (OEA), a JLUS is produced by and for local stakeholders.

JLUS GOAL

The goal of the Malmstrom AFB JLUS is to protect the viability of current and future missions at Malmstrom AFB (MAFB) and the Malmstrom Missile Complex, while at the same time guiding growth, sustaining the economic health of the region, and protecting the public health, safety, and welfare.

JLUS OBJECTIVES

To help meet this goal, three primary objectives were identified.

- **Understanding** — Convene community and military representatives to identify, confirm and understand the issues in an open forum, taking into consideration both community and U.S. Air Force viewpoints and needs. This includes public awareness, education and input organized in a cohesive outreach program.
- **Collaboration** — Encourage cooperative land use and resource planning among the Base, Missile Complex, and surrounding communities so that future community growth and development are compatible with the training and operational missions at the installation and missile sites, while at the same time seeking ways to reduce operational impacts on adjacent lands within the City of Great Falls and the seven counties.
- **Actions** — Provide a set of mutually supported tools, activities, and procedures from which local jurisdictions, agencies, and the U.S. Air Force can select, prepare, approve / adopt, and use to implement the recommendations developed during the JLUS process. The actions include both operational measures to mitigate installation impacts on surrounding communities and local government and agency approaches to reduce community impacts on military operations. These tools will help decision makers resolve compatibility issues and prioritize projects within the annual budgeting process of their respective entity / jurisdiction.

1.2 Why Prepare a Joint Land Use Study?

In addition to the many positive interactions among local jurisdictions, agencies, and the military, the activities or actions of one entity can also pose unintended negative impacts on another, resulting in conflicts. As the jurisdictions develop and expand in response to growth and market demands, local land use decisions may result in potential incompatible development closer to military installations and operational / training areas. This is often referred to as encroachment, which can have negative impacts on community safety, economic development, and sustainment of military activities and readiness. This threat to readiness is currently one of the military's greatest concerns.

Collaboration and joint planning among military installations, local communities and agencies should occur to protect the long-term viability of existing and future military missions. Working together strengthens the health of economies and local industries before incompatibility becomes an issue. Recognizing the close relationship that should exist between installations and adjacent communities, the OEA implemented the JLUS program in an effort to mitigate existing and future conflicts and enhance communication and coordination among all affected stakeholders. This program endeavors to preserve the sustainability of local communities within the JLUS study area while protecting current and future operational and training missions at MAFB and the Malmstrom Missile Complex.

REGIONAL ECONOMIC AND LOCAL IMPORTANCE

MAFB is located near the center of the State of Montana, and is an economic hub for both the surrounding region and the State. The Base and the Missile Complex serve integral roles in the security and protection of the U.S. and are extremely important to the economy, security, and social fabric of the nearby City of Great Falls and surrounding region. According to the Fiscal Year 2009 (FY09) Economic Impact Analysis released by MAFB, the Base created an estimated 1,490 indirect jobs, and had a total economic impact to the area within a 50-mile radius of the Base (to include the City of Great Falls and portions of Cascade, Chouteau, and Teton Counties) of nearly \$434 million. This economic impact is broken down by category as follows:

- **Total Annual Payroll** — \$222 million
- **Total Annual Expenditures** — \$162 million
- **Estimated Annual Dollar Value of Jobs Created** — \$50 million

Total employment at the Base (excluding dependents) was 4,524, composed of 3,149 military and 1,375 civilian (appropriated, non-appropriated, contract, and private business) personnel.

MILITARY STRATEGIC IMPORTANCE

During the late 1950s, MAFB was chosen to host the first group of Minuteman I intercontinental ballistic missiles (ICBM). In the early 1960s, 15 launch control facilities and 150 missile sites were constructed throughout central Montana to house Minuteman I missiles. Since then, an additional 50 missile sites were added (but have since been decommissioned, leaving a current total of 150 active sites) and the missiles have been upgraded to Minuteman III ICBMs. The Malmstrom Missile Complex served a key role during the Cuban Missile Crisis and the Cold War and helped to ensure that no nuclear attacks were made against the U.S. It has, and continues to support an integral role in the nation's nuclear arsenal and security of the country. In 2008, the 564th missile squadron was deactivated reducing the size of Malmstrom's active missile field from 23,500 to 13,800 square miles.

A similar reduction could occur in the future with the recent ratification of the New Strategic Arms Reduction Treaty (START). The New START is an agreement between the U.S. and Russia to reduce the number of nuclear warheads. The treaty requires a significant reduction in the number of strategic nuclear missile launchers to half of each of the countries' stockpiles. Consequently this will limit the number of deployed ICBMs, submarine launched ballistic missiles (SLBM), and heavy bombers equipped for nuclear armaments to a nationwide total of 700. Implementation of the treaty could directly impact the mission at MAFB.

MAFB does not have a current flying mission and its runway has been closed since the late 1990s. The runway could be reused, however, if improved. Improvements would include surface repair, replacement of approach instruments, and new lighting fixtures, according to the MAFB General Plan. Although no specific future mission or use has been decided for the runway, its current condition and the potential for DoD re-structuring, suggests there is a possibility it could be reused in the future. A core assumption of this study is that the jurisdictions surrounding MAFB would support and encourage reopening of the runway with an expanded mission at MAFB. If this were to change, the nature of the recommendations in this JLUS would need to be modified.

LOCAL COMMUNITIES WORKING TOGETHER

Operations at MAFB contribute to the both the local and regional economy of northern Montana. The City of Great Falls, Cascade County, and other nearby communities provide housing for a large number of active and retired military personnel, dependents, and civilian personnel. The local communities also provide goods and services to the installations, such as schools, libraries, fire protection, water, and sewage, while the military in

return gives back to the local communities through the involvement of military personnel in local charities, volunteering opportunities, an annual multicultural fair hosted by MAFB, and community outreach programs. Personnel at the installations also maintain environmental and cultural resources on lands where training and operations are conducted.



40th Helicopter Squadron hoisting an accident victim

The military assists the communities with critical services when needed. For example, the 40th Helicopter Squadron (HS), which provides security services to the Missile Complex and makes daily flights to the individual LF sites, also assists the public in search and rescue operations throughout Montana, Idaho, and northern Wyoming when needed. According to the FY09 Economic Impact Analysis, the 40th Helicopter Squadron conducted 45 hours of MEDEVAC and search and rescue efforts, totaling four rescues and 11 assists.

1.3 JLUS Study Area

Malmstrom AFB, the Malmstrom Missile Complex, and the surrounding region are location in north-central Montana (see Figure 1-1). The Malmstrom AFB JLUS has two unique study areas. One study area includes all lands near MAFB and the other includes all lands within the Malmstrom Missile Complex in proximity to the MAFs and LFs. Both study areas include resources, activities, or land uses (existing or future) that may impact current or future military operations.

The Malmstrom AFB JLUS study areas encompass the largest extent of land to be affected by the operations of MAFB, Missile Complex and other areas that exhibit significant potential for future development. The primary determinants of the study areas were compatibility issues associated with land use, vertical obstructions (wind energy conversion systems, cell towers, etc.) competition for airspace, competition for ground transportation, noise, and safety zones associated with the de-activated runway at MAFB. Figure 1-2 illustrates the MAFB Study Area, which encompasses Malmstrom AFB, the City of Great Falls and surrounding land in Cascade County. Figure 1-3 illustrates the Malmstrom Missile Complex Study Area, which includes all lands within the Malmstrom AFB Study Area, as well as Chouteau, Fergus, Judith Basin, Lewis and Clark, Teton, and Wheatland Counties.

1.4 JLUS Process Timeline / Overview

The Malmstrom AFB JLUS started in February 2010 and was completed in March 2012. Additional details pertaining to key elements of the JLUS planning process are described on the following pages.

The JLUS process was designed to create a locally relevant plan built on consensus and support from numerous stakeholders. To achieve this, the Malmstrom AFB JLUS process included a public outreach program that provided numerous opportunities for interested parties to contribute to the development of the study.

STAKEHOLDERS

Stakeholders include individuals, groups, organizations, and governmental entities interested in, affected by, or affecting the outcome of the Malmstrom AFB JLUS. Involving stakeholders early on is instrumental in the identification of important issues to be addressed and resolved through the JLUS process. Stakeholders for the Malmstrom AFB JLUS included, but were not limited to:

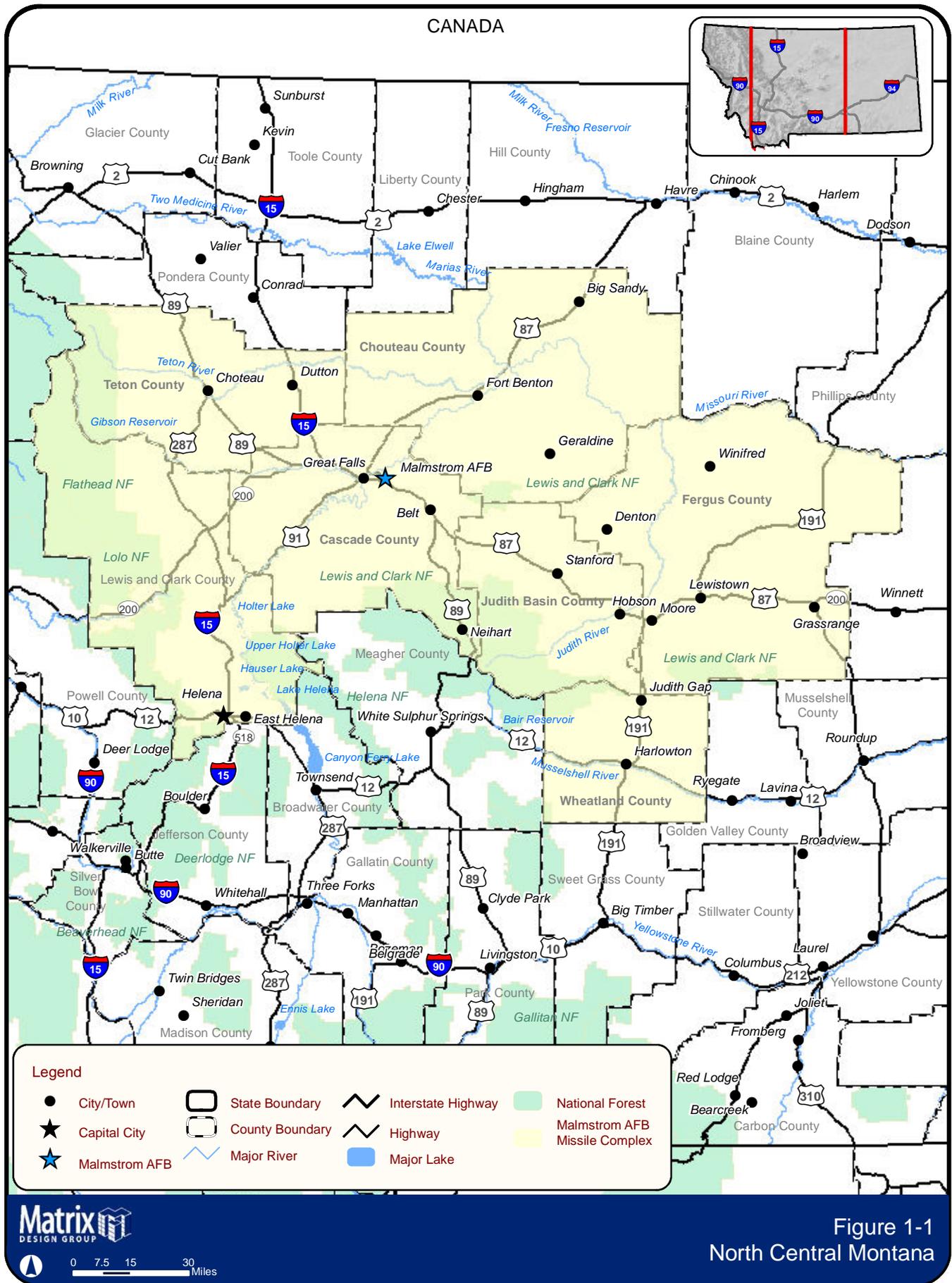
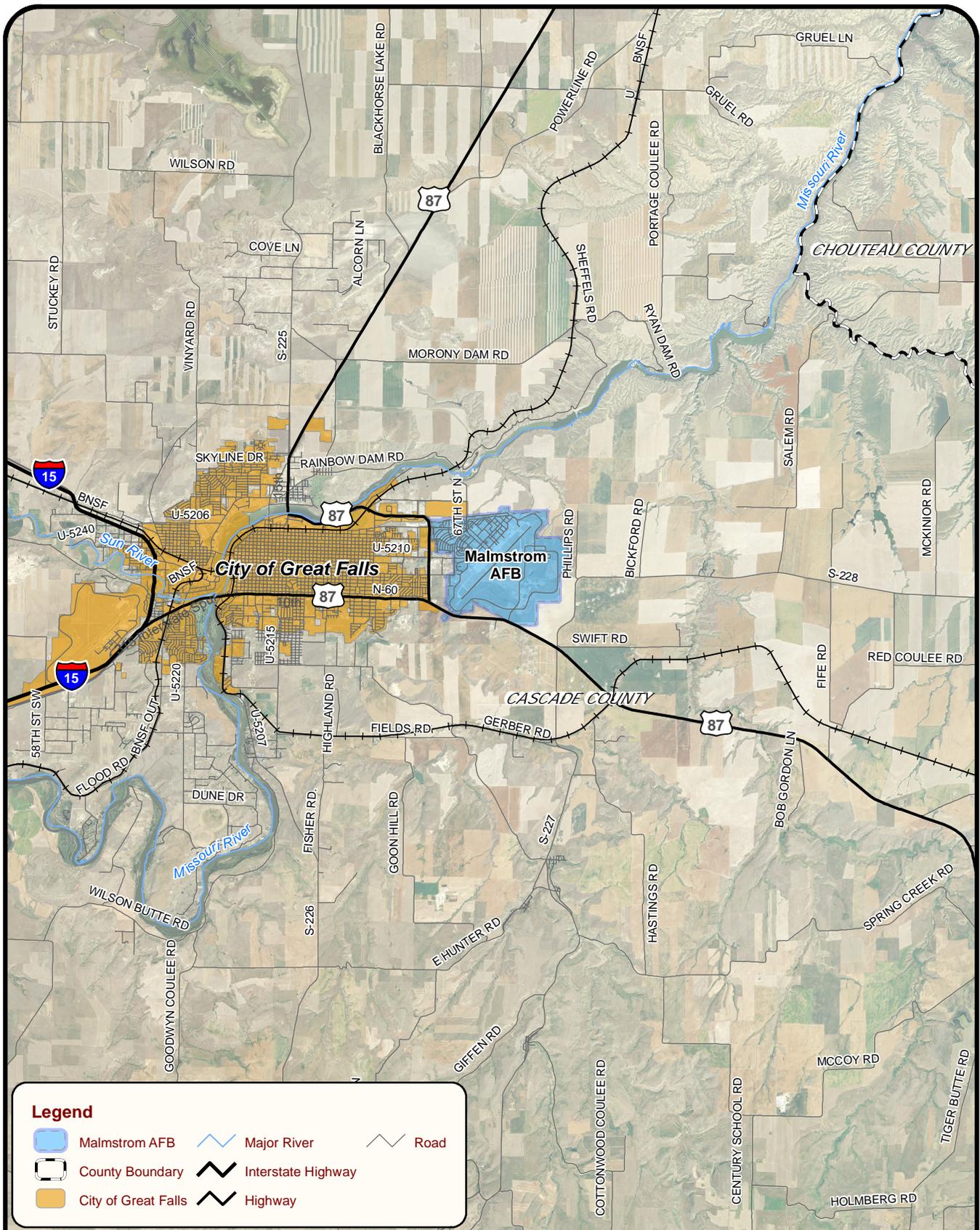


Fig1-1_MAFB_Reg_2011_09_28_JKC.pdf



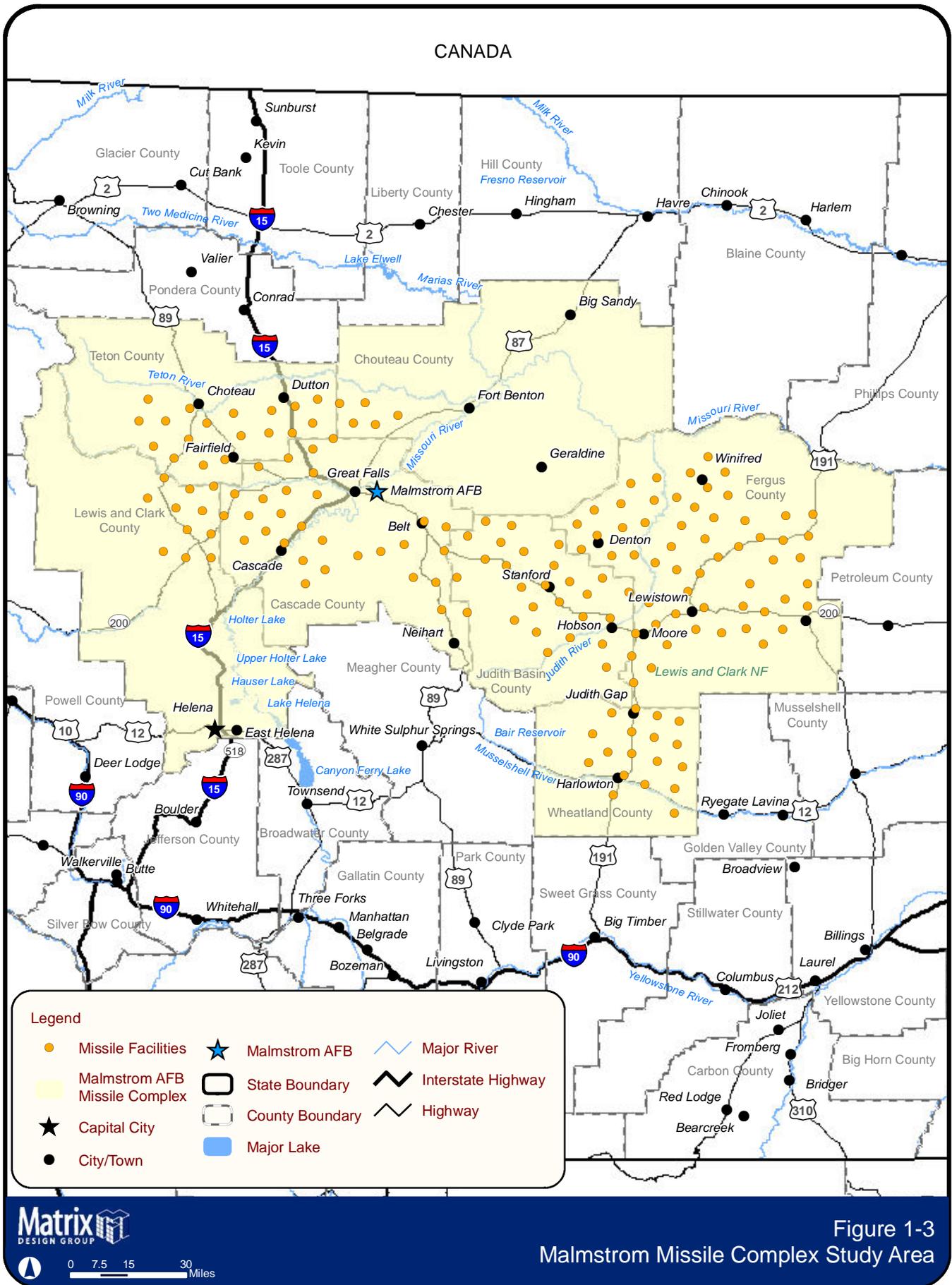
Legend

Malmstrom AFB	Major River	Road
County Boundary	Interstate Highway	
City of Great Falls	Highway	



Figure 1-2
Malmstrom AFB Study Area

Fig1-2_MAFB_FocusArea_2011_09_22_RGR.pdf



- Local jurisdictions (cities and counties)
- DoD officials (including OEA representatives) and military installation personnel
- Local, regional, and state planning, regulatory, and land management agencies
- The public (including residents and landowners)
- Environmental advocacy organizations
- Nongovernmental organizations (NGOs)
- Other special interest groups (including local educational institutions and school districts)

POLICY COMMITTEE AND TECHNICAL COMMITTEE

The development of the Malmstrom AFB JLUS was guided by two committees, which were comprised of city, county, Air Force, resource agencies, and other stakeholders.

JLUS Policy Committee (PC) – The PC consisted of officials from participating jurisdictions, military installation leadership, and representatives from other interested and affected agencies. The PC was responsible for the overall direction of the JLUS, preparation and approval of the study design, approval of policy recommendations, and approval of draft and final JLUS documents.

JLUS Technical Committee (TC) – The TC was responsible for identifying and studying technical issues. Membership included planners from surrounding jurisdictions, military base planners, business and development community representatives, natural resource protection organizations, and other subject area experts, as needed, to help assist in the development and evaluation of implementation strategies and tools. Items discussed by the TC were brought before the PC for consideration and action.

The PC and TC served as liaisons to their respective stakeholder groups. PC and TC members were charged with conveying information back and forth between their organizations and the committees. PC members were encouraged to meet with their organizations and / or constituencies to facilitate input. The JLUS sponsors, PC, and TC participants and responsibilities are identified in Tables 1-1, 1-2, and 1-3, respectively.

Table 1-1. JLUS Sponsor Responsibilities and Participants

Responsibilities	Participants
<ul style="list-style-type: none"> ■ Coordination ■ Accountability ■ Grant Management ■ Financial Contribution 	<ul style="list-style-type: none"> ■ Office of Economic Adjustment ■ Cascade County Public Works Department

Table 1-2. JLUS Policy Committee Responsibilities and Participants

Responsibilities	Participants
<ul style="list-style-type: none"> ■ Policy Direction ■ Study Oversight ■ Monitoring ■ Report Adoption 	<ul style="list-style-type: none"> ■ Cascade County Commissioners ■ Cascade County Public Works Director ■ City of Great Falls City Planning & Community Development Department ■ Fergus County ■ Great Falls International Airport Authority ■ Great Falls Association of Realtors ■ Great Falls Chamber of Commerce ■ Great Falls Citizens Council ■ Malmstrom AFB ■ Montana Association of Counties (MACo), Missile Counties Committee ■ Montana House of Representatives ■ Property Owners

Table 1-3. JLUS Technical Committee Responsibilities and Participants

Responsibilities	Participants
<ul style="list-style-type: none"> ■ Identify Issues ■ Provide Expertise to Address Technical Issues ■ Evaluate and Recommend Implementation Options to the PC ■ Provide Draft and Final Report Recommendations to the PC 	<ul style="list-style-type: none"> ■ Association of Realtors ■ Big Sky Civil and Environmental, Inc. ■ Cascade County Planning Department ■ City of Great Falls City Planning & Community Development Department ■ Chouteau County Planning Department ■ Fergus County Planning Department ■ Great Falls Development Authority ■ Great Falls Neighborhood Council # 4 ■ Judith Basin County Planning Department ■ Lewis and Clark County Planning Department ■ Malmstrom AFB ■ Montana Department of Transportation ■ Teton County Planning Department

Meetings were held throughout the process to ensure that local issues were identified and appropriately addressed in the JLUS. The meetings conducted during the process are presented below:

- **Meeting #1 (March 2010)** — This meeting served as the initial kick-off for the Policy and Technical Committees and included introductions and a discussion of the overall approach to the JLUS.
- **Meeting #2 (April 2010)** — This meeting helped to define the project and included a presentation about the JLUS program and process. The meeting also included a facilitated exercise with committee members to identify preliminary compatibility issues.

- **Meeting #3 (September 2010)** — This meeting was an update on the JLUS process. It provided the results of the compatibility issues survey from the previous meeting, which led to the development of encroachment issues. These issues were discussed at the meeting and resulted in a draft set of Military Impact Areas.
- **Meeting(s) #4 (February 2011)** — These meetings provided an opportunity for the PC and TC to review the preliminary strategies developed for the study. The TC made recommendations concerning strategy feasibility and improvements. The PC determined the size and scope of the proposed Military Overlay Districts and the Military Overlay Airport District.
- **Meeting(s) #5 (October 2011)** — These meetings provided the PC and TC an opportunity to discuss and provide comments about the draft JLUS document and proposed strategies.

PUBLIC FORUMS

In addition to the PC and TC meetings, a series of public forums were held throughout the development of the JLUS. These forums provided an opportunity for the exchange of information with the greater community, assisted in identifying the issues to be addressed in the JLUS, and provided input on the proposed strategies. Each forum included a traditional presentation and a facilitated exercise to provide a “hands on,” interactive opportunity for the public to participate in the development of the plan. The public forums are described below:

- **Public Forum #1 (September 2010)** — This forum provided an overview of the Malmstrom AFB JLUS process and engaged the community in the identification of issues to be addressed in the JLUS. It also provided an overview of the MAFB and Missile Complex mission, described the JLUS program and process, provided an opportunity for questions and answers and described compatibility issue types. This last item helped attendees describe the compatibility issues that should be addressed in the JLUS.
- **Public Forum #2 (February 2011)** — Three public meetings were offered on three different evenings at the following locations: Lewistown, Fort Benton, and Simms. The opening presentation at each meeting provided an overview of the JLUS program and process, the MAFB military operations and the study area. Each meeting offered an opportunity for the public to ask questions and provide input on issues and concerns.
- **Public Forum #3 (October 2011)** — Three public meetings were conducted throughout the study area to provide the public with an overview of the issues identified in the Malmstrom AFB JLUS, as well as the draft strategies.

PUBLIC OUTREACH MATERIALS

Fact Sheet — At the beginning of the JLUS program, a Fact Sheet was developed which described the JLUS program, objectives, public input methods and the Malmstrom AFB JLUS proposed study area. This Fact Sheet was available for review by interested members of the public at the meetings.

Compatibility Factors Brochure — This brochure described each of the 24 standard compatibility factors which are evaluated in a JLUS. While every factor did not apply to the Malmstrom AFB JLUS (i.e. Marine Environments), the list was used as a tool to ensure that a comprehensive evaluation of compatibility factors was conducted within the JLUS study area.

Strategy Tools — JLUS strategies constitute a variety of actions that local governments, military installations, government agencies and other stakeholders can take to promote compatible land use planning. This brochure provided an overview of the potential strategy tools that could be used to address compatibility issues in Montana.

Website — In addition to these documents, a project website was developed and maintained that provided stakeholders, the public, and media representatives access to project information.

The website was maintained for the duration of the project to ensure information was easily accessible. Information contained on the website included: program points of contact, schedules, documents, maps, public meeting information, and downloadable comment forms. The project website was www.malmstromjlus.com.



1.5 JLUS Implementation

It is important to note that once the JLUS process is completed, the final document is **not** an adopted plan. It is a strategic guide to be used by local jurisdictions, agencies, and organizations in the study area to guide their future compatibility efforts. For instance, local jurisdictions may use the strategies in the JLUS to guide future subdivision regulation, growth policy, and zoning updates, as well as to assist in the review of development proposals. MAFB will use the JLUS to guide its interaction with local jurisdictions on future projects, as well as to manage internal planning processes with a compatibility based approach. It is through the future actions of the stakeholders that the JLUS strategies will become a reality.

The key to implementation of the strategies in this JLUS is the establishment of the JLUS Coordinating Committee to oversee the implementation of the JLUS after it is complete. Through this Committee, local jurisdictions, MAFB, and other interested parties will continue working together to establish procedures, recommend or refine specific actions for member agencies, and make adjustments to strategies to ensure the JLUS remains relevant to the planning issues of the study area.

1.6 JLUS Organization

The following is a brief overview of the organization of the Malmstrom AFB JLUS, including the contents of each of the four chapters.

Chapter 1: Introduction. Chapter 1 provides an introduction and context for the Malmstrom AFB JLUS. This Chapter defines the JLUS, identifies its overall goal, objectives, and necessity, and describes the strategic and local importance of MAFB and the Missile Complex, as well as the working relationships among the entities and the two

study areas. It also describes the tasks and timelines used to guide development of the JLUS, the stakeholders, public outreach methods, implementation premise, and the organization of the JLUS document.

Chapter 2: Study Area Profile. In developing this JLUS, an informed understanding of MAFB, the Malmstrom Missile Complex, and county / local jurisdictions within the overall study area is necessary. For the Malmstrom AFB JLUS, this Chapter provides: an overview of the MAFB history, a description of the primary activity areas on MAFB and within the Missile Complex, a review of the current missions and military units located at those installations, military family housing assets, a description of the possible future mission at MAFB, and the economic impact of the installations on the region. This is followed by a description of the history of the participating jurisdictions, an overview of the region's growth potential and a profile of the jurisdictions within the study area, including population, housing, transportation, and important environmental areas.

Chapter 3: Compatibility. Compatibility, in relationship to military readiness, can be defined as the balance or compromise between needs and interests of the local community and the military. The goal of compatibility planning is to promote an environment where both entities can coexist sustainably. In order to develop potential solutions, it is critical to understand the conditions and implications of existing and potential compatibility issues. In this Chapter, the JLUS presents the compatibility issues identified for the Malmstrom AFB JLUS. These issues are based on input from the PC and TC, members of the public, existing plans and technical reports, and evaluation by the project team. The Chapter is divided into two sections: Section 3.1, which includes the MAFB Study Area, and Section 3.2, which addresses the Missile Complex Study Area.

Chapter 4: Implementation Plan. The final Chapter of the JLUS presents the specific course of action that has been developed cooperatively with representatives from local jurisdictions, MAFB, state and federal agencies, local organizations, and interested individuals and landowners. The result of a collaborative planning process, the recommendations in this Chapter represent a consensus forged on collaborative planning: a realistic, coordinated approach to compatibility planning developed with the input, involvement and support of the stakeholders. The Chapter is divided into Chapter 4.1, in which the strategies identified for the MAFB Study Area are discussed, and Chapter 4.2, in which the strategies identified for the Missile Complex Study Area are discussed.

Chapter 2 Study Area Overview





The following chapter presents an overview of the history and current operations at Malmstrom Air Force Base (MAFB) and throughout the Malmstrom Missile Complex. Additionally, this section profiles development trends and growth potential for each jurisdiction in the JLUS study areas.

Understanding the various activities performed on the military installation and within the Missile Complex provides valuable insight into the significance of MAFB as a national strategic asset. This information enables stakeholders to make informed decisions about the future development and economic growth of their communities, which ultimately impacts the continued existence and future role of each facility. It also allows the military to understand the types of activities occurring outside the fence when considering future missions and operations.

2.1 Malmstrom AFB

HISTORY

The origins of Malmstrom AFB date back to the start of World War II. As part of the Lend-Lease Act to supply war materials to the Allies, an area east of Great Falls, Montana was chosen to establish an air base. In the early 1940s, the 7th Ferrying Group was transporting aircraft and supplies to the Soviet Union via the Great Falls municipal airport. Eventually, a new facility was needed, and construction began on the Great Falls Army Air Base, or East Base, on June 8, 1942. The Base became active on December 15, 1942, and continued to support the transport of aircraft and supplies to the Soviet Union. Approximately 8,000 aircraft were processed for shipment to the Soviet Union during a 21-month period.



Great Falls Army Air Base, 1942

The 2nd Air Force was assigned to the base and the first B-17 Flying Fortress arrived in November 1942. The 2nd, 385th, 390th, and 401st Bombardment Groups trained at the base from November 1942 to October 1943. During 1943, the Base grew, including the construction of a consolidated mess, a Post Exchange, a theater, and a 400-bed hospital.

Following World War II, the Base went under the command of the Military Air Transport Service and was used to train C-54 transport aircraft crews. It was renamed Great Falls Air Force Base in 1947 when the Air Force became its own service. In 1948, during the strategic airlift of supplies to West Berlin, known as "Operation Vittles," Great Falls AFB was selected as the only replacement aircrew training site for C-54 aircrews as part of this operation.

In the early 1950s, the 29th Air Division activated at Great Falls AFB and brought fighter interceptor squadrons, an aircraft control and warning squadron, and ground observer detachments. The 29th Fighter Interceptor Squadron was activated in 1953 and remained in Great Falls until 1968. Following the creation of the North American Aerospace Defense Command (NORAD) in 1957, the Base was assigned responsibility for the 24th NORAD region, covering the western half of North America. The Region included four fighter/interceptor squadrons and radar sites that extended from the Rocky Mountains to halfway across North Dakota and north to the northern border of Canada. The 24th was also the alternate command post for NORAD, which remained active until 1983.

In February 1954, control of the Base was transitioned to the Strategic Air Command, with the 407th Strategic Fighter Wing assigned to Great Falls AFB. The Wing included F-84 fighters and KB-29 air re-fuelers, who were tasked to provide fighter escort for the Strategic Air Command's long-range B-36 bombers.

The Base was renamed Malmstrom AFB on June 15, 1956 following the death of 407th Strategic Fighter Wing Vice Commander Colonel Einar Axel Malmstrom, resulting from a plane crash approximately one mile west of the Great Falls Airport on August 21, 1954. The renaming was the result of large community support to name the Base in honor of Colonel Malmstrom.



Early construction of a missile site

In the early 1960s, MAFB was chosen to support the United States' (U.S.) nuclear security with the placement of Minuteman I intercontinental ballistic missiles (ICBMs) in north central Montana. The 341st Strategic Missile Wing was activated at MAFB on July 15, 1961, following the beginning of construction of the first launch facility in March of that year. It was completed in December, and the first launch control facility was completed in July of the following year. During this time, three Strategic Missile Squadrons, the 10th, 12th, and 490th were activated. The first Minuteman I ICBM arrived by rail in July 1962. The Minuteman sites served a key role during the Cuban Missile Crisis in October 1962. The Wing and its three Squadrons became fully operational in July 1963 after 28 months of construction. With 150 missiles total, each Squadron controlled 50 sites and five launch control facilities. Construction began on 50 additional missile sites and five launch control facilities in 1965 activating the 564th Strategic Missile Squadron. This new squadron and its associated sites were equipped with the more modern Minuteman II ICBMs. Following the completion of this project, the Malmstrom Missile Complex covered 23,500 square miles and was the largest missile field in the U.S. By 1969, the three remaining squadrons were upgraded with Minuteman II missiles.

Over the next several decades, MAFB's missiles and facilities underwent numerous upgrades and improvements. In January 1975, the 564th began upgrading its Minuteman IIs with the newer Minuteman IIIs. The Strategic Arms Reduction Treaty (START) was signed by the U.S. and the Soviet Union on July 31, 1991 that resulted in all 150 Minuteman IIs being taken off alert on September 27 of the same year. In 1993, MAFB was transferred from Strategic Air Command to Air Force Space Command (and again to the newly established Global Strike Command in December 2009). All Minuteman IIs were removed and replaced with Minuteman IIIs over the following years.

The 1995 Base Realignment and Closure (BRAC) had two impacts to MAFB. It transferred 120 Minuteman IIIs to Malmstrom from Grand Forks AFB in North Dakota, putting the base at 200 Minuteman IIIs on alert status, and it also deactivated the Base’s only flying wing, the 43rd Air Refueling Group, and assigned its KC-135R aircraft to MacDill AFB in Florida. The base’s runway was declared inactive on January 1, 1997, resulting in the removal of the control tower and other facilities. The runway remains inactive today.

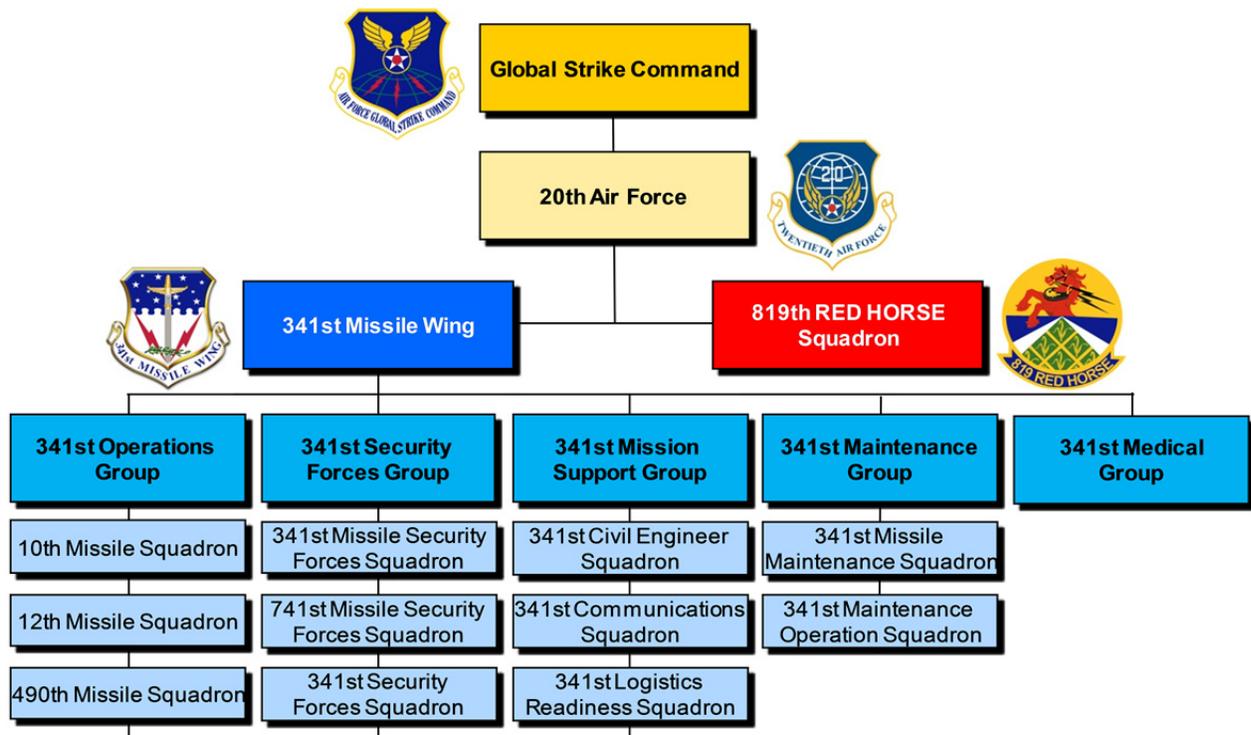
The 819th RED HORSE Squadron arrived in 1997 and was the first Air Force squadron to be composed of Active Duty, Air National Guard, and Air Force Reservists. In 1999, MAFB was named the best Air Force installation in the continental U.S. The 341st has had several designations over its operational years, but it was renamed the 341st Missile Wing on July 1, 2008. In August of the same year, the 564th was officially inactivated, reducing the number of missile squadrons to three and the number of missiles to 150 and the size of the Missile Complex to 13,800 square miles. Although not operational, these facilities remain in caretaker status until a final decision to dispose of them is made by the Department of Defense (DoD). Currently, MAFB’s Minuteman III missiles, facilities and equipment are undergoing upgrades to ensure safety and operational effectiveness for the future.

Source: www.malmstrom.af.mil, Malmstrom AFB General Plan

UNITS

Figure 2-1 illustrates Malmstrom AFB’s organizational structure.

Figure 2-1. Malmstrom AFB Organizational Chart



341st Missile Wing



The 341st Missile Wing (341 MW) is MAFB's host command unit. MAFB is one of three U.S. Air Force bases that maintains and operates the Minuteman III ICBM. Currently, 341 MW personnel provide base and logistic support to 150 missile sites, called launch facilities (LFs), and 15 missile alert facilities (MAFs) throughout north central Montana within the 13,800 square-mile Malmstrom Missile Complex. The 341 MW's role is twofold: helicopter and missile maintenance to support the Missile Complex operations and Malmstrom's daily operations. The Wing includes approximately 4,524 personnel, including 3,149 Active Duty and more than 1,375) civilians. The 341 MW achieves its mission through five functional groups: the 341st Operations Group, the 341st Security Forces Group, the 341st Mission Support Group, the 341st Maintenance Group, and the 341st Medical Group. The Operations Group includes the 10th, 12th, and 490th Missile Squadrons, each responsible for five MAFs and 50 LFs and associated missiles. Its Operations Support Squadron and the 40th Helicopter Squadron (40 HS), that operates eight UH-1N Huey helicopters, provide additional support and security within the Missile Complex.

Source: www.malmstrom.af.mil, Malmstrom AFB General Plan and 341stMissile Wing Malmstrom AFB Fiscal Year2009 Economic Impact Analysis, September 2009.

819th Red Horse Squadron



The 819th RED HORSE Squadron, short for Rapid Engineer Deployable, Heavy Operational Repair Squadron, Engineer, is a tenant unit at MAFB. The Squadron includes approximately 400 personnel, including engineers, food service, medical, vehicle and equipment maintenance, logistics planners, and supply personnel. Approximately half of the Squadron is Active Duty and the other half is Air National Guard. The purpose of a RED HORSE Squadron is to be a self-sufficient, highly mobile civil engineering response force capable of deploying within 72 hours notification to anywhere in the world, often remote locations, to provide heavy repair capability and construction support, including airfields and structures, when existing resources or capabilities cannot accommodate the needs. During peacetime, the Squadron conducts training for contingency and wartime operations.

Source: www.malmstrom.af.mil, Malmstrom AFB General Plan

CURRENT MISSION OPERATIONS

MAFB serves as the headquarters for the 341st Missile Wing, which maintains and operates 150 Minuteman III ICBMs located throughout north central Montana within the Malmstrom Missile Complex. The 40 HS is part of the 341 MW and operates eight UH-1N Huey helicopters to ensure strategic security by providing flexible, rapid-response helicopter airlift support to the Missile Complex. The 40 HS also performs aerial surveillance of DoD strategic weapon convoys, short notice emergency security forces response, and assists with civilian search and rescue.

Other than the 40 HS, there is currently no flying mission at MAFB due to the 1995 BRAC decision to transfer the 43rd Air Refueling Group and its KC-135R aircraft from Malmstrom to MacDill AFB in Florida. This decision caused the runway at Malmstrom AFB to be decommissioned and declared excess by the Air Force in 1997.

The Minuteman III is a strategic weapon system using a ballistic missile of intercontinental range. Missiles are contained in hardened silos to protect against attack and connected to an underground launch control center through a system of hardened cables. Launch crews, consisting of two officers, perform around-the-clock alert in the MAFs. As one of only three locations throughout the United States that maintains ICBMs, the 341 MW serves the vital function of providing the nation with strategic deterrent intercontinental ballistic missile capabilities.



Loading a missile into an LF

FUTURE MISSION OPERATIONS

MAFB has the potential to host a future fixed wing flying mission and/or a remote piloted aircraft (RPA) mission. While the runway at MAFB is currently decommissioned, a number of studies have been completed to determine the feasibility of restoring the runway to be used for a future flying mission. The runway, taxiways and apron are a significant asset for the Air Force. The runway is in good condition but would require upgrades, repaving and new facilities, such as a control tower, to be operational. The location of MAFB to training areas, military airspace, and military training routes as well as good flying weather enhances its military value. Currently, Air Force officials have not announced any plans to activate a flying mission at MAFB, so the future of the runway is unknown. Force structure changes are decided at the Headquarters Air Force (HAF) level.

Table 2-1 indicates the types of aircraft the MAFB class B runway could support:

Table 2-1. Aircraft Supported by a Class B Runway

■ A-4	■ C-141	■ S-3
■ A-6	■ E-3	■ SR-71
■ EA-6B	■ E-4	■ T-1
■ A-10	■ E-6	■ T-2
■ AV-8	■ E-8	■ T-6
■ B-1	■ R/F-4	■ T-37
■ B-2	■ F-5	■ T-38
■ B-52	■ F-14	■ T-39
■ C-5	■ F-15	■ T-42
■ C-9	■ F-16	■ T-43
■ KC-10	■ F/A-18	■ T-45
■ KC-135	■ F-22	■ TR-1
■ C-17	■ FB-111	■ U-2
■ C-130	■ F-117	■ VC-25
■ C-135	■ P-3	■ JSF (F-35)
■ C-137	■ RQ-1	

INSTALLATION SETTING

MAFB is located in north central Montana and is comprised of two major components: the main installation and airfield, and the Missile Complex which is spread through seven counties surrounding Great Falls, Montana.

According to the Fiscal Year 2009 (FY09) Economic Impact Analysis, MAFB's land assets (including the Missile Complex) comprise a total of 28,606 acres -- 3,900 acres are owned, 24,201 acres are added through easements, 489 acres are public domain, and 16 acres are leased. MAFB has a total of 1,048 buildings, including 266 missile facilities.

The installation covers 3,716 acres of land east of the City of Great Falls in Cascade County. It is just south of the Missouri River, approximately 75 miles east of the Rocky Mountains, and 100 miles south of the Canadian border. US Highways 87 and 89 are directly south of the Base. Most developed areas on MAFB are in the northwestern quadrant of the Base, while the eastern side is generally open space or used for storage and training purposes. The developed areas include the base cantonment area, housing, community facilities (commissary, Base Exchange, clubs, etc.), medical and industrial areas, and facilities necessary for base operations. The inactive runway extends diagonally through the center of the Base from northeast to southwest. It has a length of 11,500 feet, a width of 200 feet, and is sited at an elevation of 3,526 feet above sea level. The facilities located on the eastern portion of the Base include a weapons storage area, missile maintenance facility, RED HORSE storage area, firearms shooting range, a security police dog kennel, archery range, and the Powwow Recreational Area. Figure 2-2 illustrates where existing development is located on MAFB.

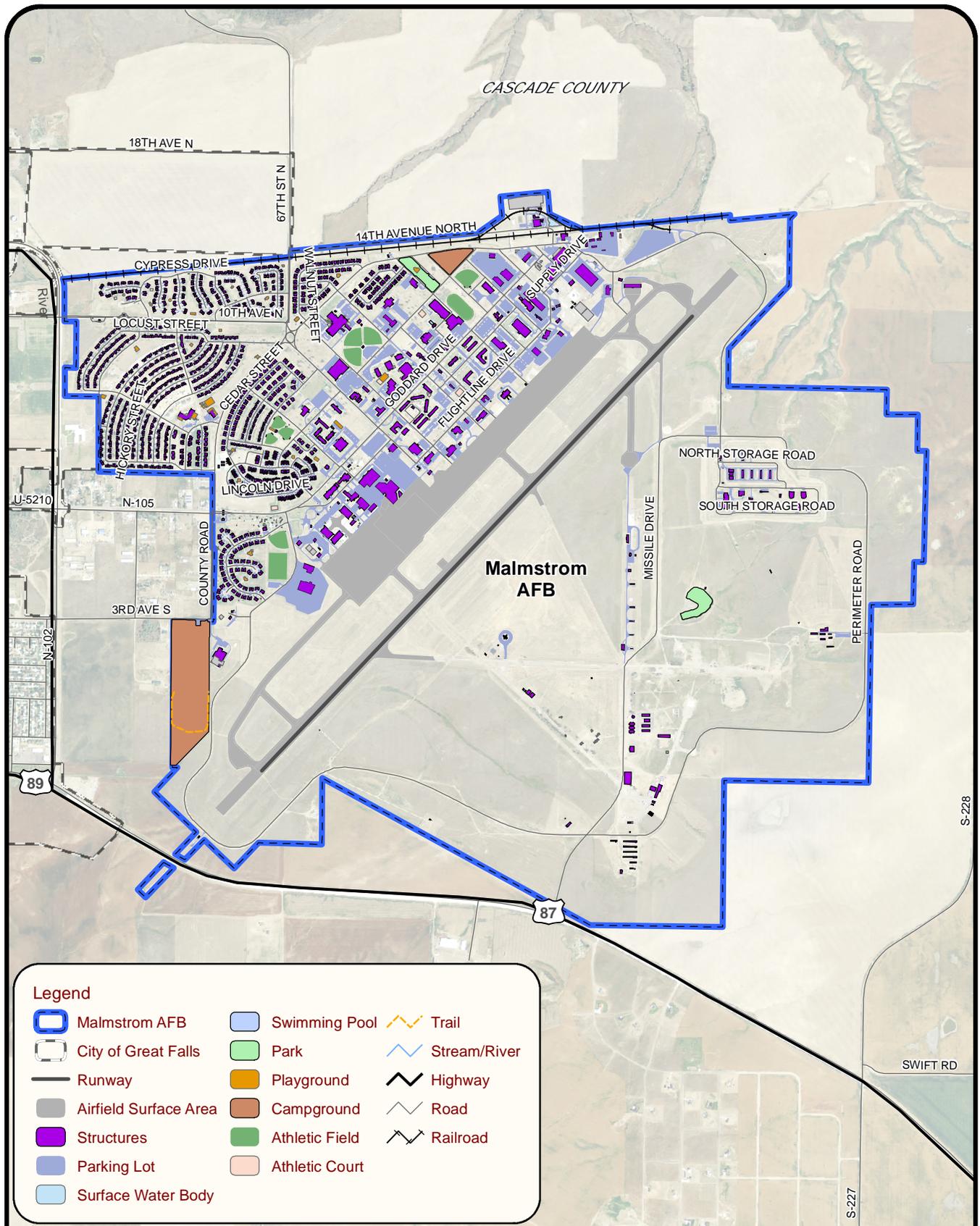
Source: Fiscal Year 2009 Economic Impact Analysis, 341st Missile Wing Malmstrom AFB, September 30, 2009; Malmstrom AFB General Plan; Utility and Development Plan East Base Area, Malmstrom AFB, November 2006

Within the Missile Complex the 341 MW manages the LFs and MAFs. Malmstrom AFB is one of three U.S. Air Force Bases that maintains and operates the Minuteman III intercontinental ballistic missile. The 341 MW is comprised of a wing staff and five functional groups including: the 341st Operations Group, the 341st Maintenance Group, the 341st Mission Support Group, the 341st Security Forces Group and the 341st Medical Group. The 341 MW operates 150 Minuteman III missiles providing the critical component of America's on-alert strategic forces. The complex is comprised of 165 active missile facilities, 25,000 miles of the Hardened Inter-site Cable System, and hundreds of miles of the Defense Access Road system. The 341 MW operates eight UH-1N helicopters throughout the 13,800 square-mile missile complex area; they are used as a force-multiplier in daily security of the missile complex.

The 341st Operations Group ensures the readiness of the MAFs and LFs and consists of more than 600 operators, administrators, helicopter aircrews, chefs, FMs and support personnel. The group is composed of three missile squadrons, an operations support squadron, a helicopter squadron, and a standardization and evaluation division. This group maintains the proficiency of the sensitive mission. The ICBM combat crews spend more than 17 hours in training with more than 250 hours in the field each month.

Each of the missile squadrons is responsible for five MAFs and 50 Minuteman III ICBMs. The 10th, 12th and 490th Missile Squadrons are fighting units composed of five missile combat crews on alert duty, 24 hours a day, 365 days a year, with the support of FMs and chefs, and security forces from the 341st Security Forces Group.

The 40th Helicopter Squadron (40 HS) ensures strategic security by providing flexible, rapid-response helicopter airlift support to the 341 MW. Other duties of the 40 HS include activities such as performing aerial surveillance of DoD strategic weapon convoys and short notice emergency security forces responses, supporting emergency war order tasks, and priority personnel and logistical transportation. The 40 HS also conducts search and rescue missions in support of the Joint Chiefs of Staff National Search and Rescue Mission.



CASCADE COUNTY

Malmstrom
AFB

Legend

- | | | |
|-----------------------|----------------|--------------|
| Malmstrom AFB | Swimming Pool | Trail |
| City of Great Falls | Park | Stream/River |
| Runway | Playground | Highway |
| Airfield Surface Area | Campground | Road |
| Structures | Athletic Field | Railroad |
| Parking Lot | Athletic Court | |
| Surface Water Body | | |



0 625 1,250 2,500 Feet

Figure 2-2
Malmstrom AFB Installation Overview

Fig2-2_MAFB_InstOverview_2011_09_22_RGR.pdf

Minuteman III Intercontinental Ballistic Missile (ICBM)

The Minuteman III Intercontinental Ballistic Missile (ICBM) is a strategic weapon system using a ballistic missile of intercontinental range, i.e., approximately 3,400 to 9,000 miles. Missiles are dispersed in hardened silos to protect against attack and connected to an underground launch control center through a system of hardened cables. Launch crews, consisting of two officers, perform around-the-clock alert in the launch control center.

A variety of communication systems provide the President and Secretary of Defense with highly reliable, virtually instantaneous direct contact with each launch crew. Should command capability be lost between the launch control center and remote missile launch facilities, specially configured E-6B airborne launch control center aircraft automatically assume command and control of the isolated missile or missiles. Fully-qualified airborne missile combat crews aboard airborne launch control center aircraft would execute the President's orders.

Launch Facilities (LFs)

ICBM LFs house the 150 ICBMs. An LF is an underground vertical cylindrical container for the storage and launching of intercontinental ballistic missiles (ICBMs). They typically have the missile a specified distance under the surface, protected by a large "blast door" on top. They are connected, either physically or electrically to a launch control center. ICBM Launch facilities are synonymous with the term missile silo, used in common nomenclature.

Missile Alert Facilities (MAFs)

MAFs are located at each operational missile wing for command, control, and monitoring of the Minuteman LFs. The MAF consists of a buried and hardened Launch Control Center (LCC), an above-ground Launch Control Support Building (LCSB), and a buried and hardened Launch Control Equipment Building (LCEB) to house the cooling and generator systems. These LCCs are removed 20 to 150 miles from the central support base and a minimum of 14 miles from each other. The LCCs are located a minimum of three miles from the nearest LF, and the individual LFs are separated by a similar distance. A crew of two officers operates all of the systems in the LCC on a 24 hour shift. The MAF topside contains living quarters and support equipment for the facility manager (FM), chef, and security personnel.

Launch Control Center (LCC)

The LCC is an underground structure of reinforced concrete and steel of sufficient strength to withstand weapon effects. It contains equipment and personnel capable of controlling, monitoring, and launching 50 missiles in the unmanned launch facilities within the squadron.

The LCC outer structure is cylindrical with hemispherical ends. Walls are approximately 4.5 feet thick. A blast door permits entry into the LCC from the tunnel junction. An escape hatch (3 feet in diameter) is located at the far end of the LCC. The escape hatch and connecting tunnel are constructed to withstand weapon effects and allow personnel egress in the event of damage to the vertical access shaft. Essential LCC launch equipment along with the missile combat crew is located in a shock isolated room suspended within the blast-proof outer structure. The room is steel and suspended as a pendulum by four shock isolators.

Hardened Inter-site Cable System (HICS)

The HICS is an extensive network of buried copper cables designed to survive a nuclear attack. The HICS is an underground communications link that connects the LCCs. HICS serves as the command and control communications network for the ICBMs.

The 40 HS has a fleet of eight UH-1N "Iroquois" helicopters, commonly known as the "Huey." They fly on a recently established 24-hour/7 days a week schedule. The helicopters accompany the missile transport high speed convoys to ensure safe and expedient movement of the Minuteman III ICBMs. The UH-1N is a light-lift utility helicopter used to support Air Force Global Strike Command missile wings and groups. Training is conducted within a three nautical mile radius around Malmstrom on a daily basis to portions of the closed runway and to grass areas east of the Base. The aircraft can carry up to 13 passengers at a maximum gross weight of 10,500 pounds. It has a range of 300 miles and can travel at a maximum airspeed of 130 knots (approximately 145 miles per hour). Training usually occurs at 4,500 (mean sea level) MSL and below. There are 20 Landing Zones (LZs) throughout the Missile Complex including the 564th (inactivated) Missile Squadron. Some LZs are on U.S. Forest Service land, with the remainder located on private land with easements. There are 15 Helipads, one at each MAF.

INSTALLATION DEMOGRAPHICS

During FY09, MAFB supported 7,571 personnel; this includes 3,149 Active Duty military, Air Force Reserve, and Air National Guard personnel and 3,047 Active Duty military dependents. There were 1,375 civilians employed at MAFB, of which 756 people were non-appropriated fund, contractors, and private business. Table 2-2 provides a detailed listing of the Installation's FY09 demographics.

Table 2-2. Population Distribution at Malmstrom AFB, FY 2009

Category	Population	Percentage
Total Appropriated Fund Military	3,149	42%
Active Duty	3,057	
Air Force Reserve / Air National Guard	92	
Total Active Duty Military Dependents	3,047	40%
Total Appropriated Fund Civilians	619	8%
General Schedule / National Security Personnel System (NSPS)	419	
Federal Wage Board	161	
Other Defense Commissary Agency (DECA)	39	
Total Non-Appropriated Fund, Contract Civilians, and Private Business	756	10%
Civilian Non-appropriated Fund (NAF)	132	
Civilian Base Exchange (BX)	66	
Contract Civilians (Not Included Elsewhere)	518	
Private Business on Base (Branch Banks / Credit Union)	40	
TOTAL POPULATION	7,571	100%

Source: Fiscal Year 2009 Economic Impact Analysis, 341st Missile Wing Malmstrom AFB, September 30, 2009

INSTALLATION ECONOMIC IMPACT

MAFB has a significant impact on the economies in the surrounding jurisdictions, in particular the City of Great Falls and Cascade County. The Installation's FY09 Economic Impact Analysis indicates that MAFB had a financial impact of more than \$433.7 million. This economic impact is measured in the following categories: annual payroll, annual expenditures, and value-added jobs.

- **Annual Payroll** – Payroll expenditures are payment for direct employment at the installation, such as military and civilian employees. MAFB spent just under \$222 million in payroll in FY09.
- **Annual Expenditures** – Expenditures include a range of direct purchases at the installation, such as construction, services, and materials. These expenditures account for over \$161 million in FY09.
- **Value-added Jobs** – While the other two categories reflect direct expenses, this value represents secondary impacts in the region. That is, given payroll and expenditures, the value of additional jobs generated by this increase in the economy. In FY09, this was estimated at over \$50 million.

Figure 2-3 and Table 2-3 show the breakdown of the total economic impact of MAFB in FY09.

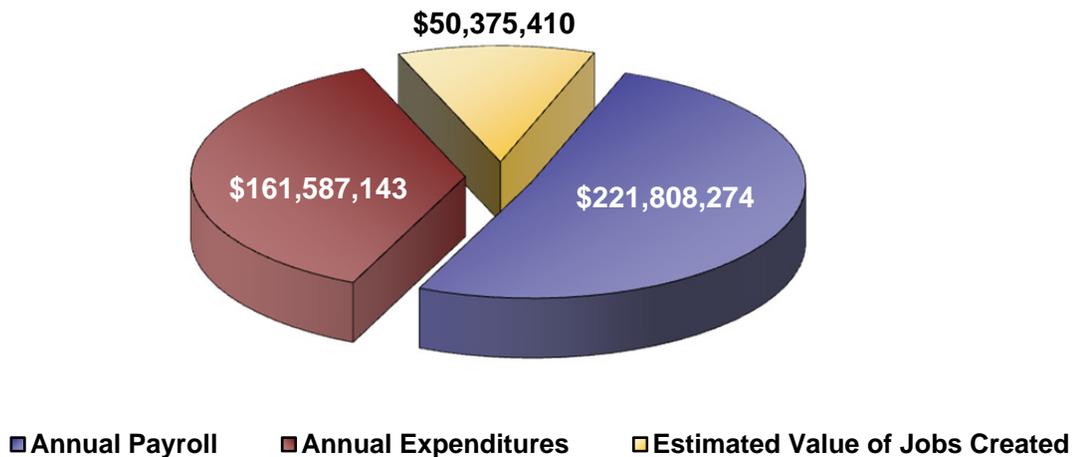


Figure 2-3. Estimated Value of Jobs Added (FY09)

Table 2-3. Economic Impact Numbers, Malmstrom AFB, FY 2009

Variable	Value
Annual Payroll	\$221,808,274
Military	\$140,692,967
Appropriated Civilians	\$39,263,838
NAF / BX / Other Civilians	\$41,851,469
Annual Expenditures	\$161,587,143
Construction	\$121,518,762
Service Contracts	\$10,040,476
Materials, Equipment, and Supplies	\$30,027,905
Estimated Annual Dollar Value-added Jobs	\$50,375,410
Estimated Indirect Jobs Created	1,490
Average Annual Pay	\$33,809
TOTAL	\$433,770,827

Source: Fiscal Year 2009 Economic Impact Analysis, 341st Missile Wing Malmstrom AFB, September 30, 2009

MILITARY HOUSING

MAFB provides on-base housing for military families and unaccompanied personnel, as well as temporary lodging for visitors. There are 1,406 military family housing units on the Base, some of which have recently been built. Of the on-base housing inventory, 248 units (18 percent) are designated for officers and the remaining units are for enlisted personnel. Furthermore, the FY09 Economic Impact Analysis identified that 1,393 (44 percent) of the appropriated fund military personnel live on-base, while the remaining 1,756 (56 percent) live off-base in the local communities. This data does not include dependents, as that information was not included in the Economic Impact Analysis.

The base has dormitories for airmen and non-commissioned officers that account for 850 available spaces. The Malmstrom Inn and Suite is a base visitor lodging facility consisting of 83 rooms and serving various servicemen and women: 23 visiting enlisted quarters, 30 visiting officer quarters, and 15 one-bedroom and 15 two-bedroom temporary lodging facilities.

Source: Fiscal Year 2009 Economic Impact Analysis, 341st Missile Wing Malmstrom AFB, September 30, 2009; www.malmstrom.af.mil

2.2 County and City Profiles

Overall the Malmstrom AFB JLUS study areas include all or portions of seven counties in north central Montana: Cascade, Chouteau, Fergus, Judith Basin, Lewis and Clark, Teton, and Wheatland Counties. The JLUS also encompasses one incorporated municipality, the City of Great Falls.

REGIONAL OVERVIEW

The overall JLUS study area is located in the Missouri Plateau of the Great Plains. The Great Plains cover a large portion of the United States and Canada between the Mississippi River to the east and the Rocky Mountains to the west. Within the U.S., the Missouri Plateau traverses portions of South Dakota, North Dakota, and Montana. The landscape of the study area consists of expansive prairie, steppe, and grassland, as well as steep mountains and hilly regions. A large majority of the rural areas are used for agricultural production and contain crops such as wheat and barley or are used for livestock such as cattle. There are also several mountain ranges and forest areas within the study area, including the Lewis and Clark National Forest.

CITY OF GREAT FALLS

Great Falls was founded in 1883 by Paris Gibson and incorporated in November 1888. It was named after the so-called “great falls” of the Missouri River. The area was platted as an attractive, well-planned community and included tree-lined streets and more than 800 acres of parkland. As more settlers arrived, the town prospered through mining, logging, farming, ranching, and hydroelectric power. Great Falls grew as a transportation hub for north central Montana in the late 1880s with the connection of the railroad to other important areas of the nation, as well as steamboats accessing the communities along the Missouri River. An important factor in the developing Great Falls economy was the smelting of copper and zinc extracted from nearby mining operations. The supply and exchange of agricultural goods, growth of military operations, manufacturing, and services were key economic drivers.

The City of Great Falls covers approximately 20 square miles and lies about 100 miles south of the Canadian border and about two miles west of MAFB. It is the largest city within Cascade County and serves as the county seat. Today the City relies on military, agricultural, manufacturing, hydroelectric power, and services for its economy. The University of Great Falls was founded in 1932 and provides post-secondary education for the City and region. Similarly the Great Falls College of Technology, which offers a two-year degree program in a wide-array of fields,

such as nursing and health technology, is a successful educational institution. Great Falls is the transportation hub for north central Montana and is served by the Great Falls International Airport, located on the west side of the City.

Source: Cascade County Growth Policy, September 19, 2006; Great Falls Growth Policy

CASCADE COUNTY

Cascade County was created in 1887 from portions of Chouteau, Lewis and Clark, and Meagher Counties, and named after the cascading features of the Missouri River. Cascade County experienced growth resulting from the settlement of Great Falls, railroad connections to transport goods, and access to the Missouri River. Montana's first hydroelectric generating facility, the Black Eagle Plant, was constructed in 1890 in a Missouri river canyon near Great Falls. Since that time, a series of five more hydroelectric dams have been built along the falls of the Missouri River that supplies power to the surrounding region and other parts of the State. Other factors that enhanced the economic growth of the County include mining and agriculture. Cattle and grain still constitute a primary role in the County's economy. MAFB has served a large role in the economy since its establishment during World War II.



Black Eagle Dam today

Today, Cascade County encompasses approximately 2,710 square miles of land in north central Montana, to the east of the Continental Divide. The City of Great Falls is the county seat of the county. The County also includes three other incorporated towns (Belt, Cascade, and Neihart), as well as several other populated communities. The largest populated areas are within and around Great Falls. Cascade County is generally characterized by steep mountain areas in its southern portion and rolling plains in its northern portion. There are four major waterways in the County: the Missouri River, the Smith River, the Sun River, and the Belt Creek. Cascade County also contains the Benton Lake National Wildlife Refuge and a portion of the Lewis and Clark National Forest.

Source: Cascade County Growth Policy, September 19, 2006

CHOUTEAU COUNTY

Chouteau County is located northeast of MAFB. It was founded in 1865 as one of the original nine counties that made up Montana. In 1882, it was named after Auguste and Pierre Chouteau, Jr., fur traders who established a trading post along the Missouri River that eventually became the county seat, Fort Benton. For many years, Fort Benton served as an important port located along the Missouri River; it was considered the world's innermost port. Its importance in trade declined following the construction of transcontinental railroads in the late 19th century.

Today, Chouteau County covers approximately 4,000 square miles of land, mostly composed of prairie. The three primary surface water sources are the Missouri, Marias, and Teton Rivers. The eastern portion of the County features part of the Bear Paw Mountains, while the Little Rockies and Highwood ranges can be found in its southern region. The majority of the County's population resides in the incorporated City of Fort Benton, Towns of Big Sandy and Geraldine, with smaller communities in unincorporated Loma, Carter, Floweree, Highwood, Shonkin, and Square Butte. According to the 2004 Growth Policy Plan, the largest employers are within the government, education, and health sectors. At the time, Chouteau County was the number one Montana county producer of wheat; however, yields varied dramatically depending on growing conditions. Agricultural land uses dominate the County's development pattern. National protected areas in the County include portions of the Lewis and Clark National Forest and Upper Missouri River Breaks National Monument.

Source: Chouteau County Growth Policy Plan, 2004; <http://www.co.chouteau.mt.us/>

FERGUS COUNTY

Fergus County is the easternmost county in the Missile Complex Study Area. It was founded in 1885 and named after James Fergus, a delegate who sponsored the bill that established the County. Fergus County has been subdivided many times since then in order to form several other surrounding counties. Lewistown became the county seat in 1886, and its population grew quickly propelling municipal incorporation in 1899. In the 1880s, Lewistown and the surrounding area grew rapidly with the advent of mining operations in the Judith Mountains including gold and sapphires. The introduction of the railroad bolstered Lewistown to a merchandising and distribution center for central Montana, which enabled continued growth. Other industries that have contributed to the County's economy over the years have included forestry's logging, agriculture, and military operations.

Fergus County expands across 4,250 square miles, which is largely agricultural; its wheat fields, farms, and ranches continue to be the backbone of the County. Hunting and fishing are other important cultural livelihoods for residents. Railroad service has since been reduced, and the majority of service commodities are transported via semi-trucks. Besides the City of Lewistown, other incorporated towns in Fergus County include Denton, Grass Range, Moore, and Winifred.

National protected areas in the County include portions of the Lewis and Clark National Forest, Charles M. Russell National Wildlife Refuge, and Upper Missouri River Breaks National Monument.

Source: Fergus County Land Use Policy, October 15, 2007

JUDITH BASIN COUNTY

Judith Basin County is located southeast of MAFB, between Cascade and Fergus counties. It covers approximately 1,870 square miles and the county seat, which is the largest community, the Town of Stanford. The City of Hobson is the only other incorporated municipality in the County, while other unincorporated communities include Geysler, Moccasin, Raynesford, Utica, and Windham. Judith Basin County includes a portion of the Lewis and Clark National Forest.

Source: http://en.wikipedia.org/wiki/Judith_Basin_County,_Montana

LEWIS AND CLARK COUNTY

Lewis and Clark County is located southwest of MAFB and adjacent to Cascade and Teton Counties. Edgerton County was established in 1865, and renamed to Lewis and Clark County two years later. Helena was founded in 1864 after the discovery of gold, which triggered rapid growth. By 1888, there were nearly 50 millionaires living in Helena, more than any city in the world at the time, due to the gold mining that occurred from nearby Last Chance Gulch. The County continued to grow with governmental operations, mining and agriculture activities.

Today, Lewis and Clark County covers approximately 3,500 square miles and is the sixth most populous county in Montana. Its natural protected areas include portions of the Flathead, Helena, Lewis and Clark, Scapegoat, Bob Marshall Wilderness and Lolo National Forests, as well as part of the Rocky Mountain Front Conservation Area. The City of Helena, the sixth largest city in Montana, serves as the county seat, and is the State capital. The Town of East Helena is the only other incorporated community, but there are several other populated communities located in the county, specifically in the vicinity of Helena. Helena is known for its economic vitality and roughly one-third of its workforce is employed by the government. It is considered the governmental center of Montana, as well as a trading and transportation hub due to its central location within the State. Carroll College and the University of Montana – Helena College of Technology are located in the City. The medical field, retail stores, and agriculture are also large employment sectors within the County.

Source: <http://www.co.lewis-clark.mt.us/>; Lewis and Clark Growth Policy, February 15, 2004

TETON COUNTY

Teton County is northwest of MAFB and adjacent to Cascade, Chouteau, and Lewis and Clark Counties. It was established in 1893 from a portion of Chouteau County. Teton County was later subdivided into other counties. Development of a reservoir and canal system for irrigation helped spur growth in the late 1800s and early 1900s. This development also provided growth and employment to other nearby communities within the County.

Teton County comprises approximately 2,300 square miles including the City of Choteau, the county seat, and other incorporated towns, Dutton and Fairfield. Other populated communities include unincorporated Bynum, Pendroy, and Power. Agriculture is the leading industry in this sparsely populated county, and some of the primary commodities produced are wheat, barley, hay, and livestock. National protected areas in Teton County include portions of Lewis and Clark National Forest and the Rocky Mountain Front Conservation Area.

Source: <http://www.tetoncomt.org/>; Teton County Growth Policy Plan, 2003

WHEATLAND COUNTY

Wheatland County is the southernmost county in the Missile Complex Study Area and lies southeast of MAFB, on the southern borders of Judith Basin and Fergus Counties. It covers approximately 1,430 square miles consisting of two municipalities: the City of Harlowton (county seat) and the City of Judith Gap. An additional populated community is unincorporated Two Dot. A portion of the Lewis and Clark National Forest is located within Wheatland County.

Source: http://en.wikipedia.org/wiki/Wheatland_County,_Montana

2.3 Overall JLUS Study Area Growth Trends

The following section profiles the City of Great Falls and the counties within the overall JLUS study area in relation to population growth, housing growth, and median home values. This information assists in setting the context for the JLUS.

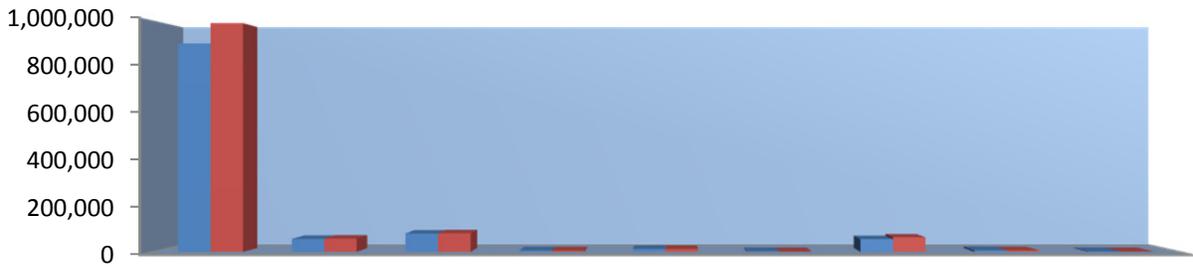
POPULATION

Population data for Montana, its counties and incorporated communities is based on a combination of information provided by the U.S. Census Bureau and the State's Census and Economic Information Center (CEIC). The CEIC prepares yearly population estimates for the State, counties, and incorporated cities and towns.

The populations within the counties included in the JLUS have experienced a wide range of fluctuation over the past several decades. Of the seven counties, only two have shown a steady increase in population, while the other five have experienced a decline in population.

Figure 2-4 shows the population growth within the overall JLUS study area between 2000 and 2010 in numbers.

Population



	Montana	City of Great Falls	Cascade County	Chouteau County	Fergus County	Judith Basin County	Lewis and Clark County	Teton County	Wheatland County
■ 2000	902,195	56,690	80,357	5,970	11,893	2,329	55,716	6,445	2,259
■ 2010	989,415	58,505	81,327	5,813	11,586	2,072	63,395	6,073	2,168

Figure 2-4. Population Trends in the Malmstrom AFB JLUS Study Area, 2000 - 2010

Chouteau, Fergus, Judith Basin, Teton, and Wheatland Counties experienced a declining population trend between 2000 and 2010. Judith Basin saw the largest population downturn from 2000 to 2010 when its population decreased by more than 11 percent; this downward trend in population most likely occurred directly from a reduction in agricultural jobs and production. Table 2-4 shows the population percent changes in the seven counties between 2000 and 2010. Historically, these counties have been agriculture-driven; however in the past several decades, agricultural jobs have diminished, for various reasons, resulting in the out-migration of people to seek other professions.

Table 2-4. Population Changes in the JLUS Study Area and Montana

Jurisdiction	Percent Population Change 2000 to 2010
Cascade County	1.2
Chouteau County	-2.6
Fergus County	-2.6
Judith Basin County	-11.0
Lewis and Clark County	13.8
Teton County	-5.8
Wheatland County	-4.0
City of Great Falls	3.2
Montana	9.7

Source: U.S. Census Bureau, Census 2000 and 2010.

The City of Great Falls, Cascade and Lewis and Clark Counties are the only jurisdictions that experienced increases in population from 2000 to 2010. While Cascade County’s population only increased by 1.2 percent, its largest city, the City of Great Falls, increased by 3.2 percent. Lewis and Clark County saw an increase in population of almost 14 percent between the years of 2000 and 2010, which was greater than the State’s 9.7 percent increase in the same timeframe. This increase affected both incorporated and unincorporated areas, and is attributed to Helena’s

continued growth and its surrounding areas. These figures indicate that there is a trend of growth in urban areas where more jobs are available and a trend of population loss in more rural areas.

Future Population Projections

In November 2008, NPA Data Services, Inc. issued population projections for the counties in Montana between 2010 and 2030, in five year increments. According to these projections Montana’s population is projected to increase by nearly 20 percent between 2010 and 2030. In contrast, the population growth of the overall JLUS study area is projected to increase by about eight percent for the same time period. The populations of Cascade, Chouteau, Fergus, Judith Basin, and Teton Counties are expected to decline between 2010 and 2030, almost continually every five years. An exception exists for Fergus and Judith Basin Counties, which are expected to increase slightly from 2020 to 2025, but then realize a decrease between 2025 and 2030. Wheatland County is projected to fluctuate between population growth and decline every five years, resulting in an ultimate population growth of about three percent by 2030. Lewis and Clark County is the only county that is projected to realize a significant increase in population, which is expected to rise by approximately 30 percent between 2010 and 2030. Figure 2-5 shows the State’s population projections; Figure 2-6 shows the population projections for the counties in the overall JLUS study area.

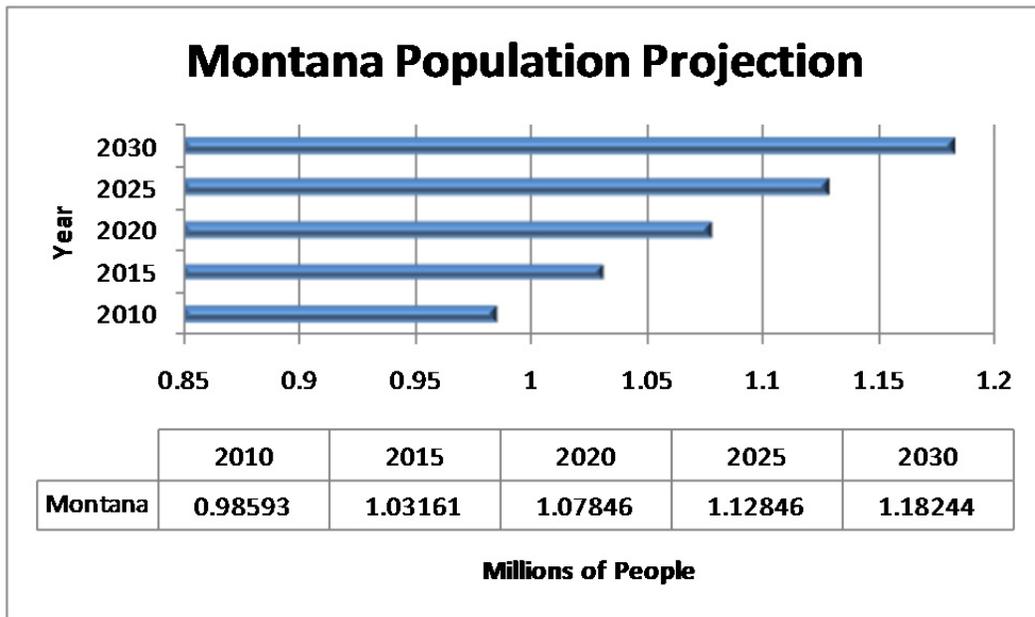


Figure 2-5. State of Montana Population Projections

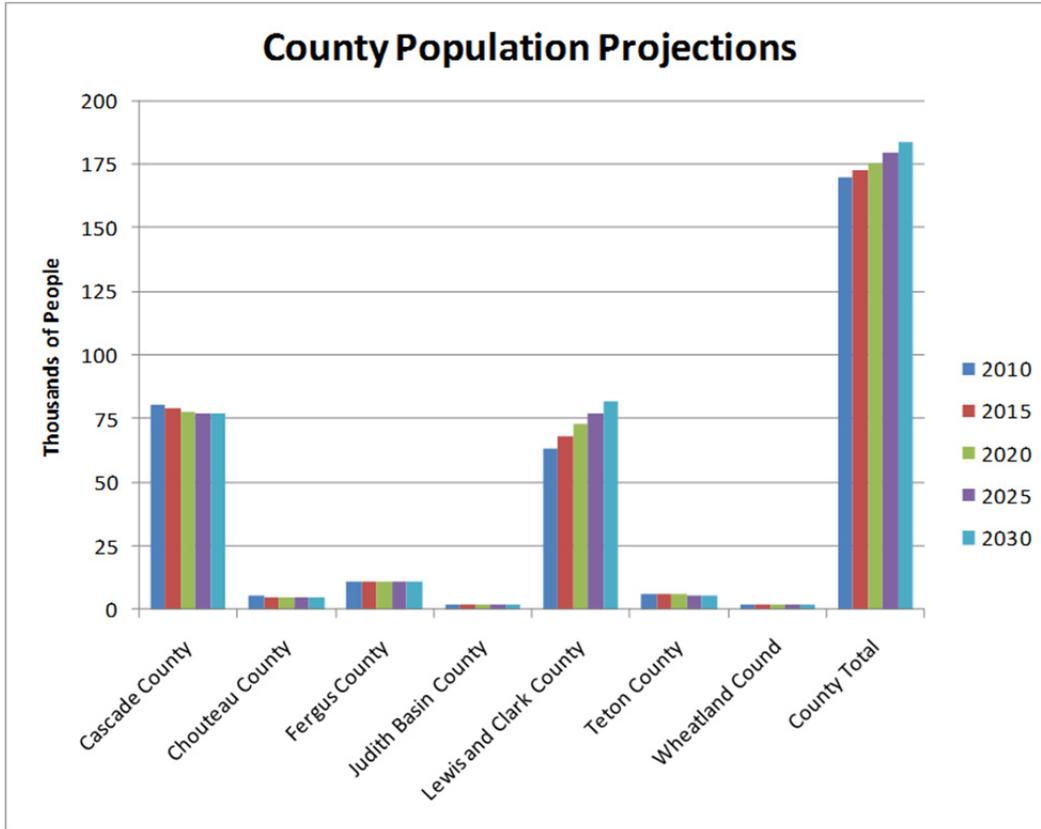


Figure 2-6. Montana County Population Projections, 2010 -2030

HOUSING TRENDS

Between 2000 and 2010 housing growth for the overall JLUS study area was mostly consistent with the aforementioned population trends. The number of new housing units did not rise much in any of the counties except Lewis and Clark County. In Chouteau and Teton Counties the number of units decreased. Judith Basin, and Wheatland Counties saw population declines over this period but the number of housing units remained the about the same. Cascade, Fergus and Wheatland Counties and the City of Great Falls saw moderate increases in housing units over the ten year period at 5.7, 4.9, 3.7 and 6.3 percent respectively. Judith Basin County saw a small increase of 0.8 percent, while Teton County saw a percentage loss at -0.6 percent. Chouteau County saw the most significant percent loss of housing units with -51 percent and Lewis and Clark County saw the greatest increase at 17.4 percent. Figure 2-7 illustrates the change in the number of housing units in the seven counties and the one city.

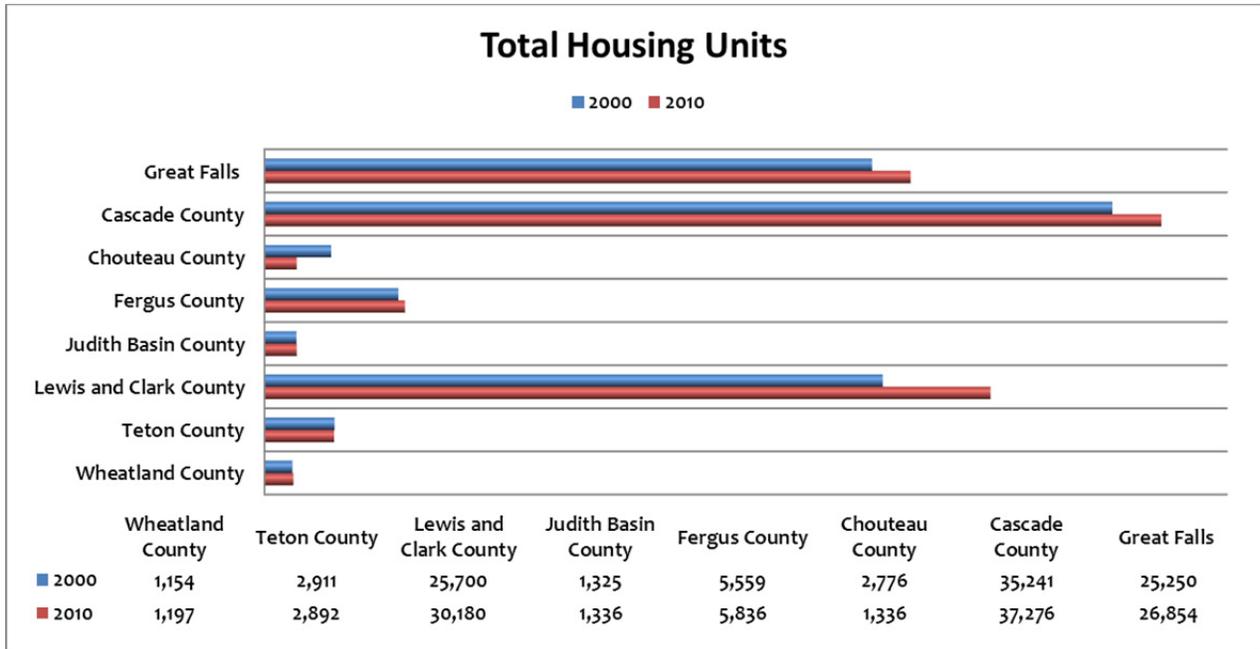


Figure 2-7. Malmstrom AFB JLUS Study Area Total Housing Units, 2000 – 2010

HOUSING VALUE TRENDS

When examining regional growth trends, the cost of housing can provide insight into areas that may be considered more attractive based on affordability. Rising housing prices in urban areas in the early and mid-2000s were viewed as a key determinant to the expansion into unincorporated areas. Following a significant increase since the mid-1990s, national housing values have significantly dropped in recent years. The impact of this trend on housing values within the overall JLUS study area remains to be seen, as updated information is not currently available.

The median housing values for the seven counties and the one major city in this JLUS study area increased substantially between 2000 and 2010, as shown on Figure 2-8. The rate changes over the course of this ten-year period are shown on Figure 2-9. Homes in Cascade County and the City of Great Falls had nearly identical median values in 2000, but by 2010 the value of homes in Cascade County increased by 80.9 percent and the median value of homes in the City of Great Falls only increased by 49.2 percent. Judith Basin County experienced the lowest value increase. After Cascade County, Lewis and Clark County and Teton County saw the highest percent increase in median home values. Yet, Lewis and Clark County (\$172,700) was the only jurisdiction with a median home value that was greater than that of the State of Montana (\$162,100).

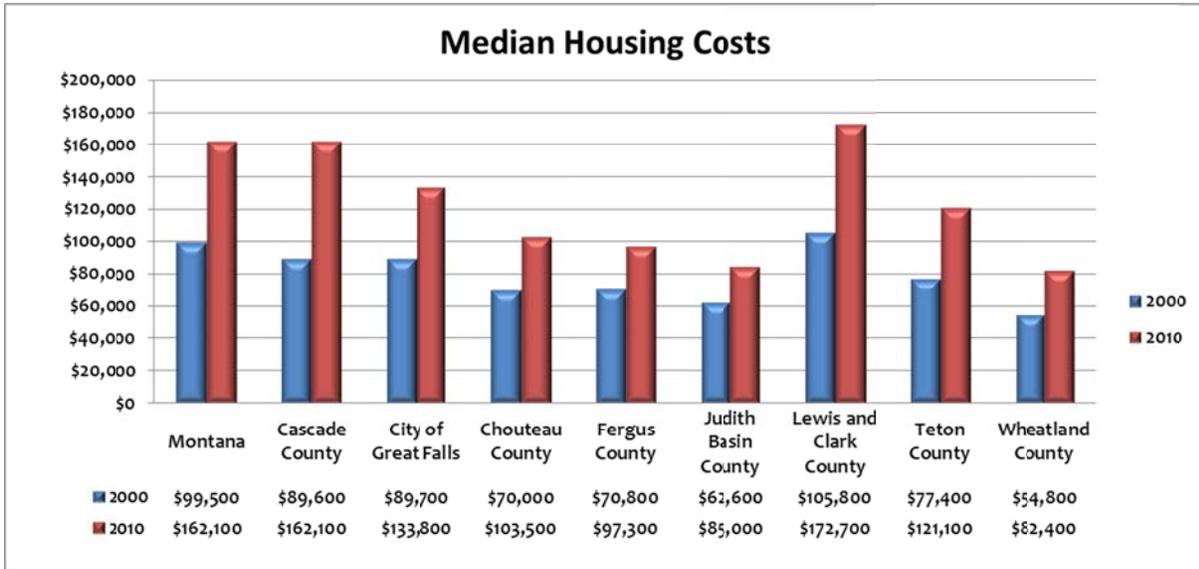


Figure 2-8. Malmstrom AFB JLUS Area Median Housing Values, 2000-2010

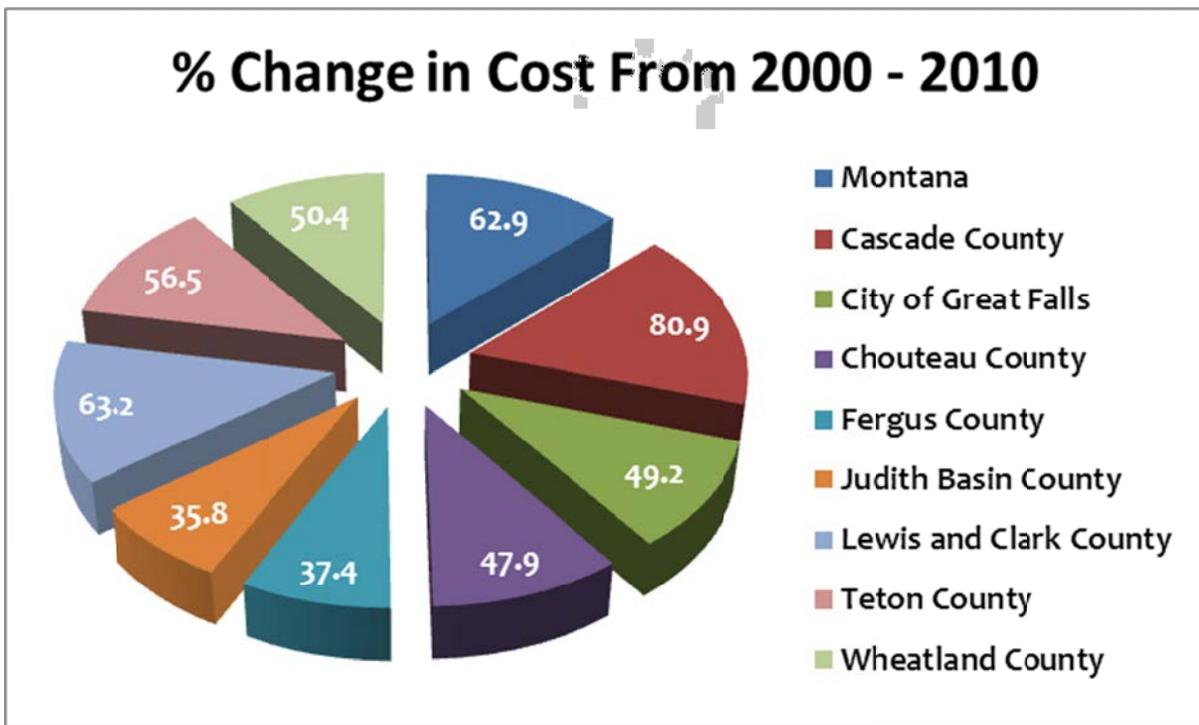


Figure 2-9. Malmstrom JLUS Study Area Median Housing Values, Percent Change in Cost from 2000-2010

2.4 Current Development within the Study Areas

A large majority of the land within the overall JLUS study area is currently utilized as either open space or agriculture. There are cities and populated communities scattered throughout the study area, with the two largest being the City of Great Falls in Cascade County and the City of Helena in Lewis and Clark County. The primary land use in the rural areas is agribusiness such as ranching and farming. There is an average of two to four population centers in each county, which are typically incorporated cities or towns. Additionally, there are several unincorporated areas that have significant populations, but the majority of the communities outside of Great Falls and Helena exhibit more rural town qualities than urban centers. In addition to developed communities and agricultural uses, a large amount of the land within the study area is also national forest and is protected for conservation or recreational uses.

Most of the communities in the study area do not have adopted zoning codes or general land use plans. Land development is generally guided in most areas by a Growth Policy Plan and subdivision regulations, but these documents are not utilized to determine specific land uses. Many of the counties have very similar and generic growth policies and subdivision regulations. However, the City of Great Falls and Cascade County have specific zoning regulations to direct future growth and protect the areas around Malmstrom AFB. These regulations are discussed in detail in Chapter 3 of this report.

2.5 Regional Assessment

TRANSPORTATION

Roadways

Since the majority of the overall JLUS study area is composed of rural areas, there is not an extensive roadway network. The primary roadways that serve the study area are composed of Interstate, U.S., and State highways, with the exception of populated areas that have expanded infrastructure networks to provide mobility and access. As the largest populated community in the study area, Great Falls has a well-established roadway network composed of local streets, collector streets, minor arterials, and principal arterials. Great Falls is the primary transportation hub within north central Montana, where majority of its highways pass through the City, connecting it to other communities in the study area and other major cities throughout Montana, the U.S. and Canada. The major highways that serve the vehicular mobility and access needs in the study area are identified below:

- **Interstate 15** — a north-south transcontinental highway that extends from the Canadian border near Sweetgrass, Montana to San Diego, California. This roadway traverses Cascade, Lewis and Clark, and Teton Counties while connecting Great Falls to Helena.
- **U.S. Highway 87** — a primary north-south highway that extends from Havre, Montana to Port Lavaca, Texas. US Highway 87 travels through Cascade, Chouteau, Fergus, and Judith Basin Counties connecting Great Falls to Fort Benton, Lewistown, and other smaller communities in these counties.
- **U.S. Highway 89** — a north-south highway that stretches from the Canadian border near Babb, Montana through the northern entrance of Yellowstone National Park and eventually the southern entrance of Yellowstone to Flagstaff, Arizona. In the study area, this route extends through Cascade, Lewis and Clark, and Teton Counties connecting Great Falls to Choteau.

- **U.S. Highway 191** — a north-south highway that extends from the Canadian border at Loring, Montana through the northern part of Yellowstone National Park and the southern end of Yellowstone to Douglas, Arizona. Within the study area, this route traverses Fergus and Wheatland Counties connecting Lewistown to Harlowton.
- **U.S. Highway 287** — a north-south highway that extends from Choteau, Montana to Port Austin, Texas. This highway travels through Lewis and Clark and Teton Counties connecting Helena to Choteau.
- **Montana Highway 3** — a north-south highway that stretches from Great Falls to Billings, Montana. This route traverses Cascade, Fergus, Judith Basin, and Wheatland Counties connecting Great Falls to Harlowton in Wheatland County and several other communities.
- **Montana Highway 80** — a north-south highway that runs from Fort Benton to Stanford. This route lies in Chouteau, Fergus, and Judith Basin Counties connecting Fort Benton to Stanford in the JLUS area.
- **Montana Highway 200** — an east-west highway that stretches from Fairview, Montana to Heron, Montana. This highway travels through Cascade, Fergus, Judith Basin, and Lewis and Clark Counties connecting Great Falls to several smaller communities throughout the region.

Source: Montana Department of Transportation, 2010

The South Arterial project has been in the works and under consideration by the City of Great Falls and Cascade County for several years; this project would provide an arterial link between Interstate 15 and U.S. Highway 87/89 improving travel routes along the southern part of Great Falls. A working group was assembled in 1994 to support the development of this link. In 2000, the arterial was incorporated into the Great Falls Area Transportation Plan. An arterial feasibility study was developed in 2004 that identified the South Arterial as a feasible route providing a variety of benefits to the local transportation system. The 2005 Federal Transportation Bill provided a \$4.5 million dollar allocation for which an apportionment was used to conduct an alignment study; it identified a recommended alignment from six alignment options, a detailed analysis of project opportunities and constraints, and cost estimates. However the South Arterial is no longer being pursued as the funds are being redistributed for other projects due to budgetary constraints. Figure 2-10 illustrates the major roadways and transportation network, including airports, within the JLUS study area.

Source: <http://www.mdt.mt.gov/pubinvolve/greatfalls/>

Defense Access Roads

Ground security forces, convoys, and vehicles transporting missiles or equipment to the various missile sites use a network of Defense Access Road (DAR) to transport personnel and supplies from the major roadways in the overall JLUS study area to the individual sites. Only these graveled public roadways to the missile alert and launch facilities are eligible for DAR funding. Funding for the gravelling of these roads are provided by the Air Force, and completed by hired contractors while the daily maintenance is completed by the respective Counties. There are currently 534 miles of DAR in the 10th, 12th, and 490th Missile Squadrons. Upon the deactivation of the 564th Missile Squadron, the 160 DAR miles in this area were no longer eligible for federal funding. These roads are composed of gravel and the standard width is 18 feet from shoulder-to-shoulder, with a 2:1 minimum fill slope on each side. There should be a seven-foot minimum load bearing surface on each side of the road from the centerline. The gravel depth at this point should be a minimum of four inches, and have a minimum slope of 4 percent from the centerline to this point. DARs that do not meet the minimum standards should be recommended for re-gravelling and improvements.

Source: FHWA Federal-Aid Policy Guide NS 23 CFR 660 E

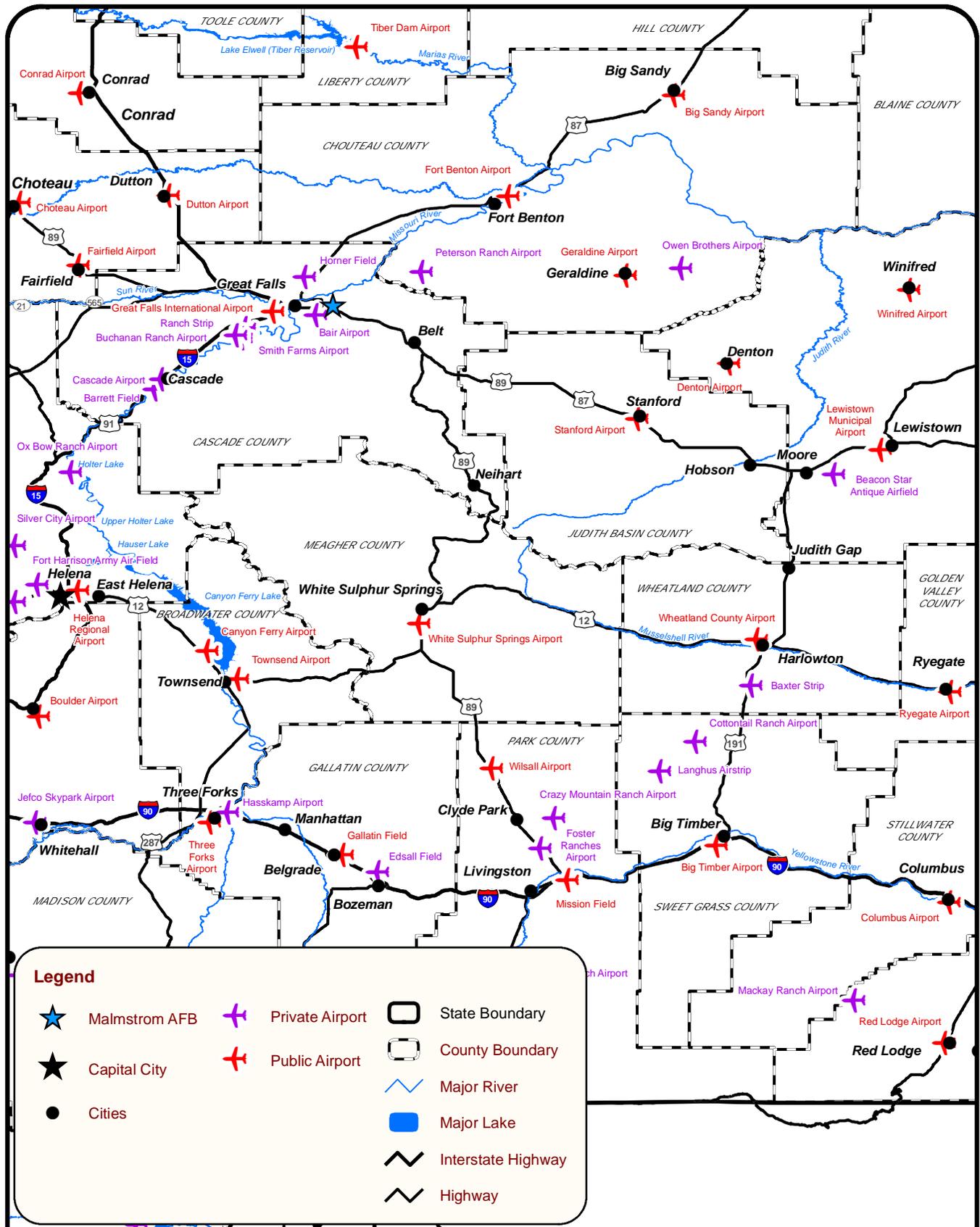


Figure 2-10
Regional Transportation Network

Fig2-10_RegTrans_2012_03_14_JKC.pdf

Air Transportation

There are several airports located throughout the overall JLUS study area that serve both commercial airlines and general aviation aircraft. The largest airport is the Great Falls International Airport (GFIA), which serves as the primary commercial airport for north central Montana. It is an important facility for residents of the region and tourists as the starting point for the various attractions in the region, including Glacier and Yellowstone National Parks. GFIA is operated by an independent Airport Authority Board. The Airport Authority owns approximately 1,000 acres on Gore Hill at the western edge of Great Falls. Some of this land is also used for other activities, including the Montana Air National Guard Headquarters for the 120th Fighter Interceptor Groups. The Airport has three functional runways, the longest of which measures 10,502 feet long by 150 feet wide. This is the primary runway for the airport and is situated parallel to the decommissioned runway at MAFB. The other two runways measure 5,722 feet long by 150 feet wide and 4,294 feet long by 75 feet wide, respectively. GFIA is served by six commercial airlines, including Allegiant Air, Delta Airlines, Frontier Airlines, Horizon Air, Northwest Airlines, and United Airlines, and is also used for general aviation, air taxi, and military aircraft operations. During 2009, approximately 304,000 commercial passengers passed through GFIA, including 151,000 enplanements and 153,000 deplanements. In the 12-month period ending March 31, 2010, GFIA experienced an average daily operational load of 114 aircraft.



Great Falls International Airport Terminal

There are several other airports that serve the communities within the study area. Helena Regional Airport is a public use airport located about two miles northeast of Helena in Lewis and Clark County. It has three runways, which measure 9,000 feet long by 150 feet wide, 4,644 feet long by 75 feet wide, and 2,989 feet long by 75 feet wide. In 2009, approximately 179,000 commercial passengers passed through this airport with roughly 89,000 enplanements and 90,000 deplanements. This airport supports both commercial and military aircraft operations; however the primary function is general aviation. During the 12-month period ending April 30, 2010, an average of 136 aircraft operations occurred daily at Helena Regional Airport.

Fort Benton Airport is a public use airport located about one mile northeast of Fort Benton in Chouteau County. It has two runways which measure 4,300 feet long by 75 feet wide and 1,700 feet long by 75 feet wide. This airport is used for general aviation and does not include commercial flights. During the 12-month period ending August 24, 2008, an average of 104 aircraft operations occurred weekly at Fort Benton Airport.

Lewistown Municipal Airport is located about two miles southwest of Lewistown in Fergus County and is used primarily for general aviation. A small amount of military and air taxi operations occur there, and in September 2008, Great Lakes Airlines became the first and only commercial airline to operate from this airport. The airport features three runways, which measure 6,100 feet long by 100 feet wide, 5,600 feet long by 100 feet wide, and 4,102 feet long by 60 feet wide. In 2009, approximately 2,000 commercial passengers passed through this airport, including a 50/50 split between enplanements and deplanements. For the 12-month period ending December 31, 2009, Lewistown Municipal Airport realized an average daily operational load of 44 aircraft.

A large majority of the other incorporated communities throughout the study area also have their own public use airports, which are primarily used for general aviation and do not support commercial airlines. The locations of public and private airports within and around the JLUS study area are shown on Figure 2-10.

Source: http://www.gtfairport.com/Airport_Main.html; City of Great Falls Growth Policy; Montana Department of Transportation, 2010; www.airnav.com

Railroads

Passenger rail service for the communities in the overall JLUS study area has not been available since the early 1970s, when it ceased operation because it was deemed no longer cost-effective. Rail service is still used to transport freight supplies from locations in the study area, including the City of Great Falls. Agricultural products are the main transport of freight railcars. Burlington Northern Santa Fe (BNSF) Railway is the primary operator of railroads within the study area. BNSF travels through the City of Great Falls connecting other important cities for the transportation of goods. BNSF has a major rail yard in the City of Great Falls and is currently adding positions due to increased demand in coal hauling.

Source: City of Great Falls Growth Policy

WATER AND SEWER

The primary water supply for the study area is collected from the Missouri River; it has provided a reliable and constant supply of water for the City of Great Falls and the surrounding area since 1889. Although other sources have been considered, none have been identified as feasible or capable to match the quantity delivered by the Missouri River. Water services in the City of Great Falls are managed by the Water and Sewer Division of the Great Falls Public Works Department. The 2006 Great Falls Water Master Plan identifies the current water system as capable of treating and delivering up to 50 million gallons per day (MGD). Data from 2004 indicated water demand averaged approximately 11 MGD including a peak summertime demand of about 32 MGD, well under the current capacity. This allows for reasonable development and additional users, depending on location and demand requirements. The City of Great Falls supplies water to Malmstrom AFB, the community of Black Eagle, and parts of unincorporated Cascade County through three transfer stations. Areas that are not served by water treatment plants generally rely on groundwater or water wells.

The City of Great Falls operates a wastewater treatment plant that serves most of the City's residents, as well as some in outlying areas. The City of Great Falls also provides wastewater service to Malmstrom AFB for all structures on the northwest side of the Base. The Great Falls Wastewater Treatment Plant can receive, treat, and discharge up to 15 MGD. Some of the other communities throughout the study area utilize their own water treatment facilities. Areas not served by a water treatment facility primarily utilize septic systems to collect, treat and dispose of wastewater.

Source: Great Falls Growth Policy

ENVIRONMENTAL / CULTURAL RESOURCES

National Forests

The U.S. Forest Service is an agency of the U.S. Department of Agriculture and is the entity responsible for managing the national forests and grasslands located throughout the United States. National forests are important areas that have been reserved by proclamation of U.S. Presidents in order to sustain the health, diversity, and productivity of the country's forests to meet the needs of present and future generations. There are four national forests that have portions located in the counties within the overall JLUS study area. The four national forests are Flathead, Helena, Lewis and Clark, and Lolo National Forests. The national forests provide a wide range of cultural, recreational, and sporting opportunities for both residents and visitors, and they contain a large diversity of plant and animal life and environmental resources.



Lewis and Clark National Forest

Flathead National Forest extends from the US Canadian border south along the west side of the continental divide approximately 120 miles and covers 2.3 million acres. Helena National Forest covers almost one million acres around the City of Helena, and extends along the continental divide. Lewis and Clark National Forest covers the largest amount of forest land within the study area; it is located in central and north central Montana along the upper Missouri River system and covers 1.8 million acres. Lewis and Clark National Forest has approximately 1,600 miles of perennial streams and several lakes, both natural and man-made. This forest traverses many mountain ranges and varies in elevation from 4,500 to 9,362 feet. Some of the important features found in this forest are the Bob Marshall-Great Bear-Scapegoat Wilderness Complex, 10,730 acres of designated Research Natural Areas, and a 9,125-acre experimental forest, developed for multi-disciplinary research and demonstration areas. Lolo National Forest is located in west central Montana and covers two million acres.

Source: <http://www.fs.fed.us>

Lewis and Clark National Historic Trail / Giant Springs State Park

The Lewis and Clark National Historic Trail follows the route that an expedition group called the Corps of Discovery, led by Meriwether Lewis and William Clark, travelled from the plains of the Midwest to the Pacific Coast and back between May 1804 and September 1806. The Trail extends over 3,700 miles and passes through 11 states: Illinois, Missouri, Kansas, Iowa, Nebraska, South Dakota, North Dakota, Montana, Idaho, Washington, and Oregon. A portion of the Trail passes through the overall JLUS study area and has markers detailing the expedition's historical information. Giant Springs State Park is located along the Missouri River just outside the City of Great Falls. Covering 675 acres, this park includes one of the largest freshwater springs in the world, which flows at 156 million gallons per day.



Lewis and Clark Historic Trail attractions

The park has several picnic areas, fishing areas, a playground, a state fish hatchery, and some historic sites. Adjacent to the park is the Lewis and Clark National Historic Trail Interpretive Center, administered by the U.S. Forest Service. This Center provides visitors with historical information on the Lewis and Clark Expedition, the routes they travelled, the Missouri River, and the people of the Northwest Indian cultures.

Source: <http://fwp.mt.gov/parks/visit/parkSiteDetail.html?id=282690>; <http://www.nps.gov/lecl/index.htm>;
<http://www.fs.fed.us/r1/lewisclark/lcic/>

Threatened and Endangered Species

According to the U.S. Fish and Wildlife Service (USFWS), there are five threatened or endangered species found in the JLUS area. The list of species generally identifies the counties where a species would reasonably be expected to inhabit, but does not necessarily identify every county where the species is listed. Some species have areas designated as critical habitat. This designation generally refers to areas of habitat that are believed to be essential to the conservation of the species and important to keeping them from becoming extinct. Areas that are located within critical habitat do not necessarily mean that no development may occur. However, it must be examined by the USFWS to ensure that no damage to the habitat results with the proposed development. In some cases, mitigation or amendments must be identified and approved before the development occurs. The following is a list of federally-listed threatened or endangered species that are known to occur within the JLUS area:

Black-footed Ferret (*Mustela nigripes*)



The endangered black-footed ferret is found in Chouteau, Fergus, Lewis and Clark, and Wheatland Counties. Adult black-footed ferrets range in size from 18 to 24 inches, which includes a tail between five to six inches long, and generally weigh between one-and-a-half pounds to two-and-a-half pounds. Males are slightly larger than females. They have slender bodies and their fur is a yellow-buff color, which is lighter on the belly and fades to nearly white on the forehead, muzzle, and throat. Their feet, tips of the tail, and face (in a mask pattern) are black. They have large front paws with claws that are used for digging. Their habitat consists of prairie and grasslands

enabling the ferret's coloring and markings to act as camouflage to blend in with the plants and land features. The ferret preys on prairie dogs and uses the prairie dog burrows for shelter.

Bull Trout (*Salvelinus confluentus*)



The bull trout is found in Lewis and Clark County; it is listed as threatened and has an area designated as critical habitat, although none is located within the study area. Bull trout are salmonids and are characterized by olive green to bronze colored backs with pale yellow, orange, or salmon-colored spots on their backs and spotless dorsal fins. Their habitat requires cold water that generally does not exceed 59 to 64 degrees Fahrenheit. Other features that limit their habitat distribution is the need for stable stream channels, unblocked migratory corridors, clean gravel used for spawning and rearing of young, and complex and varied cover. Bull trout are described in two forms

based on their migratory patterns. Resident bull trout spend their entire lives in the same stream or creek and prey on invertebrates and small fish. This form ranges up to 10 inches long. Migratory bull trout move to larger bodies of water during the winter and then migrate back to smaller bodies during breeding season to reproduce, and feed primarily on fish. This form may reach sizes up to 35 inches long and weigh up to 32 pounds.

Canada Lynx (*Lynx Canadensis*)



The Canada lynx is found in Lewis and Clark and Teton Counties; it is listed as threatened and has an area designated as critical habitat with portions located partially in Lewis and Clark and Teton Counties. Lynxes are medium-sized cats that have long legs, large paws, a short, black-tipped tail, and long distinctive tufts of fur on their ears. Their fur color changes between winter and summer. During the winter, their fur is dense and is grayish-brown, mixed with buff or pale brown on the back, and grayish-white or buff-white on the belly, legs, and feet. In the summer it changes to a more reddish to

gray-brown color. Adult males average in size of 22 pounds and 33.5 inches long from head to tail, while females average 19 pounds and 32 inches long. Their habitat consists generally of boreal forest and subalpine forest and they are well-suited in areas that receive deep snow. Individual lynxes maintain large home ranges that are typically between 12 to 83 miles in size, depending on the abundance of prey, the season, the animal's gender and age, and the density of lynx populations. Their principal prey is snowshoe hares, so they typically inhabit areas with large numbers of these animals. Other prey includes squirrels, grouse, porcupines, beavers, mice, voles, shrews, and fish. The primary land uses that adversely affect lynx habitat are timber harvesting, recreational and other related activities. Other impacts focus on the separation of contiguous habitat by high-volume roadways.

Grizzly Bear (*Ursus arctos horribilis*)



The grizzly bear inhabits Lewis and Clark and Teton Counties; it is listed as a threatened species. The grizzly bear is the second largest species of bear in the world, after the polar bear. The fur of grizzly bears can range in color from blonde to deep brown or black, and the differences are theorized to be due to different environments, diet, and temperatures of habitats of different bears. They have a large hump on their shoulders made of muscle. This large muscle allows for powerful digging by the forelimbs. Their heads are large and round and they have a concave facial profile. Adults range in weight from 400 to 1,500 pounds, with males weighing an average of 1.8 times more than females. Despite their large size, they can run at speeds of up to 35 miles per hour. Mother bears are very protective of their young and are known to attack humans if they perceive their cubs are in danger. Grizzly bears are omnivorous and their diets include moose, deer, sheep, elk, bison, salmon, trout, bass, nuts, roots, tubers, grasses, rodents, insects, berries, and scavenged carcasses, depending on the environment and availability of each type of food source. Plants make up a large part of grizzly bear diets. In the wild, grizzly bears generally live between 20-30 years. Primary factors leading to their decline are hunting and habitat degradation.

Pallid Sturgeon (*Scaphirhynchus albus*)



The pallid sturgeon inhabits Chouteau and Fergus Counties; it is listed as an endangered species. The Pallid Sturgeon is one of the largest freshwater fish species in North America and is native to the Missouri and Mississippi River systems. Adult Pallid Sturgeons may weigh over 80 pounds and reach lengths of more than five feet. They are a long, semi-flat, ray-finned fish and are generally pale-gray to white in color and continue to whiten as they age. They have been around since the time of the dinosaurs and have basically remained unchanged for 70 million years. They have a shovel-like nose with the mouth located a significant distance from the end of the snout. They take approximately 15 years to reach sexual maturity and can live up to 100 years. Their habitat consists of large turbid, free-flowing riverine habitat that has rocky or sandy substrate. They are well-adapted for living on river bottoms in which they feed; their diet consists of smaller fish and insects. Their numbers have declined from fishing, habitat loss, and damming of waterways.

Source: www.fws.com

WATER RESOURCES

There are several waterways that traverse through the overall JLUS study area, all of which are tributaries of the Missouri River. The Missouri River is a tributary of the Mississippi River and originates near Three Forks, Montana from the Jefferson, Gallatin and Madison Rivers. The River stretches for approximately 2,340 miles, and it drains about one-sixth of the continental U.S. as it passes through the Missouri River Valley. The River and its tributaries flow through seven states: Montana, North Dakota, South Dakota, Nebraska, Iowa, Kansas, and Missouri. Within the JLUS study area, the River is important for its history and culture, natural areas, fishing, recreation, water supply and irrigation to residents, and power generation from hydroelectric dams. Some of the tributaries of the Missouri River that flow through the study area include: the Sun River, Belt Creek, the Marias River, Arrow Creek, the Judith River, and the Musselshell River.

Please see the next page.

Chapter 3 Compatibility





Compatibility, in relation to military readiness, can be defined as the balance or compromise between community and military needs and interests. The goal of compatibility planning is to promote an environment where both entities can coexist successfully, while taking into account each other's needs.

A number of factors influence whether community and military plans, programs, and activities are compatible or in conflict. For this Joint Land Use Study (JLUS), a list of 24 common compatibility factors was used to help characterize local issues. These common compatibility factors fall into three broad categories: man-made, natural resources, and competition for scarce resources.

Based on input from the JLUS committees, the public, and the JLUS consulting team, issues to be addressed in the Malmstrom Air Force Base (AFB) JLUS were identified under 16 of the 24 common compatibility factors evaluated. Due to the nature of the military operations and associated compatibility issues, the Malmstrom AFB JLUS analyzed two study areas:

- 1) The Malmstrom AFB (MAFB) Study Area, which focuses on impacts to and from the MAFB airfield and on-base operations while considering a potential future fixed wing flying mission.*
- 2) The Missile Complex Study Area, which focuses on the protection of the roads, land and airspace surrounding the 150 missile facilities located throughout the seven counties.*

This chapter provides an overview of the compatibility factors identified within the two Malmstrom AFB JLUS study areas. This assessment of current and future incompatibilities drives the development of the strategies presented in Chapter 4, which are designed to address the current and future issues.

3.0 Methodology and Evaluation

The purpose of this section is to discuss the genesis of the issues identified in the Malmstrom AFB JLUS. The JLUS evaluation approach consisted of a comprehensive and inclusive discovery process identifying the key stakeholder issues which could directly or indirectly affect the compatibility strategies proposed in Chapter 4. Consequently, the strategies presented in Chapter 4 were designed to address the significant compatibility issues identified in this Chapter. During the preparation of the Malmstrom AFB JLUS, the public, the Policy Committee (PC), and the Technical Committee (TC) assisted in working through all 24 factors to identify, describe, and prioritize the extent of existing and potential future compatibility factors that could impact lands within or near the study area.

At the initial committee workshops and public meetings, these groups were asked to identify the location and type of compatibility factors they thought existed today or could occur in the future. Other issues were also added by the consulting team based on their evaluation of available information and relevant experience on similar projects. Through this process and additional research, the following compatibility factors were determined to be relevant to one of both study areas:

Man-Made		Natural Resources
1 Land Use	10 Light and Glare	18 Water Quality / Quantity
2 Safety Zones	11 Alternative Energy	19 T & E Species
3 Vertical Obstruction	12 Air Quality	20 Marine Environments
4 Local Housing Availability	13 Frequency Spectrum	
5 Infrastructure Extensions	14 Public Trespassing	Competition for Scarce Resources
6 Antiterrorism / Force Protection	15 Cultural Sites	21 Scarce Natural Resources
7 Noise	16 Legislative Initiatives	22 Land, Air, and Sea Spaces
8 Vibration	17 Interagency Coordination	23 Frequency Spectrum Capacity
9 Dust / Smoke / Steam		24 Ground Transportation

This chapter provides general technical background on each of the issues based on available information. The intent is to provide an adequate context for awareness, education, and development of JLUS recommendations. As such, it is not designed or intended to be utilized as an exhaustive technical evaluation of existing or future conditions within the study area.

Of the 24 standard compatibility factors, eight were determined not exist or apply. Three criteria were used to identify issues surrounding Malmstrom AFB and within the Missile Complex that are caused by both the military and the surrounding communities. By evaluating the issues based on these three criteria, an analysis can be conducted to determine how severely the current or potential issue impacts compatibility between military operations and the nearby communities. The three criteria are current impact, issue location, and potential impact, and each is described below:

- Current Impact.** Each issue was considered based on its current impact to the compatibility of either the installation or a local jurisdiction. Issues posing the most extensive operational constraints or community concerns constitute the highest priority for mitigation measures. These include items such as incompatible development within aircraft safety zones and Launch Facility (LF) safety arcs. Some issues pose a current impact, but are not as severe to sustainment of the military mission, such as the existence of threatened and endangered species within the study area.

- **Location.** This criterion measures the proximity of each issue in relation to activities occurring on the installation. Issues occurring near the installation are often more critical than those occurring remotely or in areas more distant from operational activities. Issues that were located inside the JLUS study area and were presently occurring were considered significant and in need of the most mitigation efforts. Issues located inside the JLUS study area with the potential to occur, or located outside the JLUS study area and presently occurring, were still important, but not as severe. Issues located outside the JLUS study area with minimal or no potential to occur were considered very low priority.
- **Potential Impact.** Although an issue may not present a current threat to the installation or the community, it may possess the ability to become an issue in the future. Should conditions change, adjacent or proximate development increase, or other issues become apparent, new conflicts with existing or future missions and operational activities at Malmstrom AFB and throughout the Missile Complex could arise. Issues were considered based on their future potential using the same criteria as established for current impact.

Each of the compatibility factors discussed in this chapter includes a summary of the issues that were identified during the JLUS process that relate to that factor. The strategies presented in Chapter 4 directly correspond to the issues presented herein.

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Chapter 3.1

**Malmstrom AFB
Study Area
Compatibility
Assessment**



3.1 Malmstrom AFB Study Area Compatibility Assessment

The following section provides an analysis of the various issues that were identified for the MAFB Study Area. The issues were developed through interviews with the local governments and state agencies, Policy and Technical Committee meetings and comments, public comments and additional research.

The issues identified for the MAFB Study Area relate to the following compatibility factors:

- 3.1.1 Land Use
- 3.1.2 Safety
- 3.1.3 Vertical Obstruction
- 3.1.4 Noise
- 3.1.5 Frequency Interference
- 3.1.6 Water Quality / Supply
- 3.1.7 Threatened and Endangered Species
- 3.1.8 Competition for Land and Sea Space

Please see the next page.

LAND USE COMPATIBILITY ASSESSMENT SUMMARY

DEFINITION: Land use planning for property surrounding military facilities is similar to the process for other land uses. For instance, local jurisdictions typically consider compatibility issues such as noise when locating residential developments near commercial or industrial areas. As the land surrounding military facilities increasingly develops, the municipality and the installation must assess organizational and operational components.

ISSUES TO CONSIDER: Existing land use regulations and policies for land around MAFB could promote incompatible development.

Land Use Compatibility Issues Identified

- i** Potential for incompatible development proximate/adjacent to Malmstrom AFB.
- i** Limited local permitting requirements and coordination of permitting.
- i** Public awareness about military easements and their terms is limited and easements do not cover the entire area of the Clear Zones.
- i** Proximity of on-base military housing to future industrial park uses presents potential incompatibilities.

Assessment of Existing Land Use Compatibility Tools

Table 3.1-1. Assessment of Existing Land Use Compatibility Tools

Agency	Compatibility Planning Tools					
	General Plan	Utility and Development Base Plan	MCA, Title 50 Chapter 60 and 74	Growth Policy Plan	Zoning Regulations	Subdivision Regulations
Malmstrom AFB	■	■	□	□	□	□
State of Montana	□	□	■	□	□	□
Cascade County	□	□	□	■	■	■
City of Great Falls	□	□	□	■	■	■

■ The tool exists and addresses land use issue(s). ■ The tool exists but does not address land use issue(s).
■ The tool exists but it only partially addresses land use issue(s). □ The agency does not employ this tool.

ASSESSMENT CRITERIA

Land uses near military installations should be compatible with the nuisances and safety risks that military installations may generate. Development is typically incompatible with military installations and training ranges when it is located near enough to be affected by noise, dust, safety issues or any of the other compatibility factors (see discussion at the beginning of this chapter for explanation of compatibility factors). Local planning documents should take military installation operations and their existing land uses into consideration.

The following is a list of uses generally considered to be compatible or incompatible with military uses:

COMPATIBLE USES

- **Open Space** – This use typically has few structures and excludes residential and other developed uses.
- **Agricultural** – This use typically restricts the number of structures and allows for limited or very low density inhabitable structures and other developed uses.
- **Commercial** – This use is compatible when not within a designated military safety zone and buildings and structures are below a specified building height.
- **Industrial** – This type of use typically may be compatible because industrial uses have many of the same characteristics as military uses e.g. noise, dust, steam, smoke, safety, etc.). Industrial uses located near military *housing*, however, can be incompatible but impacts may be mitigated depending on the specific use.

INCOMPATIBLE USES

- **Medium to High Density Residential** – These uses are not compatible within close proximity to military facilities because high numbers of people are permanently congregated in small areas. In general, residential uses are discouraged near military facilities because of increased safety risks, noise exposure and the typical heights of high density buildings, which can interfere with low-level flights.
- **Schools, Childcare Centers, Assisted Living Complexes** – These uses encourage the congregation of people and tend to be noise sensitive.
- **Public Institutions** – These uses encourage the congregation of people and tend to be noise sensitive.
- **Office Buildings** – These uses encourage the congregation of people.

LAND USE ISSUE ASSESSMENT

	<p>Issue LU-A Potential for incompatible development proximate / adjacent to MAFB.</p> <p>Current zoning designations on the land adjacent to MAFB could allow for incompatible development that interferes with existing and future MAFB operations. Current development patterns in Great Falls and Cascade County indicate that the areas surrounding MAFB are experiencing increased urbanization, which could be incompatible with existing and future military operations.</p>
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Zoning

Except for several parcels located in the City of Great Falls, MAFB is almost completely encircled by unincorporated areas in Cascade County. Much of the existing land surrounding MAFB is agricultural and undeveloped. However,

given the flexibility of uses allowed by the current county and city zoning, development will likely occur on this land. Consequently, if the regulatory approval of future development surrounding the installation is not closely coordinated with MAFB, it could prove to be incompatible with existing and future operations on MAFB.

Table 3.1-2 and Table 3.1-3 assess the compatibility of the zoning, corresponding permitted uses and densities within a one-mile area of MAFB within Cascade County and the City of Great Falls, respectively.

The Cascade County Zoning Map establishes a zoning pattern of decreasing densities spiraling outward from the City of Great Falls. The Cascade County parcels nearest to Great Falls are zoned Urban Residential or Industrial. Farther away the zoning is primarily Suburban Residential 1, Mobile Home and Rural Residential. Beyond that, most of the remaining parcels are zoned Open Space or Agricultural. Table 3.1-2 indicates the extent to which this pattern of zoning is compatible with military operations at MAFB.

Table 3.1-2. Compatibility of Cascade County Zoning within One Mile of MAFB

Zoning	Principal Uses	Special Uses	Density	Compatibility
General Business (B-2)	<ul style="list-style-type: none"> ■ Neighborhood retail ■ Retail wholesale trade ■ Warehousing 	<ul style="list-style-type: none"> ■ Living quarters associated with the business ■ Storage of recreational vehicles 	Lots no less than sixty (60) feet wide or an area of less than 7,200 square feet	Yes, however living quarters should be avoided in safety zones and DNL 65 dB and above noise contours.
Suburban Residential District – (SR-2)	<ul style="list-style-type: none"> ■ One-family dwelling per tract of land ■ Schools, parks and recreational ■ Fire station ■ Churches ■ Family day care home, group day care home, day care center ■ Community residential facility (8 or less) ■ Retirement home, nursing home ■ Agricultural uses of land, including agricultural buildings and structures if the tract is 20 acres or more ■ Livestock grazing 	<ul style="list-style-type: none"> ■ Bed and breakfast 	0.5 du/acres	Yes, however dwelling units and sensitive uses should be avoided in safety zones and DNL 65 dB and above noise contours.

Zoning	Principal Uses	Special Uses	Density	Compatibility
Rural Residential (RR- 5)	<ul style="list-style-type: none"> Same as S2 but with limited agricultural uses and buildings and no grazing 	<ul style="list-style-type: none"> A second dwelling unit Recreation building Utilities The excavation of sand and gravel 	0.2 du/acres	Yes, however dwelling units and sensitive uses should be avoided in safety zones and DNL 65 dB and above noise contours.
Light Industrial (I-1)	<ul style="list-style-type: none"> All principal uses allowed in a business district Industrial uses Agricultural commodity storage 	<ul style="list-style-type: none"> Living quarters associated with the business Wind turbines 	N/A	Yes, however living quarters should be avoided in safety zones and DNL 65 dB and above noise contours.
Heavy Industrial (I-2)	<ul style="list-style-type: none"> All uses not otherwise prohibited 	<ul style="list-style-type: none"> Living quarters 	N/A	Yes, however odors and noise generated by some industrial activities may be incompatible if located near on-base housing.
Open Space (OS)	<ul style="list-style-type: none"> Public park and playground and community center, private, non-commercial recreation area and center including country club, swimming pool and golf course, public and private forest and wildlife preserve, and similar conservation areas. Water treatment and storage, sewage facilities, and roadways. Agriculture and forestry 	<ul style="list-style-type: none"> Cemetery 	N/A	Yes

Zoning	Principal Uses	Special Uses	Density	Compatibility
Agricultural (A)	<ul style="list-style-type: none"> ■ Agricultural uses and structures ■ 1 to 2 family dwelling ■ Churches ■ Schools ■ Publically owned and operated facilities ■ Public parks and recreational facilities ■ Dairy (20 acres or more) ■ Rodeo grounds (20 acres or more) ■ Golf course ■ Campground ■ Nursing home ■ Bed and breakfast ■ Telecommunications tower / wind turbines or solar panels 	<ul style="list-style-type: none"> ■ Cemetery ■ Dog boarding ■ Quarry ■ Hospital or sanitarium ■ Transportation facilities including Airport (minimum of 20 acres) ■ Solid waste disposal ■ Utility sub-station ■ Storage ■ Animal hospital ■ Animal boarding ■ Feedlots (40 acres or less) ■ Mobile home park ■ Commercial wind farms ■ Sport complexes ■ General sales ■ General sales ■ Equipment rental ■ Health care centers ■ Outfitters ■ Firearms dealers ■ Gas and oil wells ■ Warehouse ■ Parking structures 	0.1 du/acres	Yes, however dwelling units and uses that draw large crowds should be avoided in safety zones.

3.1.1

Zoning	Principal Uses	Special Uses	Density	Compatibility
Mobile Home District (MH)	<ul style="list-style-type: none"> ■ Mobile homes and manufactured homes 	<ul style="list-style-type: none"> ■ Church, convent or monastery ■ Recreation ■ Schools 	Minimum lot area of 3,600 square feet	Yes, however dwelling units and uses that draw large crowds should be avoided in safety zones.

Source: Cascade County Zoning Regulations, 2009

As shown in Table 3.1-2, the zoning designations that exclude residential as a principal use are the most compatible with MAFB operations. The Agricultural zone, which is the zoning designation on the majority of the land surrounding MAFB, allows for the most diversity of uses, many of which could be incompatible with military operations on MAFB (e.g. schools, bed and breakfasts, and wind turbines) if a new flying mission were to be established at the base.

The Great Falls zoning designations within one mile of MAFB are evaluated for compatibility and summarized in Table 3.1-3.

Table 3.1-3. Compatibility of Great Falls Zoning within One Mile of MAFB

Zoning	Principal Uses	Conditional	Density	Compatibility
Heavy Industrial (I-2)	<ul style="list-style-type: none"> ■ Agricultural ■ Agriculture sales ■ Auction sales ■ Construction materials sales ■ Convenience sales ■ General sales ■ Manufactured housing sales ■ Off-site liquor sales ■ Secondhand sales ■ General Services ■ Sexually-oriented businesses ■ Veterinary clinics ■ Equipment rental ■ General repair ■ Agricultural storage ■ Fuel tank farm ■ Mini-storage ■ Freight terminal ■ Warehouse ■ Casino ■ Park ■ Recreational trail ■ Animal shelter ■ Composting ■ Recycling ■ Solid waste transfer 	<ul style="list-style-type: none"> ■ Community Garden 	Minimum lot size: 7,500 square feet	Yes, however industrial uses may not be compatible with on-base housing and telecommunication towers should not be located within flight corridors.

Zoning	Principal Uses	Conditional	Density	Compatibility
	<ul style="list-style-type: none"> ■ Telecommunications facility ■ Helipad ■ Parking lot/structure ■ Railroad yard ■ Industrial heavy and light ■ Industrial park ■ Junkyard ■ Light manufacturing ■ Motor vehicle graveyard and wrecking facility 			
Light industrial (I-1)	<ul style="list-style-type: none"> ■ Agricultural ■ Micro-brewery/tavern restaurant ■ Agriculture sales ■ Auction sales ■ Construction materials sales ■ Convenience sales ■ General sales ■ Manufactured housing sales ■ Commercial kennel ■ General services ■ Sexually-oriented businesses ■ Veterinary clinics ■ Equipment rental ■ General repair ■ Vehicle fuel sales, repair, sales and rental and services ■ Agricultural storage ■ Mini-storage ■ Freight terminal ■ Warehouse ■ Casino ■ Indoor sports recreation ■ Animal shelter ■ Park ■ Recreational trail ■ Public safety facility 	<ul style="list-style-type: none"> ■ Mini-golf ■ Outdoor recreation ■ Community garden ■ Composting ■ Recycling ■ Solid waste transfer ■ Utility ■ Junkyard 	N/A	Yes, however industrial uses may not be compatible with on-base housing and telecommunication towers should not be located within flight corridors.

Zoning	Principal Uses	Conditional	Density	Compatibility
	<ul style="list-style-type: none"> ■ Educational and instructional facilities ■ Telecommunications ■ Bus transit terminal ■ Helipad ■ Parking lot/structure ■ Railroad yard ■ Taxi cab dispatch terminal ■ Contractor yard ■ Artisan shop ■ Industrial light ■ Industrial park ■ Light manufacturing and assembly 			
Single-Family High Density (R-3)	<ul style="list-style-type: none"> ■ Residence – single family detached, zero lot line, manufactured ■ Community residential ■ Family day care home ■ Group day care home ■ Park ■ Recreational trail ■ Radio station ■ Community garden 	<ul style="list-style-type: none"> ■ Residence – two-family ■ Retirement home ■ Community residential type II ■ Day care center ■ Nursing home ■ Golf course ■ Cemetery ■ Public safety facility ■ Worship facility ■ Civic use facilities ■ Community centers ■ Concealed telecommuni-cations 	Minimum lot size: 7,500 square feet	Yes, however dwelling units should be avoided in safety zones and DNL 65 dB and above noise contours.
Multi-Family Residential Medium Density (R-5)	<ul style="list-style-type: none"> ■ Residence – single family, zero lot line, two-family, multi-family, condos, townhouses, manufactured, built ■ Retirement home ■ Community residential 	<ul style="list-style-type: none"> ■ Community residential type II ■ Day care center ■ Nursing home ■ Golf course ■ Cemetery ■ Public safety facility 	1 du/1,875 square feet	Yes, however dwelling units should be avoided in safety zones and DNL 65 dB and above noise contours.

Zoning	Principal Uses	Conditional	Density	Compatibility
	<ul style="list-style-type: none"> ■ Family/group day care ■ Park ■ Recreational trail ■ Radio station 	<ul style="list-style-type: none"> ■ Worship facility ■ Civic use facilities ■ Community centers ■ Educational facility ■ Concealed telecommunications ■ Utility 		
General Commercial (C-2)	<ul style="list-style-type: none"> ■ Day care center ■ Family/group day care ■ Hotel/motel ■ Micro-brewery/restaurant/tavern ■ Various sales (construction materials, convenience, general, liquor, specialty, secondhand) ■ Shopping center ■ Administrative services ■ Commercial kennel ■ Financial services ■ Funeral home ■ General and professional services ■ Veterinary clinic (small animals) ■ Equipment rental ■ General repair ■ Vehicle fuel sales, repair, sales and rental and services ■ Casino ■ Indoor entertainment ■ Indoor sports and recreation ■ Mini-golf 	<ul style="list-style-type: none"> ■ Emergency shelter ■ Nursing home ■ Campground auction sales ■ Veterinary clinic (large animals) ■ Animal shelter ■ Unconcealed telecommunications facility ■ Utilities ■ Helipad 	N/A	Yes, however sensitive uses, such as day care centers and motels, should be avoided in safety zones and DNL 65 dB and above noise contours.

Zoning	Principal Uses	Conditional	Density	Compatibility
	<ul style="list-style-type: none"> ■ Park ■ Recreational trail ■ Administrative governmental center ■ Civic use facility ■ Community center ■ Community cultural center ■ Public safety facility ■ Health care clinic, facility, sales and services ■ Concealed and collocated telecommunications ■ Bus transit terminal ■ Parking lot, structure ■ Taxi cab dispatch ■ Artisan shop ■ Light manufacturing and assembly 			
Public Lands Institutional (PLI)	<ul style="list-style-type: none"> ■ Day care center ■ Group day care ■ Park ■ Recreational trail ■ Administrative governmental center ■ Cemetery ■ Civic use facility ■ Community center ■ Community cultural facility ■ Community garden ■ Health care clinic, facility, sales and services ■ Educational facility ■ Concealed telecommunications facility ■ Parking lot or structure 	<ul style="list-style-type: none"> ■ Emergency Shelter ■ Administrative services ■ Indoor entertainment ■ Indoor sports and recreation ■ Outdoor entertainment ■ Animal Shelter ■ Unconcealed or collocated telecommunications facility ■ Utilities ■ Bus transit terminal ■ Helipad 	N/A	Yes, however sensitive uses such as days care centers should be avoided in safety zones and DNL 65 dB and above noise contours.

Zoning	Principal Uses	Conditional	Density	Compatibility
Mixed Use Transitional (M-2)	<ul style="list-style-type: none"> ■ Residence – single family detached, zero lot line, manufactured ■ Community residential ■ Day care center ■ Family and group day care home ■ Nursing home ■ Restaurant ■ Hotel/motel ■ General sales ■ Specialty sales ■ Administrative sales ■ Financial sales ■ Funeral homes ■ General services ■ Professional services ■ Veterinary clinic (small) ■ Vehicle services ■ Park ■ Recreational trail ■ Administrative governmental center ■ Civic use facility ■ Community center ■ Community cultural facility ■ Community garden ■ Public safety facility ■ Worship facility ■ Health care clinic, sales and services ■ Commercial education facility ■ Instructional facility ■ Concealed telecommunications facility ■ Parking lot, structure ■ Taxi cab dispatch terminal 	<ul style="list-style-type: none"> ■ Community facility, type II ■ Emergency shelter ■ Micro-brewery, tavern ■ Off-site liquor ■ Mini storage facility ■ Warehouse ■ Indoor entertainment ■ Indoor sports and recreation ■ Mini-golf ■ Animal shelter ■ Health care facility ■ Educational facility ■ Unconcealed and collocated telecommunications facility ■ Utilities ■ Bus transit terminal ■ Helipad ■ Contractor yard, type II 	<p>1 du/500 square feet</p> <p>Minimum lot size is 7,500 square feet</p>	<p>Yes, however sensitive uses such as days care centers should be avoided in safety zones and DNL 65 dB and above noise contours.</p>

Zoning	Principal Uses	Conditional	Density	Compatibility
	<ul style="list-style-type: none"> ■ Contractor yard, type I ■ Artisan shop ■ Light manufacturing and assembly 			

Source: City of Great Falls Land Development Code, Chapter 20, Title 17, Article 2, Title 10, Chapter 20

As shown in Table 3.1-3, most of the Great Falls zoning districts immediately surrounding MAFB allow for uses and/or have height restrictions that are compatible with MAFB operations - as long as they are not located within safety zones or high noise areas. However, most of these zones are an adequate distance from the high impact military areas so that incompatibility is unlikely. The parcels with a higher likelihood of incompatibility based on uses permitted by zoning include the properties north of MAFB that are zoned Heavy Industrial (See Issue LU-D) and the parcels to the southwest that are zoned Commercial and are within the southern Clear Zone (CZ) and APZ I (these are discussed at length under Safety Issue SA-A).

Development Patterns in Cascade County and the City of Great Falls

In recent years, both the City of Great Falls and Cascade County have seen an increase in the number of subdivision applications in areas around MAFB. If subdivision requests continue to be made in otherwise undeveloped areas around MAFB there will likely be an increase in development in this area, which could be incompatible with future military operations if not managed.

For example, there are parcels in Cascade County east of the southern APZs, which have recently been subdivided and are zoned SR-2. SR-2 zoning allows for residential uses at a density of 0.5 du/acre. To date, most of these lots have been developed into residential units. If this pattern of subdivision and development expands to other areas around MAFB it could present increasing incompatibility with a future flying mission at MAFB, especially if new development is located in safety zones or exceeds recommended building heights.

A description and assessment of some of the proposed and existing development projects (see Figure 3.1-1 for location of numbered (#) development project locations) that are in close proximity to MAFB is discussed below.

- **#1, #2: Berkner Heights and Whispering Ridge** are single family residential developments in the Berkner Heights and Whispering Ridge neighborhoods in southeast Great Falls. To the north are Skyline Heights and the Skyline Park Addition, which are fully built-out residential subdivisions. Although these subdivisions are not immediately adjacent to MAFB, residents are within close proximity to MAFB safety zones and the 65dB noise contour.
- **#3: Montana State University (MSU)-Great Falls** is a parcel of undeveloped land south of MSU-Great Falls. Potential developments being considered for this site include an upscale business/research park, large senior residential / assisted living PUD and a large sports complex. These types of uses would most likely be compatible with operations at MAFB given their distance from the base.
- **#4: Medical Tech Park** is a subdivision of eight +/- one-acre lots held by the city for potential development associated with the adjacent medical district. It is currently comprised of four lots for sale, a Social Security building and a U.S Customs building.
- **#5: Parcel Proposed for Development** is a privately owned parcel situated in the southern Clear Zone (CZ) and Accident Potential Zone I (APZ I) and has been considered for various commercial and residential uses.

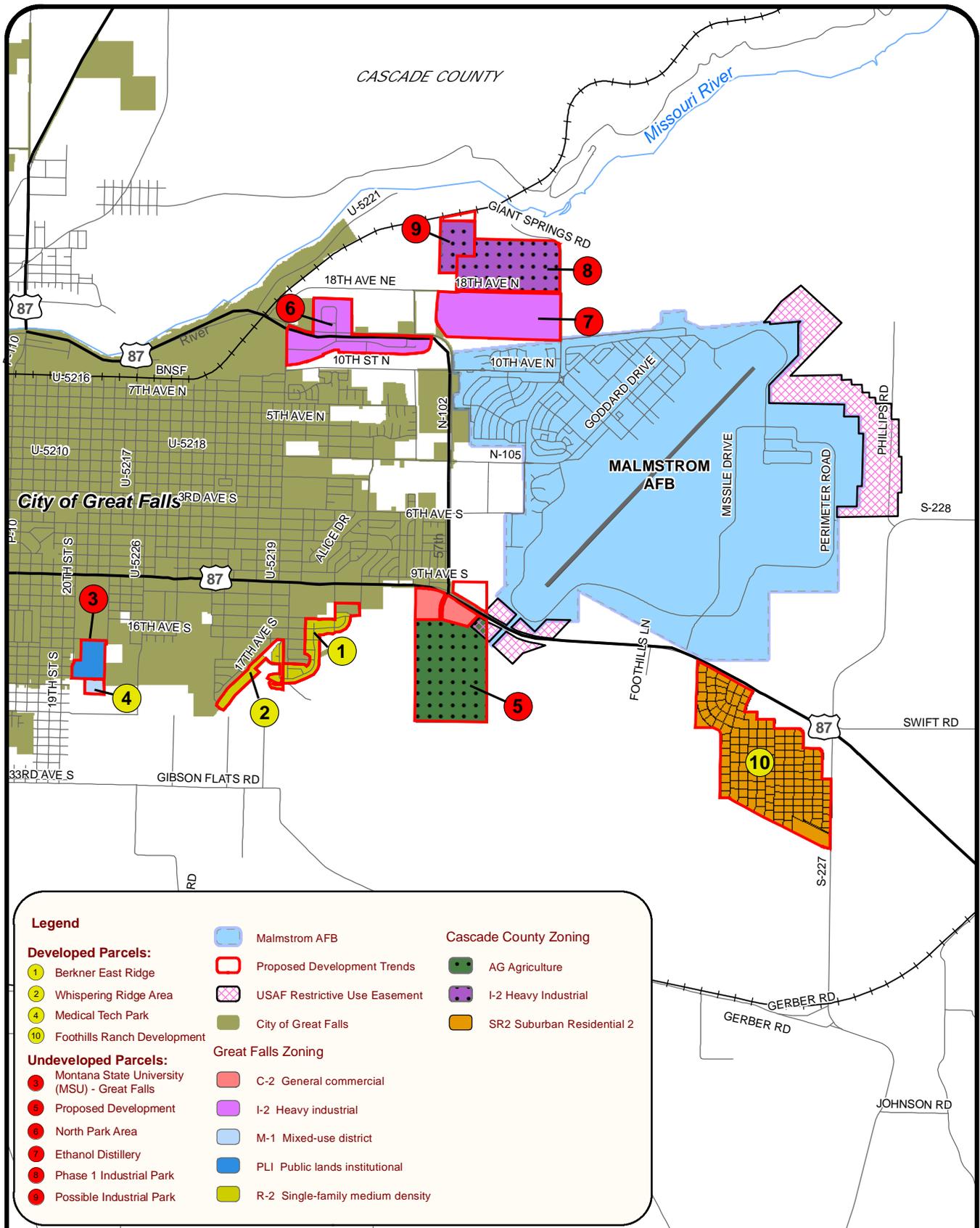


Figure 3.1-1
Proposed and Recent Development Around MAFB

- **#6, #7, #8, #9: The Planned Industrial Park** parcels are located north of MAFB. All parcels have been zoned Heavy Industrial and are included in a planned industrial park. These parcels could be incompatible with land uses on MAFB because of proximity to the on-base military housing area. The specific compatibility issues associated with the Industrial Park are discussed under Issue LU-D.
- **#10: Foothills Ranch Development.** This subdivision is adjacent to MAFB has been developed as medium density single family housing. It was the initial project in this area and may stimulate continued urbanization along the periphery of MAFB. Moreover, residents in this subdivision (and any new developments in the area) may experience increased noise levels, safety concerns and dust if a new flying mission is assigned to MAFB.

As shown on Figure 3.1-1, these development projects are on the fringe of Great Falls or in areas that are proximate to MAFB in Cascade County. Although none of these specific projects is expected to be directly incompatible with MAFB operations, cumulatively, they illustrate a pattern of development that could be incompatible in the future, if Cascade County and the City of Great Falls do not routinely consult with MAFB about the placement of development in this area.

Issue LU-B	<p>Limited local permitting requirements and coordination of permitting.</p> <p>Counties have limited permitting requirements for the construction of buildings, which limits their discretion of approval. The status quo could allow for incompatible development.</p>
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The City of Great Falls is solely responsible for approving development within its jurisdiction. The city has a zoning ordinance, development code, design standards and building and construction permitting process, all of which allow the city to regulate the type and location of development, as well to ensure compliance with minimum building standards designed to protect the public health and safety.

Cascade County, on the other hand, only regulates development through its zoning ordinance. The County does not have an adopted building code nor does it issue building permits. Instead, the State of Montana is responsible for issuing building permits in the county pursuant to Montana Annotated Code (MCA) Title 50, Chapters 60 and 74. According to these statutes, counties can elect to assume the responsibility of issuing building permits, but Cascade County has not chosen to do so. Therefore, the Montana Department of Labor and Industry (DLI) Building Code Bureau (BCB) is responsible for issuing building permits in the unincorporated areas of the county.

In this role, the BCB has permitting authority over the types of buildings constructed within Cascade County, in conformance with local zoning. The BCB does not coordinate its building permit review process with the county, however. Consequently, Cascade County and MAFB are often not aware of the issuance of building permits for new development in the area. Without communication with the BCB, Cascade County is often unaware of new and pending development. This significantly handicaps Cascade County efforts to regulate and limit incompatible development near MAFB, as well as efforts to monitor the types of structures that are being constructed nearby.

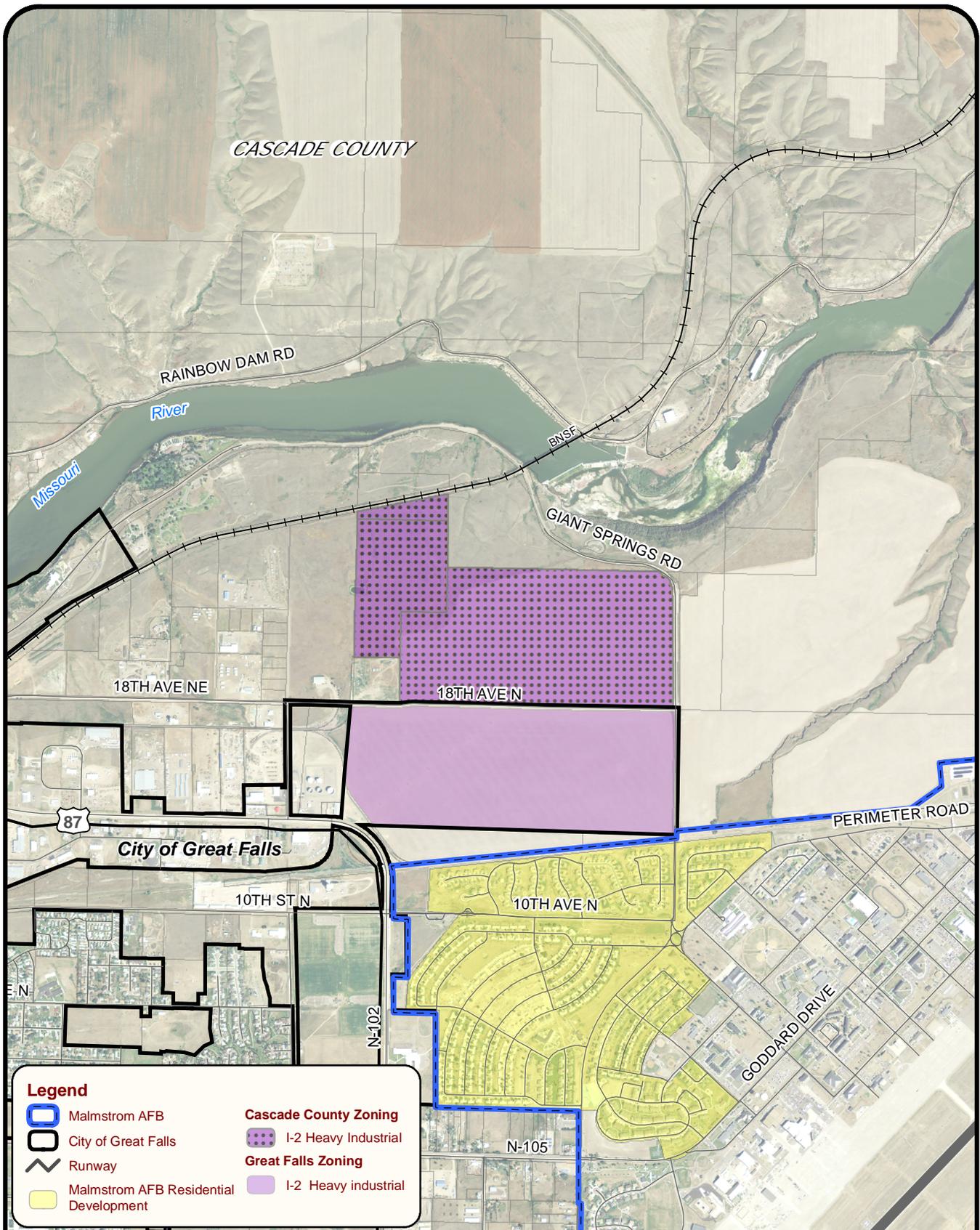
	<p>Issue LU-C Public awareness about military easements and their terms is limited, and easements do not cover the entire area of the Clear Zones.</p> <p>While Malmstrom does send notification letters to property owners regarding the Air Force restrictive easements within the Clear Zones (CZs) of the MAFB runway, there is still a lack of awareness about the location and terms of these easements among landowners, Cascade County and Building Codes Bureau (BCB) potentially causes non-enforcement of the terms of the easements.</p>
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The U.S. Air Force holds restrictive easements that encompass parts of the northern and southern CZs extending from MAFB’s runway. The easements are executed between the U.S. Air Force and the respective landowner. Although the easements are mutual agreements between the landowners and the Air Force there is often a lack of awareness about the location and terms of the easements. During a number of public meetings that were part of the Malmstrom JLUS public outreach process, it became evident that landowners subject to military easements were not always aware of the terms of the agreements.

In the past, Cascade County has reviewed development proposals for properties within the CZs, including some subject to the military easements. Consequently, it is clear that several landowners are either confused or not familiar with the terms of the easement agreements encumbering their property. This may be a result of the fact that the Air Force does not issue annual letters explaining the terms and conditions of the easements to the respective land owners as they do throughout the Missile Complex. In addition, Cascade County’s official zoning map does not reflect the area encompassed by the CZs or APZs. Showing these areas on the zoning map, even if only for informational purposes, could increase public awareness about the size and purpose of the easements.

	<p>Issue LU-D Proximity of on-base military housing to future industrial park uses presents potential incompatibilities.</p> <p>MAFB developed on-base housing adjacent to land in Great Falls zoned Heavy Industrial (I-2) and designated to be an industrial park. Prospective industries for the industrial park include an ethanol plant and a mill seed plant, which could generate unpleasant odors and noise that may impact military residents.</p>
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There are several tracts of land just north of MAFB located in the City of Great Falls and Cascade County that are zoned Heavy Industrial (I-2) (see Figure 3.1-2). The parcels in the Great Falls city limits were annexed approximately 15 years ago and were promptly zoned for industrial use. Since these parcels were annexed, the City of Great Falls and the Great Falls Development Authority (GFDA) have made plans to develop this area as 950-acre industrial park. Investments and infrastructure upgrades have been made on these parcels but no development has taken place yet. In 1995, soon after the annexation, MAFB constructed on-base housing in the northwestern corner of the installation and adjacent to these parcels. The placement of the on-base housing units near the future industrial park created the potential for future incompatibility. Industrial uses may be incompatible with the base housing because of the proximity and the potential for nuisances such as excessive noise, odor, and emission of pollutants and reduced air quality. Opportunities exist for mitigating these impacts if the developers, the City and the GFDA work with MAFB on the site design and the development of best practices that incorporate compatibility principles.



Legend

	Malmstrom AFB	Cascade County Zoning		I-2 Heavy Industrial
	City of Great Falls	Great Falls Zoning		I-2 Heavy industrial
	Runway			
	Malmstrom AFB Residential Development			

Matrix
DESIGN GROUP

0 500 1,000 2,000 Feet

Figure 3.1-2
Incompatible Zoning Near MAFB

Fig3-1-2_MAFB_IndusDev_2012_03_20_JKC.pdf

ASSESSMENT OF EXISTING LAND USE COMPATIBILITY TOOLS

Malmstrom AFB (MAFB)

MAFB General Plan

The General Plan was created to provide the 341st Space Wing (now Missile Wing) Commander, as well as other key decision-makers, a portrait of MAFB's present and future capacity to achieve its established mission, as well as the character and structure of the base.

The installation's General Plan identifies base constraints and opportunities, recommendations for improvements to infrastructure, and potential land use changes and capital improvements. The General Plan references issues of compatibility with surrounding development but mostly addresses the on-base site plan. The plan mentions the proposed industrial park as a possible incompatibility, but does not provide recommendations for managing possible impacts. Instead, the document provides information about the on-base land uses and serves as a reference for nearby jurisdictions when conducting planning activities.

Utility and Development Plan, East Base Area

This document provides a utility and development plan for the east side of MAFB. The plan reiterates the importance of coordinating MAFB development with surrounding uses but doesn't identify or establish particularly useful tools to do so. The plan focuses almost exclusively on development within the boundaries of the base and does not address the compatibility issues associated with the placement of military housing near the proposed off-base industrial park north of MAFB.

State of Montana, Department of Labor and Industry, Building Code Bureau

Montana Code Annotated 2009, Title 50. Health and Safety, Chapter 60. Building Construction and Chapter 74 – Montana Building Code

Montana Code Annotated (MCA), Title 50, Chapters 60 and Chapter 74 establish minimum building, plumbing, mechanical, electrical, energy, elevator, and boiler codes. A state building permit is required prior to the start of construction for most new buildings (exemptions are provided for small scale projects), and/or for alterations, additions and repairs. Building, plumbing, mechanical and electrical permits must be issued before work authorized under these permits can start. Once work is complete buildings must undergo inspection and final approval.

Per Title 50, Chapter 60, if a county, city, or town does not adopt a building code as provided in 50-60-301, the State of Montana, Building Code Bureau (BCB) will enforce the state code in these areas. The City of Great Falls enforces its own building code. Since none of the seven counties participating in the Malmstrom JLUS have adopted or enforce a building code, the Montana BCB enforces the state building code in these jurisdictions, including electrical permits for all buildings, structures, wind turbines and cell towers.

Cascade County

Growth Policy Plan

The current Cascade County Growth Policy Plan was adopted in September 2006. The guiding principles of the Plan include sustaining and strengthening the economic well-being of the county's citizens, protecting and maintaining the rural character and interrelationship with the natural environment and resources, maintaining the agricultural economy, retaining the presence of the U.S. military, and preserving and enhancing the rural, friendly,

and independent lifestyle of the county's citizens. The objectives of Goal IV: Retain the presence of the U.S. military in Cascade County include:

- Utilize the federal congressional delegation to retain the current status at a minimum.
- Encourage the location of additional military missions in Cascade County.
- Encourage the reactivation of the runway at MAFB for fixed wing operations.

Although the plan identifies the protection of the military mission as an important concept, the policies in the Growth Policy Plan do not specifically address compatibility, or the need to manage or prevent land use conflicts on land surrounding the base.

Zoning Regulations

The zoning regulations establish 12 zoning districts which are located throughout the county and include residential, industrial, agricultural, general business, mixed-use, open space, and planned unit development zones. Zoning regulates uses and establishes standards for minimum lot area and dimensions, building height, yard dimensions, lot coverage and parking requirements for certain types of uses. The Cascade County zoning around MAFB is primarily Agricultural, which allows for a wide of array of uses, including low density residential, bed and breakfasts, public institutions and other potential uses. Please refer to Table 3.1-2, Compatibility of Cascade County Zoning within One Mile of MAFB, (earlier in this Chapter) for a more complete overview of the compatibility of the existing Cascade County zoning surrounding MAFB.

Subdivision Regulations

The subdivision regulations do not include any restrictions that prevent or limit the density of new subdivisions in the vicinity of MAFB to protect the base from encroachment. In fact, the regulations require as a condition of final plat approval the construction (or financial guarantee of installation) of all required infrastructure improvements associated with the subdivision. This may result in infrastructure extensions in the vicinity of MAFB that encourage the growth of incompatible development.

City of Great Falls

Growth Policy Plan

The City of Great Falls Growth Policy Plan is organized into eight different elements – environment, economic development, land use, transportation, community facilities, housing and intergovernmental coordination. The Land Use Element is designed to promote a desirable urban pattern and reflect how public and private land should generally be developed. The land use issues and policies are described in a very broad manner and not specifically for certain areas. The Land Use Element does not discuss any type of development around MAFB or specific compatibility practices to prevent encroachment. However, several strategies in this element are aimed at encouraging infill development, reducing dependency on automobiles, and discouraging urban and suburban sprawl, which could reduce the potential for encroachment and incompatible development near MAFB if the infill development occurs outside a one-mile radius of the base.

Zoning Regulations

The Great Falls zoning adjacent to MAFB includes Heavy Industrial to the north and northwest (see Figure 3.1-2), Parks, Open Space, Public Lands and Institutional to the west and General Commercial to the southwest. Residential districts are located to the west of the Base. In general, these districts are compatible, but there are allowable uses in these zoning categories that are considered incompatible with current and potential future operations at MAFB. The Heavy Industrial zoning north of MAFB could create conflicts with existing on-Base housing.

Subdivision Regulations

The subdivision regulations do not describe any specific compatibility or design guidelines for subdivisions in the vicinity of MAFB. The regulations require the installation of all infrastructure improvements as a condition of final plat approval, which may encourage the growth of incompatible development in the vicinity of MAFB.

Please see the next page.

SAFETY

COMPATIBILITY ASSESSMENT SUMMARY

DEFINITION: Safety zones are on and off-base areas with high risks to public safety in which development should be restricted in terms of use and concentrations of people. Moreover, military operations should be managed to minimize safety risks to the public when operating on or around civilian land.

ISSUES TO CONSIDER: Zoning and land uses within clear zones (CZ) and accident potential zones (APZ), as well as other ancillary impacts of land uses, which might cause interference with or safety hazards to military operations and civilian activities.

Safety Issues Identified

- i Potential for development within the Clear Zone (CZ) and Accident Potential Zones (APZ) I and II

Assessment of Existing Safety Compatibility Tools

Table 3.1-4. Assessment of Existing Safety Compatibility Tools

Agency	Compatibility Planning Tools					
	AICUZ	Growth Policy Plan	Zoning Regulations	Airport Overlay District	Subdivision Regulations	Design Guidelines
MAFB	■	□	□	□	□	□
Cascade County	□	■	■	■	■	□
City of Great Falls	□	■	■	■	■	■

- The tool exists and addresses safety issue(s).
- The tool exists but does not address safety issue(s).
- The tool exists but it only partially addresses safety issue(s).
- The agency does not employ this tool.

ASSESSMENT CRITERIA

Safety zones are areas in which development should be restricted in terms of use and concentrations of people due to higher risks to public safety.

Clear Zones (CZ)

Clear Zones are located at each end of an airfield runway. The CZs for MAFB's runway are 3,000 feet wide (centered at the centerline of the runway) and extend 3,000 feet past the end of the runway.

■ COMPATIBLE USES

- According to DoD Instructions UFC 3-260-1, the only allowable uses in Clear Zones are:
 - Undeveloped land
 - Agriculture
 - Parking
 - Roadways
 - Utilities (underground)

■ INCOMPATIBLE USES

- All structures

Accident Potential Zones (APZs)

Accident Potential Zones are areas with less critical safety hazards than CZs but still possess a significant potential for accidents. MAFB's APZs are each 3,000 feet wide; APZ I extends 5,000 feet from the end of each CZ, and APZ II extends 7,000 feet from the end of each APZ I.

■ COMPATIBLE USES

- According to DoD Instructions UFC 3-260-1, uses with concentrations of people are not encouraged in APZ I. The only allowable uses for APZ I include: parking, transportation, some manufacturing (e.g. lumber, furniture, and paper), cemeteries, some services and commercial (automotive retail), golf courses, parks, recreation, ranching, forestry, fishing and mining.
- Permissible uses in APZ II include the APZ I uses as well as low density single family residential (maximum density of 1 to 2 du/acre) and low intensity (low concentrations of people) businesses and commercial activities.

■ INCOMPATIBLE USES

- Within APZ I, all residential uses are discouraged and high intensity (high concentrations of people) business and commercial activities (restaurants and retail) are not recommended.
- Within APZ II, all uses except high intensity uses such as theaters, churches, and restaurants are appropriate.

SAFETY ISSUE ASSESSMENT

	<p>Issue SA-A Potential for development within Clear Zone (CZ) and Accident Potential Zones (APZs) I and II.</p> <p>The existing configuration of the Clear Zones (CZs) and Accident Potential Zones (APZs) extend outside the boundary of the installation onto non-federal land. MAFB holds easements for some of the non-federal land within these safety zones but not all. Cascade County and Great Falls zoning within the safety zones allows for uses that are not compatible with safety zone restrictions.</p>
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Figure 3.1-3 shows how the MAFB’s Clear Zones (CZs) and Accident Potential Zones (APZs) extend beyond the boundary of the installation onto non-federal land. All of the northern and most of the southern safety zones are within Cascade County’s jurisdiction. Only a small portion of the southern CZ is in the City of Great Falls. There are different recommendations about the type of development that should be allowed within each of the safety zones.

Development is not recommended within CZs. The Air Force has obtained restrictive easements within the CZs and APZ I from property owners outside of MAFB to limit development. The easements are depicted on Figure 3.1-3. The easements obtained to date do not cover the entirety of the CZs, however. Consequently, it is possible that the land within the CZs that is not subject to a restrictive easement may be developed at some time in the future.

All of the land within the safety zones is currently undeveloped (except for the N-60 roadway running through the southern CZ); however the existing zoning could allow for incompatible development in the future. Per Cascade County’s zoning code most of the unprotected land in the CZs and APZs is zoned Agricultural, but there are several parcels with less restrictive zoning. Thus, without appropriate zoning or development controls in place incompatible development could be located in the safety zones.

One area of concern is a 1,300-acre privately-owned property comprising 206 acres of land that falls within the southern CZ and APZ I (see “Proposed Development” on Figure 3.1-3). This property is located within both jurisdictions. The portion of the property in Great Falls is zoned General Commercial (C-2) and the portion in Cascade County is zoned Agricultural (A). All permitted uses allowed in these zoning districts are not compatible with the safety zone restrictions, as described below.

- **City of Great Falls General Commercial (C-2) Zone.** C-2 zoning is primarily intended to accommodate high-traffic businesses - which are incompatible in CZs. This zoning designation allows a wide array of uses, almost all of which are discouraged within CZs.
- **Cascade County Agricultural (A) Zone.** The area in Cascade County that is zoned Agricultural has been considered for various development proposals in the past. Although DoD Instructions UFC 3-260-1, encourage agricultural uses within CZs, Cascade County’s Agricultural zone allows many uses which are not agricultural and potentially incompatible. For example, the Agricultural zone allows schools, nursing homes and bed and breakfasts. These types of uses are not recommended within the CZ or APZ I because of the risk to public safety.

Several projects have been proposed on this property in the past, including a large commercial retail center and a large housing development. While neither proposal advanced, it is clear that there is a high level of interest in developing these parcels. For example, in 2006, the Great Falls Planning Office and City Manager’s Office prepared a study called *A Discussion Paper Regarding Accident Potential Zones and Associated Land Development near Malmstrom Air Force Base*, which discussed how best to consider commercial and residential projects proposed in the MAFB safety zones.

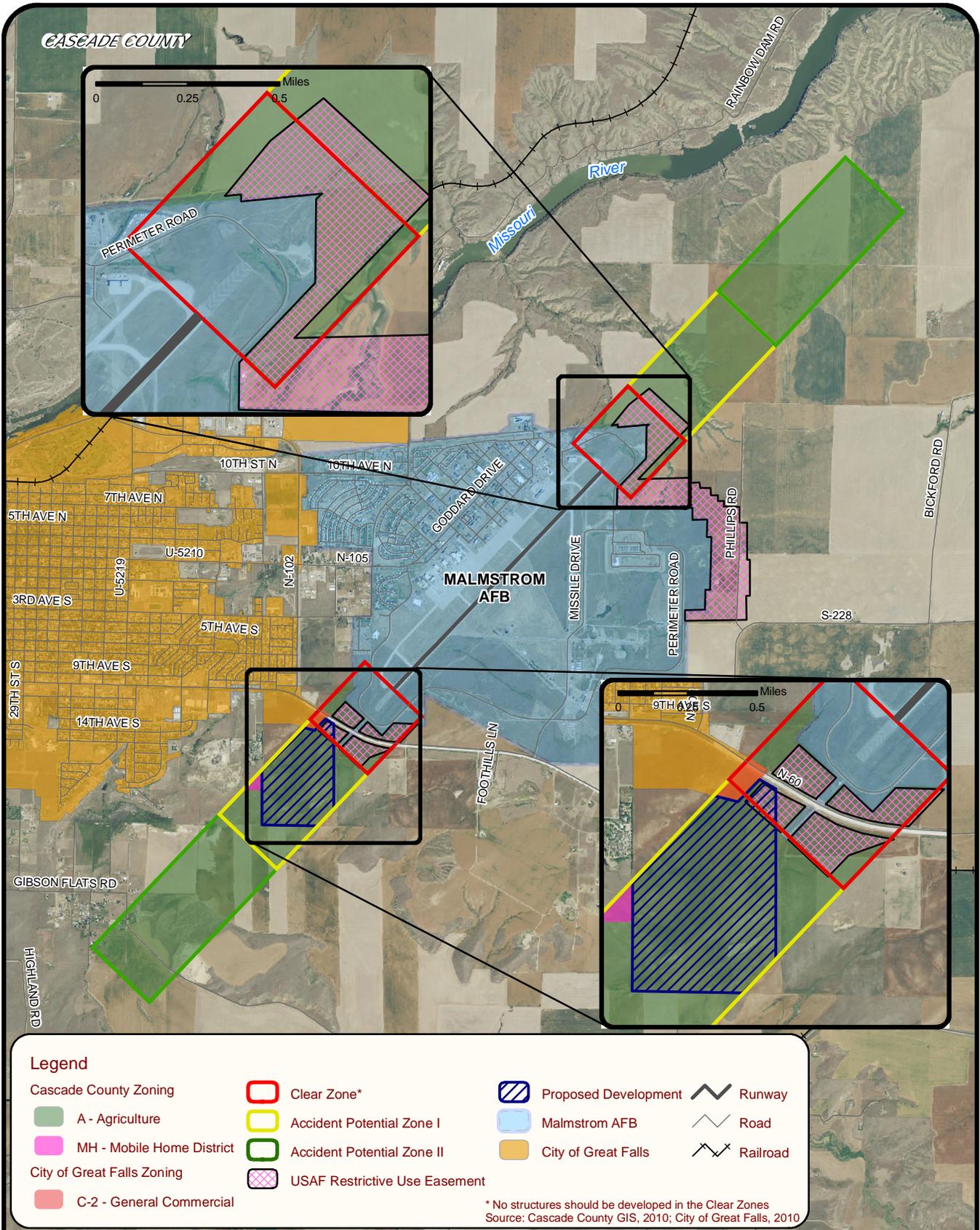


Figure 3.1-3
Incompatible Zoning Within MAFB Safety Zones



0 0.25 0.5 1 Miles

Fig3-1-3_MAFB_IncompatZoning_2012_03_14_JKC.pdf

As a result of this study the Chamber of Commerce recommended that the City Commission approve proposed residential and commercial projects, subject to the following restrictions:

- Commercial projects would be built in a manner that uses the site to the maximum practical extent for purposes consistent with an air operations “Clear Zone.” These uses include landscaping and storm water retention.
- Residential development would be permitted on a staged basis.
- Residential developers would disclose in writing to all purchasers that aircraft operations and noise may occur near the property.
- In the event that a new flying mission required an expanded Clear Zone or Accident Potential Zone, the developers would agree to stop development at the completion of the phase allowed at that time.
- The City of Great Falls would refrain from permitting development inconsistent with uses normally permitted in the theoretical “Clear Zone and Accident Potential Zones.”

These guidelines have not been incorporated into the city zoning regulations and therefore are not enforceable.

In a similar effort to reduce public safety risks and prevent incompatible development from jeopardizing the future of MAFB, Cascade County attempted to purchase the development rights of the county parcels within the CZs. This proposal was a public initiative that was defeated by Cascade County voters; thus the County has not purchased the development rights for this land. Without restrictive easements in place the privately owned parcels in the CZs could be developed in a manner that is incompatible with a potential future flying mission. Alternative solutions, such as acquisition of land or zoning changes, could help reduce the likelihood of incompatible development. In the meantime, however, the opportunity exists for residential and commercial development to be located within the CZs, which puts public safety and the future viability of air operations associated with the runway at risk.

ASSESSMENT OF EXISTING SAFETY COMPATIBILITY TOOLS

Malmstrom AFB

Air Installation Compatible Use Zone (AICUZ)

The 1994 Malmstrom AICUZ Study identifies compatible and incompatible land uses within noise contours and safety zones associated with the MAFB runway. The AICUZ maps the CZs and APZs and provides guidance for appropriate land uses in these areas. It provides land use recommendations for surrounding communities to use when developing community plans, zoning ordinances, subdivision regulations and building codes, and when reviewing development applications. Although there is currently no fixed wing flying mission at MAFB, the AICUZ is useful to help understand potential noise and safety impacts associated with future missions, as well as compatibility issues that should be considered in local jurisdiction planning efforts. The AICUZ recommendations for the types of land uses located in the various safety zones correspond to the recommendations in DoD Instructions UFC 3-260-1.

Cascade County

Growth Policy Plan

The Policy and Goal Implementation Chapter of the Growth Policy Plan designates four prohibitive development areas. One of these areas, the Military Runway Accident Potential Zone, prohibits future development in the APZs at each end of the MAFB runway and states that any approved uses will be consistent with the recommendations in the 1994 MAFB AICUZ Study. Although this policy aims to protect the MAFB safety zones, the proposed restrictions have not been implemented nor incorporated into any enforceable county regulations. Although the plan identifies the protection of the military mission as an important concept, the policies in the Growth Policy have not been incorporated into the zoning ordinance and are presently not enforceable.

Zoning Ordinance

Many allowed uses in the Cascade County Agricultural zoning district are not compatible with the recommended land use restrictions in a CZ or APZ I per DoD Instructions UFC 3-260-1. Some incompatible uses that are allowed in the Agricultural district include:

- Single Family Residential (1 du/20 acres)
- Church and/or parish
- School or college
- Publicly owned building
- Commercial dairy
- Riding and roping arena
- Golf course and driving range
- Campground
- Day Care Center, Group Day Care Center, Family Day Care Center
- Nursing Home/Retirement Home
- Bed and Breakfast
- Telecommunication towers
- Commercial Wind and Solar Generation Facilities

Moreover, neither the Zoning Ordinance nor the Official Zoning Map reference the MAFB CZs or APZs, even for informational purposes, even though the Cascade County Growth Policy Plan (mentioned above) clearly suggests development restrictions based on the 1994 MAFB AICUZ safety zones.

The Zoning Ordinance does establish an Airport Influence Area, which applies only to the City of Great Falls International Airport. The types of uses allowable within certain airport influence areas are specified and correspond to FAA standards. These standards should be applied to Malmstrom AFB as well, as long as they conform to DoD Instructions UFC 3-260-1.

Subdivision Regulations

Section IV-A-7(b)(F) and VI-A-20 (f)(i) of the Cascade County Subdivision Regulations require the protection of the public health and safety through the prohibition of structures in the CZs or APZs of any military or civilian airport. Existing subdivision plats in the southern APZ II must include a real estate disclosure statement indicating the proximity to a military facility.

City of Great Falls

Growth Policy

The Land Use Element does not address development around MAFB, or any specific compatibility practices to prevent encroachment to the installation.

Zoning Ordinance

Neither the CZs nor the APZs are reflected on the Great Falls Official Zoning Map. The Great Falls Zoning Ordinance does have an Airport Overlay District, which was designed to prevent incompatible land uses from being developed within important operational or safety areas associated with the runway at Great Falls International Airport. The overlay district also requires all property owners in the airport influence area, airport hazard zone, extended runway zone, noise impact zones and height zones to notify potential buyers that the property is subject to the provisions of the district. This overlay does not apply to areas around MAFB.

Subdivision Regulations

The subdivision regulations do not describe any specific compatibility or design guidelines for land around MAFB or within safety zones.

Design Review Guidelines

The design review guidelines do not address practices to encourage compatible development around MAFB.

Please see the next page.

VERTICAL OBSTRUCTIONS

COMPATIBILITY ASSESSMENT SUMMARY

DEFINITION: Vertical Obstructions typically take the form of tall structures that are located near a military installation and may interfere with certain military operations.

ISSUES TO CONSIDER: Wind energy, transmission lines and cell tower development are emerging infrastructure and industries in Montana, which if developed within the Imaginary Surfaces area could interfere with a future flying mission at MAFB.

Vertical Obstruction Issues Identified

- i** Unregulated presence and placement of Vertical Obstructions within imaginary surface area and/or any low-level flight paths
 - Cell Towers
 - Wind Turbines
 - Transmission Lines

Assessment of Existing Vertical Obstructions Compatibility Tools

Table 3.1-5. Assessment of Existing Vertical Obstructions Compatibility Tools

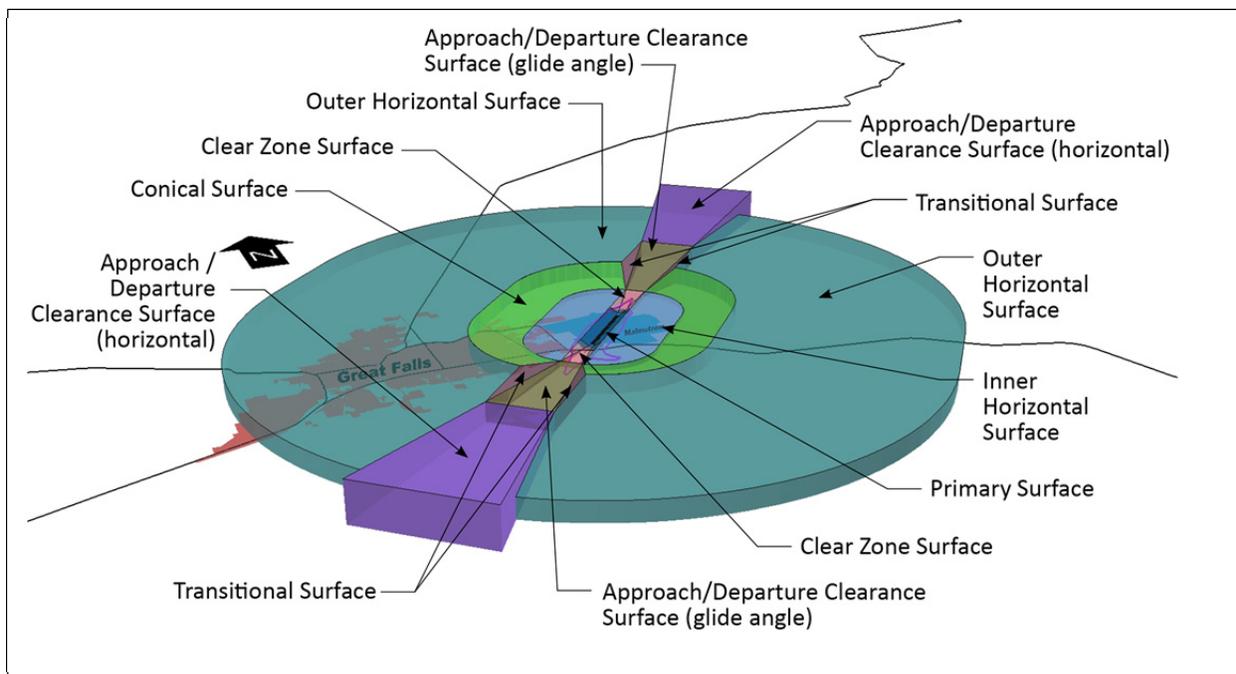
Agency	Compatibility Planning Tools					
	MCA, Title 50 Chapter 60 and 74 Building Code	40th Helicopter Squadron Mid-Air Avoidance Program	Zoning Regulations	Airport Overlay District	Subdivision Regulations	Design Review Guidelines
State of Montana	■	■	□	□	□	□
MAFB	□	■	□	□	□	□
Cascade County	□	□	■	■	■	□
City of Great Falls	□	□	■	■	■	■

- The tool exists and addresses vertical obstruction issue(s).
- The tool exists but does not address vertical obstruction issue(s).
- The tool exists but it only partially addresses vertical obstruction issue(s).
- The agency does not employ this tool.

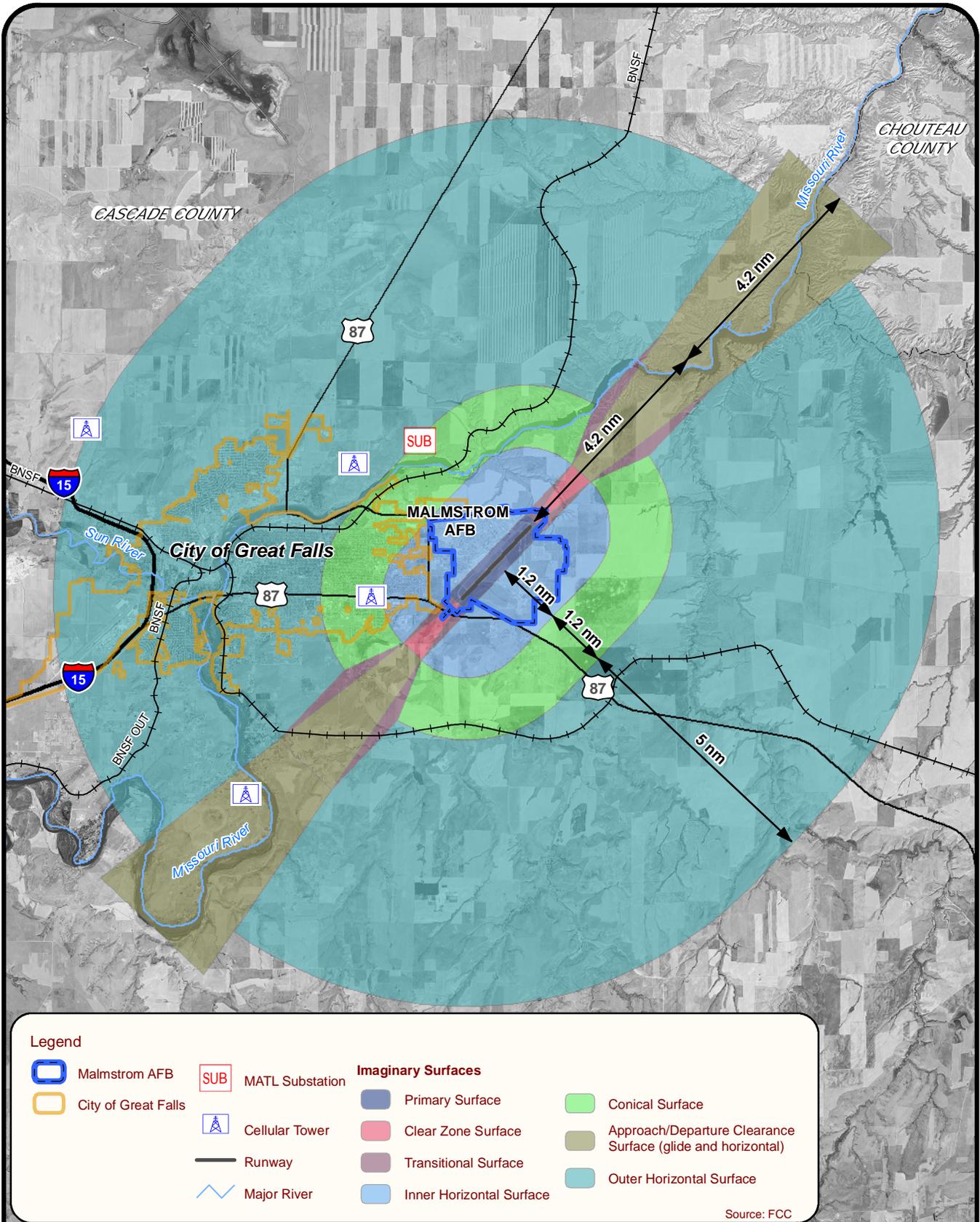
ASSESSMENT CRITERIA

Vertical obstructions in relation to flight operations from an airport (military or civilian) are addressed through compliance with Federal Regulation Title 14 Part 77, which establishes standards and notification requirements for objects affecting navigable airspace. Commonly referred to as Part 77 compliance, this regulation provides details on how to evaluate the potential of a vertical obstruction based on the airfield's elevation, the height and resulting elevation of the new structure or facility, and the location of the structure or facility relative to the airfield. Figure 3.1-4a illustrates common imaginary surfaces terms used in the Part 77 regulation, while Figure 3.1-4b provides graphic representations of the imaginary surfaces around the runway at MAFB. These images show how structures and facilities are evaluated to determine if they pose a vertical obstruction relative to navigable airspace around MAFB. The various imaginary surfaces build upon one another and are designed to eliminate obstructions to air navigation and operations, either natural or man-made. Following is a description of the key terms related to imaginary surfaces per the FAA Unified Facilities Criteria 3-260-1, 2008.

Figure 3.1-4a. Part 77 Imaginary Surfaces



- **Imaginary Surfaces** are the areas surrounding a runway that must be kept clear of objects that might damage an aircraft. A man-made or natural object that projects above an imaginary surface is an obstruction. Imaginary surfaces for fixed-wing airfields are described below.
- **The Primary Surface** defines the limits of the obstruction clearance requirements in the immediate vicinity of the landing area. It comprises surfaces of the runway, runway shoulders, and lateral safety zones and extends 200 feet beyond the runway end. For a single class "B" runway, this surface is 2,000 feet wide, or 1,000 feet on each side of the runway centerline.
- **The Clear Zone** defines the limits of the obstruction clearance requirements in the vicinity contiguous to the end of the primary surface. For a single runway end, it measures 3,000 feet by 3,000 feet. This area has the highest accident potential of all zones.



Legend

Malmstrom AFB	MATL Substation	Imaginary Surfaces	Conical Surface
City of Great Falls	Cellular Tower	Primary Surface	Approach/Departure Clearance Surface (glide and horizontal)
Runway	Runway	Clear Zone Surface	Outer Horizontal Surface
Major River	Major River	Transitional Surface	Inner Horizontal Surface

Source: FCC



Figure 3.1-4b
Vertical Obstruction Regulations

Fig3-1-4b_MAFB_VertObs_2012_03_14_JKC.pdf

- **The Approach-Departure Clearance Surface** is symmetrical about the runway centerline extended, begins as an inclined plane (glide angle) 200 feet beyond each end of the primary surface of the centerline elevation of the runway end, and extends for 50,000 feet.

The slope of the approach-departure clearance surface is 50:1 along the extended runway (glide angle) centerline until it reaches an elevation of 500 feet above the established airfield elevation. It then continues horizontally at this elevation to a point 50,000 feet from the start of the glide angle. The width of this surface at the runway end is 2,000 feet; it flares uniformly, and the width at 50,000 feet is 16,000 feet.

- **The Inner Horizontal Surface** is a plane, oval in shape at a height of 150 feet above the established airfield elevation. This surface is constructed by scribing an arc with a radius of 7,500 feet above the centerline at the end of the runway and interconnecting these arcs with tangents.
- **The Conical Surface** is an inclined surface extending outward and upward from the outer periphery of the inner horizontal surface for a horizontal distance of 7,000 feet to a height of 500 feet above the established airfield elevation. The slope of the conical surface is 20:1.
- **The Outer Horizontal Surface** is a plane located 500 feet above the established airfield elevation. It extends for a horizontal distance of 30,000 feet from the outer periphery of the conical surface.
- **The Transitional Surfaces** connect the primary surfaces, Clear Zone surfaces, and approach-departure clearance surfaces to the outer horizontal surface, conical surface, other horizontal surface, or other transitional surfaces. The slope of the transitional surface is 7:1 outward and upward at right angles to the runway centerline. To determine the elevation for the beginning of the transitional surface slope at any point along the lateral boundary of the primary surface, including the Clear Zone, draw a line from this point to the runway centerline. The elevation at the runway centerline is the elevation for the beginning of the 7:1 slope.

Source: *Unified Facilities Criteria, 3-260-01, 2008*

Federal Aviation Administration (FAA) Part 77 (§ 77.13) states the following requirements are used to determine when the FAA must be notified of proposed structures or facilities.

§ 77.13 - Any person/organization who intends to sponsor any of the following construction or alterations must notify the Administrator of the FAA (paraphrased):

- (1) Any construction or alteration of more than 200 feet in height above the ground level at its site.
- (2) Any construction or alteration of greater height than an imaginary surface extending outward and upward at one of the following slopes:
 - 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.
 - within 10,000 feet of a public use or military airport which exceeds a 50:1 surface from any point on the runway of each airport with its longest runway no more than 3,200 feet.
 - within 5,000 feet of a public use heliport which exceeds a 25:1 surface
- (3) Any highway, railroad, or other traverse way whose prescribed adjusted height would exceed that above noted standards
- (4) When requested by the FAA
- (5) Any construction or alteration located on a public use airport or heliport regardless of height or location.

Further, Part 77 identifies the height at which an object may be considered an obstruction at a designated distance. An excerpt from Section 77.23 follows:

§ 77.23 – Standards for determining obstructions

(a) An existing object, including a mobile object, is, and a future object would be, an obstruction to air navigation if it is of greater height than any of the following heights or surfaces:

(1) A height of 500 feet above ground level at the site of the object.

(2) A height that is 200 feet above ground level or above the established airport elevation, whichever is higher, within three nautical miles of the established reference point of an airport, excluding heliports, with its longest runway more than 3,200 feet in actual length, and that height increases in the proportion of 100 feet for each additional nautical mile of distance from the airport up to a maximum of 500 feet.

According to the US Department of Agriculture, Rural Utilities Service Bulletin 178F-811, Electric Transmission Specifications and Drawings, 115 kV Through 230 kV: In cases where structures or conductors will exceed a height of 200 feet, or are within 20,000 feet of an airport, the nearest regional or area office of the FAA must be contacted and if required, FAA Form 7460-1, "Notice of Proposed Construction or Alteration," is to be filed.

VERTICAL OBSTRUCTION ISSUE ASSESSMENT

	<p>Issue VO-A Presence and placement of vertical obstructions within potential future fixed wing flight paths.</p> <p>Development such as wind energy conversion systems (WECS), transmission lines and cellular towers is being considered in the imaginary surfaces area. If approved, these vertical obstructions could diminish the ability to reactivate the MAFB runway for fixed wing aircraft and/or increase hazards for existing helicopter operations out of MAFB.</p>
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The MAFB runway is a Class B runway, which can accommodate a wide array of aircraft (see Table 2-1 in Chapter 2 for a list of these aircraft). Figure 3.1-4b shows the imaginary surfaces required for a Class B runway. Although there is no current fixed wing flying mission, the imaginary surfaces serve as a notional area within which vertical obstructions should be avoided to preserve future opportunities to beddown a flying mission. It should be noted that the 40th Helicopter Squadron (HS) continues to use the MAFB runway for landing and take-off. The 40th HS flies as low as 50 feet above ground level (AGL) to and from MAFB and throughout the Missile Complex fly zone (see discussion under Missile Issue VO-A). These low-level flights and the potential for a future fixed-wing air mission at MAFB reinforce the need for restrictions on vertical obstructions within the City of Great Falls and Cascade County.

Cascade County zoning regulations do not include height restrictions for any of its zones, therefore all zones that allow structures to be developed could allow for potentially incompatible development. Within Great Falls, General Commercial (GC) and Multi-Family Residential (MFR) zones allow for the development of structures up to 65 feet, while Heavy Industrial does not have a height restriction. Since the 40th HS arrives and departs from MAFB, any structures exceeding 50 feet around MAFB could be incompatible with the current operations. Since the Heavy Industrial zone doesn't have any height restrictions, development in these zones could also interfere with both existing operations and future aircraft operations at MAFB.

The main vertical obstructions of concern within the City of Great Falls and Cascade County are new wind energy conversion systems (WECS), also known as wind turbines, transmission lines and telecommunications infrastructure (e.g. cell towers). Both the WECS and the associated transmission lines can exceed heights of 200 feet. Telecommunications infrastructure such as cell towers can range from 30 to 150 feet in height. As this infrastructure continues to be constructed in the region there is an increased likelihood that incompatible vertical obstructions will be located within the MAFB runway imaginary surface areas. If unmonitored, this type of development could adversely impact the future operability of the MAFB runway.

Wind Turbines

Montana is one of the most promising locations for the emerging wind energy industry. The high wind speeds and the availability of undeveloped land in Montana are significant assets in the renewable energy sector. The need for economic diversification throughout the region is causing local jurisdictions and the State of Montana to embrace the industry. Yet the development of wind turbines in the area brings challenges to the MAFB mission, both existing and future. As an emerging industry in Montana, wind energy is competing for some of the same airspace as MAFB. Based on the economic climate and the trend towards national investment in renewable energy, the interest in wind energy in Montana is only likely to increase.

The impacts to MAFB from wind energy relate to the placement of vertical obstructions within the imaginary surfaces of the MAFB airfield and the potential for frequency interference. Both the City of Great Falls and Cascade County have regulatory authority over the permitting of wind turbines within their jurisdictions. Neither jurisdiction, however, has adopted height regulations that are specific to WECS. The Great Falls development code includes height regulations for telecommunications towers, but not specifically wind turbines (these restrictions are discussed below). Cascade County approves wind turbine applications through a conditional use permit process, although there are no WECS height standards in the Cascade County Zoning Ordinance.

Few wind turbines have been located within MAFB runway's imaginary surfaces to date. This is in part due to the county's reliance on recommendations by the National Oceanic and Atmospheric Administration (NOAA) to exclude wind energy facilities within a 3-mile radius of the weather radar (NEXRAD) in Great Falls, even though these restrictions are not compulsory (See Issue FI-A for more information about the NEXRAD). The absence of specific WECS height and location regulations, however, may impact the MAFB imaginary surfaces and constrain future missions at MAFB.

Transmission Lines

Transmission lines are an important component of the emerging wind industry, as they facilitate the distribution of electricity to outside markets. There are a number of transmission lines that traverse the study areas; however since mapping data for transmission lines is not publicly available the exact routes of these lines cannot be discussed in detail. Transmission line towers up to and over 200 feet in height can encroach into imaginary surfaces, which could pose a threat to low flying civilian and military helicopters.

Federal Regulation Title 14 Part 77 (see above) classifies a vertical obstruction as anything 200 feet or above within three (3) nautical miles of the reference point, which constitutes the imaginary surface area. Neither the city nor the county imposes transmission line tower height restrictions. The absence of any height regulations of these facilities could jeopardize the imaginary surfaces areas for future air missions at MAFB.

Cellular Towers

As shown on Figure 3.1-4b, there is one existing cell tower within the City of Great Falls and three within Cascade County located in the imaginary surfaces area. The exact height of these structures is not known, but per FAA

regulations, if these structures are within three (3) nautical miles of a military airport they may not exceed 200 feet.

Per the Telecommunications Act, the City of Great Falls and Cascade County are entitled to regulate the development and placement of cell towers. Cascade County zoning regulations allow telecommunications facilities as a principal use in the Agricultural zone and do not impose specific height restrictions on these facilities. Much of the land within the imaginary surface area in Cascade County is zoned Agricultural and there is a high likelihood that future telecommunications facilities could be located within the MAFB imaginary surfaces area.

According to Great Falls Development Code, Section 17.20.6.250, telecommunication facilities are allowed within residential zones with a Conditional Use Permit (CUP), and are either allowed or require a CUP in various commercial, industrial and Great Falls International Airport zones. The Great Falls Development Code establishes the following height restrictions for telecommunications towers:

Table 3.1-6. Great Falls Development Code Telecommunications Towers Height Restrictions

Zone	Maximum Height
Residential zoning districts	35 feet
Commercial zoning districts	45 feet
Mixed use zoning districts	45 feet
Industrial zoning districts	100 feet, 50 additional feet may be added to accommodate co-location if the applicant submits information certifying the capacity of the tower for two additional providers and a letter of intent from the applicant indicating their intent to share space. A lightening rod, not to exceed 10 feet, shall not be included within the height limitations.

Source: Great Falls Development Code, Section 17.20.6.250

According to these height restrictions, telecommunications towers can reach a maximum height of 160 feet within industrial zones, which is well above the 50 feet AGL flown by the 40th HS in the area. There are a number of industrial zoned parcels to the immediate north of MAFB. The development of structures of this height could directly interfere with 40th HS approach and departure. Although 160 feet is less than the 200-foot maximum height restriction mentioned in FAA regulations Part 77.23, telecommunications facilities located in this area could exceed the recommended slope ratios of the inner horizontal and conical imaginary surfaces and directly impact the operability of the MAFB airfield. Any telecommunications tower proposals on these parcels (or any other parcels in the vicinity that are zoned industrial in the future) should be thoroughly scrutinized to ensure there are no impacts to the MAFB imaginary surface areas or the 40th HS. Any impact analyses should be based on the actual construction design of the telecommunications facilities.

Please see the next page.

NOISE

COMPATIBILITY ASSESSMENT SUMMARY

DEFINITION: Noise refers to any significant noise generated by military activities, which may cause nuisance or harm to nearby land uses.

ISSUES TO CONSIDER: Previous fixed wing flying missions at MAFB have generated noise contours that have extended off-base, a future flying mission could have the same impact, thereby affecting surrounding land uses.

Noise Issues Identified

- i** The noise contours of a future flying mission could extend off-base onto privately owned parcels in the City of Great Falls and Cascade County.

Assessment of Existing Noise Compatibility Tools

Table 3.1-7. Assessment of Existing Noise Compatibility Tools

Agency	Compatibility Planning Tools					
	Air Installation Compatible Use Zone (AICUZ)	MCA, Title 50 Chapter 60 and 74	Zoning Regulations	Airport Overlay District	Subdivision Regulations	
Malmstrom AFB	■	□	□	□	□	
State of Montana	□	■	□	□	□	
Cascade County	□	□	■	■	■	
City of Great Falls	□	□	■	■	■	

- The tool exists and addresses noise issue(s).
- The tool exists but does not address noise issue(s).
- The tool exists but it only partially addresses noise issue(s).
- The agency does not employ this tool.

ASSESSMENT CRITERIA

Sound is characterized by various parameters that include the rate of oscillation of sound waves (frequency), the speed of propagation, and the pressure level or energy content (amplitude). The sound pressure level has become the most common descriptor used to characterize the loudness of an ambient sound level and the decibel (dB) scale is used to quantify sound intensity.

Since the human ear is not equally sensitive to all frequencies within the entire spectrum, noise measurements are weighted more heavily within those frequencies of maximum human sensitivity in a process called “A-weighting” written as dBA. The human ear can detect changes in sound levels of approximately 3 dBA under normal conditions. Changes of 1 to 3 dBA are typically noticeable under controlled conditions, while changes of less than 1 dBA are only discerned under controlled, extremely quiet conditions. A change of 5 dBA is typically noticeable to the general public in an outdoor environment. Figure 3.1-5 summarizes typical A-weighted sound levels for a

range of indoor and outdoor activities.

Environmental noise fluctuates over time. When describing noise impacts, it is common to look at the average noise over an average day.

The Air Force adopted the NOISEMAP computer model to analyze and describe noise impacts created by aircraft operations. NOISEMAP is one of two Environmental Protection Agency (EPA) approved models. The other is the Integrated Noise Model (INM), which is used by the Federal Aviation Administration (FAA) for civilian airports.

Day Night Levels (DNL) indicates average sound level exposure, measured in decibels, over a 24-hour period.

Federal Aviation Regulations (FAR), Title 14, Part 150 is a voluntary program that U.S. airports may undertake to seek a balance between operational needs and noise impacts their operations have on surrounding neighborhoods. Per FAR Part 150, Table 3.1-8 identifies compatible and incompatible land uses in the various noise contours:

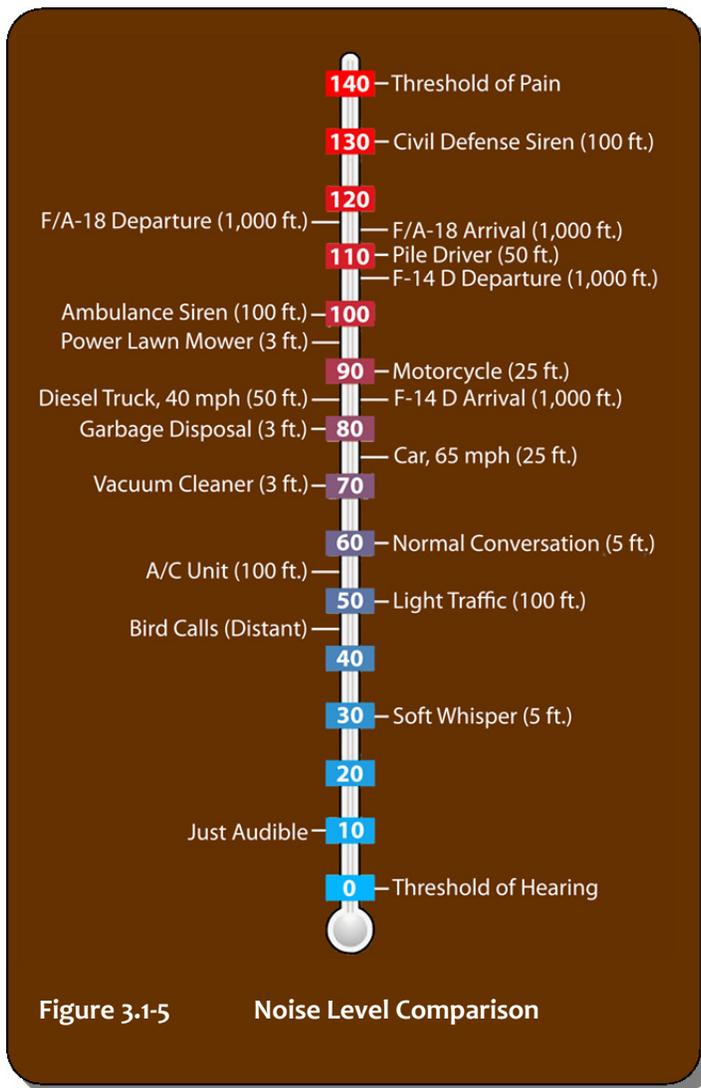


Table 3.1-8. Land Use Compatibility With Yearly Day-Night Average Sound Levels

Land Use	Yearly Day-Night Average Sound Level (L _{dn}) in Decibels			
	Below 65	65–70	70–75	75–80
RESIDENTIAL				
Residential, other than mobile homes and transient lodgings	Y	N ⁽¹⁾	N ⁽¹⁾	N
Mobile home parks	Y	N	N	N
Transient lodgings	Y	N ⁽¹⁾	N ⁽¹⁾	N ⁽¹⁾
PUBLIC USE				
Schools	Y	N ⁽¹⁾	N ⁽¹⁾	N
Hospitals and nursing homes	Y	25	30	N
Churches, auditoriums, and concert halls	Y	25	30	N
Governmental services	Y	Y	25	30
Transportation	Y	Y	Y ⁽²⁾	Y ⁽³⁾
Parking	Y	Y	Y ⁽²⁾	Y ⁽³⁾
Commercial Use				
Offices, business and professional	Y	Y	25	30
Wholesale and retail—building materials, hardware and farm equipment	Y	Y	Y ⁽²⁾	Y ⁽³⁾
Retail trade—general	Y	Y	25	30
Utilities	Y	Y	Y ⁽²⁾	Y ⁽³⁾
Communication	Y	Y	25	30
Manufacturing and Production				
Manufacturing, general	Y	Y	Y ⁽²⁾	Y ⁽³⁾
Photographic and optical	Y	Y	25	30
Agriculture (except livestock) and forestry	Y	Y ⁽⁶⁾	Y ⁽⁷⁾	Y ⁽⁸⁾
Livestock farming and breeding	Y	Y ⁽⁶⁾	Y ⁽⁷⁾	N
Mining and fishing, resource production and extraction	Y	Y	Y	Y
Recreational				
Outdoor sports arenas and spectator sports	Y	Y ⁽⁵⁾	Y ⁽⁵⁾	N
Outdoor music shells, amphitheaters	Y	N	N	N
Nature exhibits and zoos	Y	Y	N	N
Amusements, parks, resorts and camps	Y	Y	Y	N
Golf courses, riding stables and water recreation	Y	Y	25	30

Source: Federal Aviation Regulations (FAR), Title 14, Part 150, Section A150.101

Key to Table 3.1-8

SLUCM=Standard Land Use Coding Manual.

Y (Yes) =Land Use and related structures compatible without restrictions.

N (No) =Land Use and related structures are not compatible and should be prohibited.

NLR=Noise Level Reduction (outdoor to indoor) to be achieved through incorporation of noise attenuation into the design and construction of the structure.

25, 30, or 35=Land use and related structures generally compatible; measures to achieve NLR of 25, 30, or 35 dB must be incorporated into design and construction of structure.

Notes for Table 3.1-8

⁽¹⁾ Where the community determines that residential or school uses must be allowed, measures to achieve outdoor to indoor Noise Level Reduction (NLR) of at least 25 dB and 30 dB should be incorporated into building codes and be considered in individual approvals. Normal residential construction can be expected to provide a NLR of 20 dB, thus, the reduction requirements are often stated as 5, 10 or 15 dB over standard construction and normally assume mechanical ventilation and closed windows year round. However, the use of NLR criteria will not eliminate outdoor noise problems.

⁽²⁾ Measures to achieve NLR 25 dB must be incorporated into the design and construction of portions of these buildings where the public is received, office areas, noise sensitive areas or where the normal noise level is low.

⁽³⁾ Measures to achieve NLR of 30 dB must be incorporated into the design and construction of portions of these buildings where the public is received, office areas, noise sensitive areas or where the normal noise level is low.

⁽⁴⁾ Measures to achieve NLR 35 dB must be incorporated into the design and construction of portions of these buildings where the public is received, office areas, noise sensitive areas or where the normal level is low.

⁽⁵⁾ Land use compatible provided special sound reinforcement systems are installed.

⁽⁶⁾ Residential buildings require an NLR of 25.

⁽⁷⁾ Residential buildings require an NLR of 30.

⁽⁸⁾ Residential buildings not permitted.

NOISE ISSUE ASSESSMENT

	<p>Issue NO-A A future fixed wing flying mission at MAFB will likely generate noise contours that extend off base and onto privately owned parcels in the City of Great Falls and Cascade County.</p> <p>A future fixed-wing flying mission at MAFB will have noise contours that extend off base, which could impact adjacent properties if regulations and policies do not prevent incompatible uses that are sensitive to noise.</p>
--	---

There are no specific fixed wing flying missions or aircraft presently using the MAFB runway, which makes it difficult to determine the precise noise impacts of a future flying mission. Without performing noise studies based on the actual aircraft that would be located at MAFB as part of a future mission, it is impossible to determine the configuration and location of the new noise contours.

The most current noise data for MAFB is in the 1994 Air Installation Compatible Use Zone (AICUZ) Study. The AICUZ identifies DNL 75 dB, DNL 70 dB and DNL 65 dB noise contours associated with the former fixed-wing flying mission at MAFB. As shown on Figure 3.1-6 and Figure 3.1-7, most of the noise contours are on base, except for areas within the DNL 65 dB contour that extend northeast and southwest outside the base boundaries and a small area within the DNL 70 dB contour that extends slightly across the southwest boundary.

Within the southern DNL 65 dB noise contour is a parcel zoned Commercial in the City of Great Falls. As discussed in the Section 3.1.1 Land Use, commercial zoning allows numerous uses (see Table 3.1-3). As the assessment criteria listed above indicate, most commercial uses within the DNL 65 – 70 dB noise contours are allowed.

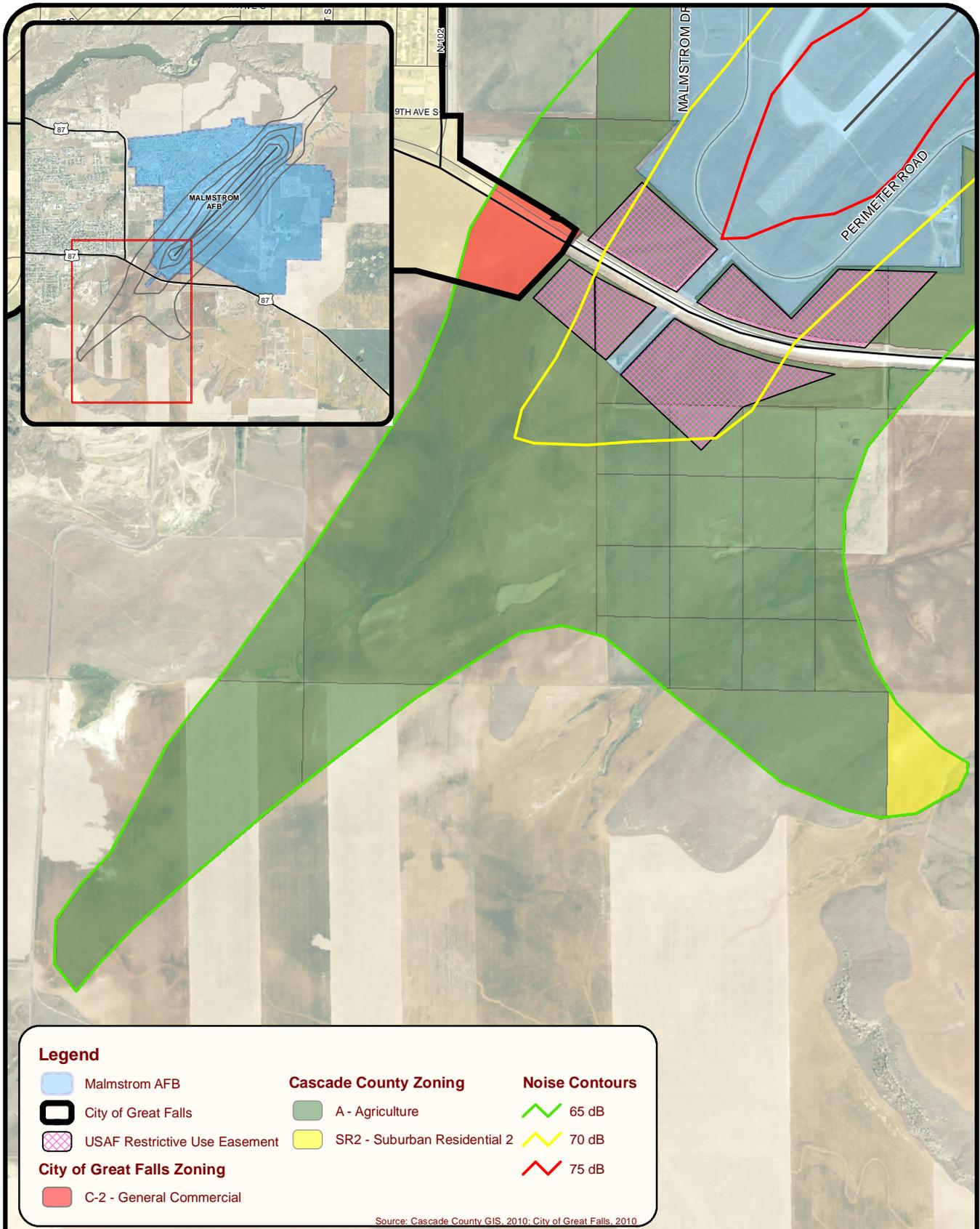
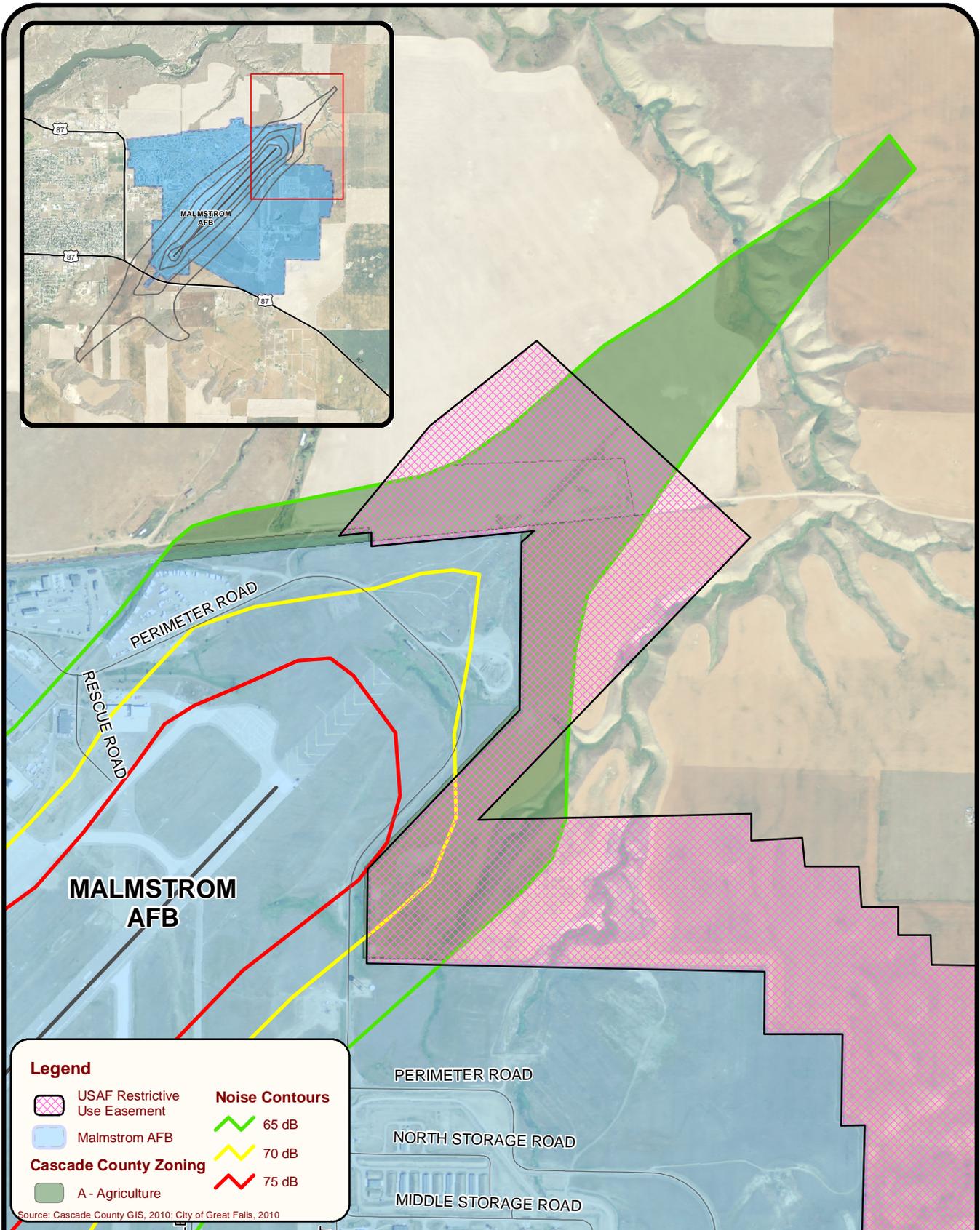


Figure 3.1-6
Potentially Incompatible Zoning Within Noise Contours, South



Legend

	USAF Restrictive Use Easement	Noise Contours	
	Malmstrom AFB		65 dB
Cascade County Zoning			70 dB
	A - Agriculture		75 dB

Source: Cascade County GIS, 2010; City of Great Falls, 2010

Matrix
DESIGN GROUP



0 250 500 1,000 Feet

Figure 3.1-7
Potentially Incompatible Zoning Within Noise Contours, North

Fig3-1-7_MAFB_NoiseZoningNorth_2012_02_06_JKC.pdf

However, the City should be mindful of the types of commercial uses it permits on this parcel, especially noise sensitive uses such as day care centers, health care centers, motels and hotels. Because such uses are allowed within the Commercial zone, there is a potential for incompatibility.

The other off-base parcels in the DNL 65 dB contours are in Cascade County and are zoned Agricultural, General Business and Suburban Residential. Permitted uses within the General Business zone are compatible within the DNL 65dB noise level. However, the Suburban Residential and Agricultural zones both allow residential development, which is only considered compatible in areas with less than DNL 65 dB or with noise level reduction measures of 25 dB.

The county parcels are currently undeveloped or minimally developed. The area zoned Suburban Residential, which is the most developed, has infrastructure in place and is part of a larger residential subdivision. As shown in Table 3.1-8, residential uses are considered compatible only in areas with noise levels less than DNL 65 dB or in the DNL 65-70 dB range with noise level reduction measures of 25-30 dB. Therefore, the county should be cautious about approving housing developments within the off-base noise contours, especially as they see an increase in subdivision applications for this area. If residential uses should be approved for areas within noise contours DNL 65 dB and above the appropriate noise level reduction measures should be taken.

ASSESSMENT OF EXISTING NOISE COMPATIBILITY TOOLS

Malmstrom AFB

Air Installation Compatible Use Zone (AICUZ)

The 1994 Malmstrom AICUZ Study identifies land uses that are either incompatible or compatible within noise contours associated with the runway, and is intended to provide information for surrounding communities to consider as they develop community plans, zoning ordinances, subdivision regulations, building codes, and other related documents. The AICUZ indicates that some of the noise abatement measures taken by the Air Force include:

- Flight Tracks are routed to minimize noise impacts on the surrounding communities.
- Engine run-up areas and test cells are sited to reduce noise disturbances.
- Sound attenuation design is incorporated into on-base construction.

The AICUZ recommends that noise level reduction measures be included in the design and construction of buildings. It also states that recreation uses are not always compatible above DNL 75dB. The AICUZ states that following uses are almost always compatible in any noise level: forestry activities, livestock farming, resources production, excavation and open space.

State of Montana, Department of Labor and Industry, Building Code Bureau

Montana Code Annotated 2009, Title 50, Health and Safety, Chapter 60, Building Construction and Title 50, Chapter 74 – Building Codes

Montana Code Annotated, Title 50, Chapter 60 and Title 50, Chapter 74 establish and enforce minimum building, plumbing, mechanical, electrical, energy, elevator, and boiler codes. It does not mention any noise mitigation requirements.

Cascade County

Zoning Regulations

The zoning regulations establish Agricultural zoning as the primary land use around MAFB, which allows residential development at a density of 1 du/20 acres. Agricultural zoning also allows for nursing homes and churches, which are noise sensitive uses. The regulations establish an Airport Overlay District, however, which establishes a model for minimizing airport noise impacts by regulating the types of land uses that are allowed near the airport. Noise sensitive uses are restricted. However, the Airport Overlay District is designated solely for the civilian airport and does not address the potential for noise generated by MAFB aircraft.

Subdivision Regulations

The subdivision regulations do not address minimizing or prohibiting subdivision approvals because of noise factors within the vicinity of MAFB or the noise contours.

City of Great Falls

Zoning Regulations

The Great Falls zoning regulations do not specifically designate zones according to noise impacts. The regulations establish an Airport Overlay District, however, which establishes a model for minimizing airport noise impacts by regulating the types of land uses that are allowed near the airport. Noise sensitive uses are restricted. However, the Airport Overlay District is designated solely for the civilian airport and does not address the potential for noise generated by MAFB aircraft.

Subdivision Regulations

The subdivision regulations do not describe any specific noise compatibility or guidelines for areas in the vicinity of MAFB.

A Discussion Paper Regarding Accident Potential Zones and Associated Land Development near Malmstrom Air Force Base

This discussion paper was prepared in 2006 by the Great Falls Planning Office and City Manager's Office. The paper primarily focuses on safety zones and does not address noise.

FREQUENCY INTERFERENCE

COMPATIBILITY ASSESSMENT SUMMARY

DEFINITION: The competition for frequency spectrum may lead to a reduction in available spectrum for military training and developmental/operational testing activities. The electromagnetic spectrum is important to the electronic warfare missions and other military electromagnetic test requirements.

ISSUES TO CONSIDER: Wind turbines are known to generate frequency which can disrupt weather radar readings. Electromagnetic sources can pose interference issues as well as safety issues.

Frequency Interference Issues Identified

-  Weather radar interference from wind energy development.
-  Electromagnetic sources on Malmstrom AFB.

Assessment of Existing Frequency Interference Compatibility Tools

Table 3.1-9. Assessment of Existing Frequency Interference Compatibility Tools

Agency	Compatibility Planning Tools	
	General Plan	Zoning Regulations
MAFB		<input type="checkbox"/>
Cascade County	<input type="checkbox"/>	
City of Great Falls	<input type="checkbox"/>	

-  The tool exists and addresses frequency interference issue(s).
-  The tool exists but does not address frequency interference issue(s).
-  The tool exists but it only partially addresses frequency interference issue(s).
- The agency does not employ this tool.

ASSESSMENT CRITERIA

There are two main types of interference generated by wind turbines:

- Direct Interference which is a result of:
 - High reflectivity
 - Reducing sensitivity
 - False images
 - Shadow areas
- Doppler Interference which is a result of:
 - False targets
 - False Moving Target Indicator/Detection (MTI/MTD)
 - Impacts to both airborne and fixed radar

Electromagnetic Radiation emitters are categorized as either:

- **“NH”** – meaning the hazard levels are not in excess of the permissible exposure limits
- **“SH”** – meaning the time of exposure is too short to have an adverse impact
- **“IH”** – exposure possible, but location of radiation is in inaccessible areas
- **“DL”** – transmitter dummy loads

Thresholds of exposure to radio frequency / microwave radiation are called threshold limited value (TLV).

FREQUENCY INTERFERENCE ISSUE ASSESSMENT

	<p>Issue FI-A Wind Turbine Frequency.</p> <p>Wind turbines generate frequencies which can interfere with weather radars, if unmitigated.</p>
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The City of Great Falls contains a Doppler weather RADAR, which is tied into a nationwide network of weather radars. This network of RADARs, called the NEXRAD network, provides critical information about severe weather and flash floods, air traffic safety, flow control for air traffic, resource protection at military bases, and management of water, agriculture, forest, and snow removal.

The NEXRAD located in Great Falls is a Doppler radar, which means it can detect motion toward or away from the radar and the location of precipitation areas. The radar’s advanced ability to detect motion allows meteorologists to read thunderstorms. The RADAR’s sensitivity also makes it susceptible to interference from nearby wind turbines. Wind farms can interfere with NEXRAD radars through the creation of echoes which are difficult to mitigate and which reduce performance and confuse radar. Wind towers create frequency interference through two events: the reflection of radar energy off the blades and the creation of the Doppler reflection from the rotation of the blades. Wind energy development can directly interfere with the signal transmitted by the NEXRAD through “ghosting.” Ghosting occurs when the energy transmitted by the radar is reflected off the blades of the turbine and returned as interference.

The National Oceanic and Atmospheric Administration (NOAA) recommends a 3 km to 18 km wind turbine no-build radius around each NEXRAD Radar to avoid interference. This area is identified as a “red dot” on NEXRAD maps. As stated, this is a NOAA-recommended, but not enforceable, boundary. Despite this designation, it should be noted that several wind projects are operating in this area without incident or complaints. Preventing frequency interference continues to be a challenge for NOAA because there is no formalized local process for local governments to engage NOAA during the review of wind energy development applications. Therefore, voluntary engagement of NOAA by local governments is critical for both the operation of the NEXRAD radar, the sustainability of wind energy development, and the viability of military operations at MAFB.

	<p>Issue FI-B Electromagnetic Radiation.</p> <p>There are sources of electromagnetic radiation on MAFB.</p>
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According to the MAFB General Plan there are multiple sources of electromagnetic radiation on MAFB. The location of these sources is shown on Figure 3.1-8. These stationary sources of radio frequency (RF) radiation are found in Buildings 500 and 1879. These sources of electromagnetic radiation can be classified as the radio frequency (RF) portion of the electromagnetic radiation spectrum. Overexposure to RF radiation can cause hazards to personnel, flammable liquids and electro-explosive devices. The primary effect of overexposure on humans is thermal stress which can result in shock and burn hazards. The MAFB General Plan does not state whether the radiation extends off-base but it does state that “none of the stationary sources of RF radiation on-base represent a potential hazard to humans or animals.” (pg. 4-20). The City of Great Falls and Cascade County should be made aware of electromagnetic radiation sources that extend off the base.

ASSESSMENT OF EXISTING FREQUENCY IMPEDENCE AND INTERFERENCE COMPATIBILITY TOOLS

Malmstrom AFB

MAFB General Plan

The General Plan does not describe a means for protecting access to frequency or managing the impacts of electromagnetic sources.

Cascade County

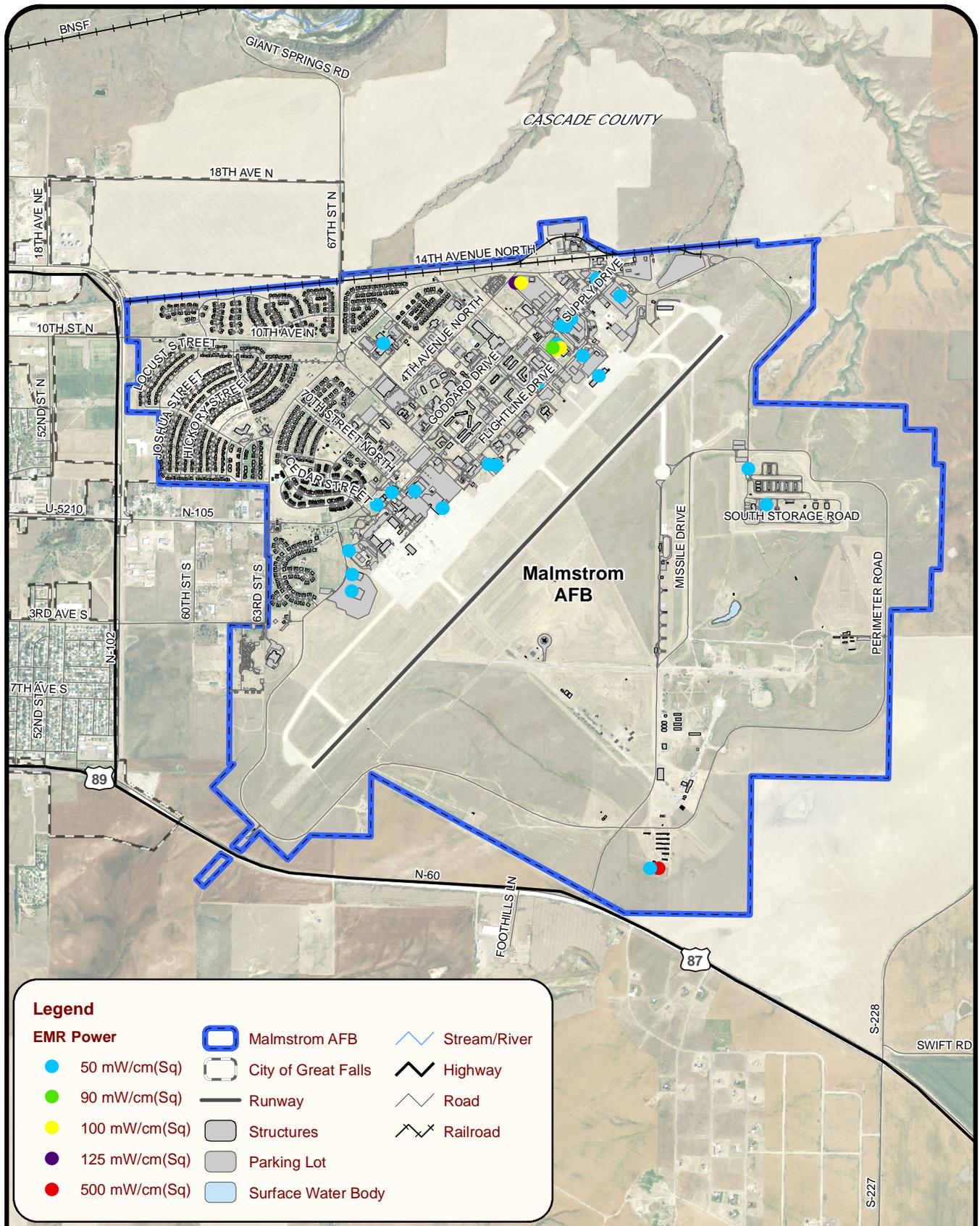
Zoning Regulations

The zoning regulations do not include any restrictions regarding the location of frequency sources. However, the county evaluates the appropriate placement of wind energy development through a conditional use permit process that relies heavily on NOAA recommendations.

Great Falls

Zoning Regulations

The zoning regulations do not include any restrictions regarding the location of frequency sources.



0 625 1,250 2,500 Feet

Figure 3.1-8 Sources of Electromagnetic Radiation on MAFB

Fig3-1-8_MAFB_Electro_2012_03_23_JKC.pdf

WATER QUALITY / SUPPLY

COMPATIBILITY ASSESSMENT SUMMARY

DEFINITION: Water Quality / Supply relates to the supply and quality of the water available to the civilian and military populations. It also addresses any practices that may jeopardize water quality or supply.

ISSUES TO CONSIDER: Sedimentation into the Missouri River caused by development patterns on MAFB .

Water Quality / Supply Issues Identified

i Whitmore Ravine Erosion Project.

Assessment of Existing Water Quality / Supply Compatibility Tools

Table 3.1-10. Assessment of Existing Water Quality / Supply Compatibility Tools

Agency	Compatibility Planning Tools				
	Utility and Development East Base Area Plan	Integrated Natural Resources Management Plan	Whitmore Ravine Erosion Project	Whitmore Ravine Watershed Assessment	Conservation District
MAFB	■	■	■	■	□
Cascade County	□	□	□	□	■

- The tool exists and addresses water quality / supply issue(s).

■ The tool exists but it only partially addresses water quality / supply issue(s).
- The tool exists but does not address water quality / supply issue(s).

□ The agency does not employ this tool.

ASSESSMENT CRITERIA

MAFB has a General Permit for Storm Water Discharge Associated with a Small Municipal Separate Storm Sewer System (MS4) to manage and prevent the leakage of fuels and hazardous materials generated on Base into surface and ground water. There are no set effluent restrictions under this MS4 permit but Malmstrom AFB is required to control discharges of storm water that contains pollutants.

WATER QUALITY / SUPPLY ISSUE ASSESSMENT

	<p>Issue WQ-A Whitmore Ravine Erosion Project.</p> <p>Development on MAFB has historically contributed to erosion and sedimentation in the Missouri River. The interagency and multi-jurisdictional Whitmore Ravine Erosion Project is a storm water management project designed to manage runoff and sedimentation from MAFB into the Missouri River.</p>
--	---

The Whitmore Ravine is a watershed area of 6,930 acres that flows into the Missouri River. Approximately 3,052 acres are on MAFB and 3,878 acres include the agricultural property north and east of the base. MAFB discharges storm water into the ravine. Over the years, portions of the ravine have eroded, with the causes attributed to geology and hydrology, weather patterns, surface and ground water discharges from agricultural land, and dry weather flows from MAFB’s storm water system. Erosion of the Whitmore Ravine has resulted in agricultural land degradation, sediment deposits in the Missouri River and the formation of a delta at the ravine’s mouth.

To manage this problem, MAFB is participating in the Whitmore Ravine Erosion Project, an interagency, multi-jurisdictional storm water management project. The project has entailed assessing contributing areas and factors to the erosion and developing strategies that might address these issues. A watershed analysis was conducted to identify and prioritize the key contributors to increased erosion and sedimentation in Whitmore Ravine. The results of the assessment indicated the key contributors were geologic conditions, saturation from constant flow from the Base, storm water flow from on and off Base, natural processes and agricultural development.

MAFB contributes storm water into the East Fork of Whitmore Ravine. Through the Whitmore Ravine Erosion Project MAFB has been able to better manage storm water runoff, which has helped to stabilize the East Fork of Whitmore Ravine, yet the West Fork and Middle Fork remain areas of concern. Even though the project assessment determined that most erosion into the Missouri River is occurring from the West and Middle Forks of Whitmore Ravine, and not from MAFB, the Air Force continues to works towards minimizing erosion by improving the storm water system on Base and participating in a myriad of planning efforts. While noticeable improvements have been made, erosion management remains an ongoing project.

ASSESSMENT OF EXISTING WATER QUALITY / SUPPLY COMPATIBILITY TOOLS

Malmstrom AFB (MAFB)

MAFB Storm Water Pollution Prevention Plan (SWPPP)

The SWPPP outlines how MAFB manages the discharge of storm water to help eliminate or minimize the discharge of pollutants using best management practices (BMP).

Whitmore Ravine Erosion Project

The Whitmore Ravine Erosion Project is an ongoing interagency and multi-jurisdictional storm water management project that is addressing the management of runoff from MAFB and other properties in the Whitmore Ravine watershed area and the prevention of sedimentation of the Missouri River. Part of the project included an assessment of storm water management in the study area, including MAFB. The overall objectives of the assessment were to quantify the flow rates, volumes, characteristics and overland flows from MAFB and surrounding properties that contribute to the Whitmore Ravine; compare the current Whitmore Ravine watershed conditions to historical conditions; and to identify and prioritize the key contributors to sediment erosion within the ravine. The assessment determined that soil types and man-made development on MAFB have contributed to the erosion of Whitmore Ravine.

Utility and Development Plan, East Base Area

The plan was developed prior to any planned expansions on MAFB and provided an analysis of the water supply and management systems on the Base. The plan indicates that MAFB receives all potable water and sanitary sewer service from the City of Great Falls.

Integrated Natural Resources Management Plan (INRMP)

The MAFB INRMP was completed in 2008. The document provides an overview of the various natural resources on and around MAFB and how base operations and land uses affect these resources. The INRMP provides guidance for the management of natural resources and environmental stewardship at MAFB in compliance with federal, state and local regulations. The INRMP only covers land within the boundaries of the main MAFB installation.

The plan identifies the following areas to be the most impacted by the MAFB mission:

- Biological Impacts
- Air Quality
- Noise and
- Hazardous Waste

The INRMP identifies soils, wetlands and Bird Aircraft Strike Hazards (BASH) as constraints to the military mission and discusses ways in which MAFB plans to protect the identified natural resources. Much of the discussion highlights existing federal and state requirements for the management of everything from water to migratory birds. The INRMP does not identify a strategy for minimizing surface water sedimentation, however.

Cascade County

Conservation District

The Cascade County Conservation District (CCCD) has helped facilitate the Whitmore Ravine Erosion Project by participating in the study and forming the Cooperative Conservation Committee (CCC). The CCCD aims to bring together stakeholders to identify solutions to the erosion problem. Stakeholders include the Montana Department of Environmental Quality; the Cascade County Conservation District; local landowners and farmers; the Natural Resources Conservation Service; the Montana Department of Fish, Wildlife and Parks; and Malmstrom Air Force Base staff. CCCD has also worked with the Air Force on the development of the Draft Whitmore Ravine Watershed Assessment.

THREATENED AND ENDANGERED SPECIES

COMPATIBILITY ASSESSMENT SUMMARY

DEFINITION: Threatened and Endangered (T&E) Species are species at risk of extinction. Often, military installations serve as habitat sanctuaries for threatened and endangered species from surrounding urbanized areas. The presence of species on-base can hinder military training or create opportunities for hazards.

ISSUES TO CONSIDER: The presence of T&E bird species on MAFB increases the opportunity for Bird Air Strike Hazards with existing helicopters and possibly future fixed-wing aircraft.

Threatened and Endangered Species Issues Identified

i Potential for Bird Air Strike Hazards (BASH)

Assessment of Threatened and Endangered Species Existing Compatibility Tools

Table 3.1-11. Assessment of Threatened and Endangered Species Compatibility Tools

Agency	Compatibility Planning Tools		
	BASH Plan (Draft)	Integrated Natural Resources Management Plan	Zoning Regulations
MAFB	■	■	□
Cascade County	□	□	■
City of Great Falls	□	□	■

■ The tool exists and addresses T&E issue(s).

■ The tool exists but does not address T&E issue(s).

■ The tool exists but it only partially addresses T&E issue(s).

□ The agency does not employ this tool.

ASSESSMENT CRITERIA

According to the Endangered Species Act (ESA), species may be listed as either endangered or threatened. “Endangered” means a species is in danger of extinction throughout all or a significant portion of its range. “Threatened” means a species is likely to become endangered within the foreseeable future. The only species not eligible for a listed status are pest insects.

According to biological surveys conducted for the 1994 Finding of No Significant Impact (FONSI) for the Construction of Family Housing Phase IV on MAFB, there have been no federally-listed threatened or endangered species or potential habitats identified on MAFB. However, there are two bird species identified as protected by the Montana Department of Fish, Wildlife and Parks that are known to migrate into or across the base. These two species are the ferruginous hawk and the loggerhead shrike.

THREATENED AND ENDANGERED SPECIES ISSUE ASSESSMENT

	<p>Issue TE-A Potential for Bird Air Strike Hazards (BASH).</p> <p>Wind farms in and around the missile complex could displace migratory birds causing them to migrate through helicopter and future fixed-wing flight paths.</p>
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The presence of birds on or near airfields increases the likelihood of Bird Air Strike Hazards (BASH), which are incidents of collision between birds and aircraft. BASH incidents are a concern for both birds and the safety of helicopter pilots. Although the MAFB runway is not fully operational, the 40th HS uses it for take-off and landing and is at risk of BASH. A future air mission could experience the same BASH challenges.

The BASH program focuses on the reduction of bird activity around airfields through habitat alteration and direct avian control, but is conducted with the goal of promoting natural biological diversity and migratory bird habitat. According to the MAFB Integrated Natural Resources Management Plan, MAFB accomplishes this by limiting bird control and habitat alteration to only areas that are most critical to the safe operation of aircraft. The primary habitat management method under BASH is the maintenance of grass between 7 to 14 inches in height in the helicopter takeoff and landing areas. This management technique prevents bird nesting and minimizes food resources.

Additional threats in the study area include wind farms that can displace migratory birds, including potentially threatened and endangered species, into established helicopter flight paths. Pilots currently use specific flight corridors to avoid collisions with certain bird species. Development of wind energy towers in or around these corridors could impact and displace migratory bird routes. This may potentially trigger certain restrictions to helicopter flight routes, including access to various missile sites, which could impact mission critical operations.

ASSESSMENT OF EXISTING THREATENED AND ENDANGERED SPECIES COMPATIBILITY TOOLS

Malmstrom AFB

Bird / Wildlife Aircraft Strike Hazard (BASH) Plan – Draft

Bird and wildlife strikes are an important safety concern for aircraft operating at military bases. MAFB is preparing an updated BASH Plan for the base and the Missile Complex. The BASH Plan is prepared in accordance with provisions of AFI 91-202 (*US Air Force Mishap Prevention Program*), AFI 91-204 (*Safety Investigations and Reports*),

and AFP 91-212 (*BASH Management Techniques*). The BASH plan defines responsibilities and prescribes procedures for minimizing aircraft and pilot exposure to potentially dangerous and catastrophic bird / wildlife strikes. The plan is based on hazards from indigenous and migratory bird and mammal species. Execution of specific portions of this plan is continuous, while other portions are dictated by hazardous wildlife activity, environmental changes, and land use development.

Some of the specific bird threats identified in the draft plan include:

- MAFB is located within the central flyway for North American migratory birds.
- Flocks of gulls that feed and loaf near the operations area and the Helicopter Maneuver Area (HMA), which is near the center of MAFB’s airfield. Some species are present year-round, but late summer and early fall are when the largest concentrations of migratory gull species are present.
- Hawks, owls, vultures and pelicans searching for food or riding thermals over MAFB and in traffic patterns.
- Migratory waterfowl, including Canada geese, from August-April.

The draft BASH Plan describes many functions to prepare pilots for BASH operations and to inform pilots about expected daily bird activity, including Bird Watch Condition levels (low, moderate, and severe), a Bird Hazard Working Group, flying operation procedures and strike reporting processes. Some of the control techniques identified in the draft BASH Plan include pyrotechnics, vehicle disturbance, propane cannons, grass height maintenance, insect control and limited lethal control.

Malmstrom Air Force Base Integrated Natural Resources Management Plan (INRMP)

The INRMP identifies soils, wetlands and Bird Aircraft Strike Hazards as the primary natural constraints upon the military mission. The INRMP discusses how existing federal and state regulations require the management of migratory birds.

Cascade County

Zoning Regulations

Agricultural and Open Space zoning around MAFB provide locations for birds and other species to dwell off base, which can help reduce the likelihood of BASH.

Great Falls

Zoning Regulations

Zoning in the areas nearest to the runway is primarily single-family and high density residential and commercial. These types of uses could displace birds onto open space areas on base but given that most of the county land surrounding the city is in agricultural production, there are plenty of open space areas off base for birds to dwell.

Please see the next page.

COMPETITION FOR LAND AND AIR SPACE

COMPATIBILITY ASSESSMENT SUMMARY

DEFINITION: Land and air are finite resources and spaces that various entities share and often compete for.

ISSUES TO CONSIDER: Currently the 40th HS uses portions of the MAFB runway and occupies some of the same airspace at the Great Falls International Airport (GFIA). If a fixed wing mission were to be located at MAFB, there might be additional competition for use of the airspace.

Competition for Land and Air Space Issues Identified

i Shared Airspace

Assessment of Existing Competition for Land and Air Space Compatibility Tools

Table 3.1-12. Assessment of Existing Competition for Land and Air Space Compatibility Tools

Agency	Compatibility Planning Tools		
	40th HS mid-Air Avoidance Program	Zoning Regulations	Airport Master Plan
MAFB	■	□	□
City of Great Falls	□	■	□
Great Falls International Airport Authority	□	□	□

- The tool exists and addresses competition for land and air space issue(s).
 - The tool exists but it only partially addresses competition for land and air space issue(s).
- The tool exists but does not address competition for land and air space issue(s).
 - The agency does not employ this tool.

ASSESSMENT CRITERIA

Assessment criteria are established in FAA Regulations, Part 77, which state:

"The airport imaginary surfaces proposed for helicopters have been substantially revised for compatibility with the current "Helicopter Design Guide." The primary surfaces coincide in size and shape with the takeoff and landing area of each heliport. The designated approach clearance surfaces begin at the edge(s) of the primary surface and extend outward and upward at a slope of 8 to 1. The approach surface is a trapezoid whose inner width is coincident with the width of the primary surface and which extends to the minimum en route altitude where its width is 500 feet. Transitional surfaces extend outward and upward at a slope of 2 to 1 from the lateral boundaries of each primary surface and approach surface for a horizontal distance of 250 feet from the centerline of these surfaces."

These are the standards which apply to the 40th HS use of the MAFB runway for take-off and landing. A new flying mission would have imaginary surface requirements as discussed in the Vertical Obstruction section.

LAND AND AIR SPACE ISSUE ASSESSMENT

Issue LAS-A Shared Airspace.

The airspace in the Great Falls area is currently shared by the 40th Helicopter Squadron, Montana Air National Guard and commercial aircraft at Great Falls International Airport. Competition for airspace will increase if MAFB is assigned a future flying mission.

The airspace in the Great Falls area is shared by the MAFB 40th Helicopter Squadron (HS), commercial aircraft arriving and departing from Great Falls International Airport (GFIA) and Montana Air National Guard. If MAFB should secure a flying mission in the future, competition for airspace will be imminent.

The airspace surrounding MAFB is currently uncontrolled. The only active flying mission at MAFB is the 40th HS, which uses fully instrument capable Huey helicopters. These helicopters may be found in the instrument pattern anywhere there is a published approach. Training is conducted within a three nautical mile radius around MAFB. The 40th HS communicates with each other on radio frequency 139.225 when operating in the local pattern and requests air traffic avoid MAFB by three nautical miles. Training usually occurs at or below 4,500 mean sea level (MSL) without positive communications with Great Falls International Airport (GFIA) Approach Control. Consequently, GFIA Approach Control may not be able to see on radar the helicopters operating in the MAFB area.

The 40th HS flies day and at night. Helicopter pilots often operate in the visual flight rule (VFR) patterns of many small airfields throughout Montana. Whenever possible, pilots will avoid interfering with fixed-wing traffic in the air and on the ground. Nevertheless, the unspecified routes of the helicopters and the wide variation in flying altitudes increases the safety risks associated with shared airspace with GFIA.

The issue of shared airspace could be aggravated by a future flying mission at MAFB if the type of aircraft required different airspace or if GFIA changed its use of the airspace. According to the GFIA Authority, approach and departure routes have not changed for GFIA since the MAFB runway was closed, meaning MAFB's previous airspace and imaginary surfaces have not been altered. Although there is no way to know the airspace needs of a future mission, preserving the former airspace and imaginary surfaces helps protect the runway for future use and from future conflicts over the use of airspace.

ASSESSMENT OF EXISTING LAND AND AIR SPACE COMPATIBILITY TOOLS

Malmstrom AFB

40th Helicopter Squadron (HS) Mid-Air Avoidance Program

The 40th HS is the key air support for operations in the Missile Complex. The 40th HS assists in search and rescue missions throughout Montana, Idaho and northern Wyoming. Pilots in the 40th HS fly UH-1N Huey helicopters from MAFB to the launch facilities and missile alert facilities on a daily basis. A mid-air avoidance pamphlet was developed to educate local pilots about the operations areas and extent of 40th HS travel. The pamphlet advises pilots to avoid MAFB by at least three nautical miles, as the Great Falls Approach Control systems may not be able to see helicopters operating in the area. The pamphlet also advises pilots to not assume that helicopter pilots can see them.

City of Great Falls

Zoning Regulations

The City of Great Falls' Airport Overlay District establishes regulations on land uses near the airport. The overlay district does not address airspace issues.

Please see the next page.

Chapter 3.2

**Missile Complex
Study Area
Compatibility
Assessment**





3.2 Missile Complex Study Area Compatibility Assessment

The following section provides an analysis of the various issues that were identified for the Missile Complex Study Area. The issues were developed through interviews with the local governments and state agencies, Policy and Technical Committee meetings and comments, public comments and additional research.

The issues identified for the Missile Complex Study Area relate to the following compatibility factors:

- 3.2.1 Land Use
- 3.2.2 Safety
- 3.2.3 Vertical Obstruction
- 3.2.4 Infrastructure Extensions
- 3.2.5 Noise
- 3.2.6 Alternative Energy
- 3.2.7 Trespassing
- 3.2.8 Legislative Initiatives
- 3.2.9 Interagency Coordination
- 3.2.10 Frequency Spectrum Capacity
- 3.2.11 Ground Transportation Capacity

Please see the next page.

LAND USE

COMPATIBILITY ASSESSMENT SUMMARY

DEFINITION: Land use planning for property surrounding military facilities is similar to the process used to evaluate other land uses. For instance, local jurisdictions typically consider compatibility issues such as noise when locating residential developments near commercial or industrial areas. As the land surrounding military facilities increasingly develops, the municipality and the installation must assess organizational and operational components.

ISSUES TO CONSIDER: Without adequate land use regulations in place, the Missile Complex Counties do not have many means for monitoring and preventing incompatible development around Launch Facilities (LF), Missile Alert Facilities (MAF) and throughout the 40th Helicopter Squadron (HS) Fly Zone.

Land Use Compatibility Issues

- i** Absence of local land use regulatory mechanisms that allow for the management of land uses near Launch Facilities (LFs) or Missile Alert Facilities (MAFs).
- i** Lack of awareness by property owners that have safety arc development easements on their land.
- i** Possible expansion of military facilities.

Assessment of Existing Land Use Compatibility Tools

Table 3.2-1. Assessment of Existing Land Use Compatibility Tools

Agency	Compatibility Planning Tools							
	Montana Subdivision and Platting Act	MCA, Title 50 Chapter 60 and 74 – Building Code	Growth Policy Plan	Development Regulations	Zoning Regulations	Subdivision Regulations	Resource Use Plan	
State of Montana	■	■	□	□	□	□	□	
Cascade County	□	□	■	□	■	■	□	
Chouteau County	□	□	■	■	□	■	□	
Fergus County	□	□	■	□	□	■	□	
Judith Basin County	□	□	□	□	□	■	□	
Lewis and Clark County	□	□	■	□	□	■	□	

Agency	Compatibility Planning Tools						
	Montana Subdivision and Platting Act	MCA, Title 50 Chapter 60 and 74 – Building Code	Growth Policy Plan	Development Regulations	Zoning Regulations	Subdivision Regulations	Resource Use Plan
Teton County	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Wheatland County	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

- The tool exists and addresses land use issue(s).
- The tool exists but does not address land use issue(s).
- The tool exists but it only partially addresses land use issue(s).
- The agency does not employ this tool.

ASSESSMENT CRITERIA

The assessment criteria for determining the adequacy of a jurisdiction’s land use regulations is based on the existence, type and nature of any adopted policies and ordinances. For example, answers to the following questions provide an understanding of the adequacy of a local jurisdiction’s ability to regulate land use and development in the Missile Complex:

- Does the jurisdiction have a Growth Policy Plan?
- Does the Growth Policy Plan include a statement about protecting military facilities and operations? Does it provide useful and realistic policies for accomplishing this objective?
- Does the jurisdiction have a Zoning Ordinance? Does the Zoning Ordinance designate compatible zones near military facilities? Does the jurisdiction have zoning districts such as overlays, which impose restrictions on uses in specific areas?
- Does the Zoning Ordinance address issues such as building height, noise, external lighting, and design standards that serve to protect citizens against harm and nuisances generated by the military?
- Does the jurisdiction have a Subdivision Ordinance? Does the Subdivision Ordinance include any guidance about evaluating development applications on lands near military facilities and use areas?
- Does the jurisdiction have a design review process which evaluates the appropriateness of the proposed design for the intended location?
- What is the scope of the development permitting authority of the local jurisdiction (e.g. zoning, conditional uses, building permits, electrical permits etc.)? Are there any permits issued by entities other than the local government?

LAND USE ISSUE ASSESSMENT

	<p>Issue LU-A Absence of local land use regulatory mechanisms that allow for the management of land uses near LFs or MAFs.</p> <p>The State of Montana does not require counties to assume the responsibility of regulating land uses in their jurisdiction. Alternatively, State agencies are responsible for issuing permits. In the absence of local land use regulatory authorities there is an increased likelihood that incompatible development will be located close to military facilities which could negatively impact the health and safety of residents.</p>
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State of Montana statutes allow counties to elect varying degrees of regulatory authority over land uses and development permitting within their jurisdiction. All counties within the Missile Complex, except Cascade County, have elected to limit their regulatory authority. This means that only the State is regulating land use and types of development within six of seven counties through its limited permit and development review authority. The following is a summary of the various types of local land use and development regulations allowed by the State of Montana Annotated Code.

Growth Policy Plans

Per Montana State Law (MCA Title 76, Chapter 1, Part 6) all counties are required to have a Growth Policy Plan. A Growth Policy Plan is a long range planning document that allows each county to engage in a comprehensive visioning process. Although Growth Policy Plans promulgate policies, the documents are not regulatory. Policies in a Growth Policy Plan are only legally binding if adopted and codified into the zoning ordinance or subdivision regulations. Therefore, cities and counties cannot deny land use applications based exclusively on an inconsistency with a Growth Policy Plan; any local government decision must also be consistent with the regulations in an adopted (legally binding) ordinance, such as a zoning or subdivision ordinance.

Zoning Ordinances

The State of Montana Annotated Code (MCA), Title 79, Section 2, authorizes, but does not compel counties to develop and uphold zoning regulations. Although Montana law does not require zoning, counties may voluntarily elect to implement zoning regulations. Cascade County is the only county of the seven counties participating in the Malmstrom AFB JLUS to have adopted zoning regulations. Cascade County zoning within the Missile Complex is primarily Agricultural (See MAFB Land Use Issue LU-A for a discussion of all allowable uses in Cascade County's Agricultural zone). Agricultural zoning allows a wide array of land uses from agricultural and open space to residential, bed and breakfasts and telecommunications towers. Depending on the location, many of these uses may not be compatible with the 40th HS flying mission.

The absence of zoning in the six other counties enables unregulated development to be located throughout the Missile Complex, as well as in helicopter flight paths and near LFs and MAFs. In these six counties, there is no county regulatory process required for the review and permitting of any development, including cell towers, transmission lines, wind energy or other energy projects which may result in vertical obstructions in military flight routes and on-the-ground encroachments to MAFs and LFs. Moreover, state law exempts similar facilities from state permitting oversight if below a certain size (see the requirements of the Major Facilities Siting Act). This lack of regulatory oversight essentially allows development of these facilities (and most other uses) nearly anywhere within the Missile Complex without county knowledge. Consequently, counties are often unaware of potentially incompatible development projects in the Missile Complex until construction has commenced or is complete.

Without zoning, counties are not only unable to regulate the use and location of new development but also the design standards as well, such as building heights, setbacks, etc. Without zoning to protect the public health, safety and welfare, these counties are not able to regulate wind energy, cell towers or any other development. The current patchwork of wind energy and cell tower projects throughout the 40th HS fly zone could pose a direct risk to Air Force pilots as the 40th HS conducts low-level flights throughout the Missile Complex.

Subdivision Ordinances

Per the Montana Subdivision and Platting Act (MCA, Title 76, Chapter 3), Montana counties are required to establish and enforce subdivision regulations. Since six of the seven missile counties have not adopted zoning regulations, subdivision regulations are the only land use regulatory authority of these counties. Subdivision regulations address only the division of land, but do not regulate the type of development; therefore counties with subdivision regulations, but without adopted zoning regulations, still do not have any means for regulating land use.

Many counties in the Missile Complex have adopted subdivision regulations that are based on the model subdivision code developed by the State of Montana. For example, Judith Basin County uses the Montana model subdivision regulations as the basis for reviewing subdivision applications.

Building Codes

Per MCA Title 50, Section 60 the State of Montana Department of Labor and Industry (DLI), Building Code Bureau (BCB) is responsible for issuing building and electrical permits unless a local county has elected to assume this responsibility. The State (BCB) is responsible for administering building permits in all of the counties in the Missile Complex. Since the state permit process does not entail any local consultation there is often a lack of local awareness about new and pending development projects in the Missile Complex.

Additionally, MCA Title 50, Section 60-602 exempts the following buildings from any review or permitting requirements:

“(a) farm and ranch buildings; (b) mining buildings on mining property; (c) petroleum refineries and pulp and paper mills (except office and shop buildings); (d) residential buildings containing less than five dwelling units (*except when serving transient guests*); and (e) private garages and private storage buildings used for the owner's own use (*not part of a commercial enterprise or business*) from the need to obtain a state building permit.”

These exemptions increase the likelihood for incompatible development throughout the entire Missile Complex, but especially near the LFs that house the missiles.

Most LFs in the Missile Complex are located on private property, but within an easement area granted by the private property owner to the Air Force. Generally, each LF is surrounded by a 1,200-foot radius safety arc, which restricts certain uses as described in each easement agreement between each property owner and the Air Force. The terms of each easement agreement vary since each is independent and executed with different property owners. Most of the easement agreements, however, restrict development of inhabited buildings within the safety arc, but do allow uninhabited structures.

For example, permissible uninhabited structures within a safety arc may include sheds or barns that support the agricultural use of the surrounding lands. Since many of the LFs are surrounded by rural /agricultural land, most easement agreements allow agricultural uses, such as farm and ranch buildings. These are the same structures that are exempt from state building permit requirements. For the six missile counties without zoning, this means that there are no development regulations for any state-exempted structures within the 1,200 ft. safety arc, including an absence of any building, cell tower or any other structure height regulations. This absence of regulation increases the safety risk to both the public and the 40th HS pilots.

State Trust Lands

There are parcels of State Trust Lands located throughout the Missile Complex. The State of Montana, Department of Natural Resources and Conservation (DNRC) administers trust lands to produce revenue for State Trust beneficiaries. The state sells or leases properties to private users to generate revenues. Until sold or leased to a private entity, State Trust Land are not subject to any local land use regulations.

Once sold, these parcels become privately-owned or leased and subject to local regulations, just like any other private property. Only former State Trust Lands which have been conveyed to a private user fall under the jurisdiction of a local government. State Trust Land that is transferred to a public entity is not required to comply with local zoning. There are several State Trust Lands programs that encourage the following land uses on State Trust Land:

- Mineral development
- Forest management
- Agricultural/grazing
- Easements/rights-of-way
- Real estate management
- Wind energy development
- Recreation

Many of these programs will result in land sales or leases without the knowledge of the local government. This presents a challenge for communities aiming to carry out compatibility planning. Since the DNRC offers renewable energy incentives on State Trust Lands, there is added incentive for wind energy development companies to bid on State Trust Land. The lack of local regulatory authority and the state's incentives for certain types of development create potential conflicts between these uses, which contribute to local economies, and military sustainability.

The Judith Gap Wind Energy Farm is a textbook example of a State Trust Land wind energy program project that has encroached on DoD facilities and created land use compatibility problems. The Judith Gap Wind Energy Farm, Montana's first, is located on a mix of private and State Trust Land in central Montana between Harlowton and Judith Gap. The project was constructed within existing military flight paths as there was no coordination between the DNRC, Judith Basin County and MAFB during the planning and permitting process. As sited and constructed, the wind farm is incompatible with and negatively affects the Missile Range. Had there been coordination between the DNRC, Judith Basin County and MAFB during the early planning phases of the project, it is possible that impacts to the Missile Complex could have been avoided or mitigated.

Bureau of Land Management Lands

The Bureau of Land Management (BLM) owns land located within the Missile Complex. Just as with state lands, local jurisdictions do not have permitting authority on BLM lands. BLM land is open to the public and any land that is not designated a Wilderness Area, can be used for recreation, grazing, natural resources extraction (oil and gas development and logging) and ranching. Of these uses, natural resource extraction presents a potential concern because the search for and/or excavation of minerals or water entails the use of tall structures such as drills and cranes. The presence of such structures could affect low-level airspace within the 40th HS Fly Zone. As discussed in the Vertical Obstructions section, structures exceeding 50 feet within the Fly Zone could present hazards to the 40th HS. Currently, the BLM does not take these concerns into account when evaluating development permit applications for BLM land.

In summary, the absence of land use regulation limits the Missile counties' ability to control the type, location and height of development within the LF buffer zones and throughout the 40th HS fly zone. Although wind turbines and tall structures in the Missile Complex have not yet significantly interfered with overhead flights, this will likely become an important issue as the region continues to grow and the wind energy industry expands.

	<p>Issue LU-B Lack of awareness by property owners that have safety arc development easements on their land.</p> <p>The military holds various easements around each LF and throughout the Hardened Inter-site Cable System (HICS) network. These easements establish safety arcs and protect critical military infrastructure. Lack of knowledge about the location and terms of the easements by landowners and local and state agencies threatens the effectiveness of military operations.</p>
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Each LF and the entire Hardened Inter-site Cable System (HICS) network have safety distance and/or standoff requirements that are established through easement agreements. The land surrounding the LFs is mostly privately owned. There are approximately 500 landowners affected by the military easements encumbering their properties.

The HICS is a network of underground cables located throughout the Missile Complex. As the critical means for communication and control between the LFs and MAFs, the HICS network is a vital component of the MAFB mission. To ensure protection of this infrastructure the Air Force established a buffer of 16 feet (8 feet on either side of the center line) around the HICS. This buffer is held in easement on all private property along the entirety of the HICS network.

To memorialize these easements, the Air Force files the easements with the County Clerk and Recorder. The easements are then part of the chain of title and are included in the title commitment that is disclosed at the time of sale. Nevertheless, given the high number of individual easement agreements, it is a challenge for the Air Force to enforce compliance with the terms of each agreement. This is oftentimes because the original signatories of the easement have passed on or moved, leaving their property to new owners who are not aware of the easement agreements. The Air Force sends an annual letter to landowners as a reminder of the terms of the easements on their property; however, many of the landowners are out of state and neglect to inform the tenants about the existing easement agreements. Additionally, confusion exists because the exact boundary of the easements around the LFs can be difficult to discern. For most LFs, the easement extends 25 feet outside of the fence that surrounds each facility. This sometimes confuses landowners who believe the fence demarcates the easement boundary.

	<p>Issue LU-C Possible expansion of military facilities.</p> <p>The existing 1,200-foot safety arc only provides enough of a buffer zone for the explosive safety quantity distance (radius of potential flying debris from an explosion) and not for all other training needs, which may require additional Right-of-Entry agreements. The ongoing need for helicopter support at the LFs and MAFs will require the siting of two additional refueling sites.</p>
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Each LF is surrounded by a 1,200-foot radius safety arc, bound by a development easement agreement between the Air Force and the landowner(s). These easement agreements restrict certain types of development within the

safety arcs. The terms of each easement vary since each is independent and executed with different property owners. These agreements generally restrict development of inhabitable buildings within the safety arc.

A small number of LFs are used by the 40th HS and security forces for mission critical training locations. The Air Force has obtained right-of-entry agreements from surrounding landowners within 1,200 feet of the site for the sole purpose of this training. The Air Force is researching the possibility of extending the training in right-of-entry areas to 1,200 meters (3,936 feet). If needed, the Air Force will contact landowners to obtain a right-of-entry agreement. Such agreement is required prior to any training on the site. A right-of-entry agreement would not restrict the landowners' use of the property but would allow Air Force training on the property, but only upon advanced notification to the landowner.

Other future Air Force expansions could include the development of two additional refueling sites within the Missile Complex. The refueling sites would be located in two separate landing zones. The planned location of these facilities is unknown.

If the Air Force seeks expanded right-of-entry access, it will need to ensure careful and respectful use of private property. For example, at some right-of-entry locations the Air Force has developed supporting infrastructure, such as concrete pillars, on private property to assist with operations. However as the location of right-of-entry agreements change, the Air Force has not always restored the private property to its previous and original condition. In addition, according to some landowners, military personnel sometimes neglect to close gates to private property, which has led to cattle losses and unrestricted access by unauthorized persons.

ASSESSMENT OF EXISTING LAND USE COMPATIBILITY TOOLS

State of Montana

MCA Title 76, Chapter 2- Zoning

MCA Title 76, Chapter 2 allows counties, cities, and towns to establish zoning regulations for the purpose of promoting public health, safety, morals, and general welfare. Governing boards of counties (county commissioners) or municipalities (city or town council, or other legislative bodies) of local governments that have adopted a Growth Policy Plan may enact zoning regulations for all or a part of their jurisdiction that are compliant with the standards described in the Growth Policy Plan. The zoning regulations must include reasonable provisions for compatible urban growth in the vicinity of cities and towns and must include the areas around municipalities. Zoning regulations must address the character of zoning districts and the suitability of particular uses that encourage the most appropriate use of land throughout the jurisdictional area. This chapter allows the governing body to establish different zoning districts in order to achieve these standards.

Montana Subdivision and Platting Act (MSPA – MCA 76-3)

The Montana Subdivision and Platting Act (MSPA) – Title 76, Chapter 3, MCA provides directives to local governments to help manage haphazard land development through the public review and regulation of subdivisions, and to improve the accuracy of public land records. Each county, city, and town is required to adopt subdivision regulations consistent with the MSPA and is prohibited from adopting subdivision regulations that are more stringent than state requirements. The law promotes cluster development to minimize costs to the public and promote effective and efficient provision of public services. The law does not specify how subdivisions should be considered around military installations.

Montana Code Annotated 2009, Title 50, Health and Safety, Chapter 60, Building Construction and Chapter 74 – Building Code

Montana Code Annotated, Title 50, Chapter 60 and Title 50, Chapter 74 establish and enforce minimum building, plumbing, mechanical, electrical, energy, elevator, and boiler codes. A state building permit is required prior to the start of construction for certain types of new buildings, and alterations, additions and repairs. Building permits are issued by the Montana Division of Labor and Industry (DLI), Building Code Bureau (BCB) and must be issued concurrent with any plumbing, mechanical or electrical permits associated with the project. All required permits issued by the BCB for a project must be issued prior to the commencement of any project construction.

Per Title 50, Chapter 60, if a county, city, or town does not adopt a building code, the BCB will enforce the state code in these areas. All seven counties participating in the Malmstrom JLUS have no building code and rely on the BCB to enforce the state code in their jurisdiction.

The state building code provides exemptions for the following:

- Farm and ranch buildings.
- Mining buildings on mining property.
- Petroleum refineries and pulp and paper mills (except office and shop buildings).
- Residential buildings containing less than five dwelling units (except when serving transient guests), private garages and private storage buildings used for the owner's own use (not part of a commercial enterprise or business).

Exempted structures can be built without permits. Variances to the provisions of the state code can be granted by BCB if compliance would cause economic hardship.

Cascade County

Growth Policy Plan

The current Cascade County Growth Policy Plan was adopted in September 2006. The goals of the plan include sustaining and strengthening the economic well-being of the county's citizens, protecting and maintaining the rural character and interrelationship with the natural environment and resources, maintaining the agricultural economy, retaining the presence of the U.S. military, and preserving and enhancing the rural, friendly, and independent lifestyle of the County's citizens. The objectives of Goal IV: Retain the presence of the U.S. military in Cascade County, include:

- Utilize the federal congressional delegation to retain the current MAFB mission status, at a minimum.
- Encourage the location of additional military missions in Cascade County.
- Encourage the reactivation of the runway at MAFB for fixed wing operations.

This plan was published prior to the closing of 50 missile sites in the Missile Complex. The plan does not specifically mention the need to protect and sustain the 341st Missile Wing's operations, nor does it include land use policies that implement this goal.

Zoning Regulations

The current Cascade County Zoning Regulations apply to all unincorporated areas of the county, except the Flood Road Zoning District. There are 12 zoning districts which include five types of residential, two types of industrial, agricultural, general business, mixed-use, open space and planned unit development. The zoning regulations establish minimum lot sizes for various zoning districts, as well as area, height, yard, lot coverage, and parking

requirements for certain types of uses. The land surrounding the LFs and MAFs is zoned Agricultural, which allows for a wide array of uses.

Subdivision Regulations

The current Cascade County Subdivision Regulations do not identify policies for limiting the subdivision of parcels where LFs/MAFs are located.

Chouteau County

Growth Policy Plan

The current Chouteau County Growth Policy Plan was adopted in 2004. It provides a vision that indicates how the county wants to develop and make public investments for the following 20 years. The major themes of the plan are to provide for future development that is cost efficient to serve, to preserve the county's rural character, and to protect the county's unique natural resources.

Although it does not address missile sites specifically, the plan includes a land use goal (Goal 2.2) to "promote development that is compatible with existing land uses and that minimizes negative impacts on neighboring uses." The Chouteau County Growth Policy Plan does not specifically identify any facets of the Missile Complex, missile sites, Air Force, or MAFB, but generally refers in many areas to other government entities. It does not address any compatibility or other measures to prevent encroachment of the missile sites.

Development Regulations

The Chouteau County Development Regulations were adopted by the Chouteau County Planning Board in August 1985, and revised in March 1997. The regulations were originally created in response to a concern that the Wild and Scenic designation of the Missouri River would lead to development along the river to accommodate tourism. The regulations require a development permit for any subdivision that creates parcels less than 160 acres, or for any new construction or changes in land use, except for agriculture. The primary goals of the development regulations are to:

- protect existing agricultural land and operations,
- minimize impacts to public health and safety due to new construction,
- protect rivers and streams,
- minimize the public costs of providing services to new development,
- encourage new growth to locate near existing communities, and
- discourage residential and vacation subdivision development in certain designated areas.

The regulations apply primarily to agricultural lands and operations. Since most of the land around the LFs is agricultural, this potentially provides a small degree of regulation to protect the Missile Complex in Chouteau County.

Subdivision Regulations

Chouteau County's Subdivision Regulations were passed in 2007. These regulations provide procedures for both major and minor subdivisions. Minor subdivisions have less than five lots. Chouteau County also has specific procedures for "low impact" minor subdivisions of one or two lots. A major subdivision has six or more lots. When reviewing a subdivision application Chouteau County considers impacts on:

- Agriculture
- Agricultural water user facilities
- Local services
- Natural environment
- Wildlife and wildlife habitat
- Public health and safety

This list does not include military facilities.

Zoning Regulations

Chouteau County does not have a zoning ordinance.

Fergus County

Land Use Policy

The Fergus County Land Use Policy Plan was updated in February 2011. The land use policy plan is used to guide the use of lands and resources within the county and to protect the rights of private landowners. The land use policy plan includes policies that are intended to protect the customs and cultures of the citizens by protecting their private property rights, facilitating economic growth, and establishing a process to ensure self-determination by county residents. The plan includes a statement of endorsement for policies that do not impose undue restraints on mining within historic mining districts, natural resource development and renewable energy development. This effectively encourages wind energy development, which could pose a risk to helicopter pilots and crew

The policy plan states that Fergus County and its residents support the continued multiple use of federal and state lands. As such, federal and state agencies are to inform local governments, to the extent bound by federal law and regulation, of all pending actions that will affect local communities and citizens. Although the Malmstrom Missile Complex is not specifically identified, the Fergus County coordination policy seems to suggest that there should be coordination between the Department of Defense (DoD) and the county. Since this notion of coordination includes exchanges of ideas between coordinating parties, this policy could provide the basis for DoD review of Fergus County subdivision applications in the Missile Complex for compatibility.

Subdivision Regulations

The Fergus County Subdivision Regulations state that the county can determine land to be unsuitable for a proposed subdivision based on a variety of reasons or hazards, including flooding, snow avalanches, rock fall, landslides, steep slopes in excess of 25 percent, high potential for wildfire, subsidence, high water table, polluted or non-potable water supply, high voltage lines, high pressure gas lines, aircraft or vehicular traffic hazards or congestion, or severe toxic or hazardous waste exposure. Although the list does not mention the Missile Complex specifically, it appears the county could potentially consider aircraft hazards when approving a proposed subdivision in the vicinity of LFs or helicopter routes.

Zoning Regulations

Fergus County does not have a zoning ordinance.

Judith Basin County

Growth Policy Plan

The Judith Basin County Growth Policy Plan was not available for review.

Subdivision Regulations

Judith Basin County administers the state subdivision regulations.

Zoning Regulations

Judith Basin has no zoning ordinance.

Lewis and Clark County

Growth Policy Plan

The current Lewis and Clark County Growth Policy Plan was adopted in February, 2004. The plan focuses on six different local planning areas within the county, which are Augusta, Canyon Creek/Marysville, Canyon Ferry/York, Helena Valley, Wolf Creek/Craig, and Lincoln. Helena Valley is the primary population and economic hub for the county and has the largest growth rate.

Lewis and Clark County's Growth Policy Plan aims to minimize incompatible development and prevent development in sensitive environmental, ecological and safety hazard areas. Policy 2.4 of Land Use Goal 2 states that rural, agricultural, or open space zoning should be evaluated as a tool to protect agricultural areas and guide future planning for growth in certain areas. Policy 3.4 of Land Use Goal 3 states the county will assist interested planning areas or neighborhoods in preparing appropriate development standards and zoning regulations consistent with local objectives.

There is no identification of the Malmstrom Missile Complex or any policies to prevent encroachment around LFs and MAFs in the Growth Policy Plan.

Subdivision Regulations

The current subdivision regulations for Lewis and Clark County were amended in March, 2009. The subdivision approval process is designed to ensure all requirements, including zoning, road improvement standards, and mitigation of off-site impacts, are adequately addressed. It is during the subdivision application process that potential site problems are addressed and coordinated with the county and the developer. Although the subdivision regulations do not specifically identify the standards for subdivisions around LFs and MAFs, the coordination intrinsic to the subdivision review process could help limit the subdivision of land within a certain distance of these facilities.

Special Zoning Districts

A large number of special zoning districts have been established for various neighborhoods, communities, and other areas throughout Lewis and Clark County. These zoning districts have been created through the cooperation and collaboration of local communities and the county to address specific issues in those areas. Based on this collaborative approach it may be possible to create special zoning districts around the LFs AND MAFs to prevent incompatible development.

Wheatland County

Growth Policy Plan

Wheatland County's Growth Plan was not available for review.

Resource Use Plan

The purpose of the Resource Use Plan is to facilitate Wheatland County's participation in cooperative, coordinated or collaborative natural resource planning efforts that are initiated by the various private, state and federal land managers. The goal of the document is to ensure the availability and use of natural resources by Wheatland County residents and to ensure the development of land and resource management plans that provide a reasonable degree of predictability, reliability, defensibility and accountability.

The document recognizes the need for compatible management strategies on privately owned adjacent lands and resources to effectively plan and manage resources with needs that cross ownership and administrative boundaries. These management tools are intended to address issues such as fish, wildlife and their habitats, ecosystem management and split-estate (surface/mineral) situations. There is no mention of DoD lands or the missile silos.

The plan states that "Commissioners will only participate in a private land and resource management planning process upon invitation of the landowner." It encourages commenting, consultation, collaboration, coordination and cooperation by county planners and landowners. The plan recognizes that the economic future lies in wind energy and telecommunications industries. Although the plan does not factor in federal assets such as military facilities, the Resource Use Plan could serve as a framework for incorporating these types of considerations into land use decisions in the future.

Subdivision Regulations

The current Wheatland County Subdivision Regulations were adopted in January 1997 and cover the Cities of Harlowton and Judith Gap. During the subdivision review process, certain lands can be determined unsuitable for subdivision development based on a variety of factors. It is possible that the proximity of a missile site could be grounds for not allowing certain types of subdivision development within a certain distance. Additionally, specific language could be updated or added to the regulations to state that a certain proximity to a missile site precludes certain types of development.

Zoning Regulations

Wheatland County does not have a zoning ordinance.

SAFETY

COMPATIBILITY ASSESSMENT SUMMARY

DEFINITION: Safety zones are areas where development should be more restrictive in terms of use and concentrations of people due to the higher risks to public safety. Conversely, military operations need to manage safety risks to the public when operating on or around civilian land.

ISSUES TO CONSIDER: Although there are existing restrictive easements around each of the LFs, the terms of the easements are not specific enough to prevent incompatible development. Incompatible development could cause harm to 40th Helicopter Squadron pilots and to landowners.

Safety Issues Compatibility

- i Potential for incompatible development and uses in existing LF safety arcs.
- i Potential for low-level aircraft collisions.

Assessment of Existing Safety Compatibility Tools

Table 3.2-2. Assessment of Existing Safety Compatibility Tools

Agency	Compatibility Planning Tools		
	Easements	40th HS Mid-Air Avoidance Plan	Zoning Regulations
MAFB	■	■	□
Cascade County	□	□	■
Chouteau County	□	□	□
Fergus County	□	□	□
Judith Basin County	□	□	□
Lewis and Clark County	□	□	□
Teton County	□	□	□
Wheatland County	□	□	□

- The tool exists and addresses safety issue(s).
- The tool exists but does not address safety issue(s).
- The tool exists but it only partially addresses safety issue(s).
- The agency does not employ this tool.

ASSESSMENT CRITERIA

Each LF has a surrounding 1,200 foot radius safety arc, which occupies approximately 104 acres of land (typically private property). The safety arc was established to prevent injury from the projection of a missile silo cover in the instance of missile detonation per Air Force Manual (AFMAN) 91-201. The land covered by each safety arc is encumbered by a restrictive development easement agreement executed between the Air Force and each private landowner. There are over 500 individual property owners in the Missile Complex, each with a separate easement agreement. Although each agreement is unique to each property, generally, each easement is designed to limit certain types of development within the 1,200-foot safety arc area. Sample language from an existing easement agreement follows:

“The easement and rights hereby granted to include a perpetual and assignable easement across and over Tract XXXXXX, above described, consisting of the right to prohibit human habitation; the right to remove buildings presently or hereafter being used for human habitation; the right to prohibit entry on said tract except by owner, his/her employees, agents and lessees; the right to prohibit the use of firearms and explosives; the right to limit the use of said land to agricultural and grazing purposes and for the exploration, production and removal of oil, gas and mineral operations for as long as the easement of the estate remains in effect, furthermore any proposed mining activity within the limits of said tract whether tunnel or open pit type must have approval from the Air Force Officer in charge; the right to post signs on said tract indicating the nature of extent of the Government’s control in such manner as not to interfere with agricultural, grazing and mining operation; and the right of ingress and egress over and across said land for the purpose of exercising the rights set forth herein; subject, however, to existing easements for public roads and highways, public utilities, railroads and pipelines and to the reservations, and exceptions and any other outstanding rights contained in or referred to in patents issued by the United States provided that is and when the United States of America and its assigns cease to use said tract for a period of one year, then and in that event, all interests hereby conveyed shall terminate.”

(Source: Warranty Easement (Restrictive) for Tract XXXX, 1963.)

According to this excerpt and input from the 341st Missile Wing and the 40th HS, the following are compatible and incompatible uses within the 1,200-foot safety buffer around LFs.

COMPATIBLE

- Limited entry to property owners
- Agricultural uses and buildings (under 50 feet in height)
- Grazing
- Exploration, production and removal of oil, gas and mineral operations
- Undeveloped open space

INCOMPATIBLE

- Buildings used for human habitation
- Use of firearms and explosives
- High density development
- Structures exceeding 50 feet in height (such as silos, wind turbines, cell towers and transmission lines)

SAFETY ISSUE ASSESSMENT

	<p>Issue SA-A Potential for incompatible development and uses in existing Launch Facility safety arcs.</p> <p>Each LF has a safety arc (1,200-foot radius) to protect adjacent uses. The existing restrictive easement language allows for limited land uses and development, however, the terms of the easements often are not specific enough to prevent incompatible development.</p>
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As the sample language from the easement agreement indicates, limited development is allowed within the safety arcs. The potential for development within the 1,200-foot safety arcs creates a safety threat to the helicopter pilots and to persons frequenting these areas. All land comprising the safety arcs is subject to perpetual easements executed between the Air Force and the private property owners. The primary purpose of the restrictive easements is the establishment of a safety arc around each LF to ensure an adequate explosive safety quantity distance (ESQD) for projected missile covers in the case of detonation. The safety arcs also serve as a landing area for the 40th HS to access each LF. If certain types of development are located within this area, there is a higher safety risk both to the public and the helicopter pilots.

Since many of the easement agreements were negotiated in the 1950s and 1960s, many landowners who agreed to the terms of the easement agreements have either moved or passed the property to their families. For example, a cellular tower was constructed in an easement area near Eddy’s Corner in Judith Basin County without the knowledge of MAFB personnel. The cell tower presented a safety risk because it was a vertical obstruction in the 40th HS landing and departure zone. Consequently, MAFB had to negotiate with the landowner to remove the tower.

Another potential issue associated with the easement agreements is they allow the Air Force to grant waivers that permit inhabitable structures to be constructed within a safety arc. The requests for waivers are likely to increase as development continues within the Missile Complex. As shown on Figure 3.2-1, development in the areas around some LFs (in this case LF A-03 in Judith Basin County) is growing closer to the LFs. Safety risks to the public and pilots dramatically increase when development grows to within 1,200 feet of a LF.

	<p>Issue SA-B Potential for low-level aircraft collisions.</p> <p>40th HS pilots fly at very low levels (50 feet above ground level) throughout the fly zone, which increases the potential for collisions with low-level civilian aircraft.</p>
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The 40th HS flies at low levels at all hours of the day and night and does not follow specific flight paths when traveling throughout the fly zone. As Figure 3.2-2 illustrates, the 40th HS fly zone is larger than the Missile Complex, because the 40th HS continues to fly to the closed LFs and MAFs in the north for security purposes. Navigation in this area is conducted through a visual flight rule (VFR) system. Although many helicopters have a crew of three (two pilots and a flight engineer), many medium aircraft only have a single pilot with a limited ability to see all obstacles. The helicopters used by the 40th HS have numerous blind spots and are typically flown at very low altitudes (e.g. 50 to 100 feet above ground level (AGL)).

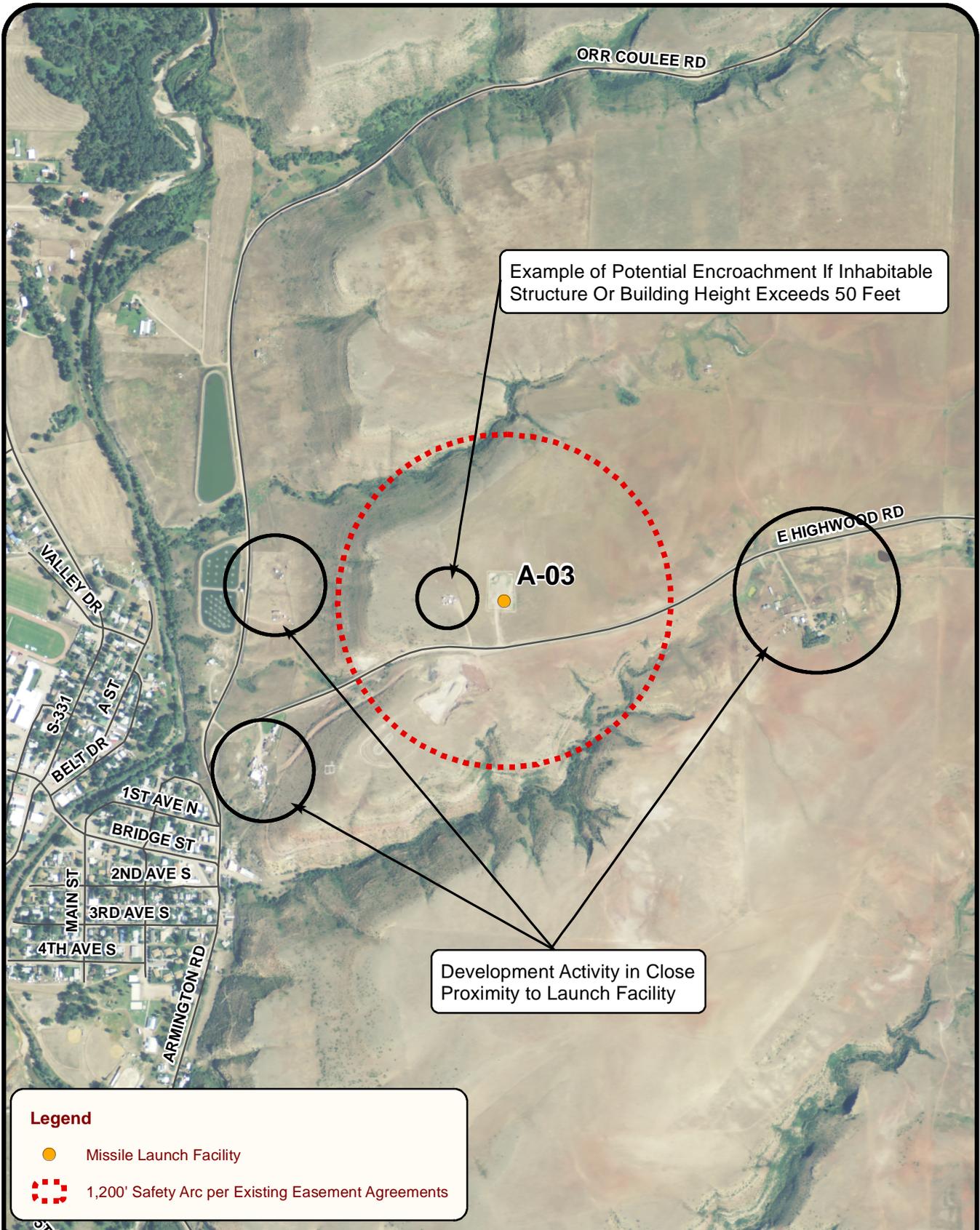


Figure 3.2-1
 Example of Potential Encroachment in
 a Launch Facility Safety Arc

Fig3-2-1_MAFB_LF_A-03_2011_09_21_RGR.pdf

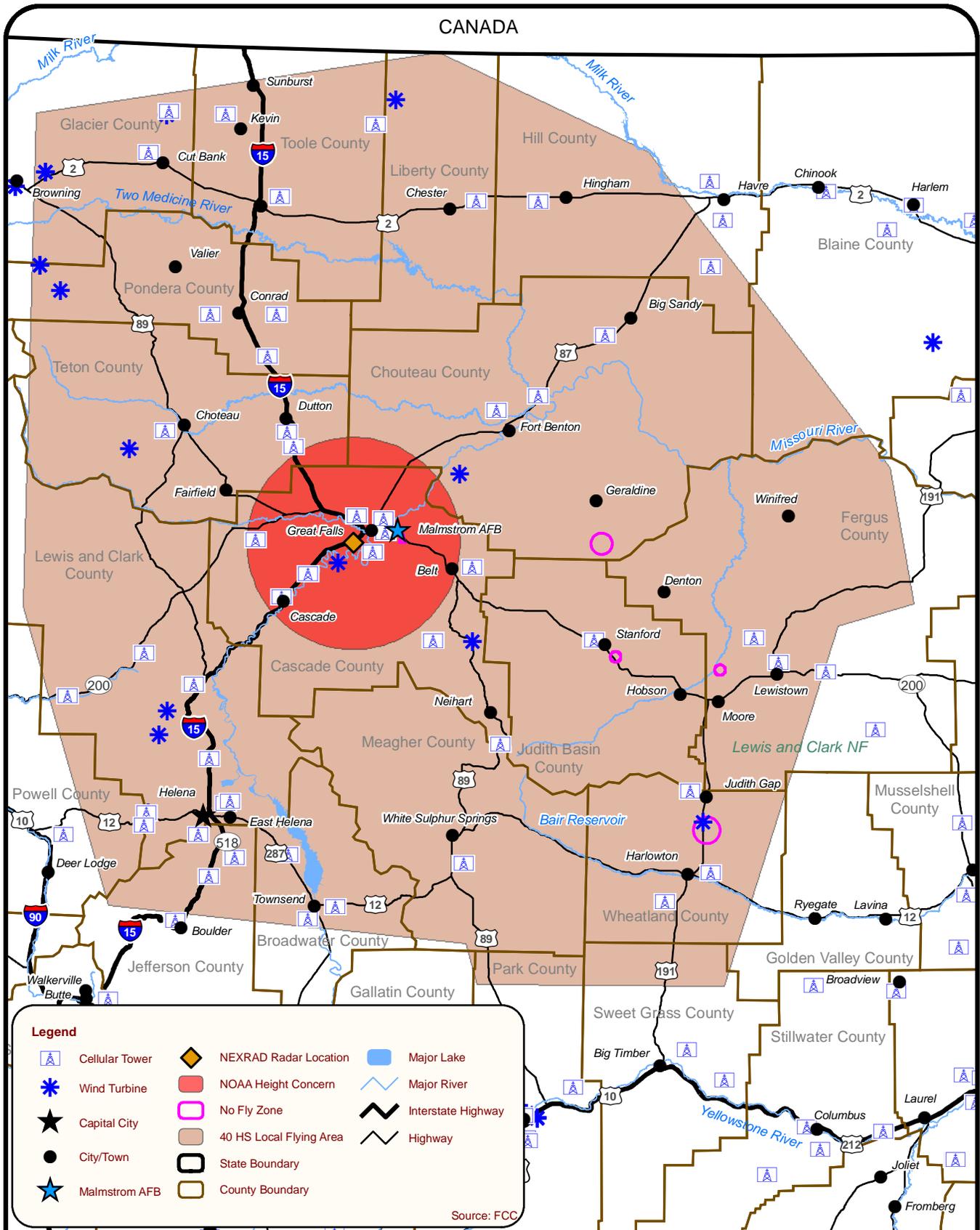


Figure 3.2-2
Vertical Obstructions Within MAFB Missile Complex

Fig3-2-2_MAFB_VerObsMissileComplex_2012_03_236_JKC.pdf

As most land in the 40th HS fly zone is agricultural, crop dusting planes are frequently in the area flying at low altitudes, per 14 C.F.R. §91.119, which requires agricultural aircraft to be operated under 500 feet AGL. These regulations, along with the 40th HS flight operations, create potential conflicts between the military and civilian aircraft.

ASSESSMENT OF EXISTING SAFETY COMPATIBILITY TOOLS

Malmstrom AFB

US Air Force Restrictive Easement Agreements

The Air Force has acquired easements from private property owners in order to support missions at MAFB and in the Missile Complex. A restrictive easement around each LF in the Missile Complex has been purchased from the underlying property owner by the US government. Each LF easement is 104 acres and circular, with a 1,200-foot radius centered on each missile silo. These easements restrict certain types of development and may slightly vary between property owners, since each is a discrete agreement between the Air Force and each landowner. In general, the easements only restrict inhabitable structures and not the height of permitted structures. This could result in the development of tall structures that pose a safety risk to the 40th HS pilots conducting low-level flights near the LFs.

40th Helicopter Squadron Mid-Air Avoidance Program

The 40th HS at MAFB is the key air support for operations in the Missile Complex. A mid-air avoidance pamphlet was developed to educate local pilots about the operation areas and extent of 40th HS travel. The pamphlet advises pilots to avoid MAFB by at least three nautical miles, as the Great Falls International Airport Approach Control systems may not be able to see helicopters operating in the Malmstrom area. The pamphlet also advises pilots to not assume that helicopter pilots can see them.

VERTICAL OBSTRUCTION

COMPATIBILITY ASSESSMENT SUMMARY

DEFINITION: Vertical Obstructions are typically tall structures located within military use areas and safety zones that create potential safety or operational obstructions.

ISSUES OF CONCERN: Vertical Obstructions present one of the most significant compatibility factors for the Missile Complex due to the 40th HS low level flights and the development of wind energy projects in the region.

Vertical Obstruction Compatibility Issues

- i** Unregulated development of vertical obstructions within the 40th HS fly zone.
- i** Potential for vertical obstructions within existing safety arcs.
- i** Objects within the Fresnel Zone can interfere with line-of-sight transmissions.

Assessment of Existing Vertical Obstruction Compatibility Tools

Table 3.2-3. Assessment of Existing Vertical Obstruction Compatibility Tools

Agency	Compatibility Planning Tools			
	Montana Subdivision and Platting Act	Major Facilities Siting Act	MCA, Title 50, Chapter 60 and 74 – Building Code	Zoning Regulations
State of Montana	■	■	■	□
Cascade County	□	□	□	■
Chouteau County	□	□	□	□
Fergus County	□	□	□	□
Judith Basin County	□	□	□	□
Lewis and Clark County	□	□	□	□
Teton County	□	□	□	□
Wheatland County	□	□	□	□

- The tool exists and addresses vertical obstruction issue(s).
- The tool exists but does not address vertical obstruction issue(s).
- The tool exists but it only partially addresses vertical obstruction issue(s).
- The agency does not employ this tool.

ASSESSMENT CRITERIA

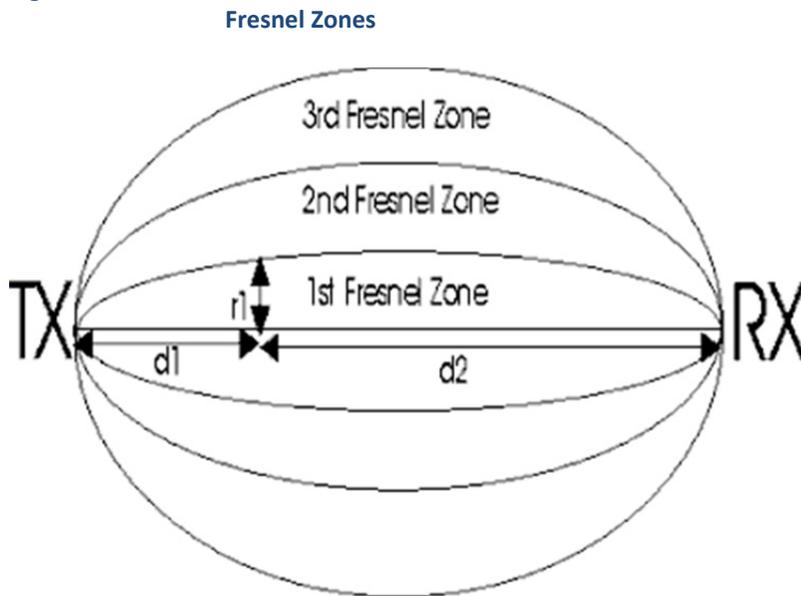
Vertical obstructions present a major safety concern to the 40th HS as aircraft is routinely flown 50 feet above ground level (AGL) throughout the Missile Complex. Air Force Instruction 11-2UH-1NV3, Paragraph 8.2.2 states:

"Helicopter low-level flight areas will be surveyed annually. Verify all man-made obstacles above 50 feet above ground level (AGL) (or commensurate with the lowest altitude flown within the area) and document all new man-made obstacles on the master chart and the flight charts. Annotate the survey date on the master chart."

This requirement indicates that any structures exceeding 50 feet in height present a possible safety issue to low-level helicopter flights.

Vertical obstructions could also create a concern if located within the line-of-sight area between a transmitting and receiving antenna. This area is called the Fresnel Zone and vertical obstructions should be avoided in this area. The strongest signal between a transmitter and receiver is a direct line. The Fresnel Zone is the area beyond the direct line in which non-direct waves travel. If non-direct waves are deflected or interrupted by outside obstacles, they can interrupt signals transmitted through the direct line-of-sight. The area encompassed by the Fresnel Zone is defined as a series of concentric ellipsoids as shown on Figure 3.2-3. The direct line of sight is located in the 1st Fresnel Zone.

Figure 3.2-3.



TX = Transmitter

RX = Receiver

(Source: <http://www.zytrax.com/tech/wireless/fresnel.htm> - visited on 01/24/12)

VERTICAL OBSTRUCTION ISSUE ASSESSMENT

Issue VO-A Unregulated development of vertical obstructions within the 40th HS fly zone.

The counties within the Missile Complex are an emerging energy generation hub and there are numerous wind energy conversion systems (WECS) and energy transmission lines being sited and developed within the study area. These structures can present obstacles to low-level aircraft. The absence of height regulations/restrictions throughout the Missile Complex increases the likelihood that structures that might interfere with low-level aircraft.

Helicopters in the 40th HS travel at speeds of 130 knots at a height as low as 50 feet above ground level (AGL) throughout the Missile Complex fly zone. As shown on Figure 3.2-2, the Missile Complex fly zone covers a wide area. There are no established military flight routes within the fly zone because of the uninterrupted terrain and the requirement for complete navigational flexibility. There are no local government controls over the siting of tall obstructions, such as wind turbines, cell towers, electricity transmission towers, grain elevators, etc., because six of the seven counties in the Missile Complex have no zoning regulations. Together, the absence of any predictable military flight routes and the lack of zoning regulations in most of the fly zone create the potential for conflicts between the 40th HS and existing and future tall obstructions.

One of the primary vertical obstruction issues of concern is the emerging development of wind energy industry facilities in the fly zone. Montana is becoming a premier location for wind energy due to consistent high wind velocities. In order for the 40th HS to fly as low as 50 feet AGL, flight routes need to be clear of vertical obstructions.

A primary issue with wind energy development is the absence of a permitting mechanism for small development projects that do not trigger the requirements of the Major Facility Siting Act (MFSA), as well as the absence of zoning regulations (aka permitting procedures) in nearly all counties in the Missile Complex. The only permitting requirement for small wind energy projects in the Missile Complex (except in Cascade County) is an electrical permit issued through the State of Montana, Department of Labor and Industry, Building Codes Bureau (BCB). Although this permitting requirement is in place there is no coordination or consultation between the BCB, MAFB and the counties when electrical permit applications are being reviewed by the BCB. The lack of local government regulation and basic communication between the BCB, Air Force and counties enables the placement of wind energy projects of any height anywhere in the Missile Complex. Further, the absence of a state inventory and basic mapping information of existing and proposed wind energy projects exacerbates the lack of awareness and contributes to escalating safety concerns about possible aircraft collisions with unknown vertical obstructions throughout the Missile Complex.

The authority granted to local governments in the Telecommunications Act has created a corps of litigation in which wireless companies sue local governments for discriminating against cell tower development without adequate justification.

Cellular Towers

Existing cellular towers (cell towers) create vertical obstructions and are located throughout the fly zone, as illustrated on Figure 3.2-2. Typically, cell tower approval and placement is a local government responsibility per the Telecommunications Act of 1996, which grants local governments the authority to regulate the location of cell towers via local zoning codes. This authority has created tension between local governments and wireless companies, who treat the regulation of cell tower placement based on safety concerns as unjustified. Due to the lack of zoning regulations in six of the missile counties, there is no mechanism for these local governments to exercise this authority. Consequently, the placement and development of cell towers is

essentially unregulated and can occur anywhere, creating a significant number of vertical obstructions throughout the fly zone.

Transmission Lines

The State of Montana’s role in permitting transmission line projects is dictated by the Major Facility Siting Act (MFSa). Under the MFSa administrative rules, any entity interested in constructing an electric transmission line of 500kV or more must submit to the Montana Department of Environmental Quality (DEQ) an application that describes the need, proposed location, baseline data and reasonable alternate transmission line locations. The DEQ grants permission to construct a transmission line through the issuance of a permit called a certificate of compliance. The certificate of compliance includes a report, environmental review and written approval of the project.

	<p>Issue VO-B Potential for vertical obstructions within existing safety arcs.</p> <p>The height of structures within the 1,200-foot Launch Facility safety arcs is not regulated through local government zoning nor addressed in existing restrictive easement agreements. The presence of structures in safety arcs that exceed 50 feet in height creates operational safety hazards for helicopter pilots landing at LFs.</p>
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The 1,200 foot safety arc that surrounds each LF is subject to an easement held by the Air Force that restricts certain types of development. The easements are not restrictive or specific enough, however, to eliminate all forms of incompatible development. For example, there are no height restrictions or any other structural design guidelines in the easement agreements, other than a prohibition of “habitable” structures. Since the easement agreements do not specify a process of formal consultation with the Air Force and most of the counties have no zoning regulations, for all practical purposes, there are currently no preventative means of regulating the design of development within the safety arcs prior to construction. This escalates the likelihood of construction of vertical obstructions within the safety arcs which conflict with the 40th HS landing activities at the LFs.

	<p>Issue VO-C Objects within the Fresnel Zone can interfere with line-of-sight transmissions.</p> <p>Transmitting and receiving antennas are located at LFs and MAFs throughout the Missile Complex. The placement of vertical structures within the line-of-site of these antennas will interfere with signals and could jeopardize the Air Force’s ability to conduct surveillance around military facilities.</p>
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Some of the LFs and MAFs throughout the Missile Complex have line-of-sight systems, which facilitate security surveillance. The line-of-sight systems use microwave transmitters/receivers/repeaters, which depend on electro-magnetic radiation or acoustic wave propagation. Electro-magnetic radiation is a light emission traveling in a straight line. The rays or waves may be diffracted, refracted, reflected, or absorbed by atmosphere and obstructions with material and generally cannot travel over the horizon or behind obstacles. The challenge with these systems is that tree branches, or even heavy rain or snow, can interfere with low-powered microwave transmitters. Objects within the Fresnel Zone can disturb line of sight propagation even if not blocking the geometric line between antennas. This effect can be reduced by raising either or both antennas further from the ground: the reduction in loss achieved is known as *height gain*.

ASSESSMENT OF EXISTING VERTICAL OBSTRUCTION COMPATIBILITY TOOLS

Department of Defense

Energy Siting Clearinghouse

Section 358 of the 2011 National Defense Authorization Act (NDAA) authorized the study of effects of new construction and obstructions on military installations and operations. The Energy Siting Clearinghouse serves to coordinate the DoD review of applications for energy projects. Several key elements of Section 358 include designation of a senior official and lead organization to conduct the review of energy project applications, a specific time frame for completion of a hazard assessment associated with an application (30 days), specific criteria for DoD objections to projects and a requirement to provide an annual status report to Congress. This new legislation facilitates procedural certainty and a predictable process that promotes compatibility between energy independence and military capability.

State of Montana

Montana Subdivision and Platting Act (MSPA – MCA 76-3)

Cell tower developers in Montana are required to complete a New Tower Submission Packet in order to construct new antenna support structures by or for the use of licensees of the Federal Communications Commission (FCC). The packet (including Form 620 and attachments) is required to be submitted to the State Historic Preservation Office (SHPO) or to the Tribal Historic Preservation Office (THPO), as appropriate, before any construction or other installation activities on the site begin. Failure to submit the submission packet and complete the review process under Section 106 of the National Historic Preservation Act (NHPA) prior to beginning construction violates Section 110(k) of the NHPA and the FCC rules.

Major Facilities Siting Act (MFSA)

The Utility Siting Act (known as the Major Facilities Siting Act - MFSA) was passed by the Montana Legislature in 1973. The purpose of the MFSA was to create a process for the review and regulation of the siting and construction of most large energy producing, conversion, and transporting facilities in Montana. The goal of the law is help to determine whether there is a public need for the facility and if the proposed facility will minimize adverse impacts on the environment.

MFSA requires the issuance of a certificate of environmental compatibility and public need from the Montana Board of Natural Resources and Conservation. This certificate indicates that the project has been analyzed for air and water quality impacts.

Since its creation, MFSA has been altered to exclude the many forms of energy facilities. This legislation was created to facilitate public input during the development of energy facilities and has no impact on compatibility between military installations and surrounding land uses.

Montana Code Annotated Title 50. Health and Safety. Chapter 60. Building Construction and Chapter 74 – Building Code

Montana Code Annotated, Title 50, Chapters 60 and Chapter 74 establish and enforce minimum building, plumbing, mechanical, electric, energy, elevator, and boiler codes. It does not regulate the height of structures.

Montana Code Annotated Title 15. Chapter 24. Electrical generation facility impact fee for local governmental units and school districts -- wind generation facility impact fee.

Montana Code Annotated, Title 15, Chapter 24 states that if an owner or operator of a commercial electrical generation facility is exempt from property taxation pursuant to 15-24-3001, the owner or operator of the facility

is subject to a local government and school impact fee. The impact fee is for local impacts and must be distributed to the local government and to impacted school districts. The impact fee may not exceed 0.5% of the total cost of constructing the wind generation facility. According to Section 3006 of the law:

(1) The governing body of a county receiving impact fees under 15-24-3004(2)(b) or 15-24-3005(4) shall establish an electrical energy generation impact fee reserve account to be used to hold the collections. Money held in the account may not be considered as cash for the purpose of reducing mill levies.

(2) Money may be expended from the account for any purpose of an interlocal agreement provided for in 15-24-3004 or 15-24-3005. The county treasurer shall distribute money in the account to each local governmental unit according to the terms of the interlocal agreement.

(3) Money in the account must be invested as provided by law. Interest and income from the investment of the electrical energy generation impact fee reserve account must be credited to the account.

These funds are to be placed in a reserve account that is established for the jurisdiction(s) that are affected by the development. The law does not clarify how this money may be spent.

Cascade County

Zoning Regulations

According to the Cascade County Zoning Regulations, a telecommunications facility is:

“a facility that transmits and/or receives electromagnetic signals; it includes antennas, microwave dishes, horns and other types of equipment for the transmission or receipt of such signals, telecommunications towers or similar structures supporting said equipment, equipment buildings, parking areas and other accessory development.”

The code defines a telecommunications tower as “a mast, pole, monopole, guyed tower, lattice tower, free-standing tower or other structure designed and primarily used to support antennas; a ground or building mounted mast greater than ten feet tall and six inches in diameter supporting one or more antennas, dish arrays, etc., shall be considered a telecommunications tower.”

Telecommunications towers are permitted in agricultural zones subject to the following requirements:

- The setback to property boundaries for tower/antenna structures must be the height of the tower plus twenty (20) feet (example: a 100 foot tall tower must be 120 feet from all property boundaries).
- Must meet all other state, federal, and local regulations.
- Must not have any attached advertising signage.
- Must not interfere with any electrical components on neighboring properties.
- Must be fenced or protected to prohibit unauthorized access.
- Must be located at least 1,000 feet from any of the following uses:
 - Public and private elementary school, high school, college;
 - University, public park and playground, and public swimming pool;
 - Off-street parking areas for the above uses.

The Cascade County Zoning Regulations include no building or cell tower height restrictions.

Chouteau County

Zoning Regulations

Chouteau County does not have a zoning ordinance.

Fergus County

Zoning Regulations

Fergus County does not have a zoning ordinance.

Judith Basin County

Zoning Regulations

Judith Basin County does not have a zoning ordinance.

Lewis and Clark County

Special Zoning Districts

A large number of special zoning districts have been established for various neighborhoods, communities, and other areas throughout Lewis and Clark County. These zoning districts have been created to address special requests for the individualized areas. These zoning districts serve as a zoning ordinance but do not include zoning designations for the entire County. The potential exists to create special zoning districts around the LFs to prevent incompatible development such as tall structures within the LF safety arcs.

Teton County

Zoning Regulations

Teton County does not have a zoning ordinance.

Wheatland County

Zoning Regulations

Wheatland County does not have a zoning ordinance.

Please see the next page.

INFRASTRUCTURE EXTENSIONS

COMPATIBILITY ASSESSMENT SUMMARY

DEFINITION: Infrastructure extensions deal with the potential that new infrastructure (water, sewer, roads, transmission lines) will invite new development in otherwise undeveloped areas and invite new industries that might compete for the same resources as the military.

ISSUES OF CONCERN: The development of new transmission lines may contribute to the surge in wind energy development throughout the Missile Complex. Other infrastructure improvements could interrupt military operations in the region.

Infrastructure Extensions Compatibility Issues

- i** Potential interruptions in operability of the Hardened Inter-site Cable System (HICS) due to roadway improvements.
- i** Existing and future overhead electrical transmission line networks could attract wind energy development to the region, which could interfere with 40th HS air operations.

Assessment of Infrastructure Extensions Compatibility Tools

Table 3.2-4. Assessment of Infrastructure Extensions Compatibility Tools

Agency	Compatibility Planning Tools			
	USAF Restrictive Easements	Major Facilities Siting Act	Montana Environmental Policy Act	State Transportation Improvement Program
MAFB	■	□	□	□
State of Montana	□	■	■	■

- The tool exists and addresses infrastructure issue(s).
- The tool exists but does not address infrastructure issue(s).
- The tool exists but it only partially addresses infrastructure issue(s).
- The agency does not employ this tool.

INFRASTRUCTURE EXTENSION ISSUE ASSESSMENT

	<p>Issue IE-A Potential interruptions in operability of the Hardened Inter-site Cable System (HICS) due to roadway improvements.</p> <p>Communications between missile squadron command and control are conducted through the HICS, which is a buried cable network providing communication paths between launch control centers (LCCs) and LFs. The HICS network could be jeopardized by construction activities, such as digging, laying pipelines or road work.</p>
--	--

Communications between missile squadron-wide command and control are accomplished in part through message transmission over the HICS, which is a hardened buried cable network providing communication paths between launch control centers (LCCs), MAFs and LFs throughout the Missile Complex. Development over the HICS network could impede maintenance and/or operability of the network, thereby significantly jeopardizing MAFB's mission. For example, roadway construction and maintenance often entails earth removal that can expose underground HICS and create opportunities for the cable system to be damaged or interrupted. Even with easements in place, MAFB has reported instances where road construction has exposed the cable. Such incidents will likely increase as development occurs throughout the Missile Complex. A connected HICS network is a critical military infrastructure; if severed through civilian development or construction activities, communications and national security could be compromised.

Although development easements are in place between the Air Force and private landowners to protect the HICS network, there is a general lack of awareness about the location and terms of these agreements among many of the landowners. The location of HICS is sensitive information and a map of the comprehensive network is not available to the public. The only way for a developer to obtain information about the location of the HICS is to refer to the appropriate landowners' property deed or to call the Call and Locate hotline, which is a utility identification service. The need to limit access to this information increases the possibility for interruption or disturbance by utility companies, property owners and/or roadway construction. The Montana Department of Transportation (MDOT), which is responsible for issuing permits for roadway construction and improvements, currently does not consider or know the location of HICS when issuing permits.

	<p>Issue IE-B Existing and future overhead electrical transmission line networks could attract wind energy development to the region, which could interfere with 40th HS air operations.</p> <p>The Missile Complex is transected by numerous overhead electrical transmission line corridors. The ability to tie into these networks from locations that exhibit high wind speeds will attract these uses in the future.</p>
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Existing and future overhead electrical transmission line networks will continue to attract wind energy development to the region. Transmission lines and wind turbines can become vertical obstructions if they are sited in locations where the 40th HS conducts low level flights. According to the Montana Department of Commerce, the following transmission line projects are being considered or are underway in Montana.

- **Havre to Rainbow and Wolfe Point to Williston Transmission Upgrades** consists of two Western Area Power Administration (WAPA) projects, which will upgrade the existing lines from 161 kilovolt (kV) to 230 kV.
- **Montana Alberta Tie, Ltd. (MATL)** is a 230 kV, 215 mile merchant (private) transmission line connecting Great Falls and Lethbridge, Alberta. Construction of this line has begun.
- **TransCanada's Chinook (formerly Northern Lights)** is a proposed 800 mile, 3000 MW high voltage direct current (HVDC) transmission line connecting eastern Montana through Townsend to Las Vegas, Nevada, with target markets in Las Vegas, Southern California and Phoenix.
- **Mountain States Transmission Intertie (MSTI)** is a proposed project from Northwestern Energy to provide 1,500 MW of new transmission capacity on a 500 kV line between the Butte area and southern Idaho. This project is in the permitting stage and is proposed between substations located near Townsend and Jerome, Idaho with an in-service date of 2013.
- **BPA / Colstrip 500 kV Transmission Line Upgrades** is a commissioned technical study of the increased capacity of high voltage transmission line from Colstrip to the west coast by up to 750 MW. Northwestern is working with Montana Energy Promotion & Development, Pacific Corp, Puget Sound Power, Portland Electric and BPA. Funding agreement studies to advance the first phase were completed in early 2009.

Mapping information is not publically available for transmission lines. It is therefore not clear whether these existing and proposed transmission lines may present a compatibility concern. It is clear that during the early stages of the permitting process for all transmission line projects, the DEQ's review should be closely coordinated with MAFB to avoid conflicts.

ASSESSMENT OF EXISTING INFRASTRUCTURE EXTENSION COMPATIBILITY TOOLS

Malmstrom AFB

U.S. Air Force Restrictive Easement Agreements

There are easement agreements between the U.S. government and private landowners for the land encumbered by the Hardened Inter-site Cable System (HICS). The HICS is a buried, underground system of cables that interconnects all of the MAFs and LFs within the Missile Complex. The cable lines are buried a minimum of 36 inches below ground and the easements extend 8-1/4 feet to either side of the centerline of the cable. The easements have been established to limit development in the easement and to allow the US government access to maintain and/or upgrade the cables. These easements help to protect the area immediately surrounding the HICS, but since a map of the network is not publically available it is challenging for developers to keep track of the locations of all the easements.

State of Montana

Major Facilities Siting Act (MFSA)

The Utility Siting Act (known as the Major Facilities Siting Act - MFSA) was passed by the Montana Legislature in 1973. The purpose of the MFSA was to create a process for the review and regulation of the siting and construction of most large energy producing, conversion, and transporting facilities in Montana. The goal of the law is help to determine whether there is a public need for the facility and if the proposed facility will minimize adverse impacts on the environment.

MFSA requires the issuance of a certificate of environmental compatibility and public need from the Montana Board of Natural Resources and Conservation. This certificate indicates that the project has been analyzed for air and water quality impacts. The assessment does not take into consideration the impacts of these structures on Air Force operations.

Montana Environmental Policy Act (MEPA)

The Montana Environmental Policy Act (MEPA) requires all state agencies to conduct an environmental review of agency decisions and planning activities that impact the environment. The environmental review process applies not only to actions initiated by the agency, but also to the issuance of state permits and licenses. Like NEPA, the type of environmental assessment required depends on the scope and significance of the project. An agency must prepare either an Environmental Assessment (EA), a Mitigated Environmental Assessment (Mitigated EA) or an Environmental Impact Statement (EIS).

Under MEPA, some actions are exempted from environmental assessment, these are:

- Montana Public Service Commission activities;
- Certain emergency timber sales;
- Certain actions that involve minor amendments to a hard-rock mine operating permit;
- The transfer of permits for portable emission sources;
- A qualified exemption for reciprocal access agreements on state land;
- A transfer of an ownership interest in a lease, permit, license, certificate or other entitlement for use or permission to act by an agency if there is not a material change in terms or conditions of the entitlement or unless otherwise provided by law;
- Montana Department of Natural Resources and Conservation's (DNRC) or Montana Board of Land Commissioner's issuance of lease renewals and state leases and licenses subject to further permitting by the Montana Department of Environmental Quality;
- DNRC's issuance of lease renewals;
- No action on the part of the DNRC or the Board even though it has the authority to;
- DNRC and Board action in relation to and compliance with local government actions concerning planning and zoning;
- Issuance of historic right-of-way deeds across state lands;
- Transfer of certain coal mine operating permits;
- Small business licenses under the Montana Small Business Licensing Coordination Act); and
- Emergency energy orders issued by the Governor.

MEPA serves to ensure the disclosure of environmental impacts and the development of mitigation measures to reduce any impacts. Impacts to military operations are not included in the environmental assessment process.

State Transportation Improvement Program (STIP)

The Montana Department of Transportation (MDOT) is responsible for issuing a STIP which outlines the state's existing and planned highway, aeronautics, rail, public transportation and federal lands highway improvement projects within a five-year period. The STIP provides information about the amount of federal dollars received for various roadway projects as well as a breakdown of the percentage of total dollars allocated for different projects.

The state highway projects are divided by region and most of the Missile Complex highways fall within the Great Falls Region, District 3 and Billings Region, District 5. Generally, most of the larger STIP projects are on non-interstate and primary roadways in Wheatland, Judith Basin, Lewis and Clark and Cascade counties. The STIP provides a good overview of the locations of planned roadway improvement projects and helps inform the public about upcoming investments.

There are numerous roadway, pedestrian and bike improvements planned throughout the Missile Complex. The 2011-2015 STIP identifies roadway projects that are mostly focused on improving existing roadways and not new construction. Roadways within the Missile Complex to be improved include: I-15, US-287, MT-200, US-87, MT-3 and MT-80. The most significant project is the rehabilitation of large stretches of I-15. It is not expected that these projects will contribute to increased development because they are roadway rehabilitation and not expansion projects. MDoT does not consult with MAFB during the STIP development process to determine the potential impact of proposed projects on military operations.

Please see the next page.

NOISE

COMPATIBILITY ASSESSMENT SUMMARY

DEFINITION: Noise refers to any significant noise generated by military activities.

ISSUES TO CONSIDER: Noise complaints from 40th HS overhead flights have been minimal to date, however this may increase with the new full-time flight schedule.

Noise Compatibility Issues

 Full-time flight schedule.

Assessment of Existing Noise Compatibility Tools

Table 3.2-5. Assessment of Existing Noise Compatibility Tools

Agency	Compatibility Planning Tools	
	AICUZ	Zoning Regulations
MAFB		<input type="checkbox"/>
Cascade County	<input type="checkbox"/>	
Chouteau County	<input type="checkbox"/>	<input type="checkbox"/>
Fergus County	<input type="checkbox"/>	<input type="checkbox"/>
Judith Basin County	<input type="checkbox"/>	<input type="checkbox"/>
Lewis and Clark County	<input type="checkbox"/>	<input type="checkbox"/>
Teton County	<input type="checkbox"/>	<input type="checkbox"/>
Wheatland County	<input type="checkbox"/>	<input type="checkbox"/>

 The tool exists and addresses noise issue(s).

 The tool exists but it only partially addresses noise issue(s).

 The tool exists but does not address noise issue(s).

The agency does not employ this tool.

ASSESSMENT CRITERIA

See assessment criteria discussion under the Noise section of the MAFB Study Area.

NOISE ISSUE ASSESSMENT

Issue NO-A Full-time flight schedule.

There is a potential for increased noise complaints because of the new around-the-clock flight schedule of the 40th HS. The increased frequency of flights and additional hours of operation (especially at night) will increase noise and the potential for noise complaints.

Communities within the 40th HS fly zone have not expressed concerns about noise issues to date. Since September 2010, the 40th HS has a flight schedule that dispatches helicopters on low-level flights on a 24-hours-per-day, seven-days-per-week basis. These flights generate noise around the clock. When possible and during training exercises, helicopter pilots can fly at a minimum of 50 feet above ground level (AGL) over populated areas. Flights over wildlife refuge areas are a minimum of 2,000 feet AGL to avoid startling or negatively affecting wildlife under flight routes. Since the schedule change, nighttime flights have occurred about four times per week with few noise complaints thus far; however, the low-level and the increased frequency of flights could contribute to increased noise levels.

ASSESSMENT OF EXISTING NOISE COMPATIBILITY TOOLS

Malmstrom AFB

Air Installation Compatible Use Zone (AICUZ)

The 1994 Malmstrom AICUZ Study focuses exclusively on the noise contours associated with the MAFB runway and does not address noise in the Missile Complex.

Cascade County

Zoning Regulations

Cascade County is the only missile county with zoning regulations. The Cascade County Zoning Regulations do not address noise from military aircraft.

Chouteau County

Zoning Regulations

Chouteau County does not have a zoning ordinance.

Fergus County

Zoning Regulations

Fergus County does not have a zoning ordinance.

Judith Basin County

Zoning Regulations

Judith Basin County does not have a zoning ordinance.

Lewis and Clark County

Special Zoning Districts

The special zoning districts do not take into consideration noise generated by helicopter flights.

Teton County

Zoning Regulations

Teton County does not have a zoning ordinance.

Wheatland County

Zoning Regulations

Wheatland County does not have a zoning ordinance.

Please see the next page.

ALTERNATIVE ENERGY

COMPATIBILITY ASSESSMENT SUMMARY

DEFINITION Alternative energy refers to sources such as solar, wind or biofuels that can be used to replace or supplement traditional fossil-fuel sources, such as coal, oil and natural gas. Alternative energy development could pose compatibility issues related to glare (solar energy) or vertical obstruction (wind generation). Other alternative energy developments, such as biofuels, have no typical compatibility issues and would be judged for compatibility on a case-by-case basis.

ISSUES OF CONCERN: Alternative Energy infrastructure such as wind turbines and transmission lines can create vertical obstructions for the 40th HS.

Alternative Energy Compatibility Issues

- i Emerging wind energy development industry.

Assessment of Existing Alternative Energy Compatibility Tools

Table 3.2-6. Assessment of Existing Alternative Energy Compatibility Tools

Agency	Compatibility Planning Tools	
	Zoning Regulations	Subdivision Regulations
Cascade County	■	■
Chouteau County	□	■
Fergus County	□	■
Judith Basin County	□	■
Lewis and Clark County	□	■
Teton County	□	■
Wheatland County	□	■

- The tool exists and addresses alternative energy issue(s).
- The tool exists but does not address alternative energy issue(s).
- The tool exists but it only partially addresses alternative energy issue(s).
- The agency does not employ this tool.

ASSESSMENT CRITERIA

There are no assessment criteria for this issue.

ALTERNATIVE ENERGY ISSUE ASSESSMENT

Issue AE-A Expanding Market for Wind Energy Development.

Montana is a premier location for future wind energy based on its consistently high wind velocities. Many projects are being considered for the study area which could generate large amounts of electricity, but also create potential vertical obstructions, if located within existing or future flight corridors.

Montana is becoming a premier location for wind energy development due to the consistent high wind velocities. The State of Montana has developed a map that depicts the location of wind generating capacity in the state to provide guidance for the strategic placement of future wind farms. This map provides a useful tool for anticipating where wind industry developers may construct wind turbines/farms.

The following is a list of known and possible wind energy projects that may be constructed in the Missile Complex fly zone that could create vertical obstruction safety hazards to low level aviation:

Existing Wind Energy Development

- **Judith Gap Wind Farms Phase I** is a community-based wind energy development company that intends to develop over 500 MW of wind energy projects in Judith Basin, Wheatland, Golden Valley and Fergus Counties. The Judith Highlands energy project is ongoing and will be developed in phases over the next five to eight years.
- **Cascade County Public Works Complex Wind Turbines** is an Entegri Wind Systems 50-kilowatt wind turbine and a 2-kilowatt solar energy system. The County operates its turbine in conjunction with a NorthWestern Energy net metering agreement, which is available to every NorthWestern Energy customer.
- **The Horseshoe Bend Wind Park** is owned and operated by United Materials, a local aggregate and highway construction company. Six towers 40 meters (120 feet +/-) in height generate electrical power at the commercial level.
- **Frenchman Ridge** is comprised of five wind towers along Frenchman Ridge toward Geraldine which were erected in Fall 2010.

Proposed Wind Projects

- **Gaelectric Unnamed Projects #1, #2, #3** are 500 MW projects to be placed in the Geysers/Belt Area. Construction is expected to be completed in 2014.
- **Judith Gap Wind Farm Phase II** is a 52.5 MW project, which has been proposed for 6 miles south of Judith Gap in Wheatland County.
- **Judith Highlands Energy** is a 500 MW project to be south of Lewistown. The project is expected to be developed in 100+ MW phases over the next 5 to 8 years.
- **Harlowtown Farm Project** is a 540 MW project near Harlowtown, which has installed an anemometer to test wind speeds. Permitting is expected to begin soon.
- **The Big Otter Wind Energy Project** will be located in Cascade County and required a special use permit issued by the County. The developer, Invenergy, proposes to use a wind turbine with an output of 1.5 MW. In total, the project will consist of 16 turbines. This project will connect into an existing transmission line located between Belt and Monarch.

Potential Wind Farm Projects

- Cascade County recently issued a permit for a 10 kW wind turbine to be located at 5443 US Highway 89, parcel #5151300.
- In 2010, Cascade County met with a developer expressing interest in a developing a wind energy farm of at least 150 turbines starting in Belt, running along Highway 89.
- Expansion of Wind Farm on Gore Hill is possible.
- Cascade County has approved a 140 foot high, 50 kW wind turbine for 12 Northpoint Drive, on parcel #2688604.
- 90 wind turbines may be erected in Fergus County near Highway 191.

This list of existing, proposed, and potential projects provides a portrait of the level of interest in wind energy projects in the fly zone. As stated, the primary concerns with wind energy projects relate to the presence of vertical obstructions in the 40th HS Fly Zone. The 40th HS can typically navigate around single wind turbines or small wind farms scattered throughout the Missile Complex. This type of development characterizes the existing conditions throughout the fly zone. The concern is when large wind farms with a high density of turbines are proposed to be developed in the fly zone. If these types of projects are not coordinated with MAFB, the likelihood of collision or a threat to public safety is increased. This concern is aggravated by the fact that six of the seven counties in the Missile Complex do not have zoning or any other ordinances to regulate the height or density of wind energy projects.

ASSESSMENT OF EXISTING ALTERNATIVE ENERGY COMPATIBILITY TOOLS

Cascade County

Zoning Regulations

Per the Cascade County Zoning Regulations the land surrounding the LFs and MAFs is zoned Agricultural. Commercial wind farms are allowed under a Special Use Permit in the Agricultural zone and are subject to all other applicable federal, state, and local regulations. Building height restrictions are based solely on the required property setback. Setback requirements vary according to the type of building and there is no established maximum height.

Subdivision Regulations

The current Cascade County Subdivision Regulations do not identify policies for the siting of wind energy development.

Chouteau County

Zoning Regulations

Chouteau County does not have zoning regulations.

Subdivision Regulations

Chouteau County's Subdivision Regulations do not identify policies for the siting of wind energy development.

Fergus County

Zoning Regulations

Fergus County does not have a zoning ordinance.

Subdivision Regulations

The Fergus County Subdivision Regulations identify policies for the siting of wind energy development.

Judith Basin County

Zoning Regulations

Judith Basin County does not have zoning regulations.

Subdivision Regulations

Judith Basin County Subdivision Regulations do not identify policies for the siting of wind energy development.

Lewis and Clark County

Zoning Regulations

Lewis and Clark County does not have zoning regulations.

Subdivision Regulations

Lewis and Clark County Subdivision Regulations do not identify policies for the siting of wind energy development.

Wheatland County

Zoning Regulations

Wheatland County does not have zoning regulations.

TRESPASSING

COMPATIBILITY ASSESSMENT SUMMARY

DEFINITION: Trespassing entails the unauthorized presence of person(s) on a military facility or the unauthorized presence of military personnel on private property.

ISSUES TO CONSIDER: Insufficient right-of-entry access for military uses and training may cause inadvertent trespassing onto private property.

Trespassing Compatibility Issues

- i** Existing military right-of-entry agreements do not adequately accommodate training needs.

Assessment of Existing Trespassing Compatibility Tools

Table 3.2-7. Assessment of Existing Trespassing Compatibility Tools

Agency	Compatibility Planning Tools	
	Signage	Right-of-Entry Agreements
MAFB	■	■

■ The tool exists and addresses trespassing issue(s).

■ The tool exists but it only partially addresses trespassing issue(s).

■ The tool exists but does not address trespassing issue(s).

□ The agency does not employ this tool.

ASSESSMENT CRITERIA

All LFs have a 1,200 foot safety arc held in easement, which prohibits the development of inhabitable structures. In addition to these restrictive easements, the Air Force also holds right-of-entry agreements with landowners around some, but not all of the LFs and MAFs. Often times these right-of-entry agreements cover an area within, but smaller than the 1,200 foot safety arc. Therefore, military personnel and private security forces that enter or land aircraft on property adjacent to a LF or a MAF without explicit rights of access are trespassing on private property.

TRESPASSING ISSUE ASSESSMENT

	<p>Issue TR-A Existing military right-of-entry agreements do not adequately accommodate training needs.</p> <p>Right-of-entry agreements between the Air Force and private landowners exist on some but not all of the land surrounding the LFs and MAFs. Military personnel and security forces sometimes find themselves training or operating vehicles in areas that are not covered by right-of-entry agreements.</p>
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Although the Air Force holds a restrictive easement on private property surrounding each LF in the Missile Complex, the main purpose of these easements is to prevent the development of inhabited structures within the safety arc. These easement agreements do not inherently grant military personnel access to the areas around the LFs and MAFs. Access is needed to reach the LFs and MAFs from the roads and for training. Military personnel and security forces often use the areas around the LFs and MAFs to train in anti-terrorism protection strategies, vehicle maneuverability and air navigation activities.

In order for the Air Force to access and train on the land near LFs and MAFs it must execute right-of-entry agreements with landowners. These right-of-entry agreements are separate and apart from the 1,200-foot easements. Alternatively, the Air Force must request and obtain written permission from affected landowners for temporary access. Although these agreements grant access to the LFs and MAFs, they are imperfect because the right-of-entry agreements expire and need to be renewed after 5-years. In addition, the written permission process can be lengthy and hinder training schedules. During emergency situations it may not always be feasible to quickly obtain land owner permission, which may result in military trespassing onto private property.

Another issue is the area of right-of-entry agreements often is not adequate for training activities. The right-of-entry agreements only provide adequate area for military personnel to access the LFs and MAFs, and not much more. Consequently, it will be important to obtain proper legal access in the future to continue the training and other military activities in these areas.

ASSESSMENT OF EXISTING TRESPASSING COMPATIBILITY TOOLS

Malmstrom AFB

Signage

Each LF has a fence with warning signs which generally succeed in keeping civilians out.

Right-of-Entry Agreements

Some of the LFs and MAFs have right of-entry agreements between the Air Force and landowners that allow Security Forces to enter the private land for training or mission critical purposes. These right-of-entry agreements are limited to five years and must be renewed to be legally binding.

Please see the next page.

LEGISLATIVE INITIATIVES

COMPATIBILITY ASSESSMENT SUMMARY

DEFINITION: Legislative Initiatives relate to state and local efforts that either promote or discourage compatibility around military facilities.

ISSUES TO CONSIDER: Legislative initiatives may be necessary to facilitate local government regulation of land use and to promote compatibility with military facilities.

Legislative Initiatives Compatibility Issues

i Senate Bill 417 – Military Area Compatibility Act.

Assessment of Existing Legislative Initiatives Compatibility Tools

Table 3.2-8. Assessment of Existing Legislative Initiatives Compatibility Tools

Agency	Compatibility Planning Tools	
	MCA Title 76, Chapter 2 – Zoning	Montana Association of Counties
State of Montana	■	■

- The tool exists and addresses legislative initiative issue(s).
- The tool exists but does not address legislative initiative issue(s).
- The tool exists but it only partially addresses legislative initiative issue(s).
- The agency does not employ this tool.

ASSESSMENT CRITERIA

There are no assessment criteria for this factor.

LEGISLATIVE INITIATIVES ISSUE ASSESSMENT

Issue LI-A Senate Bill 417 - Military Areas Compatibility Act.

Cascade County spearheaded state legislation called the Military Areas Compatibility Act, which was signed into law by the governor on May 16, 2011. The law increases the regulatory capacity of the Missile Counties around military facilities.

Cascade County spearheaded the development and introduction of legislation which increases the regulatory capacity of missile counties around military facilities. Senate Bill 417 (SB 417), which was passed in 2011, allows local governments to establish Military Affected Areas (MAA), which are defined as “land used for military purposes or in close proximity to military facilities that is directly affected or will be directly affected by military uses.” The bill states that MAAs will be limited to the 1,200 foot area around LFs and MAFs.

SB 417 authorizes local governments to:

- Designate MAAs;
- Conduct a required public hearing;
- Provide regulations for MAAs;
- Require maps and legal descriptions of MAAs;
- Allow for the creation of a Joint Regulation Board for military facilities that are located in more than one jurisdiction;
- Allow for nonconforming uses in MAAs;
- Allow MAA regulations to be part of zoning regulations;
- Require a permit system for development proposed within MAAs;
- Require an enforcement mechanism for regulations;
- Establish an appeals process;
- Provide a variance from the regulations; and
- Provide penalties and remedies for violations.

In sum, the establishment of MAAs will allow local governments to regulate land uses around military facilities without the need to adopt comprehensive land use regulations. A critical component of this legislation is that local governments are required to issue permits for development within the MAAs. This legislation will immensely help address several key land use compatibility issues in the Missile Complex and around MAFB. The legislation was signed by the Governor on May 6, 2011.

ASSESSMENT OF EXISTING LEGISLATIVE INITIATIVES COMPATIBILITY TOOLS

State of Montana

MCA Title 76, Chapter 2- Zoning

MCA Title 76, Chapter 2 allows counties, cities, and towns to establish zoning regulations for the purpose of promoting public health, safety, morals, and general welfare. Governing boards of counties (county commissioners) or municipalities (city or town council, or other legislative bodies) of local governments that have adopted a Growth Policy Plan may enact zoning regulations for all or a part of their jurisdiction that are compliant with the standards described in the Growth Policy Plan. The zoning regulations must include reasonable provisions for compatible urban growth in the vicinity of cities and towns and must include the areas around municipalities. Zoning regulations must address the character of zoning districts and their peculiar suitability for particular uses that encourage the most appropriate use of land throughout the jurisdictional area. This statute allows the governing body to establish different zoning districts in order to achieve these standards.

Montana Association of Counties (MACo)

The Montana Association of Governments (MACo) subcommittee (called the Missile Counties Committee (MCC)) serves as a valuable venue for the various military counties to discuss issues, share ideas and collaborate. It is through this venue that Cascade County found support for new legislation that would help address land use regulatory concerns related to the Missile Complex.

Senate Bill 417

This new legislation establishes an opportunity for local government (including the seven counties in the Missile Complex) to exercise land use regulation authority within a specified area around LFs and MAFs, without requiring the adoption of comprehensive jurisdiction-wide zoning regulations. The bill requires local governments to issue permits within MAAs and respects nonconforming uses.

Please see the next page.

INTERAGENCY COORDINATION

COMPATIBILITY ASSESSMENT SUMMARY

DEFINITION: Interagency Coordination refers to the extent to which local and state governments coordinate internally, externally and with the military.

ISSUES TO CONSIDER: The role of state agencies in development permitting increases the need for coordination with local government and the military. Local governments should establish formal mechanisms for coordinating with the military.

Interagency Coordination Compatibility Issues

- i** Lack of formal communication about military operations and county planning
- i** Lack of formal communication by state agencies that issue permits in the Missile Complex.

Assessment of Existing Interagency Coordination Compatibility Tools

Table 3.2-9. Assessment of Existing Interagency Coordination Compatibility Tools

Agency	Compatibility Planning Tools
	Montana Association of County
State of Montana	

-  The tool exists and addresses interagency coordination issue(s).
-  The tool exists but does not address interagency coordination issue(s).
-  The tool exists but it only partially addresses interagency coordination issue(s).
-  The agency does not employ this tool.

ASSESSMENT CRITERIA

Some indicators of inadequate interagency coordination include:

- Complaints by various agency representatives that “they have never heard of this before”.
- A general lack of awareness about the local military mission or land uses.
- The absence of clear military or civilian points of contact.
- Duplications in effort.
- Significant conflicts over planning efforts or policies.

INTERAGENCY COORDINATION ISSUE ASSESSMENT

	<p>Issue IC-A Lack of formal communication about military operations and county planning.</p> <p>Counties in the Missile Complex are generally unaware of the 40th HS flight paths and other MAFB operations. MAFB is not routinely consulted about potentially incompatible development near its facilities.</p>
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There is insufficient coordination between local jurisdictions, property owners and MAFB on a wide array of land use issues. Until the JLUS process, there was little coordination or exchange of information concerning new development in the Missile Complex. Recently however, Cascade County has starting including MAFB in the permit review process for wind energy projects. This has facilitated preventative planning and MAFB input on a number of proposals. Despite the progress between Cascade County and the Air Force, coordination is still lacking between the other missile counties and MAFB.

During various public meetings as part of the JLUS process, it became apparent that many landowners with property surrounding LFs and MAFs have limited awareness about the terms or existence of the restrictive easement agreements. MAFB has designated points of contact for the installation and the Missile Complex, which are the community Planner and Real Property Officer respectively. To create continued awareness about the terms of the easements the Real Property Officer sends a letter to landowners annually reminding them of the terms and conditions of the easements. Nevertheless, there remains a general lack of awareness among landowners about military training needs and standard operating procedures. The Air Force needs to continue to improve communications with residents and local governmental to better address community issues and concerns surrounding military operations.

	<p>Issue IC-B Lack of formal communication between State Agencies that issue permits in the Missile Complex.</p> <p>While state agencies such as the Montana Department of Transportation, Building Code Bureau and the Montana Department of Environmental Quality are responsible for reviewing applications and issuing permits, there is often little communication between these agencies and the counties or MAFB as part of the permit review process.</p>
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Numerous state agencies have permitting authority in the Missile Complex (e.g. Department of Transportation, Building Code Bureau and Department of Environmental Quality). Because of the absence of local zoning regulations and building codes, these agencies are often exclusively responsible for issuing permits in the Missile Complex. The agencies typically don't communicate with the Missile Complex counties and/or MAFB during the agency review processes. Continuing non-communication between state agencies, counties and MAFB will facilitate ongoing piecemeal development, which could have direct adverse impacts on military operations in the area.

ASSESSMENT OF EXISTING INTERAGENCY COORDINATION COMPATIBILITY TOOLS

State of Montana

Montana Association of Counties (MACo)

There is a MACo subcommittee called the Missile Counties Committee (MCC). The MCC serves as a valuable venue for the various military counties to discuss issues, share ideas and collaborate. MAFB does not participate in the MCC meetings.

Please see the next page.

FREQUENCY SPECTRUM CAPACITY

COMPATIBILITY ASSESSMENT SUMMARY

DEFINITION: The competition for frequency spectrum may lead to a reduction in available spectrum for military training and developmental/operational testing activities. The electromagnetic spectrum is important to electronic warfare missions and other military electromagnetic test requirements.

ISSUES OF CONCERN: Reduced capacity of the frequency spectrum may decrease mission effectiveness by limiting the Air Force’s ability to use surveillance and war-fighting systems at any given time. The military must compete with public and commercial use of the frequency spectrum.

Frequency Spectrum Capacity Compatibility Issues

-  Wind turbine frequency.
-  Competition for the frequency spectrum may limit the Air Force’s ability to carry out necessary surveillance.

Table 3.2-10. Assessment of Existing Frequency Spectrum Capacity Compatibility Tools

Agency	Compatibility Planning Tools		
	General Plan	Zoning Regulations	Subdivision Regulations
MAFB	■	□	□
Cascade County	□	■	■
Chouteau County	□	□	■
Fergus County	□	□	■
Judith Basin County	□	□	■
Lewis and Clark County	□	□	■
Teton County	□	□	■
Wheatland County	□	□	■

-  The tool exists and addresses frequency spectrum issue(s).
-  The tool exists but does not address frequency spectrum issue(s).
-  The tool exists but it only partially addresses frequency spectrum issue(s).
-  The agency does not employ this tool.

ASSESSMENT CRITERIA

Limitations on frequency spectrum capacity can result from a number of factors, including:

- Using a new transmission frequency that is close to an existing frequency;
- Reducing the distance between two antennas transmitting on a similar frequency;
- Increasing the power of a similar transmission signal;
- Using poorly adjusted transmission devices that transmit outside assigned frequencies or produce an electromagnetic signal that interferes with a signal transmission;
- Portable electronic systems that affect Wi-Fi broadband systems.
- Certain types of development such as radars and wind turbines.

FREQUENCY SPECTRUM CAPACITY ISSUE ASSESSMENT

	<p>Issue FS-A Wind turbine frequency.</p> <p>Wind turbines generate frequencies which can interfere with helicopter radar systems.</p>
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The military relies on a range of frequencies for communications and support systems. The 40th HS communicates on radio frequency 139.225 when operating in a local pattern. Access to the radio frequency spectrum is vital to accomplishing the mission. Wireless system frequency access must be protected and given priority to ensure current and future operations. Malmstrom AFB is requesting additional frequencies from Congress to meet operational requirements and to address regional congestion issues.

Wind turbines create frequencies that can interfere with radio transmissions between air traffic controllers and aircraft. Recent studies have suggested that large numbers of wind turbines located five to eight miles from radar may negatively impact the system and interfere with readings. In some cases, spinning wind turbine blades cause “ghosts” on radar readings (which look like unknown aircraft), or may act as a “wall” where radar cannot penetrate. Both instances create security concerns.

If an aircraft is flying near this “wall,” then it may not be detected by the radar. If something were to happen to the aircraft, it might not be seen by the radar system. Air Force representatives have said that wind turbines in proximity to an airfield specifically affect Digital Air Surveillance Radar, Precision Approach Radar, and other navigational aids. This can also interfere with bird monitoring, which could lead to additional BASH concerns. The impacts to radar increase with the height and number of wind turbines, but the biggest impact is caused by proximity. Therefore, the placement of wind turbines throughout the Missile Complex needs to be closely coordinated with the Air Force to ensure limited frequency interference with helicopter radar systems.

	<p>Issue FS-B Competition for the frequency spectrum may limit the Air Force’s ability to carry out necessary surveillance.</p> <p>Civilian uses of bandwidth along the frequency spectrum can occupy bandwidth and limit the ability for military antennas to transmit information and carry out security surveillance.</p>
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The Air Force needs to have guaranteed access to the electromagnetic spectrum to be able to maintain security at the LFs and MAFs. A reduction in access to or the availability of the spectrum could potentially limit the safety of military assets by restricting the number of line-of-sight systems that can use a certain bandwidth. Spectrum limitations restrict the use of line-of-sight transmitters and receivers.

In order to successfully establish secure perimeters around the LFs and MAFs, the Air Force relies on a range of frequencies for communications and support systems. Since 1993, Congress has been selling federal spectrum bands for reallocation to the private sector, promoting the development of new telecommunications technologies, products and services. The expanding public and commercial use of the frequency spectrum from Wi-Fi wireless transmitters to consumer electronics can encroach on the military’s use of the frequency spectrum. Increasing community and DoD demands for this important resource can create conflicts for all users.

ASSESSMENT OF EXISTING FREQUENCY SPECTRUM CAPACITY COMPATIBILITY TOOLS

Malmstrom AFB

MAFB General Plan

The General Plan does not describe a means for protecting access to the frequency spectrum.

Cascade County

Zoning Regulations

The Cascade County zoning regulations do not regulate the frequency spectrum.

Subdivision Regulations

The Cascade County Subdivision Regulations do not address management of the frequency spectrum.

Chouteau County

Zoning Regulations

Chouteau County does not have a zoning ordinance.

Subdivision Regulations

The Chouteau County Subdivision Regulations do not address management of the frequency spectrum.

Fergus County

Zoning Regulations

Fergus County does not have a zoning ordinance.

Subdivision Regulations

The Fergus County Subdivision Regulations do not address management of the frequency spectrum.

Judith Basin County

Zoning Regulations

Judith Basin County does not have a zoning ordinance.

Subdivision Regulations

The Judith Basin County Subdivision Regulations do not address management of the frequency spectrum.

Lewis and Clark County

Special Zoning Districts

The special zoning districts do not regulate the frequency spectrum.

Subdivision Regulations

The Lewis and Clark County Subdivision Regulations do not address management of the frequency spectrum.

Teton County

Zoning Regulations

Teton County does not have a zoning ordinance.

Subdivision Regulations

The Teton County Subdivision Regulations do not address management of the frequency spectrum.

Wheatland County

Zoning Regulations

Wheatland County does not have a zoning ordinance.

Subdivision Regulations

The Wheatland County Subdivision Regulations do not address management of the frequency spectrum.

GROUND TRANSPORTATION

COMPATIBILITY ASSESSMENT SUMMARY

DEFINITION: Ground transportation capacity refers to the need for civilian and military traffic to share roadways which can degrade the level of service as well as the quality of the roadway.

ISSUES TO CONSIDER: Military and civilian traffic compete for use of local and state roadways. Military use of local roadways can impact traffic and roadway quality and conditions, as well as require higher roadway standards and increased maintenance.

Ground Transportation Compatibility Issues

- i** Missiles transported throughout the Missile Complex occur on heavy trucks and in large convoys, which require a higher frequency of roadway maintenance.
- i** Civilian truck movements could interfere with convoy movements.

Assessment of Existing Ground Transportation Compatibility Tools

Table 3.2-11. Assessment of Existing Ground Transportation Compatibility Tools

Agency	Compatibility Planning Tools	
	Defense Access Roads	State Transportation Improvement Program
MAFB	■	□
State of Montana	□	■

- The tool exists and addresses ground transportation issue(s).
- The tool exists but does not address ground transportation issue(s).
- The tool exists but it only partially addresses ground transportation issue(s).
- The agency does not employ this tool.

ASSESSMENT CRITERIA

The following roadway standards must be met in order for military traffic to use local roads:

- A roadway load bearing width greater than 14 feet
- A roadway centerline turning radius greater than 60 feet
- A super elevation of less than 10%
- Minimal occurrences of Condition Red Washouts (conditions created by storms that wash away any portion of road bearing surface).

GROUND TRANSPORTATION CAPACITY ISSUE ASSESSMENT

Issue GT-A Missiles are transported throughout the Missile Complex on heavy trucks and in large convoys, which require a higher frequency of roadway maintenance.

Military convoys use the local roadway system to transport missiles. The degradation of more frequently used roads typically requires higher levels of maintenance. While some of the local roads used by convoys are designated as Defense Access Roads (which qualify for federal funds), others are not, which requires maintenance using local funds.

The 341st Missile Wing (MW) and the 40th HS are responsible for transporting Intercontinental Ballistic Missiles (ICBMs) throughout the Missile Complex. State highways and county roads are used to transport ICBMs to the LFs in the Missile Complex. ICBMs are transported on 73-ton transporter-erector (TE) vehicles and 25-ton payload transporter trucks. The size and weight of these vehicles requires heavy-duty road conditions that are well in excess of standard roadway conditions. Poor or inadequate roadway conditions can hinder the transport of ICBMs and adversely impact the military mission.

The State of Montana and the local county governments are largely responsible for maintaining these roadways; however, through the Defense Access Road (DAR) Program, the DoD helps pay for maintenance and operations on the roadways used regularly by the military. The DAR program provides funding for extraordinary maintenance and snow removal, and for re-gravelling on routes used by TE vehicles where maintenance is determined to be beyond the requirement for normal public traffic. Federal financial assistance for local roadway improvements is a significant economic contribution to the region.

Since DAR program facilities are shared by both civilian and military traffic, issues can arise about maintenance responsibilities. Military use of local roadways contributes to roadway deterioration, which requires increased maintenance and additional state and federal dollars. If state and local governments delinquent maintain roadways used by military convoys, operations can be affected. According to MAFB there are over 600 aged and deteriorated bridge structures on the 1,770 miles of DAR facilities in the Missile Complex.

Issue GT-B Civilian truck convoy movement impediments.

The trucks traveling with oversized loads require roadway construction which can impact how convoys travel through the Missile Complex.

The Montana Department of Transportation (MDoT) is responsible for overseeing the permitting process for oversized trucks traveling throughout the state and in the Missile Complex. In some cases, roadway construction is required to accommodate oversized trucks. Within the Missile Complex, construction on routes and slow traveling oversized trucks can inhibit the movement of convoys transporting ICBMs.

The ICBM convoys typically travel at high speeds and do not stop when transporting equipment and/or Minuteman III missiles. There will be conflicts if oversized trucks need to use the same roadways at the same time as the military convoys, because the convoys will not stop when in transit. Since the convoys travel throughout the Missile Complex on a 24/7 basis non-peak scheduling for oversized trucks throughout the Missile Complex is not a guaranteed tool. The MDoT needs to engage in close coordination with MAFB to ensure the permits granted for oversized trucks throughout the Missile Complex will not interfere with convoy movement.

ASSESSMENT OF EXISTING GROUND TRANSPORTATION CAPACITY COMPATIBILITY TOOLS

Malmstrom AFB

Defense Access Roads Program

The Defense Access Road (DAR) Program provides a legal mechanism for the Department of Defense to help pay for a portion of improvements to certain public highways. These funds can only be used on highways as “important to the national defense”. This program can be critical to a given military mission since many of the roads providing access to military installations are usually not owned by the Department of Defense. Since military installations are not responsible and cannot provide funding for the maintenance of any non-DAR designated public highways, unimproved civilian roadways can cause challenges to military operations. The DAR program allows DAR-designated roads to be maintained and improved to allow for continued military use.

Montana Department of Transportation

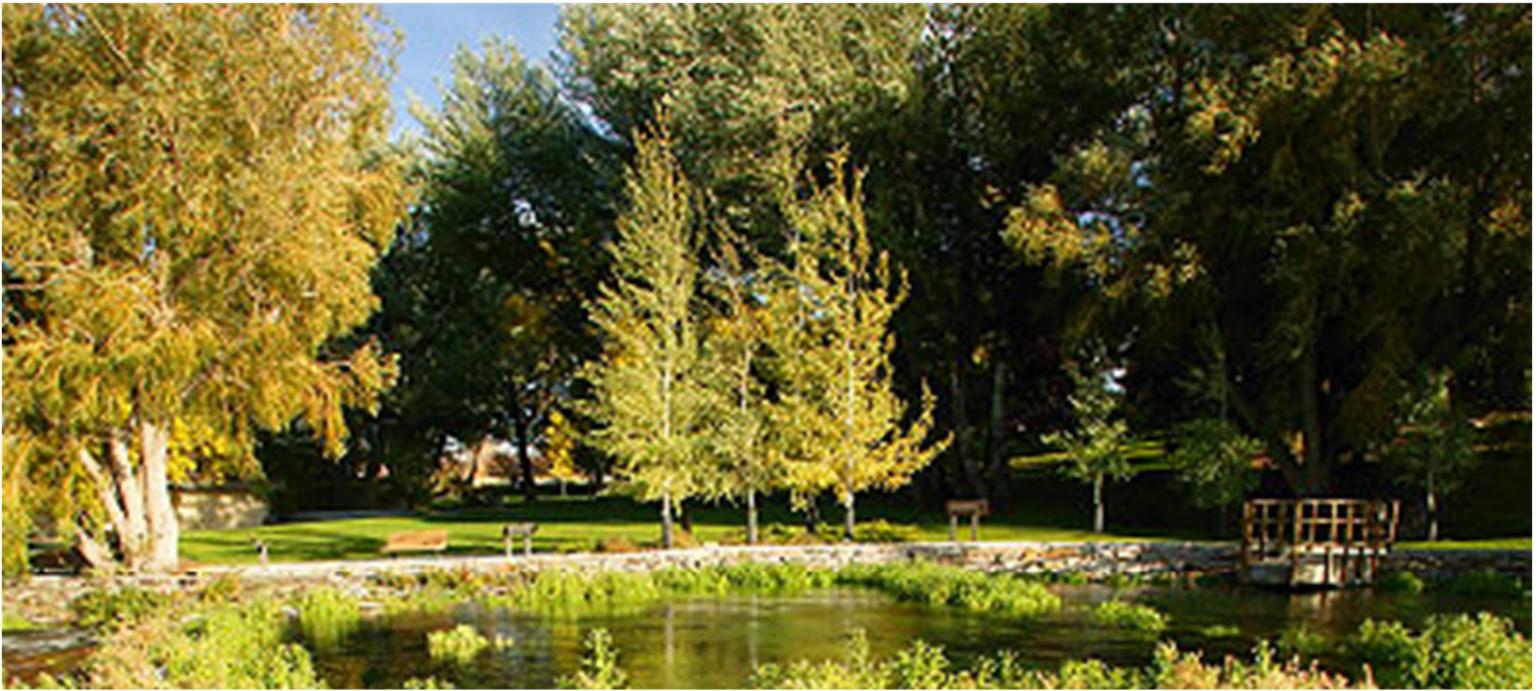
State Transportation Improvement Program (STIP)

The Montana Department of Transportation (MDoT) is responsible for issuing a STIP, which outlines the State’s existing and planned highway, aeronautics, rail, public transportation and federal lands highway improvement projects within a five-year period. The STIP provides information about the amount of federal dollars received for various roadway projects as well as a breakdown of the percentage of total dollars allocated for different projects. The State highway projects are divided by region and most of the Missile Complex highways fall within the Great Falls Region, District 3 and Billings Region, District 5. Generally, most of the larger STIP projects are on non-interstate and primary roadways in Wheatland, Judith Basin, Lewis and Clark and Cascade Counties. The STIP provides a good overview of the planned roadway improvement projects and their locations and helps to inform the public about upcoming investments. There are numerous roadways, pedestrian and bike improvements planned throughout the Missile Complex.

Please see the next page.

Chapter 4 Implementation Plan





This section prescribes a specific course of action that has been developed cooperatively with representatives from local jurisdictions, Malmstrom AFB, state and federal agencies, local organizations, and other interested entities. As a result of this collaborative planning process, the recommendations presented in this section represent the JLUS Implementation Plan; a realistic and coordinated approach to compatibility planning in the areas near Malmstrom AFB and throughout the Missile Complex.

4.0 Introduction

The Implementation Plan recommends JLUS strategies that are intended to guide appropriate development and to maintain the operational capabilities of Malmstrom AFB. The strategies were designed to facilitate economic development in the region while remaining compatible with the Malmstrom AFB critical mission. Several factors were taken into consideration when developing the Implementation Plan. These factors include:

- Review and analysis of existing and potential Malmstrom AFB encroachment and compatibility issues;
- Review and analysis of existing regulatory and non-regulatory compatible land use strategies;
- Input from Policy and Technical Committee Members and the public at-large; and
- Consultant's professional experience and judgment.

IMPLEMENTATION PLAN GUIDELINES

The key to a successful implementation plan is balancing the different needs of all involved stakeholders. In order to ensure the development of realistic and implementable strategies following assumptions were used to establish the political and regulatory context:

- The State of Montana, Department of Labor and Industry, Bureau of Building Codes is responsible for issuing building and electrical permits in all counties within the JLUS study areas. A state building/electrical permit is required prior to the start of construction for any non-exempt building/structure to be built, remodeled, moved, or undergoing a change of occupancy.
- Each city and county is required to develop and adopt a Growth Policy Plan. However, Growth Policy Plans do not propose specific locations for land uses and facilities or identify detailed regulations. As a stand-alone document, the Growth Policy Plan does not have the force of law.

These assumptions served as the basis for the following guidelines which were used in development of the strategies:

- In concert with the State of Montana’s land use laws, the recommended strategies must not exceed the regulatory requirements imposed by state law and some strategies can only be implemented with new enabling legislation.
- In order to minimize regulation, where appropriate, strategies were recommended only for specific geographic areas to resolve the compatibility/encroachment issue.
- Specific recommendations about the design standards and location of certain development should be made, but voluntarily implemented by each of the counties.

ORGANIZATION OF THIS SECTION

The remainder of this section is organized in the four following sub-sections:

- **Section 4.0 – Introduction to the Implementation Plan**
 - Explains the purpose of the Chapter and provides a list, and the definition of the type of compatibility strategies used in the Implementation Plan.
- **Section 4.1 – Malmstrom AFB Study Area Implementation Plan**
 - Presents the recommended Malmstrom AFB JLUS Implementation Plan for the MAFB Study Area by type of strategy, a description of the issue that needs to be addressed, a description of strategy or set of strategies, the timeframe for implementing the strategy, the overlay district where the strategy will be utilized and the primary party who is responsible for implementing the strategy as well as their agency partners responsible in assisting to implement the strategy.
- **Section 4.2 – Missile Complex Study Area Implementation Plan**
 - Presents the recommended Malmstrom AFB JLUS Implementation Plan for the MAFB Study Area by type of strategy, a description of the issue that needs to be addressed, a description of strategy or set of strategies, the timeframe for implementing the strategy, the overlay district where the strategy will be utilized and the primary party who is responsible for implementing the strategy as well as their agency partners responsible in assisting to implement the strategy.
 - Describes a proposed approach for staging the various recommended strategies for both study areas.

COMPATIBILITY STRATEGY TYPES

There are numerous JLUS compatibility strategies employed in the Malmstrom AFB JLUS Implementation Plan. The following sub-section provides a brief definition and assessment for each JLUS compatibility strategy type to

ensure a common understanding exists among the various implementing agencies about how these types of strategies work.

Acquisitions

Property rights are comprised of a bundle of privileges that are attached to each parcel of land, and include the right to possess, use, develop, lease, or sell the land. As a compatibility planning tool, all or some of these property rights can be acquired through donation, easement, or purchase for public purposes. The types of acquisition could include the following:

- **Fee Simple Acquisition.** This option involves the purchase of property and is typically the most costly method to protect open space, as well as sensitive, or critical areas. The cost to purchase property and/or the need to have a willing seller may make this acquisition tool difficult to implement.
- **Fee Simple / Leaseback.** An example of a leaseback is when a government agency purchases the full title to a property and then leases it back to the previous owner. The land's natural resource and open space values are protected through lease controls that restrict land uses.
- **Conservation Easement.** A conservation easement is a way to protect a buffer, natural resource, open space area, or agricultural land by restricting certain uses and retaining it in its current state. The owner maintains ownership of the property with the right to sell or deed the property. The owner also retains the right to use the property for certain reserved uses (including uses for economic gain), as long as allowed by the conditions of the easement. Conservation easements can be acquired through several mechanisms, including donation or purchase. If donated, the donor could qualify for a federal income tax deduction, making this option more desirable to the property owner. Conservation easements are typically a more cost effective method to acquire land compared with outright purchase.
- **Lease.** In cases where the landowner does not want to, or cannot make a permanent commitment, the execution of a lease may be a way to control land uses for a short time. Leases can be obtained by government agencies or jurisdictions, non-profit organizations, land trusts, or private entities.
- **Eminent Domain.** A local government can use the power of eminent domain to acquire private property for public use, in exchange for payment of just compensation (based on fair market value), through the process of condemnation.

The purpose of acquisition tools is to eliminate land use incompatibilities through market transactions and the local development process. Acquisition tools are particularly effective because they advance the complementary goals of shifting inappropriate uses away from military installations and preserving community assets such as agriculture, open space, rural character, or sensitive natural habitats. Examples where property acquisition strategies have been used to address compatibility issues include:

- Creating a buffer between active military installations and incompatible land uses;
- Shifting future growth away from critical military lands;
- Protecting public safety by limiting incompatible land uses;
- Protecting the natural environment; and
- Conserving open space.

When considering acquisition as a means of minimizing development on property, a governmental entity must have adequate funding sources available for the acquisition costs.

Communication / Coordination

In any planning effort, plans can only move toward successful implementation if frequent ongoing communication is maintained among the local jurisdictions, Malmstrom AFB, state and federal agencies, landowners, and the public. Enhanced communication and coordination is an integral component to successful compatibility planning in support of Malmstrom AFB's existing and potentially enhanced future mission. The recommended strategies for this JLUS include numerous opportunities for increased communication and coordination, especially between state permitting agencies, Malmstrom AFB and local governments.

Deed Restrictions

Deed restrictions, or covenants, are written agreements that restrict or limit some of the rights associated with property ownership. These restrictions are recorded with the deed for the property and are attached to the property when it is sold to a new owner (i.e., remain in effect). Deed restrictions are private agreements or contracts executed between a motivated buyer and a willing seller. Deed restrictions can encompass a wide range of restrictions, yet are typically tailored to meet specific needs.

They can also be used to eliminate or mitigate impacts associated with local development on military installations. This is accomplished through the incorporation of restrictions or limitations on development types or certain land uses. Examples include specifying a maximum height for trees and structures, restricting the use of motorized vehicles, and limiting lighting. Deed restrictions could be a useful tool in creating greater awareness about critical military easements.

Development Agreements

A Development Agreement (DA) is an agreement between a city or county and a developer which serves as a means for granting vested rights to a specific development project. DAs allow for the application of local land use policies in new or creative ways. DAs also permit greater flexibility in the establishment of conditions or requirements on development, which can allow for the negotiation of greater exactions.

Mandatory requirements of a DA are:

- Duration of agreement
- Permitted uses of property
- Density or intensity of use
- Maximum height or size of buildings
- Provision for reservation or dedication of land

The discretionary contents of a DA are:

- Requirements for subsequent discretionary actions
- Timing of development or phasing
- Financing of public facilities
- Reimbursement
- Nearly any other provision that can be agreed upon

Legislation

State legislation can have a significant impact on compatibility planning by allowing, restricting or limiting the tools available to local jurisdictions to control land use planning activities. Legislative strategies are designed to encourage changes in state law to accomplish a desired end state. Under Montana law, local jurisdictions are provided with certain powers to regulate land uses and development activities. If additional local control is desirable, state enabling legislation would be required to create or amend existing regulatory authority. On the local level, new or expanded regulation would be accomplished through the development, consideration, and passage of new ordinances or procedures. These changes would need to be consistent with the provisions of state law.

Memorandums of Understanding (MOU)

A Memorandum of Understanding (MOU) is a contract between two or more government entities. The governing bodies of the participating public agencies must take appropriate legal actions, often adoption of an ordinance or resolution, before such agreements become effective. These agreements are also known as Joint Powers Agreements or Inter-local Agreements. The purpose of an MOU is to establish a formal framework for coordination and cooperation. These agreements may also assign roles and responsibilities for all of the agreement's signatories. MOUs generally promote:

- Coordination and collaboration by instituting a protocol for sharing information on specific community development proposals, such as conditional use permits and subdivision plats.
- Joint communication among participating jurisdictions, state agencies and the military ensuring that residents, developers, businesses, and local decision makers have adequate information about military operations, possible impacts on surrounding lands, procedures to submit comments, and any additional local measures to promote land use compatibility around installations.
- Formal agreement on cooperative land use planning activities, such as implementation of a recommendation in this JLUS.

Plans and Programs

A Growth Policy Plan is a long-range plan that outlines goals and policies to guide the physical development of a municipality. Growth Policy Plans are designed to serve as the jurisdiction's blueprint for future decisions concerning physical development, including land use, infrastructure, public services, and resource conservation. Most comprehensive plans consist of written text discussing the community's goals, objectives, policies, and programs for the distribution of land use as well as one or more diagrams or maps illustrating the general location of existing and future land uses, roadways, city administered facilities and parks and open space. The primary goals of the Growth Plan are to:

- Identify the community's land use, circulation, environmental, economic, and social goals and policies as they relate to future development in the community.
- Provide a basis for local government decision making, including decisions on development approvals.
- Provide citizens with opportunities to participate in the planning and decision making processes in their communities.
- Inform citizens, developers, decision makers, and other cities and counties of the policies that guide development within a particular community.

Real Estate Disclosure

Prior to the transfer of real property to a new owner, real estate disclosure requires sellers and their agents to disclose certain specified facts related to the condition of the property. These facts could include noise or other proximity impacts associated with property near a military installation or operations area. The purpose of real estate disclosure is to protect the seller, buyer, and sales agent from potential litigation resulting from specified existing and/or anticipated conditions (i.e., hazard areas, existing easements, etc.). Disclosures are perhaps the most practical and cost effective land use compatibility tools for the reason that the buyers are informed of the possible effects (noise, light, etc.) for lands proximate to a military installation prior to considering purchase. The City of Great Falls requires real estate disclosure statements for the sale of real property located near Malmstrom AFB.

Zoning

The primary purpose of zoning is to protect the public health, safety and welfare. Zoning is a regulatory tool that enables the division of a jurisdiction into districts (zones) within which permissible uses are prescribed and allowable building heights, bulk, layout, and other requirements are defined, as identified in the following examples. Zoning can provide protection against:

- Physical danger, particularly safety considerations for properties in proximity to military ranges or within military flight areas.
- Nuisances associated with military operations, such as noise, vibration, air emissions, etc.
- Heavy traffic flows or truck routes in residential areas.
- Psychological nuisances, such as perceived and actual dangers associated with military operations.
- Light and glare, air emissions, and loss of privacy.
- Loss of open space and agricultural preservation.

Zoning ordinances requiring rigid separation of uses or inflexible provisions can make creative solutions to land use compatibility, such as cluster development, difficult or impossible.

Military Overlay Districts

A Military Overlay District (MOD) is a formally designated geographic planning area where military operations may impact local communities, and conversely, where local activities may affect the military's ability to carry out its mission. An MOD is designated to promote an orderly transition between community and military land uses to ensure that they are compatible. Within an MOD local jurisdictions can modify zoning or other land use regulations to specifically address the concerns related to the impact (e.g. impose stricter height restrictions or density standards), while limiting those restrictions to the known area of impact. When designating military overlay districts, the local jurisdiction must remember that they have no regulatory control over development or activities on federal property, and that the military only has regulatory authority on federal Department of Defense (DoD) lands, and not on lands within a city or county.

Subdivision Regulations

According to Montana's Subdivision and Surveying Laws and Regulations "a subdivision comprises only those parcels containing less than 160 acres that cannot be described as a one-quarter aliquot part of a United States government section when the parcels have been segregated from the original tract." The local comprehensive plan, zoning, subdivision, and other ordinances govern the design of a subdivision, the size of its lots, and the types of required improvements; such as street construction, sewer lines, water lines and drainage facilities. Applications

for subdivisions must be submitted to the local government for consideration. Subdivision regulations set forth the minimum requirements deemed necessary to protect the health, safety, and welfare of the public. More specifically, these regulations are designed to accomplish the following initiatives.

- Assure that effective protection is provided for the natural resources of the community, especially groundwater and surface water.
- Encourage well-planned subdivisions through the establishment of adequate design standards.
- Facilitate adequate provisions for transportation and other public facilities.
- Secure the rights of the public with respect to public lands and waters.
- Improve land records by the establishment of standards for surveys and plats.
- Safeguard the interests of the public, the homeowner, the subdivider, and units of local government.
- Prevent, where possible, excessive governmental operating and maintenance costs.

Building Codes

Construction standards are set out in the State Building Code, which controls the design, engineering, accessibility and fire protection standards to ensure human safety and welfare. They include both technical and functional standards and generally address the following in terms of compatibility issues.

- **Structural Safety.** Buildings should be designed for environmental factors in the area and manmade issues, such as electrical safety.

As a result of this collaborative planning process, the JLUS recommendations for Malmstrom AFB are outlined in the following Implementation Plan. This Plan is the result of a realistic and coordinated approach to compatibility planning for the areas located around Malmstrom AFB and the Missile Complex.

HOW TO READ THE IMPLEMENTATION PLANS

The Study Area Implementation Plans are a road map of the JLUS recommended strategies. These strategies are grouped by primary Malmstrom AFB/Missile Complex encroachment/compatibility issue. The Implementation Plans recommend strategies for the 15 encroachment/compatibility issues identified in Chapter 3.

To help organize the presentation of the Implementation Plans, strategies are grouped by type of compatibility strategy. A broad definition of each type of compatibility strategy is presented above. The Implementation Plan is presented in a matrix format which is comprised of seven components, including:

- **Issue Number.** Provides each strategy an alpha-numeric identifier used when referencing a particular strategy.
- **Type of Strategy.** Identifies the type of compatibility strategy.
- **Issue.** Describes the issue the strategies aim to address.
- **Strategy.** Contains a description of the strategy.
- **Timeframe.** Indicates the estimated time it should take to implement the strategy.
- **Geographic Area.** Identifies the specific MOD where the strategy should apply.
- **Primary Agency Responsible for Implementation.** Lists the party primarily responsible for implementing the strategy and the parties responsible for partnering to enhance its successful achievement.

Please see the next page.

Chapter 4.1

Malmstrom AFB Study Area Implementation Plan



4.1 Malmstrom AFB Study Area Implementation Plan

The Malmstrom AFB Study Area Implementation Plan includes three types of Military Overlay Districts (MODs), categorized according to the primary Malmstrom AFB encroachment compatibility issue categories (Noise, Safety, Vertical Obstruction).

MALMSTROM AFB MILITARY OVERLAY AIRPORT DISTRICT (MOAD)

A Military Overlay Airport District (MOAD) is proposed as the zoning tool to implement the policies and regulations associated with each Malmstrom AFB Military Overlay District (MOD). The MOAD is comprised of several MODs and, where appropriate, some MODs will have subareas. The boundary of the MOAD is derived from the boundary of the farthest reaching imaginary surface associated with MAFB's Class B runway. The boundary of the MOAD will trace the outer edges of the Outer Horizontal Surface and the Approach and Departure Clearance Surfaces. These surfaces set the boundary of the MOAD, which is an umbrella for the various MODs within the MOAD. See Figure 4.1-1 for an illustration of this area.

The official MOAD boundary and associated restrictions will be developed during the implementation stage of the JLUS.

HEIGHT MILITARY OVERLAY DISTRICTS (HMODS)

The Malmstrom AFB Height MODs will apply to the MAFB Study Area and will be encompassed by the MOAD discussed above. The Height MODs will correspond to the various Imaginary Surface zones and will reflect the Federal Aviation Administration guidelines regarding the recommended height restrictions for each of these areas.

As shown on Figure 4.1-2 and Figure 4.1-3, the Height MODs will be classified as follows:

- Clear Zone Surface – MOD-A
- Transitional Surface – MOD-B
- Inner Horizontal Surface – MOD-C
- Conical Surface – MOD-D
- Approach / Departure Clearance Surface (Horizontal and Glide) – MOD-E
- Outer Horizontal Surface – MOD-F

The Primary Surface will not constitute an MOD because it falls entirely within the boundary of MAFB. Height restrictions associated with each of these HMODs are shown on Figure 4.1-3 and should correspond to the height ceilings identified for each surface in Title 14 of the Code of Federal Regulations (14CFR) Part 77, Objects Affecting Navigable Airspace. Since some of these surfaces entail a gradual slope they do not have a fixed associated ceiling. Therefore the establishment of height restrictions for these areas (e.g. Transitional Zone, Approach and Departure Clearance Zones) could happen in a number of different ways. For example, Cascade County and Great Falls could:

1. Use the lowest height across each zone as the default height ceiling.
2. Build subzones and step the height increases across the zone per the designated slope ratio.
3. Identify the Geographic Positioning System (GPS) location and use a height calculator to determine the actual height within the imaginary surfaces that are sloped.

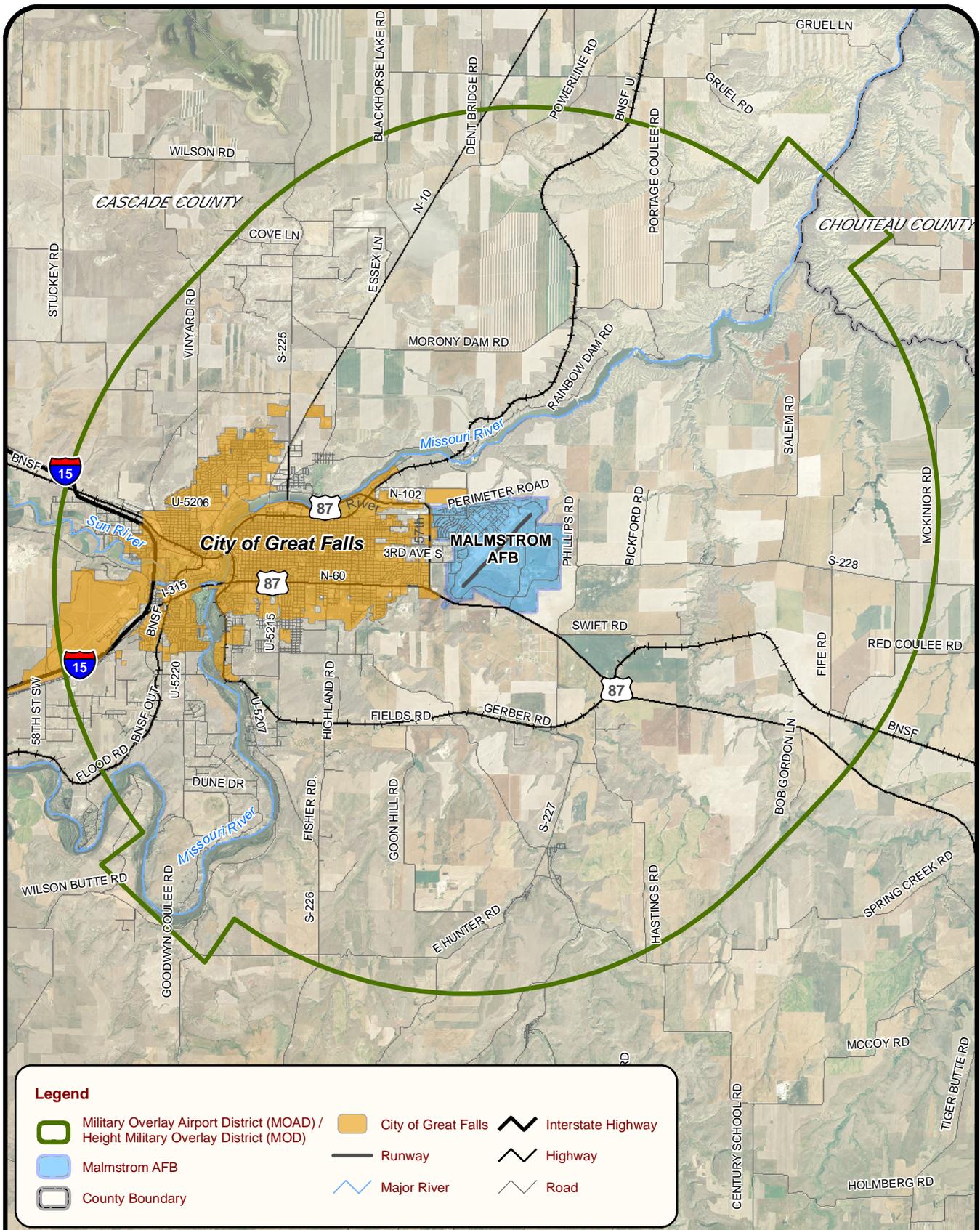
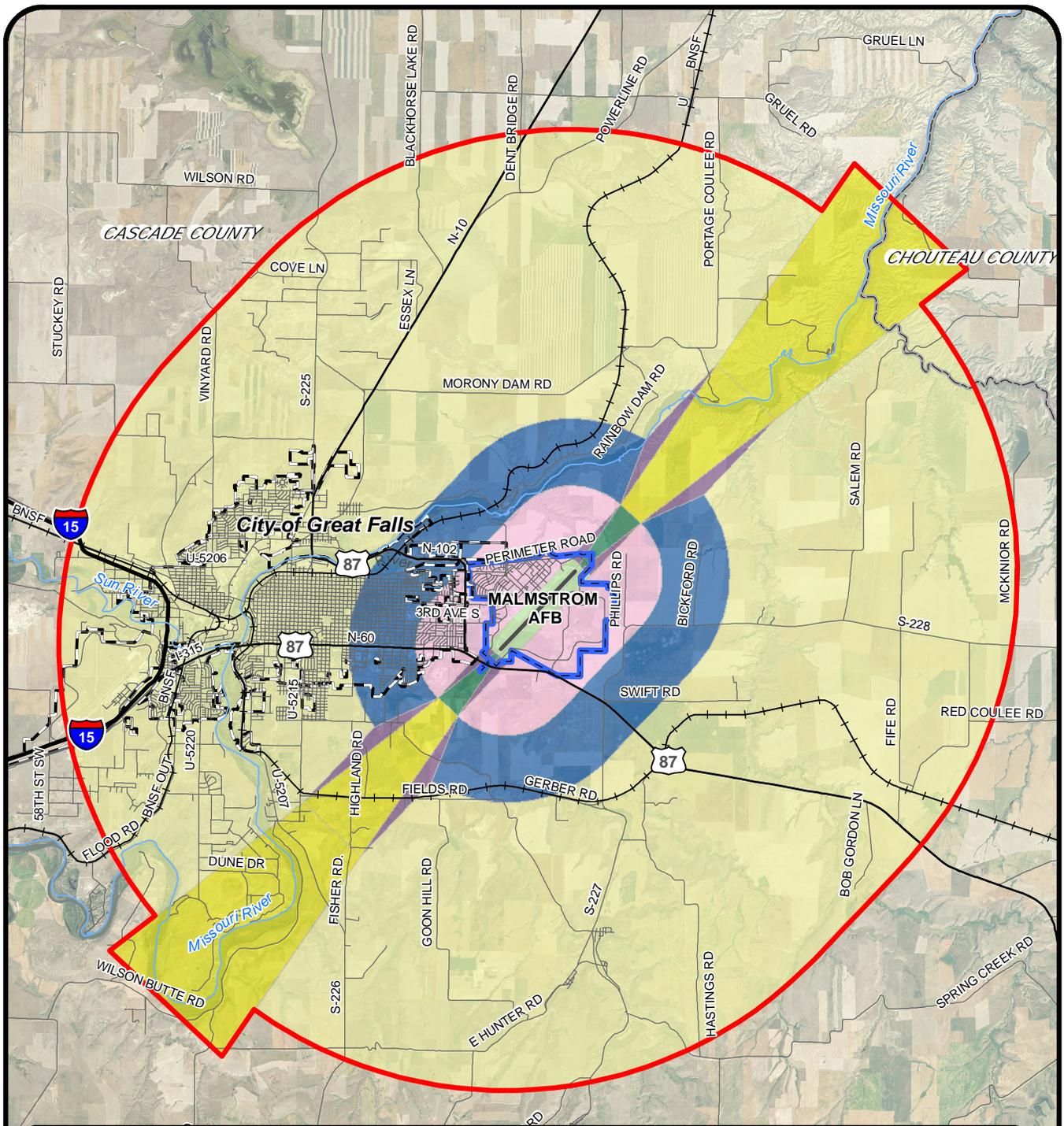


Figure 4.1-1
Military Overlay Airport District

Fig4-1-1_MilitaryOverlay_2012_02_06_JKC.pdf



Legend

- Height Military Overlay District (MOD)
- Primary Surface
- Clear Zone Surface - MOD-A
- Transitional Surface - MOD-B
- Inner Horizontal Surface - MOD-C
- Conical Surface - MOD-D
- Approach/Departure Clearance Surface (glide and horizontal) - MOD-E
- Outer Horizontal Surface - MOD-F
- Malmstrom AFB
- City of Great Falls
- Runway
- Major River
- Interstate Highway
- Highway
- Road



Figure 4.1-2
Height Military Overlay Districts

Fig4-1-2_HeightOverlay_2012_02_06_JKC.pdf

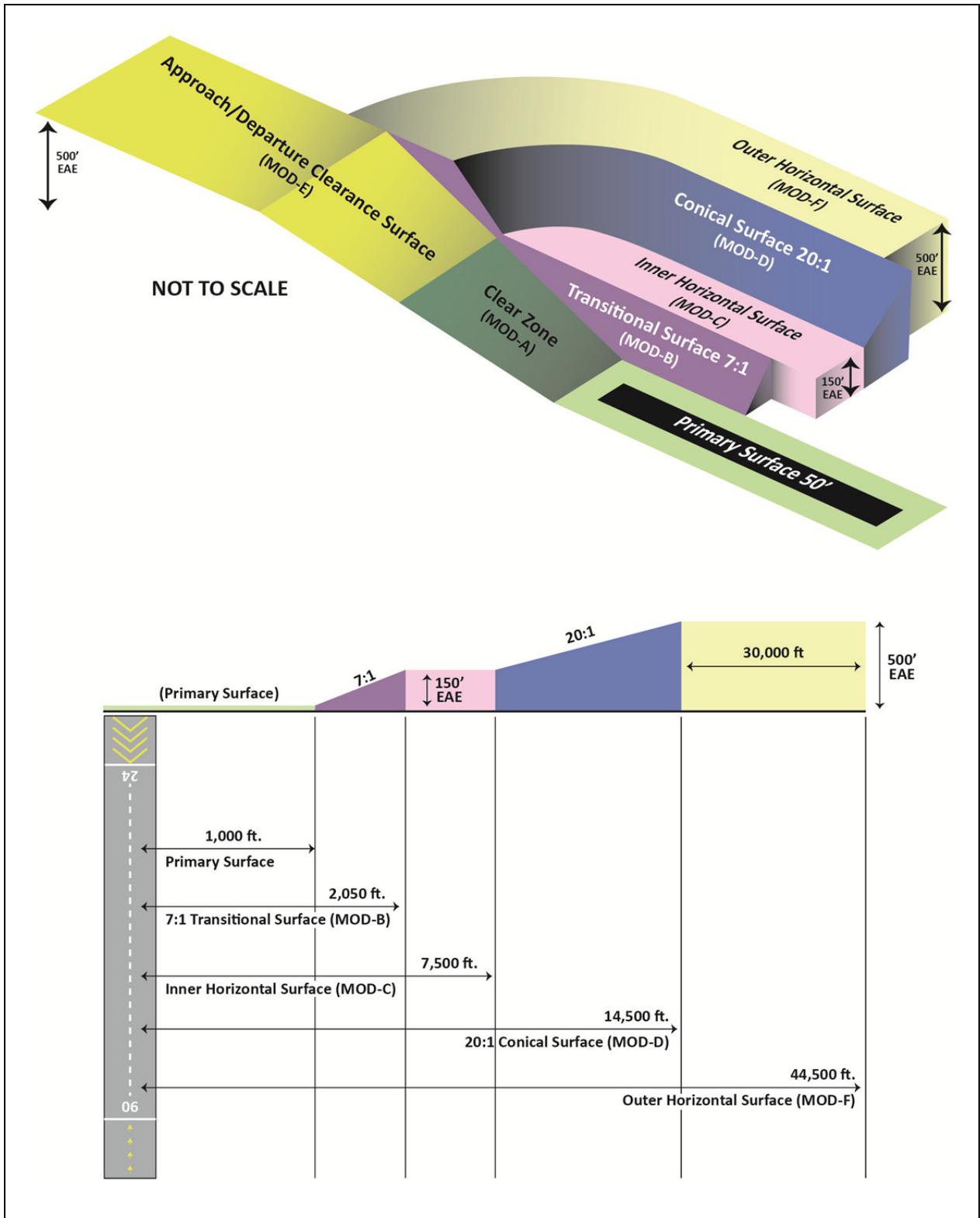


Figure 4.1-3. Proposed Height MODs

If, for example, Option 1 were chosen, the height restrictions for each MOD would be:

- **MOD-A** – No structures greater than 50 feet in height
- **MOD-B** – No structures greater than 50 feet in height
- **MOD-C** – No structures greater than 150 feet in height
- **MOD-D** – No structures greater than 150 feet in height
- **MOD-E** – No structures greater than 50 feet in height
- **MOD-F** – No structures greater than 500 feet in height

The second two options would be less restrictive but likely more challenging to administer. The preferred approach for each jurisdiction should be decided during the implementation period of the JLUS.

NOISE AND SAFETY MILITARY OVERLAY DISTRICTS (NSMODS)

As shown on Figure 4.1-4, the Noise and Safety Military Overlay District (NSMOD) boundary comprises the area encompassed by the combined outer area of the 1994 MAFB runway safety zones (Clear Zones, Accident Potential Zones I and II) and the associated noise contours that extend off base. The NSMOD is further divided into subzones.

The first subzones are the Noise MODs, which correspond to the 65 dBA and 70 dBA noise contours, which extend off-base. The second subzones are the Safety MODs, which include the Clear Zones (CZs) and Accident Potential Zones (APZs) for a Class B runway. Standards for subdivision requirements, types of land uses, and densities for these areas will be decided in the implementation phase and will apply to these zones as appropriate. These standards will be non-regulatory and may or may not be outlined in the Compatible Development Guidelines (see description in Chapter 4.2).

Table 4.1-1 presents a summary of the implementation strategies of the Malmstrom AFB Study Area Implementation Plan. (Please see legend below.) The strategies are organized by encroachment issue as discussed in Chapter 3.1. Following is the Implementation Plan.

Legend:

- Primary Agency
- Partner Agency
- 1 to 2 Years
- 3 to 5 Years
- ◆ 6 to 10 Years
- ◇ Ongoing
- ❖ Pending Reactivation of the MAFB Runway

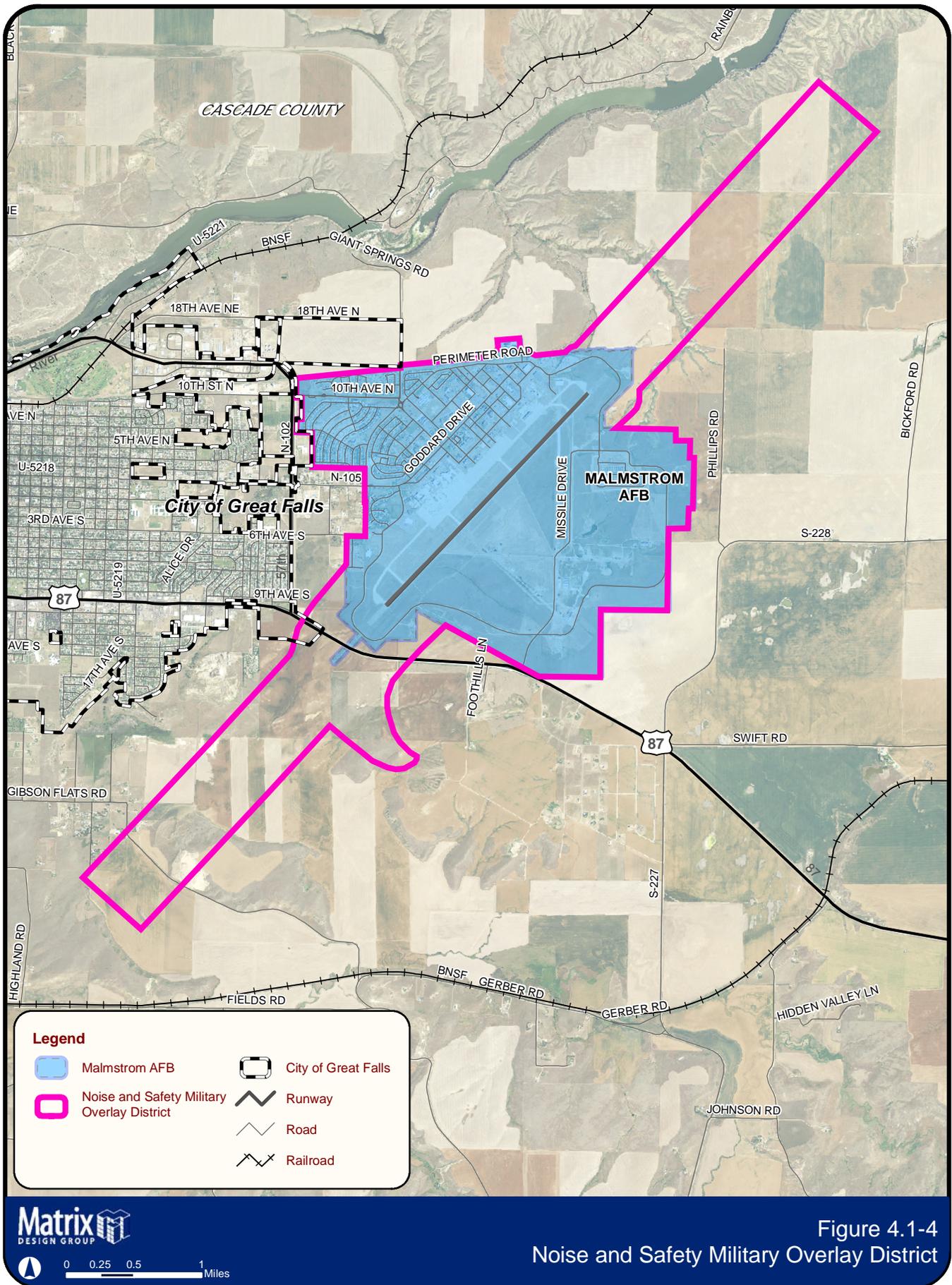


Fig4-1-4_NoiseSafetyOverlay_2012_02_06_JKC.pdf

Please see the next page.

Table 4.1-1. Malmstrom AFB – Summary of the Implementation Strategies

Malmstrom AFB Strategies		Primary Agency Responsible for Implementation														
Issue #	Type of Strategy	JLUS Strategy Description	Timeframe	Geographic Area			Malmstrom AFB (MAFB)	Cascade County	City of Great Falls	State Legislature	MT Department of Transportation	MT Department of Environmental Quality	MT Department of Natural Resources and Conservation	MT Building Codes Bureau	Great Falls International Authority	JLUS Coordinating Committee
				Noise and Safety Military Overlay District (NSMOD)	Height Military Overlay District (MOD)	Military Overlay Airport District (MOAD)										
MANMADE																
Frequency Interference																
FI-A	Issue	Wind turbine frequency. Wind turbines generate frequencies which can interfere with weather radar if unmitigated.														
FI-A1	Regulatory	See Strategy VO-A1. Incorporate frequency considerations into the "Red, Yellow, Green" map.	○		X		■									■
FI-A2	Regulatory	Coordinate the review of wind energy development projects within the recommended "No-Build Zone" with the National Oceanic and Atmospheric Administration (NOAA). Incorporate NOAA's recommendations concerning wind turbine placement into local zoning regulations. Other Agency: National Oceanic and Atmospheric Administration	○		X		■									■
FI-B	Issue	Electromagnetic radiation. There are sources of electromagnetic radiation on MAFB.														
FI-B1	Communication	Communicate safety arcs or standoff areas associated with the sources of electromagnetic radiation to surrounding jurisdictions.	●		X		■									
FI-B2	Regulatory	Ensure that Great Falls and Cascade County zoning regulations consider potential impacts of electromagnetic radiation on MAFB when reviewing development applications for properties adjacent to the installation.	●		X		■									

Malmstrom AFB Strategies			Primary Agency Responsible for Implementation												
Issue #	Type of Strategy	JLUS Strategy Description	Geographic Area			Malmstrom AFB (MAFB)	Cascade County	City of Great Falls	State Legislature	MT Department of Transportation	MT Department of Environmental Quality	MT Department of Natural Resources and Conservation	MT Building Codes Bureau	Great Falls International Authority	JLUS Coordinating Committee
			Noise and Safety Military Overlay District (NSMOD)	Height Military Overlay District (MOD)	Military Overlay Airport District (MOAD)										
Land Use		Issue	Timeframe												
LU-A		<p>Potential for incompatible development proximate / adjacent to Malmstrom AFB.</p> <p>Current zoning designations on the land adjacent to MAFB could allow for incompatible development that interferes with existing and future MAFB operations. Current development patterns in Great Falls and Cascade County indicate that the areas surrounding MAFB are experiencing increased urbanization, which could be incompatible with existing and future military operations.</p>													
LU-A1	Zoning	Consider establishing a Military Overlay Airport District (MOAD) as an overlay zoning district. Establish a Noise and Safety Military Overlay District (NSMOD) and a Height Military Overlay District (MOD) within the MOAD.	●	X	X	X	■								
LU-A2	Policy	Update Cascade County and Great Falls Growth Policy Plans to add policies that support compatible land uses within the MOAD and MODs. Update the information in the Economic Development, Land Use, Transportation, and Public Facility Elements.	●	X	X	X	■								

Malmstrom AFB Strategies		Primary Agency Responsible for Implementation													
Issue #	Type of Strategy	JLUS Strategy Description	Geographic Area			Malmstrom AFB (MAFB)	Cascade County	City of Great Falls	State Legislature	MT Department of Transportation	MT Department of Environmental Quality	MT Department of Natural Resources and Conservation	MT Building Codes Bureau	Great Falls International Authority	JLUS Coordinating Committee
			Noise and Safety Military Overlay District (NSMOD)	Height Military Overlay District (MOD)	Military Overlay Airport District (MOAD)										
LU-A3	Zoning	Consider amending Section 16: Airport Areas of the Great Falls Zoning Ordinance to develop a new subsection 16.2 Airport Areas-Malmstrom AFB. Consider amending Section 17.54: Airport Overlay Districts of the Land Development Code, to include overlay districts for Malmstrom AFB. These amendments will establish a military overlay districts (MOAD, NSMOD, and MODs) in which appropriate zoning can be applied to CZs, APZs, noise contours and the MOAD.	X		X		■	■							
LU-A4	Zoning	See Strategy VO-A2. Consider amending the Cascade County Zoning Ordinance to include the Military Overlay Airport District (MOAD) in the zoning map. Develop policies and development requirements specific to the criteria of the different MOAD subzones (MODs) and incorporate them into the zoning ordinance.	X	X	X	■									
LU-A5	Policy	Prepare a comprehensive set of voluntary desirable non-regulatory guidelines that outline development standards (height, density, siting) that would improve the compatibility of development within the MOAD, and all MOD subzones. Work with MAFB to identify preferred densities and necessary height restrictions.			X										■
	Timeframe		●	●	○										

Malmstrom AFB Strategies			Primary Agency Responsible for Implementation											
Issue #	Type of Strategy	JLUS Strategy Description	Timeframe	Geographic Area	Malmstrom AFB (MAFB)	Cascade County	City of Great Falls	State Legislature	MT Department of Transportation	MT Department of Environmental Quality	MT Department of Natural Resources and Conservation	MT Building Codes Bureau	Great Falls International Authority	JLUS Coordinating Committee
LU-A6	Zoning	Consider amending the Cascade County "Agricultural" zoning district within the NSMOD, to prohibit noise sensitive uses or public gathering types of uses within the NSMOD. Examples of noise sensitive uses may include: churches, schools, public parks or community centers, day care centers, nursing homes, bed and breakfasts.	●	Noise and Safety Military Overlay District (NSMOD)		■								
LU-A7	Coordination	Consider establishing a representative from MAFB as an Ex Officio member on the Commission / Council to foster collaboration, coordination and guidance from the DoD on development applications.	●	Height Military Overlay District (MOD)	□	■	■							
LU-A8	Regulatory	Amend Cascade County and the City of Great Falls Subdivision Ordinances to regulate densities within the NSMOD. Work with MAFB to identify preferred densities within the NSMOD that support compatible development.	●	Military Overlay Airport District (MOAD)	□	■								
LU-B	Issue	Limited local permitting requirements and coordination of permitting. Counties have limited permitting requirements for the construction of buildings, which limits their discretion of approval. The status quo could allow for incompatible development near MAFB.												

Malmstrom AFB Strategies		Primary Agency Responsible for Implementation														
Issue #	Type of Strategy	JLUS Strategy Description	Timeframe	Geographic Area			Malmstrom AFB (MAFB)	Cascade County	City of Great Falls	State Legislature	MT Department of Transportation	MT Department of Environmental Quality	MT Department of Natural Resources and Conservation	MT Building Codes Bureau	Great Falls International Authority	JLUS Coordinating Committee
				Noise and Safety Military Overlay District (NSMOD)	Height Military Overlay District (MOD)	Military Overlay Airport District (MOAD)										
LU-B1	Coordination	Establish a protocol for coordination between jurisdictions, state agencies and the military for review of conditional use permits, variances, rezones and subdivision applications for property adjacent to military installations and / or in the MOAD.	●			X	■	■	■	■	■	■	■	■		
LU-B2	MOU	Develop a formal notification and review process for building code permits from the Building Codes Bureau (BCB). This would require BCB to notify, provide a copy of the development permit application and obtain review consultation with MAFB and the jurisdiction where the project is to be located.	○			X										
LU-C	Issue	<p>Public awareness about military easements and their terms is limited and easements do not cover the entire area of the Clear Zones.</p> <p>While Malmstrom does send notification letters to property owners regarding the Air Force restrictive easements within the Clear Zones (CZs) of the MAFB runway, there is still a lack of awareness about the location and terms of these easements among landowners, Cascade County and Building Codes Bureau (BCB) potentially causes non-enforcement of the terms of the easements.</p>														

Malmstrom AFB Strategies		Primary Agency Responsible for Implementation														
Issue #	Type of Strategy	JLUS Strategy Description	Timeframe	Noise and Safety Military Overlay District (NSMOD)	Height Military Overlay District (MOD)	Military Overlay Airport District (MOAD)	Malmstrom AFB (MAFB)	Cascade County	City of Great Falls	State Legislature	MT Department of Transportation	MT Department of Environmental Quality	MT Department of Natural Resources and Conservation	MT Building Codes Bureau	Great Falls International Authority	JLUS Coordinating Committee
LU-C1	Education	Increase public awareness that the MAFB Community Planner is the point of contact at MAFB in mailers, newsletters and on the website. Indicate that his/her responsibility it is to receive, process, and respond to public inquiries about military easements.	●				■									
LU-C2	Education	Develop and distribute an educational brochure that presents the locations and development parameters associated with the NSMOD and military easements.	●	X			■									
LU-C3	Education	Conduct an annual public awareness event on-base where MAFB can educate the public about its mission and operations and host question and answer sessions.	●				■									
LU-C4	Education	Amend Great Falls Section 17.64 to include MAFB and/or work with the Realtor Association to require a disclosure statement upon the sale of fee simple land within the NSMOD, which informs the purchaser that the property is located near a military installation and, where appropriate, that the property may include a military easement with restrictions.	●	X				■	■							

Malmstrom AFB Strategies		Primary Agency Responsible for Implementation														
Issue #	Type of Strategy	JLUS Strategy Description	Timeframe	Geographic Area			Malmstrom AFB (MAFB)	Cascade County	City of Great Falls	State Legislature	MT Department of Transportation	MT Department of Environmental Quality	MT Department of Natural Resources and Conservation	MT Building Codes Bureau	Great Falls International Authority	JLUS Coordinating Committee
				Noise and Safety Military Overlay District (NSMOD)	Height Military Overlay District (MOD)	Military Overlay Airport District (MOAD)										
LU-D	Issue	<p>Proximity of on-base military housing to future industrial park presents potential incompatibilities.</p> <p>MAFB developed on-base housing adjacent to land in Great Falls zoned Heavy Industrial (I-2) and designated to be an industrial park. Prospective industries for the industrial park include an ethanol plant and a mill seed plant, which could generate unpleasant odors and noise that may impact military residents.</p>														
LU-D1	MOU	<p>Develop a mutually supported industrial development concept plan and development agreement for the area located northwest of MAFB that would propose non-intensive, lighter industrial uses along the southern periphery of the tract with more intensive uses on its interior.</p> <p>Other Agency: Great Falls Development Authority</p>	○			■	□	■								
LU-D2	MOU	<p>Create and adopt a formal MAFB notification and review process for proposed developments located within the NSMOD.</p>	●				■									
LU-D3	Coordination	<p>Require developers to identify potential noise, odor and dust impacts of proposed development. Require appropriate mitigation measures (planting of foliage, establishment of buffer zones) for measurable impacts.</p>	●				■									
LU-D4	Coordination	<p>Consult with the City of Great Falls and Cascade County early in the development planning process and well in advance of any construction activities to ensure compatibility with surrounding uses.</p>	◇			■	□	□								

Malmstrom AFB Strategies			Primary Agency Responsible for Implementation													
Issue #	Type of Strategy	JLUS Strategy Description	Timeframe	Geographic Area			Malmstrom AFB (MAFB)	Cascade County	City of Great Falls	State Legislature	MT Department of Transportation	MT Department of Environmental Quality	MT Department of Natural Resources and Conservation	MT Building Codes Bureau	Great Falls International Authority	JLUS Coordinating Committee
				Noise and Safety Military Overlay District (NSMOD)	Height Military Overlay District (MOD)	Military Overlay Airport District (MOAD)										
Noise																
NO-A	Issue	<p>A future fixed wing flying mission at MAFB will likely generate noise contours that extend off base and onto privately owned parcels in the City of Great Falls and Cascade County.</p> <p>A future fixed-wing flying mission at MAFB will likely have noise contours that extend off base, which could impact adjacent properties if regulations and policies do not prevent incompatible uses that are sensitive to noise.</p>														
NO-A1	Regulatory	See Strategy LU-A1. Establish a NSMOD that regulates the type of compatible uses permitted within the NSMOD. Require the noise contours to be depicted on the official zoning maps for both jurisdictions.	●	X			■									
NO-A2	Regulatory	Update the noise contours on the official zoning map. Update the zoning map each time MAFB updates its noise studies.	○	X			■									
NO-A3	Regulatory	Incorporate into the zoning codes and/or subdivision ordinances FAA Regulations Part 150 noise attenuation standards for residential uses located within DNL 65dB and greater.	○	X			■									
NO-A4	Regulatory	See Strategy LU-C4. Require a disclosure statement for fee simple transactions of property that is located in DNL 65dB and greater.	●	X			■									

Malmstrom AFB Strategies		Primary Agency Responsible for Implementation													
		Geographic Area	Malmstrom AFB (MAFB)	Cascade County	City of Great Falls	State Legislature	MT Department of Transportation	MT Department of Environmental Quality	MT Department of Natural Resources and Conservation	MT Building Codes Bureau	Great Falls International Authority	JLUS Coordinating Committee			
Issue #	Type of Strategy	JLUS Strategy Description	Timeframe	Noise and Safety Military Overlay District (NSMOD)	Height Military Overlay District (MOD)	Military Overlay Airport District (MOAD)									
Safety															
SA-A	Issue	Potential for development within Clear Zone (CZ) and Accident Potential Zones (APZ) I and II. The existing configuration of the Clear Zones (CZs) and Accident Potential Zones (APZs) extend outside the boundary of the installation onto non-federal land. MAFB holds easements for some of the non-federal land within these safety zones but not all. Cascade County and Great Falls zoning within the safety zones allows for uses that are not compatible with safety zone restrictions.													
SA-A1	Regulatory	See Strategy LU-A1. Amend zoning regulations to limit high density development and sensitive uses in this area.	○	X											
SA-A2	Regulatory	Per the Cascade County Growth Policy Plan, designate the CZs and APZs as prohibited development areas in the zoning regulations.	●	X											
SA-A3	Acquisition	Identify fee simple lands within safety zones. Determine the willingness of private property owners to deed land and/or establish conservation easements. If appropriate, establish a property trust and/or conservation easement program with those landowners.	○	X											

Malmstrom AFB Strategies		Primary Agency Responsible for Implementation														
Issue #	Type of Strategy	JLUS Strategy Description	Timeframe	Geographic Area			Malmstrom AFB (MAFB)	Cascade County	City of Great Falls	State Legislature	MT Department of Transportation	MT Department of Environmental Quality	MT Department of Natural Resources and Conservation	MT Building Codes Bureau	Great Falls International Authority	JLUS Coordinating Committee
				Noise and Safety Military Overlay District (NSMOD)	Height Military Overlay District (MOD)	Military Overlay Airport District (MOAD)										
VO-A	Issue	Vertical Obstruction														
		Presence and placement of vertical obstructions within potential future fixed wing flight paths. Development such as wind energy conversion systems (WECS), transmission lines and cellular towers is being considered in the imaginary surfaces area. If approved, these vertical obstructions could diminish the ability to reactivate the MAFB runway for fixed wing aircraft and/or increase hazards for existing helicopter operations out of MAFB.														
VO-A1	Regulatory		Regulatory													
		Develop a "Red, Yellow, Green" (RYG) map of locations where structures exceeding a mutually agreed upon height may be located within MODs and MOAD. Coordinate siting of wind energy development with MAFB and wind energy developers.														

Malmstrom AFB Strategies		Primary Agency Responsible for Implementation												
Issue #	Type of Strategy	JLUS Strategy Description	Geographic Area	Malmstrom AFB (MAFB)	Cascade County	City of Great Falls	State Legislature	MT Department of Transportation	MT Department of Environmental Quality	MT Department of Natural Resources and Conservation	MT Building Codes Bureau	Great Falls International Authority	JLUS Coordinating Committee	
VO-A2	Regulatory	<p>See Strategy LU-A1. Establish a Height MOD (MOD) within the MOAD, which correspond to the different imaginary surfaces (e.g. horizontal, conical, and transitional) and set height restrictions within these MOD subzones per FAA regulations. Within the MOAD establish MOD subzones that correspond to the various imaginary surfaces. Height restrictions associated with each of these HMODOs should correspond to the height ceilings identified for each surface in Title 14 of the Code of Federal Regulations (14CFR) part 77, Objects Affecting Navigable Airspace, in one of the following ways:</p> <ul style="list-style-type: none"> • Use the lowest height across each zone as the default height ceiling. • Build subzones and step the height increases across the zone per the designated slope ratio. • Identify the Geographic Positioning System (GPS) location and use a height calculator to determine the actual height within the imaginary surfaces that are sloped. <p>The exact approach can be determined during the implementation phase.</p>	Noise and Safety Military Overlay District (NSMOD) Height Military Overlay District (MOD) Military Overlay Airport District (MOAD)	X	X	X								
	Timeframe													

Malmstrom AFB Strategies		Primary Agency Responsible for Implementation														
Issue #	Type of Strategy	JLUS Strategy Description	Timeframe	Noise and Safety Military Overlay District (NSMOD)	Height Military Overlay District (MOD)	Military Overlay Airport District (MOAD)	Malmstrom AFB (MAFB)	Cascade County	City of Great Falls	State Legislature	MT Department of Transportation	MT Department of Environmental Quality	MT Department of Natural Resources and Conservation	MT Building Codes Bureau	Great Falls International Authority	JLUS Coordinating Committee
VO-A3	Coordination	The Department of Defense Siting Clearinghouse requirements and standards published in Title 32, Code of Federal Regulations, Part 211 shall advise and guide the process to facilitate the early submission of renewable energy project proposals to the Clearinghouse for military mission compatibility review. Other Agency: Department of Defense	◆		X		☐	☐	☐			☐				
VO-A4	Zoning	Revise Cascade County zoning regulations to establish height restrictions in all zones and City of Great Falls zoning regulations to include height restrictions in C-2 and I-2 zones in HMODs.	●		X			■								
VO-A5	Zoning	As part of the development permitting process require developers of proposed tall structures (above 200 feet) to report to the FAA if structures are to be located within HMODs with a lower ceiling. Other Agency: Federal Aviation Administration	●		X			■	■							
NATURAL RESOURCES																
Threatened and Endangered Species																
TE-A	Issue	Potential for Bird Air Strike Hazards (BASH). Wind farms in and around the missile complex could displace migratory birds causing them to migrate through helicopter and future fixed wing aircraft flight paths.														

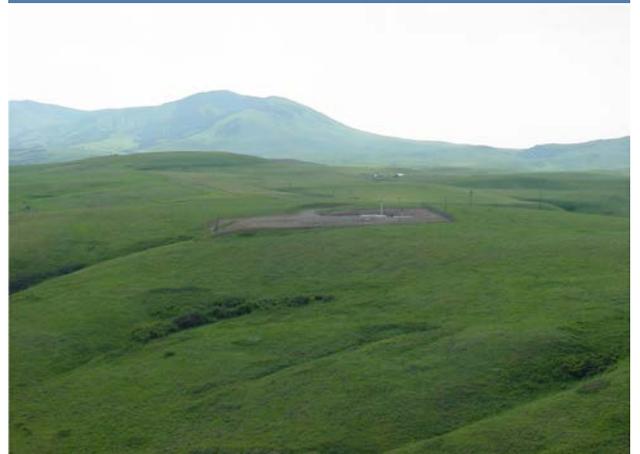
Malmstrom AFB Strategies		Primary Agency Responsible for Implementation														
Issue #	Type of Strategy	JLUS Strategy Description	Timeframe	Geographic Area			Malmstrom AFB (MAFB)	Cascade County	City of Great Falls	State Legislature	MT Department of Transportation	MT Department of Environmental Quality	MT Department of Natural Resources and Conservation	MT Building Codes Bureau	Great Falls International Authority	JLUS Coordinating Committee
				Noise and Safety Military Overlay District (NSMOD)	Height Military Overlay District (MOD)	Military Overlay Airport District (MOAD)										
TE-A1	Policy	Finalize Draft BASH Plan. Share the study with the City of Great Falls and Cascade County so recommendations can be incorporated into local planning processes.	○				■									
TE-A2	Regulatory	Once BASH document is complete use mapping data from the report to establish a BASH overlay zone in which certain uses are avoided, such as stormwater retention ponds and tall grass.	◆				□	■	■							
Water Quality																
WQ-A	Coordination	Whitmore Ravine Erosion Project. Development on MAFB has historically contributed to erosion and sedimentation in the Missouri River. The interagency and multi-jurisdictional Whitmore Ravine Erosion Project is a storm water management project designed to manage runoff and sedimentation from MAFB into the Missouri River.														
WQ-A1	Coordination	Continue participating in the Whitmore Ravine Erosion Project and working on the Air Force's Draft Whitmore Ravine Watershed Assessment.	◆				■									
COMPETITION																
Land and Air Spaces																
LAS-A	Issue	Shared airspace. The airspace in the Great Falls area is currently shared by the 40th Helicopter Squadron, Montana Air National Guard and commercial aircraft at Great Falls International Airport. Competition for airspace will increase if MAFB is assigned a future flying mission.														

Malmstrom AFB Strategies		Primary Agency Responsible for Implementation											
Issue #	Type of Strategy	JLUS Strategy Description	Geographic Area	Malmstrom AFB (MAFB)	Cascade County	City of Great Falls	State Legislature	MT Department of Transportation	MT Department of Environmental Quality	MT Department of Natural Resources and Conservation	MT Building Codes Bureau	Great Falls International Authority	JLUS Coordinating Committee
LAS-A1	Zoning	Consider establishing a Joint Airport Zoning Board with Great Falls International Airport Authority, when a future air mission is established on MAFB.	Noise and Safety Military Overlay District (NSMOD) Height Military Overlay District (MOD) Military Overlay Airport District (MOAD)	■								■	
LAS-A2	Coordination	Establish a protocol for exchanging information about changes to flight paths and aircraft.		◆									◆

Please see the next page.

Chapter 4.2

**Missile Complex
Study Area
Implementation
Plan**



4.2 Missile Complex Study Area Implementation Plan

The Missile Complex Study Area Implementation Plan includes strategies such as instating a Military Affected Area (MAA), establishing Compatibility Development Guidelines, and developing a “Red, Yellow, Green” map.

MILITARY AFFECTED AREAS

Throughout the Missile Complex Study Area the designated MODs will take the form of Military Affected Areas (MAAs) per Senate Bill 417 (SB 417). SB 417 allows local governments to establish and regulate land uses in MAAs. MAAs may encompass the 1,200 foot safety arcs currently surrounding each of the Launch Facilities (LF) and Missile Alert Facilities (MAFs). This area is shown on Figure 4.2-1. The establishment of the MAAs will allow the safety arcs to be identified in Growth Policy Plans, Subdivision Regulations and Zoning Regulations. The implementation of compatible guidelines in the MAAs will be non-regulatory and should be outlined in the Compatible Development Guidelines.

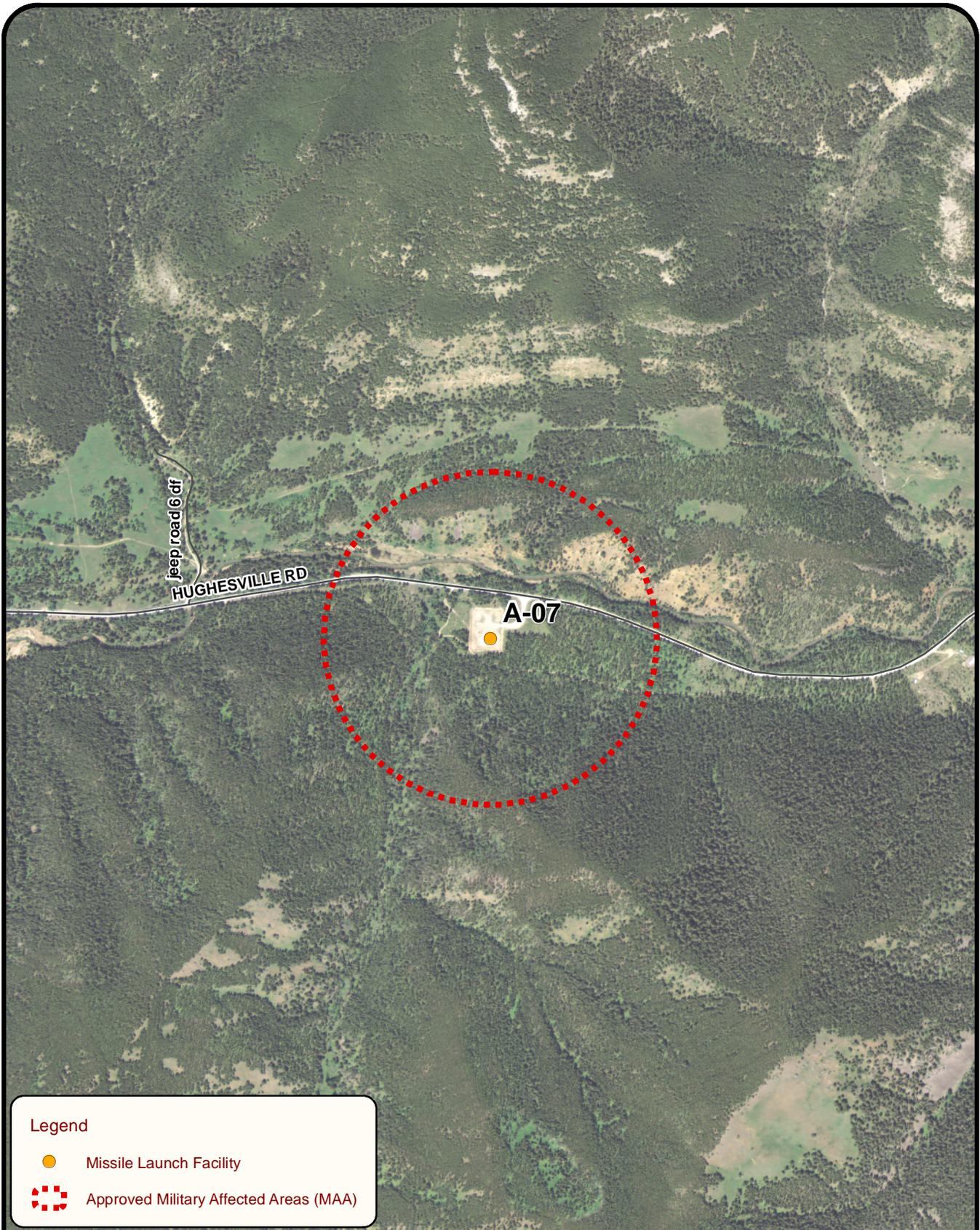
COMPATIBILITY DEVELOPMENT GUIDELINES (CDG)

Compatible Development Guidelines (CDG) are a desirable, non-regulatory set of land use guidelines. The purpose of the CDG is to inform the state, local governments, and private landowners of MAFB’s preferred land uses and design standards in critical areas. Depending on final decisions made by a future JLUS Implementation Task Force, the CDG would most likely identify the type, density and design standards for future development in the MOAD, MODs and MAAs. The CDG will provide useful guidance on how Growth Policy Plans, Zoning Ordinances and Subdivision Ordinances, could be amended. However, as non-regulatory guidelines, the final determination as to whether to incorporate this information into these documents would be left to each jurisdiction.

“RED, YELLOW, GREEN” MAP

The “Red, Yellow, Green” Map would be a planning effort in which Malmstrom AFB would provide guidance to the State, counties and developers about the appropriate locations within the 40th HS Fly Zone for tall structures and facilities that generate frequency that might interfere with operations (e.g. wind turbines, transmission towers, cell towers etc.). The “Red, Yellow, Green” Map process would create a map that incorporates the needs and interests of the wind energy companies, the State and local jurisdictions, and the Air Force. Once completed, this map will serve as an important resource for City/County staff, elected and appointed officials, and the public and property owners to enhance their understanding of compatible uses.

Although the Policy Committee declined to establish an MOD to encompass the entire 40th HS Fly Zone, they did elect to use the Fly Zone as the planning area for a future “Red, Yellow, Green” Map planning effort (see Figure 4.2-2).



Legend

- Missile Launch Facility
- ⊞ Approved Military Affected Areas (MAA)

Matrix
DESIGN GROUP

0 300 600 1,200 Feet

Figure 4.2-1
Approved Military Affected Areas (MAA)

Fig4-2-1_AppPropMAA_2011_09_22_RGRa.pdf

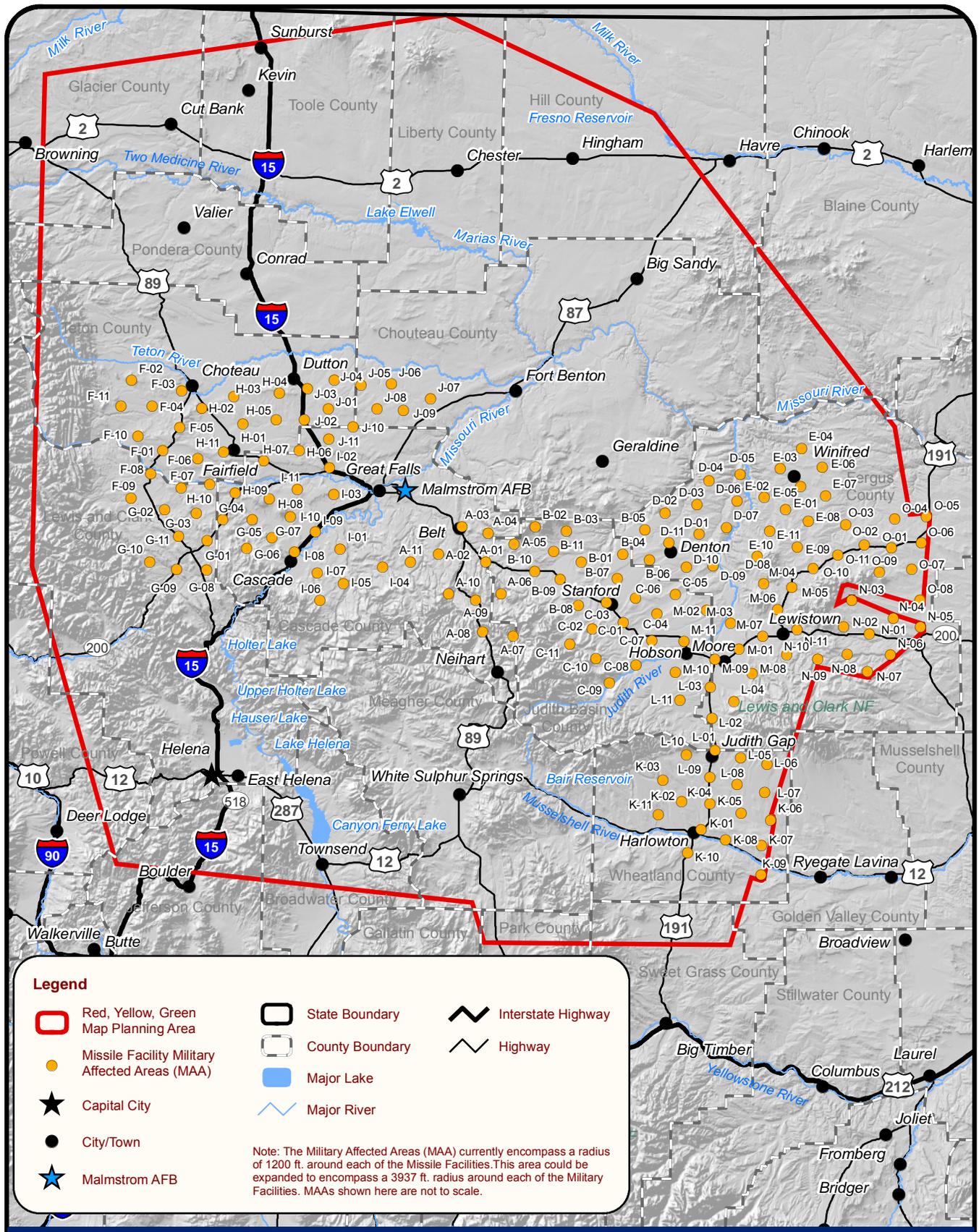


Figure 4.2-2
"Red, Yellow, Green" Map Planning Area

MISSILE COMPLEX STUDY AREA IMPLEMENTATION PLAN

Table 4.2-1 presents a summary of the implementation strategies of the Missile Complex Study Area Implementation Plan. (Please see the legend below.) The strategies are organized by the encroachment issues discussed in Chapter 3.2.

Legend:

- Primary Agency
- Partner Agency
- 1 to 2 Years
- 3 to 5 Years
- ◆ 6 to 10 Years
- ◇ Ongoing
- ❖ Pending Reactivation of the MAFB Runway

Table 4.2-1 Missile Complex – Summary of the Implementation Strategies

Missile Complex Strategies		Primary Agency Responsible for Implementation																			
Issue #	Type of Strategy	JLUS Strategy Description	Timeframe	Overlay District	Military Affected Areas	Malmstrom AFB	Cascade County	Lewis and Clark County	Fergus County	Wheatland County	Judith Basin County	Chouteau County	Teton County	State Legislature	MT Department of Transportation	MT Department of Environmental Quality	MT Department of Natural Resources and Conservation	MT Building Codes Bureau	Great Falls International Airport	JLUS Coordination Committee	
MANMADE																					
Alternative Energy																					
AE-A	Issue	Expanding market for wind energy development. Montana is a premier location for future wind energy based on its consistently high wind velocities. Many projects are being considered for the study area which could generate large volumes of electricity, but also create potential vertical obstructions, if located within existing or future flight corridors.																			
AE-A1	Coordination	Develop a "Red, Yellow, Green" Map in which MAFB communicates specific locations where structures that exceed a mutually agreed upon height should be prohibited to avoid incompatibility with the 40th HS Fly Zone.	○	X		■															■
AE-A2	Coordination	When issuing electrical permits, certificates of compliance or special use permits, require wind energy developers to coordinate with MAFB.	●	X												■		■			

Missile Complex Strategies		Overlay District	Primary Agency Responsible for Implementation																	
Issue #	Type of Strategy	JLUS Strategy Description	40 th HS Fly Zone	Military Affected Areas	Malmstrom AFB	Cascade County	Lewis and Clark County	Fergus County	Wheatland County	Judith Basin County	Chouteau County	Teton County	State Legislature	MT Department of Transportation	MT Department of Environmental Quality	MT Department of Natural Resources and Conservation	MT Building Codes Bureau	Great Falls International Airport Authority	JLUS Coordination Committee	
IE-B1	Coordination	Share all transmission line siting and environmental plans and permitting applications with MAFB prior to approval.	X													■				
IE-B2	Communication	Require developers, local governments and landowners to call the MAFB Missile Cable Affairs Office when proposing development on or around HICS.	X												□					
IE-B3	Communication	See Missile Complex Strategy VO-A11. Obtain and incorporate transmission line mapping data into the "Red, Yellow, Green" map.	X													□				■
IC-A	Issue	Lack of formal communication about military operations and county planning. Counties in the Missile Complex are generally unaware of the 40th HS flight paths and other MAFB operations. MAFB is not routinely consulted about potentially incompatible development near its facilities.																		
IC-A1	Coordination	Develop an MOU between all the jurisdictions / agencies that have land use management and regulatory authority and MAFB to establish a JLUS Coordinating Committee. The Committee would be responsible for overseeing and facilitating implementation of the JLUS.																		

Missile Complex Strategies		Primary Agency Responsible for Implementation																		
Issue #	Type of Strategy	JLUS Strategy Description	40 th HS Fly Zone	Overlay District	Malmstrom AFB	Cascade County	Lewis and Clark County	Fergus County	Wheatland County	Judith Basin County	Chouteau County	Teton County	State Legislature	MT Department of Transportation	MT Department of Environmental Quality	MT Department of Natural Resources and Conservation	MT Building Codes Bureau	Great Falls International Airport Authority	JLUS Coordination Committee	
IC-A2	MOU	Establish a formal review and comment process for receiving MAFB input on major development and subdivision projects proposed for locations in the Missile Complex (limited to the counties participating in the JLUS). Ensure the MOU includes definitions about the size and scale of projects that warrant MAFB input, and that time limits are imposed on the allowed review period.	X	40 th HS Fly Zone	●	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
IC-B	Issue	Lack of formal communication between State Agencies that issue permits in the Missile Complex. While state agencies such as the Montana Department of Transportation, Building Code Bureau and the Montana Department of Environmental Quality are responsible for reviewing applications and issuing permits, there is often little communication between these agencies and the counties or MAFB as part of the permit review process.																		
IC-B1	MOU	Establish a Memorandum of Understanding (MOU) between each permitting State agency, MAFB and each county that identifies a procedure for sharing and communicating about development permit applications within the respective county's jurisdiction.	X		●	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
IC-B2	Legislation	Adopt State legislation that requires all state agencies with permitting authority in the Missile Complex to consult with MAFB for all development and permit applications within the 40th HS Fly Zone.	X		○								■	□	□	□	□	□	□	□

Missile Complex Strategies			Primary Agency Responsible for Implementation																		
Issue #	Type of Strategy	JLUS Strategy Description	Timeframe	Overlay District		Malmstrom AFB	Cascade County	Lewis and Clark County	Fergus County	Wheatland County	Judith Basin County	Chouteau County	Teton County	State Legislature	MT Department of Transportation	MT Department of Environmental Quality	MT Department of Natural Resources and Conservation	MT Building Codes Bureau	Great Falls International Airport Authority	JLUS Coordination Committee	
				40 th HS Fly Zone	Military Affected Areas																
LU-A	Issue	<p>Absence of local land use regulatory mechanisms that allow for the management of land uses near LFs or MAFs.</p> <p>The State of Montana does not require counties to assume the responsibility of regulating land uses in their jurisdiction. Alternatively State agencies are responsible for issuing permits. In the absence of local land use regulatory authorities there is an increased likelihood that incompatible development will be located close to military facilities which could negatively impact the health and safety of residents.</p>																			
LU-A1	Policy	Per SB 417, consider establishing an MAA around each LF and MAF.	●	X																	
LU-A2	Policy	Prepare a comprehensive set of voluntary non-regulatory guidelines that outline development standards (height, density, siting) that would improve the compatibility of development within MAAs and the Fly Zone.	○																		
LU-A3	Policy	Augment County Growth Policy Plans by developing Resource Use Plans that address the need to protect military assets and include corresponding policies. Use the existing Wheatland County Resource Plan as an example. Augment Wheatland County's Resource Use Plan to include protection of military assets as an objective.	○	X																	

Missile Complex Strategies				Primary Agency Responsible for Implementation																	
Issue #	Type of Strategy	JLUS Strategy Description	Timeframe	Overlay District		Malmstrom AFB	Cascade County	Lewis and Clark County	Fergus County	Wheatland County	Judith Basin County	Chouteau County	Teton County	State Legislature	MT Department of Transportation	MT Department of Environmental Quality	MT Department of Natural Resources and Conservation	MT Building Codes Bureau	Great Falls International Airport Authority	JLUS Coordination Committee	
				40 th HS Fly Zone	Military Affected Areas																
LU-A4	Coordination	Consider using the DoD's Readiness and Environmental Protection Initiative program to partner with individual land owners and acquire development rights for the purpose of land conservation within MAAs.	O	X	X																
LU-A5	Coordination	Establish a Farmland Protection Program, which is a conservation easement program that allows landowners to voluntarily sell their development rights and restrict future land uses to agriculture.	O																		
LU-A7	Legislation	Revise Montana Code Annotated, Title 76-3 standardized subdivision language to reflect standards that assist in the protection of LFs and MAFs (e.g. limiting densities, requiring military consultation for new development, limiting heights). Apply these standards to the designated MAAs.	O		X																
LU-A8	Coordination	Establish a formal protocol for coordinating the review of development applications for property in the MAAs and the 40th HS Fly Zone.		X	X																
LU-A9	Coordination	Work with the State of Montana Department of Natural Resources and Conservation (DNRC) to develop a formal notification and review process for proposed projects considered for State Trust Lands. This would require the DNRC to notify, provide a copy of the development proposal and obtain review consultation with MAFB and the respective county(s) where the project is located.	O	X																	

Missile Complex Strategies				Primary Agency Responsible for Implementation																	
Issue #	Type of Strategy	JLUS Strategy Description	Timeframe	40 th HS Fly Zone	Military Affected Areas	Malmstrom AFB	Cascade County	Lewis and Clark County	Fergus County	Wheatland County	Judith Basin County	Chouteau County	Teton County	State Legislature	MT Department of Transportation	MT Department of Environmental Quality	MT Department of Natural Resources and Conservation	MT Building Codes Bureau	Great Falls International Airport Authority	JLUS Coordination Committee	
LU-A10	MOU	Develop a formal notification and review process for wind energy development projects that require an electrical permit from the State of Montana Building Codes Bureau (BCB). This would require BCB to notify, provide a copy of the development permit application and obtain review consultation with MAFB and the jurisdiction where the project is to be located.	○	X		■												■			
LU-A11	Coordination	Explore strategic land exchanges on land (private, state, federal) proximate to LFs and MAFs to achieve mutual landowner objectives. Such exchanges will be executed through a defined process, lands to be exchanged and the net benefits to each entity. Other Agency: Bureau of Land Management	◇	X	X	□											■				
LU-A12	Coordination	Refer specific BLM and DNRC development and use permit applications to MAFB for review / comment. BLM and DNRC to modify application process to ensure early notification to MAFB and local jurisdictions of specific development requests on managed lands when the initial application is received. The military will provide a list of the types of projects and locations requiring this level of notification. Other Agency: Bureau of Land Management	◇	X	X	□											■				

Missile Complex Strategies

Primary Agency Responsible for Implementation

Overlay District

Timeframe

Issue #	Type of Strategy	JLUS Strategy Description	40 th HS Fly Zone	Military Affected Areas	Malmstrom AFB	Cascade County	Lewis and Clark County	Fergus County	Wheatland County	Judith Basin County	Chouteau County	Teton County	State Legislature	MT Department of Transportation	MT Department of Environmental Quality	MT Department of Natural Resources and Conservation	MT Building Codes Bureau	Great Falls International Airport Authority	JLUS Coordination Committee
LU-B	Issue	<p>Lack of awareness by property owners that have safety arc development easements on their land.</p> <p>The military holds various easements around each LF and throughout the Hardened Inter-site Cable System (HICS) network. These easements establish safety arcs and protect critical military infrastructure. Lack of knowledge about the location and terms of the easements by land owners and local and state agencies threatens the effectiveness of military operations.</p>																	
LU-B1	Regulatory	<p>Work with MAFB to identify LF sites where easement agreement revisions are most critical. Augment these easement agreements to include height restrictions and other design standards that minimize incompatible development and enhance safety.</p>	●	X	■														
LU-B2	Regulatory	<p>Use the authorities established by SB 417 to establish MAAs around the LFs and MAFs. Impose more restrictive land uses per recommendations.</p>	●	X		■	■	■	■	■	■	■							
LU-B3	Planning	<p>Incorporate safety arcs and or designated MAAs into Growth Policy Plans. Map individual sites and characterize them. Develop policies consistent with county needs that aim to conserve these areas.</p>	○	X	■	■	■	■	■	■	■	■							
LU-B4	Education	<p>Host an annual public awareness meeting at MAFB. Include a question and answer session and tour of the base and LF facilities.</p>	●		■														

Missile Complex Strategies			Primary Agency Responsible for Implementation																	
Issue #	Type of Strategy	JLUS Strategy Description	40 th HS Fly Zone	Overlay District	Malmstrom AFB	Cascade County	Lewis and Clark County	Fergus County	Wheatland County	Judith Basin County	Chouteau County	Teton County	State Legislature	MT Department of Transportation	MT Department of Environmental Quality	MT Department of Natural Resources and Conservation	MT Building Codes Bureau	Great Falls International Airport Authority	JLUS Coordination Committee	
LU-B5	Regulatory	Upon the sale of fee simple land within the MAAs, consider requiring the inclusion of disclosure statements, which identify that the property includes a military easement with restrictions.		X		■	■	■	■	■	■	■								
LU-C	Issue	<p>Possible expansion of military facilities.</p> <p>The existing 1,200-foot safety arc only provides enough of a buffer zone for the explosive safety quantity distance (radius of potential flying debris from an explosion) and not for all other training needs, which may require additional Right-of-Entry agreements. The ongoing need for helicopter support at the LFs and MAFs will require the siting of two additional refueling sites.</p>																		
LU-C1	Coordination	MAFB to identify priority locations for helicopter refueling sites and LFs/MAFs where expanded Right-of-Entry agreements are needed. Begin working with landowners to determine willingness to accommodate these expansions.		X	■															
LU-C2	Acquisition	Identify potential acquisition strategies (e.g. conservation easements, fee simple purchase etc.) for critical LF sites with willing landowners.		X	■															
LU-C3	Legislation	Pass state legislation that grants missile counties direct appropriations for the purchase of additional easements around LFs, when necessary.		X									■							□

Missile Complex Strategies		Primary Agency Responsible for Implementation																			
Issue #	Type of Strategy	JLUS Strategy Description	Timeframe	40 th HS Fly Zone	Overlay District	Malmstrom AFB	Cascade County	Lewis and Clark County	Fergus County	Wheatland County	Judith Basin County	Chouteau County	Teton County	State Legislature	MT Department of Transportation	MT Department of Environmental Quality	MT Department of Natural Resources and Conservation	MT Building Codes Bureau	Great Falls International Airport Authority	JLUS Coordination Committee	
LU-C4	Plans and Programs	Develop an Air Force program which requires Malmstrom military personnel to return property to its pre-ROE condition after ROE agreements expire. Other Agency: Air Force	◆		X	■															
LU-C5	Policy	Include language in ROE agreements stating that if military personnel should repeatedly leave the gates to private property open, the Air Force may install cattle guards to prevent cattle from escaping.	○		X	■															

Legislative Initiatives																						
LI-A	Issue	Senate Bill 417 – Military Areas Compatibility Act. Cascade County spearheaded state legislation called the Military Areas Compatibility Act, which was signed into law by the governor on May 16, 2011. The law increases the regulatory capacity of the Missile Counties around military facilities.																				
LI-A1	Policy	Educate each county about the implications of this law and how it can be implemented to protect LFs and MAFs, as appropriate, in each of the jurisdictions.	●		X																	■

Missile Complex Strategies		Primary Agency Responsible for Implementation																		
Issue #	Type of Strategy	JLUS Strategy Description	40 th HS Fly Zone	Military Affected Areas	Malmstrom AFB	Cascade County	Lewis and Clark County	Fergus County	Wheatland County	Judith Basin County	Chouteau County	Teton County	State Legislature	MT Department of Transportation	MT Department of Environmental Quality	MT Department of Natural Resources and Conservation	MT Building Codes Bureau	Great Falls International Airport Authority	JLUS Coordination Committee	
Noise																				
NO-A	Issue	Full-time flight schedule. There is a potential for increased noise complaints because of the new around-the-clock flight schedule of the 40th HS. The increased frequency of flights and additional hours of operation (especially at night) will increase noise and the potential for noise complaints.																		
NO-A1	Education	Increase community awareness of flight schedules and helicopter operations throughout Missile Complex through the use of newsletters, brochures, or annual outreach functions hosted by MAFB.	X		■															
Safety																				
SA-A	Issue	Potential for incompatible development and uses in existing Launch Facility safety arcs. Each LF has a safety arc (1,200 foot radius) to protect adjacent uses. The existing restrictive easement language allows for limited land uses and development, however, the terms of the easements often are not specific enough to prevent incompatible development.																		
SA-A1	Regulatory	See Strategy LU-A1.																		
SA-A2	Coordination	Transmit a comprehensive inventory of easement locations in each missile county to the State DNRC for use in reviewing specific use proposals.	◆	X	■															

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SA-A3	Legislation	Amend Montana Code Annotated, Title 50, Chapter 60 and Title 50, Chapter 74 (Building Construction) to eliminate building permit exemptions within the MAAs.	X	X									■							
SA-B	Issue	Potential for low-level aircraft collisions. 40th HS pilots fly at very low levels (50 feet AGL) throughout the fly zone, which increases the potential for collisions with low-level civilian aircraft.																		
SA-B1	Coordination	Mutually exchange maps that illustrate the low level flight corridors associated with helicopter flight paths of MAFB and the civilian fixed and rotary wing flight patterns of GFIA.	X		■															
Trespassing																				
TR-A	Issue	Existing military right-of-entry agreements do not adequately accommodate training needs. Right-of-entry agreements between the Air Force and private landowners exist on some but not all of the land surrounding the LFs and MAFs. Military personnel and security forces sometimes find themselves training or operating vehicles in areas that are not covered by right-of-entry agreements.																		
TR-A1	Acquisition	Identify and prioritize locations where increased right-of-entry access is needed to allow for training. Coordinate this process with prioritization of refueling and expanded safety arcs site. Amend existing or develop new right-of-entry agreements with willing landowners.		X	■															

Missile Complex Strategies

Primary Agency Responsible for Implementation

Overlay District

Timeframe

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Vertical Obstruction																				
VO-A	Issue	<p>Unregulated development of vertical obstructions within 40th Helicopter Squadron fly zone.</p> <p>The counties within the Missile Complex are an emerging energy generation hub, and there are numerous wind energy conversion systems (WECSs) and energy transmission lines being sited and developed within the study area. These structures can present obstacles to low-level aircraft. The absence of height regulations / restrictions throughout the Missile Complex increases the likelihood that structures might interfere with low-level aircraft.</p>																		
VO-A1	Planning	Develop a "Red, Yellow, Green" (RYG) Map, which identifies locations throughout the fly zone where wind energy development, cell towers and transmission lines should be prohibited to protect public safety and ensure compatibility.	X		■															■
VO-A2	Policy	Any counties without zoning regulations should consider instituting a permitting requirement for tall development within MAAs per Section 5(c) of SB 417.		X																
VO-A3	Coordination	Coordinate with the FAA about permitting of cell towers that exceed 200 feet and trigger required approvals. Other Agency: Federal Aviation Administration	X																	
VO-A4	Strategy	Building Code Bureau should coordinate approval of electrical permits for cell towers within the 40th HS Fly Zone with local counties and MAFB.	X																	■

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VO-A5	Coordination	When issuing electrical permits, certificates of compliance or special use permits, require wind energy developers to coordinate with MAFB.	X	Military Affected Areas	■	■	■	■	■	■	■	■	■	■	■					
VO-A6	Coordination	The Department of Defense Siting Clearinghouse requirements and standards published in Title 32, Code of Federal Regulations, Part 211 shall advise and guide the process to facilitate the early submission of renewable energy project proposals to the Clearinghouse for military mission compatibility review. Other Agency: Department of Defense	X		■															
VO-A7	Regulatory	Amend MCA Title 15, Chapter 24 to clarify that funds in the wind energy development impact fee reserve account may be used to minimize adverse impacts of wind energy development. For example funds could be used to create a Transfers of Development Rights program, or to purchase easements on parcels not compatible with wind energy projects.			■										■					
VO-A8	MOU	Develop a formal notification and review process for projects subject to the DEQ Major Facilities Sitings Act and that are requesting a Certificate of Compliance. This would require DEQ to notify, provide a copy of the development proposal and obtain review consultation with MAFB and the respective county(s) where the project is located.	X		■										■					

Missile Complex Strategies

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Issue

Issue #	Type of Strategy	JLUS Strategy Description	Timeframe	40 th HS Fly Zone	Military Affected Areas	Malmstrom AFB	Cascade County	Lewis and Clark County	Fergus County	Wheatland County	Judith Basin County	Chouteau County	Teton County	State Legislature	MT Department of Transportation	MT Department of Environmental Quality	MT Department of Natural Resources and Conservation	MT Building Codes Bureau	Great Falls International Airport Authority	JLUS Coordination Committee
VO-A9	Coordination	Coordinate the review and siting of new overhead transmission lines with federal, state, county and MAFB officials.	●	X		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			<input checked="" type="checkbox"/>				
VO-A10	Coordination	Work with line siting entities to locate transmission towers outside of existing and future flight corridors and within existing transmission corridors. Other Agency: Utility Companies.	●	X												<input checked="" type="checkbox"/>				
VO-A11	Education	Create a Cell Tower Siting Awareness Program. Develop a brochure which provides information about best practices for cell tower siting to telecommunications companies. Include instructions for coordinating with affected cities, counties and MAFB when considering the placement of cell towers. Other Agency: Telecommunications Companies.	○	X		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			<input checked="" type="checkbox"/>				<input checked="" type="checkbox"/>
VO-B	Issue	Potential for vertical obstructions within existing safety arcs. The height of structures within the 1,200-foot Launch Facility safety arcs is not regulated through local government zoning nor addressed in existing restrictive easement agreements. The presence of structures in safety arcs that exceed 50 feet in height creates operational safety hazards for helicopter pilots landing at LFs.																		
VO-B1	Regulatory	Establish Height Restrictions within MAAs. Work with MAFB to establish a standard for preferred heights of buildings in MAAs per provisions of SB 417 (See Strategy VO-A3).	○		X	<input type="checkbox"/>	<input checked="" type="checkbox"/>													

Missile Complex Strategies		Overlay District	Primary Agency Responsible for Implementation																	
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VO-B2	MOU	Prepare and adopt a formal notification procedure for MAFB to provide input on proposed wind energy conversion system (WECS) projects within MAAs and the 40th HS Fly Zone.	X	X	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>										
VO-B3	Policy	Create a transfer of development rights program for wind energy development that may be incompatible with military operations or is proposed within an MAA.		X	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>										
VO-C	Issue	Objects within the Fresnel Zone can interfere with line-of-sight transmissions. Transmitting and receiving antennas are located at LFs and MAFs throughout the Missile Complex. The placement of vertical structures within the line-of-site of these antennas will interfere with signals and could jeopardize the Air Force's ability to conduct surveillance around military facilities.																		
VO-C1	Coordination	Identify the contours of the Fresnel Zone for each of the LFs/MAFs with line-of-sight systems and establish height restrictions for development within this area in the subdivision ordinance.		X	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>										
COMPETITION FOR SCARCE RESOURCES																				
Frequency Spectrum Capacity																				
FS-A	Issue	Wind turbine frequency. Wind turbines generate frequencies which can interfere with helicopter radar systems.																		

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FS-A1	Regulatory	Incorporate frequency considerations into "Red, Yellow, Green" map. Identify locations within the 40th HS Fly Zone, where wind turbines should not be developed due to concerns about frequency interference.	X		■															
FS-B	Issue	Competition for the frequency spectrum may limit the Air Force's ability to carry out necessary surveillance. Civilian uses of bandwidth along the frequency spectrum can occupy bandwidth and limit the ability for military antennas to transmit information and carry out security surveillance.																		
FS-B1	Implementation	Purchase "RF spectrum analyzer" device which is used to detect interference between frequency bands. This tool can be used to identify interference from on-installation sources including military and public/commercial users.		X	■															
	Timeframe		O																	

Missile Complex Strategies

Primary Agency Responsible for Implementation

Overlay District

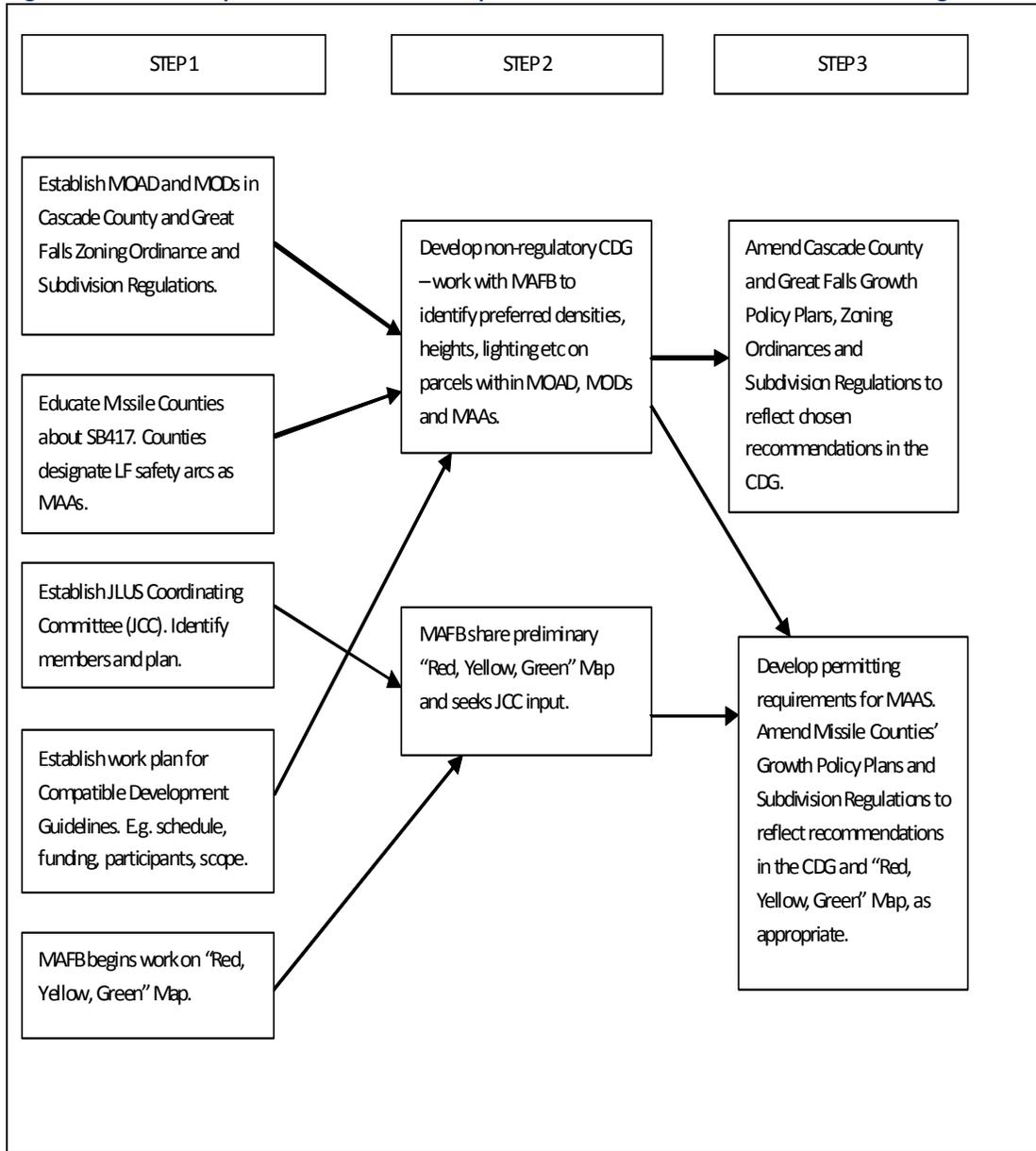
Timeframe

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Ground Transportation																				
GT-A	Issue	<p>Missiles are transported throughout the Missile Complex on heavy trucks and in large convoys, which require a higher frequency of roadway maintenance.</p> <p>Military convoys use the local roadway system to transport missiles. The degradation of more frequently used roads typically requires higher levels of maintenance. While some of the local roads used by convoys are designated as Defense Access Roads (which qualify for federal funds), others are not, which requires maintenance using local funds.</p>																		
GT-A1	Coordination	<p>Work with MDoT to ensure awareness about convoy routes. This information should be factored into MDoT's permitting process.</p>	X		■									■						
GT-A2	MOU	<p>Develop an MOU which allows for MAFB to provide input on MDoT's proposed uses, improvements and permit issuance along these routes.</p>	X		■									■						
GT-A3	Coordination	<p>Coordinate maintenance and improvements to Defense Access Roads with MDoT.</p>	X		■									■						
GT-B	Issue	<p>Civilian truck convoy movement impediments.</p> <p>The trucks traveling with oversized loads require roadway construction to which can impact how convoys travel through the Missile Complex.</p>																		
GT-B1	Coordination	<p>Coordinate with MAFB about permitting oversized loads and coordination of oversized load movements.</p>	X		■									■						

PROPOSED ACTION PLAN

Figure 4.2-3 illustrates a recommended approach for staging the implementation of the strategies.

Figure 4.2-3. Proposed Action Plan for Implementation of the Malmstrom JLUS Strategies



Please see the next page.

